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Fish Karyotypes

A CHECK LIST

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Introduction

In many vertebrate groups, the study of karyotypes and genome size has contributed along with analyses of mitochondrial and nuclear gene sequences to the resolution of challenges in biology systematics and evolution. However, in fishes—the most diverse of all vertebrate groups—higher taxa traditionally have been classified largely by morphology and paleontology, with a much smaller input of cytogenetic information. In part, this is because karyotypes can be obtained only from living specimens, tissues, or cells, which makes it challenging to study the karyotypes of fishes that are difficult to collect alive (e.g., deep-sea fishes). Of course, even fresh material provides no guarantee that reliable chromosome figures can be obtained easily.

DNA sequence data are exerting an increasingly strong influence in modern fish systematics, for example, by leading to proposed challenges in the classification of numerous higher taxa ranging from genera to orders. However, the most fruitful approach is certain to be one that involves synthetic analyses of morphology, molecular phylogenetics, comparative karyology, and genome size, rather than focusing on only one or a few of these sources of data. For example, although it may be very difficult to establish homology of karyotypes analyzed by Giemsa staining and several banding methods among taxa, the polarity of karyotype states nonetheless can still be inferred by analysis of Robertsonian fusion/fission, tandem fusion, pericentric inversion, paracentric inversion, aneuploidy, or polyploidy in any monophyletic taxon, even when the polarity of DNA sequences is unclear. The role of cytogenetic data is likely to increase further because powerful new methods such as fluorescence in situ hybridization (FISH) (Phillips 2007: P-53) are implemented in fishes beyond model species (e.g., zebrafish, medaka, sticklebacks, and pufferfish). Given their limited scope, FISH data are not included here, but their future importance is clearly acknowledged.

The purpose of this book is to facilitate the implementation of an integrative approach to fish systematics by providing karyotype information for 3,425 species/subspecies of extant jawless, cartilaginous, actinopterygian, and lobe-finned fishes. This presentation fills an important need, as fish karyotypes tend to be published not only in well-known and easily accessible journals, but also in museum journals of more regional significance or in other venues that are difficult to obtain. Several books on fish chromosomes have been published in the past (Denton 1973: D-7; Chiarelli and Capanna 1973: C-1; Ojima 1983: O-73; Vasiliev 1985: V-72; Klinkhardt et al. 1995: K-114), but this volume represents the first in nearly 15 years and is the most comprehensive. Such an update is clearly warranted, given the historical growth in the numbers of karyotyped species/subspecies listed in Table 1.

Table 1 Historical transition of the numbers of karyotyped species/subspecies

Author(s)	Denton	Park	Ojima et al.	Sola et al.	Ojima	Vasiliev	Klinkhardt et al.	Arai
Year	1973	1974	1976	1981	1983	1985	1995	This
Reference no.	D-7	P-6	O-22	S-88	O-73	V-72	K-114	book
Myxini	4	2	3	0	3	5	0	8
Petromyzontida	7	6	8	0	7	13	14	14
Chondrichthyes								
Holocephali	1	2	0	0	2	2	2	2
Elasmobranchii	15	8	4	0	13	17	52	68
Actinopterygii								
Cladistia	2	2	2	4	7	6	7	7
Chondrostei	1	4	0	5	7	12	12	21
Neopterygii								
Holostei	2	2	2	2	3	1	3	3
Teleostei	446	505	417	798	1,035*	1,258	2,182*	3,296
Sarcopterygii	3	1	0	1	2	5	5	6
Total	481	532	436	810	1,079*	1,318	2,277*	3,425

*Synonymous species were counted as different species.

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Substantial revisions to the species names and higher taxonomy of many fishes in the intervening years also make an updated compendium necessary. In this book, synonymies are circumvented by providing both the name reported in the original karyotype papers and currently recognized names. In particular, the classification of taxa above the species level follows Nelson (2006: N-68), and species names conform to the up-to-date list in the *Catalogue of Fishes* by Eschmeyer (http://research.calacademy.org/redirect?url=http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp, E-13). The classification of chromosomes followed Levan et al. (1964: L-25): chromosomes were classified to metacentrics (M), submetacentrics (SM), subtelocentrics (ST), and acrocentrics (A). As shown in Table 1 (Levan et al. 1964), M, m, sm, st, t, and T do not denote chromosomes but rather centromeric position; e.g., acrocentrics is characterized by t. Levan et al. (1964) do not propose abbreviations for chromosomes. Two kinds of abbreviations for chromosomes, M-SM-ST-A and m-sm-st-t(-T), have been adopted in karyotypes. I adopt M-SM-ST-A because chromosome classification can be differentiated from centromeric position by these abbreviations and thus the problematic treatment of T in the other system can be avoided. In addition to providing data for extant fishes, ancestral chromosome numbers (ACN = NAN sensu Arai and Nagaiwa 1976: A-64) are proposed in this book.

To date, karyotype data have been made available for 53 orders (84% of the known total) and 269 families (52% of total). In addition, genome size has been reported in 52 orders (83%) and 264 families (51%), which are available in standardized form as part of the Animal Genome Size Database (http://www.genomesize.com, G-85). As a result, it is possible to compare these two characters, at least at the family level (Tables 2, 3).

In some cases, a given karyotype consists of chromosomes that cannot easily be distinguished as either SM or ST, such that different authors may report different information. For example, the arm number (NF_1) of *Oncorhynchus keta* ($2n = 74$) is reported as 100 in Sasaki et al. (1968: S-14) versus 102 in Ueda (1985: U-72), and the NF_2 of *Alburnus alburnus* ($2n = 50$) is given as 92 in Cataudella et al. (1977: C-34) versus 86 in Hafez et al. (1978: H-3). These different reports on karyotypes between conspecific populations were included in the database (Tables 4–7) without comment, although it should be noted that these differences may derive from artifacts of preparation technique or taxonomic problems, rather than representing real polymorphisms. If so, then it will be important to resolve these discrepancies before meaningful comparisons can be made. Similarly, there may be issues relating to differences in reported karyotypes resulting from different degrees of chromosome condensation, to the lack of a uniform terminology among authors, or even to some miscalculations (number of arms, NOR position, etc.). Some examples of these sources of error were detected when examining the literature; e.g., the same researcher(s) have at times defined M/SM as two-arm chromosomes in some taxa, but M/SM/ST as two-arm chromosomes in other taxa. To prevent such confusion, these two-arm definitions were differentiated in the present book; i.e., NF_1 means M/SM as two-arm chromosomes and NF_2 means M/SM/ST as two-arm chromosomes.

There are several fundamental questions that remain to be answered with regard to phylogenetic karyology in fishes. For example: (1) Why is polyploidy in teleost fishes only observed in freshwater species and not in marine species? (2) What is the phylogenetic significance of differences in the number and location of NORs as shown by different banding methods (especially by the FISH method with 18S rDNA and 5S rDNA probes)? (3) In cases in which both large and small B chromosomes have been reported, are both, neither, or only the large B chromosomes to be counted in the diploid chromosome number? Or should this be considered on a case-by-case basis? (4) What is the biological significance of microchromosomes, and what is their relationship (if any) with B chromosomes? (5) Can sex chromosomes be differentiated in more species by using FISH methods with probes of genes specific to sex chromosomes?

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Availability of Fish Karyotypes

Karyotypes have been reported for 3,425 species/subspecies of fishes (including jawless, cartilaginous, ray-finned, and lobe-finned fishes) (see Table 1). This total represents a coverage of about 12.2% of extant fish diversity (62 orders, 515 families, and 27,977 species); however, these are not sampled evenly from among fish groups and instead are biased toward freshwater taxa such as the Cypriniformes, Characiformes, Siluriformes, Cyprinodontiformes, and Cichlidae in the Perciformes. Specifically, numbers of karyotyped species/subspecies are 747 (21.8%) in Cypriniformes, 341 (10.0%) in Characiformes, 362 (10.6%) in Siluriformes, 345 (10.1%) in Cyprinodontiformes, and 130 (3.8%) in Cichlidae (Perciformes). On the other hand, 4 orders (Orectolobiformes, Echinorhiniformes, Pristiophoriformes, and Pristiformes) and 30 families in cartilaginous fishes and 5 orders (Albuliformes, Saccopharyngiformes, Ateleopodiformes, Lampriformes, and Polymixiiformes) and 216 families in actinopterygian fishes currently lack any karyotype data. Of course, relative coverage depends on the number of recognized taxa, which has been updated significantly in recent times consequent to molecular analyses that may or may not reflect undue inflation (Nelson 2006: N-68; Kottelat and Freyhof 2007: K-130).

Fish Vouchering and Identification

To verify the identification of fishes included in karyotype studies, voucher specimens should be deposited in a museum, curated university collection, or another appropriate institute. Unfortunately, vouchered specimens are not available for most species for which karyotypes have been reported, meaning that their initial identification cannot be confirmed. Moreover, there are many papers in which the localities of material fishes purchased from fish dealers were not described, which further increases the prospect of taxonomic errors. This problem is especially relevant when the classification of a taxon in question has been revised, making it difficult to link old and new names. For example, two different karyotypes were reported in a labrid, *Pseudolabrus japonicus* (Arai and Koike 1980: A-75; Ojima and Kashiwagi 1979: O-27). Thereafter, *Pseudolabrus japonicus* was separated to two different species, *P. eosthinus* and *P. sieboldi* by revisional study of *P. japonicus* (Mabuchi and Nakabo 1997: M-1). By examination of *P. japonicus* material deposited at a museum, it was known that the two karyotypes corresponded to these two different species (Mabuchi et al. 2002: M-2).

Classification of Extant Fishes

Fish systematics has developed greatly during the past 10 years, mainly based on molecular phylogenetic studies. Although results in molecular phylogenetics are not always agreed upon by all researchers, it is necessary that a consistent taxonomic system be used in a database such as this. In this regard, the higher taxonomic classification proposed by Nelson (2006: N-68) has been used with the following updates:

Orders Batrachoidiformes and Lophiiformes were changed from the superorder Paracanthopterygii to the superorder Acanthopterygii (Miya et al. 2003, 2005: M-138, 139).

Although polyphyly of the order Gasterosteiformes and the suborder Labroidei (order Perciformes) has been reported (Kawahara et al. 2008: K-105; Mabuchi et al. 2007: M-17) and

Stylephoriformes (Miya et al. 2007: M-140), close relationship between Alepocephaliformes and Otocephala (Lavoué et al. 2008: L-24), and Gobiiformes (Thacker 2009: T-63) were proposed, these hypotheses were treated as pending problems in this book.

The higher-level classification used here is as follows:

Genus- and species-level designations given here are those presented by Eschmeyer (2009: E-13). Again, there have been many suggested changes to fish taxonomy at this level as well. For example, in European cyprinid fishes, many species previously placed in *Leuciscus* are now in the genera *Squalius*, *Telestes*, and *Petroleuciscus*, and many species previously placed in *Chondrostoma* are now in the genera *Protochondrostoma*, *Pseudochondrostoma*, *Parachondrostoma*, *Achondrostoma*, and *Iberochondrostoma* (Kottelat and Freyhof 2007: K-130). Changes such as these are noted in the karyotype database (Tables 4–7).

Historical Transition of Numbers of Karyotyped Species/Subspecies

The number of karyotyped species/subspecies has increased rapidly since the early 1970s. For example, in 1973 karyotypes were available for 481 species/subspecies; in 1985, 1,318 species/subspecies had been karyotyped; and at the time of this writing, data exist for 3,425 species/subspecies (see Table 1). Since the last compendium in 1995 (K-114), the number of karyotyped taxa in Elasmobranchii, Chondrostei, and Teleostei increased but that in Petromyzontida, Holocephali, Cladistia, and Holostei did not increase. In some cases, an increase in the number of karyotyped taxa in Elasmobranchii and Teleostei has been caused by the erection of numerous additional taxa and through revised techniques for chromosome preparation (Klinkhardt 1991: K-79).

Relationship Between Karyotype and Genome Size

Relationships between karyotypes and genome size in families were also explored (see Tables 2, 3). Sources of karyotypes and genome size were usually different. Data of karyotypes and genome size were extracted from Tables 4–7 and the up-to-date list of Gregory (www.genomesize.com, G-85).

As with karyotype data, there are significant gaps in the fish genome size dataset.

Two orders (Echinorhiniformes and Pristiophoriformes) and 21 families in cartilaginous fishes and eight orders (Alubuliformes, Saccopharyngiformes, Gonorynciformes, Ateleopodiformes, Lampriformes, Polymixiiformes, Percopsiformes, and Stephanoberyciformes) and 230 families in actinopterygian fishes have no information on genome size. Two orders (Echinorhiniformes and Pristiophoriformes) and 19 families in cartilaginous fishes and five orders (Albuliformes, Saccopharyngiformes, Ateleopodiformes, Lampriformes, Polymixiiformes) and 181 families in actinopterygian fishes have neither information on karyotypes nor information on genome size.

As for jawless fishes, karyotypes and genome size in the Myxiniformes differ from those in the Petromyzontiformes, i.e., $2n \leq 36$ and genome size >5.0 pg/cell in Myxiniformes versus $2n = 76$ or >140 and genome size <4.3 pg/cell in Petromyzontiformes. Myxiniformes exhibits different chromosome numbers and DNA amounts between somatic cells and spermatogonia, i.e., $2n =$ 14–36 in somatic cells versus $2n =$ 16–96 in spermatogonia. B chromosomes have been reported in spermatogonia in Myxiniformes (Nakai et al. 1995: N-62; Kojima et al. 2010: K-140).

As for jawed fishes, diploid chromosome numbers and genome size in cartilaginous fishes except Chimaeriformes are larger than those in actinopterygian fishes. The Polypteriformes and the Coelacanthiformes possess about 7.0–9.0 pg/cell. The Ceratodontiformes has extraordinary large genome sizes (more than 80.0 pg/cell).

Acipenseriformes is of special interest among Actinopterygii in their possession of 105 to 372 chromosomes and 2.4 to 13.8 pg/cell. Ploidy levels including diploidy (2X), tetraploidy (4X), and hexaploidy (6X) have been inferred in this order. However, the high number of chromosomes suggests another possible series, i.e., tetraploidy, octaploidy, and dodecaploidy (Fontana et al. 2007: F-61).

Diploid chromosome numbers and genome size in Neopterygii except the Lepisosteiformes, Osteoglossiformes, Characiformes, Siluriformes, Osmeriformes, and Salmoniformes are usually 48 or 50 and lower than 3.0 pg/cell, respectively. However, more than 3.0 pg/cell in Neopterygii has been reported in Anguilliformes, Cypriniformes, Characiformes, Siluriformes, Argentiniformes, Esociformes, Myctophiformes, Gasterosteiformes, Batrachoidiformes, Synbranchiformes, and Perciformes, i.e., Muraenidae, Cyprinidae (Cyprininae, part of Gobioninae, part of Leuciscinae, part of Rasborinae, Schizothoracinae, and polyploid species in Barbinae), polyploid species of Cobitidae, Catostomidae, part of Characidae, Curimatidae, Prochilodontidae, Ariidae, part of Callichthyidae, Doradidae, part of Loricariidae, Plotosidae, Microstomatidae, part of Umbridae, Myctophidae, part of Syngnathidae, Batrachoididae, part of Synbranchidae, Scaridae, Artedidraconidae, and Channichthyidae.

Among taxa described above, freshwater fishes such as part of Cypriniformes (Catostomidae, part of Cyprinidae, part of Cobitidae), and part of Siluriformes (part of Callichthyidae) may be of polyploid origin (Allendorf and Thorgaard 1984: A-16; Ferris 1984: F-23).

Complex relationships between ploidy and genome size have been reported in the Cobitoidea. In one example, the Leptobotiinae-Balitoridae exhibit $2n$ = 48–50 and genome size about 1.0 pg/cell, whereas the Botiinae possess $2n$ = 98–100 and genome size about 2.0 pg/cell. A second example is provided by comparing *Cobitis* species with $2n$ = 48–50 and about 4.0 pg/cell versus those with $2n$ = 96–100 and about 7.0 pg/cell. A third example comes from non-*Cobitis* cobitids with $2n$ = 48–50 with about 2.0 pg/cell versus those with $2n$ = 96–100 and about 4.5 pg/cell (Suzuki 1996: S-143).

The diploid chromosome number in marine neopterygian fishes, which have various genome sizes (0.8–4.4 pg/cell), was generally 46, 48, or 50 with the exception of $2n$ = 56 in Osmeriformes and did not show polyploidy, although triploidy was exceptionally reported in the Zoarcidae (Perciformes) (Morescalchi et al. 1996: M-89). In other words, it is difficult to infer polyploidy in marine fishes from genome size.

In Teleostei, genome size is relatively conserved in families, with the important exception of those including recent or ancient polyploids. Diploid chromosome numbers have been thought to vary across taxa above the family level, but when they were analyzed in terms of Robertsonian translocation and tandem fusion, they were found to be more conservative in each family. On the other hand, there are several problems in karyological analysis. The finding of B chromosomes might cause change of $2n$, NF, and ancestral chromosome number (ACN) in taxa that have been reported to possess no B chromosomes. It is likely that many more species, when analyzed with sufficient intensity, will be found to possess B chromosomes (Camacho et al. 2000: C-2). B chromosomes have been studied actively in Characiformes and neotropical Siluriformes (Carvalho et al. 2008: C-98), but there have been very few data on B chromosomes in the other taxa.

Table 2 Numbers of karyotyped genera and species/subspecies (sp/ssp), diploid chromosome number (2n) and genome size in families of jawless fishes

FCM = flow cytometry, FD = Feulgen densitometry, BFA = bulk fluorometric assay, SCF = static cell fluorometry.

Order/family/subfamily	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	BFA	SCF
PHYLUM CHORDATA									
Subphylum Craniata									
Superclass Myxinomorphi									
Class MYXINI									
MYXINIFORMES				**8**					
Myxinidae				8					
Myxininae	4	2	25	4	14, 28, 34, 36				6.9–9.2
Eptatretinae	3	1	45	4	34, 36	5.4	5.5	5.6	4.6–6.9
Superclass Petromyzontomorphi									
Class PETROMYZONTIDA									
PETROMYZONTIFORMES				**14**					
Petromyzontidae	8	5	34	11	142–168	2.6, 4.2	2.6–2.9, 4.2	3.2	
Geotriidae	1	1	1	1	ca. 180		3.1		
Mordaciidae	1	1	3	2	76		2.8		

Table 3 Numbers of karyotyped genera and species/subspecies (sp/ssp), diploid chromosome number (2n) and genome size in families of jawed fishes

FCM = flow cytometry, FD = Feulgen densitometry, FIA = Feulgen image analysis densitometry, BFA = bulk fluorometric assay.

Table 3.1 Class CHONDRICHTHYES

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Superclass Gnathostomata									
Grade Chondrichthiomorphi									
Class CHONDRICHTHYES									
Subclass Holocephali									
CHIMAERIFORMES				**2**					
Callorhinchidae	1	0	3	0				3.9	
Rhinochimaeridae	3	0	8	0				3.2	
Chimaeridae	2	2	22	2	58, 86		3.0	4.0	3.2
Subclass Elasmobranchii									
Subdivision Selachii									
HETERODONTIFORMES				**2**					
Heterodontidae	1	1	8	2	102	17.5	14.5, 29.6		13.6
ORECTOLOBIFORMES				**0**					
Brachaeluridae	2	0	2	0					
Ginglymostomatidae	3	0	3	0		7.6, 11.4	10.9	8.5	8.0
Hemiscylliidae	2	0	12	0				9.1–11.0	
Orectolobidae	3	0	6	0				10.1	
Parascylliidae	2	0	7	0					
Rhincodontidae	1	0	1	0					
Stegostomatidae	1	0	1	0					
LAMNIFORMES				**2**					
Alopiidae	1	0	3	0					
Cetorhinidae	1	0	1	0					
Lamnidae	1	1	5	1	82	12.9	13.4	10.0	
Megachasmidae	1	0	1	0					
Mitsukurinidae	1	0	1	0					
Odontaspididae	2	1	3	1	ca. 84	10.9			
Pseudocarchariidae	1	0	1	0					
CARCHARHINIFORMES				**17**					
Carcharhinidae	12	4	50	7	74–90	6.7–8.3	5.5–13.1	5.7–9.9	6.8–8.6
Hemigaleidae	4	0	7	0					
Leptochariidae	1	0	1	0					
Proscylliidae	3	0	5	0					
Pseudotriakidae	2	0	2	0					
Scyliorhinidae	16	2	113	5	62, 64, 72	18.1	11.3–14.7		15.4
Sphyrnidae	2	1	8	1	78–86	6.6	8.9	6.1	7.0, 7.8
Triakidae				4					
Galeorhininae	6	0	10	0			17.3		
Triakinae	3	2	28	4	68, 72, 80		8.6–9.8		9.0–12.8
HEXANCHIFORMES				**3**					
Chlamydoselachidae	1	1	1	1	ca. 100		9.2		
Heptranchiidae	1	1	1	1	72				
Hexanchidae	1	0	2	0			10.7		
Notorynchidae	1	1	1	1	104	8.8			
ECHINORHINIFORMES				**0**					
Echinorhinidae	1	0	2	0					

Table 3.1 Class CHONDRICHTHYES (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
SQUALIFORMES				**4**					
Centrophoridae	2	0	14	0			13.1–14.2	14.5	
Dalatiidae	7	0	10	0			18.2		
Etmopteridae	5	1	41	2	86	16.2	32.3	23.8–25.4	
Oxynotidae	1	1	5	1	62		34.1	25.0	
Somniosidae	7	0	17	0			16.4–26.0	19.5–23.2	
Squalidae	2	1	10	1	58–60, 78	14.0	13.7–14.4	11.6	12.0
SQUATINIFORMES				**1**					
Squatinidae	1	1	15	1	88			32.8	18.6–19.6
PRISTIOPHORIFORMES				**0**					
Pristiophoridae	2	0	5	0					
Subdivision Batoidea									
TORPEDINIFORMES				**6**					
Narcinidae	9	2	37	2		14.7, 24.1	21.0–24.0		8.4
Narcine					28				8.4
Narke					54		21.0–24.0		
Torpedinidae	2	1	22	4	66, 82, 86	14.1	14.0–15.0		14.6
PRISTIFORMES				**0**					
Pristidae	2	0	7	0					5.6
RAJIFORMES				**11**					
Rajidae	26	3	238	7	58, 96–98	5.8–7.2	5.4–8.1	5.5–6.9	5.6–7.2
Rhinidae	1	0	1	0					
Rhinobatidae	4	1	42	4	59–64, 84, 92	4.9–8.0	5.9–8.3	6.0	8.0
Rhynchobatidae	1	0	4	0					
MYLIOBATIFORMES				**22**					
Suborder Platyrhinoidei				1					
Platyrhinidae	2	1	3	1	64	9.0, 15.5			15.4
Suborder Zanobatoidei				0					
Zanobatidae	1	0	2	0			11.7		
Suborder Myliobatoidei				21					
Dasyatidae	6	2	68	8	58, 64–78	7.8–10.1	8.5–13.7	6.8–13.4	9.4
Gymnuridae	2	1	11	2	56	10.0, 11.4			16.2
Hexatrygonidae	1	0	1	0		10.0			
Myliobatidae				6					
Mobulinae	2	1	10	1	66	9.6–10.2	9.4		
Myliobatinae	4	1	20	4	52–54	10.4–11.9	8.7–10.8		9.8
Rhinopterinae	1	1	7	1	64	10.0–10.2			10.4
Plesiobatidae	1	0	1	0					
Potamotrygonidae	3	2	20	3	66, 90				
Urolophidae	2	1	24	2	52, 72	15.5	13.1		13.0
Urotrygonidae	2	0	16	0					

Table 3.2 Class ACTINOPTERYGII. Part 1 Cladistia and Chondrostei

Order/family	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Grade Teleostomi (OSTEICHTHYES)									
Class ACTINOPTERYGII									
Subclass Cladistia									
POLYPTERIFORMES				**7**					
Polypteridae	2	2	16	7	36, 38		9.1–14.5	7.4	9.4–9.8
Subclass Chondrostei									
ACIPENSERIFORMES				**21**					
Acipenseridae	4	4	25	20	105–372				
(2X)					105–120	2.4–4.7	3.2–3.6	4.4	
(4X)					240–260	8.8–9.5	6.1–9.1		
(6X)					372	13.1		13.8	
Polyodontidae	2	1	2	1	120	3.2–4.9			

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Subclass Neopterygii									
Division Holostei									
LEPISOSTEIFORMES				**2**					
Lepisosteidae	2	1	7	2	56, ca. 68	2.8	2.9	2.8	2.4
AMIIFORMES				**1**					
Amiidae	1	1	1	1	46		2.3–2.5	2.3	
Division Teleostei									
Subdivision Osteoglossomorpha									
HIODONTIFORMES				**2**					
Hiodontidae	1	1	2	2	50		1.2		
OSTEOGLOSSIFORMES				**14**					
Osteoglossidae	4	4	7	7	40–56			1.6–1.8	2.0
Pantodontidae	1	1	1	1	48				1.5
Mormyridae	18	2	201	2	48				2.0–2.4
Notopteridae	4	4	8	4	34, 42	2.2			2.6
Gymnarchidae	1	0	1	0					
Subdivision Elopomorpha									
ELOPIFORMES				**3**					
Elopidae	1	1	6	1	48				2.4
Megalopidae	1	1	2	2	46, 50–52			2.0	
ALBULIFORMES				**0**					
Suborder Albuloidei				0					
Albulidae	1	0	3	0					
Suborder Notacanthoidei				0					
Halosauridae	3	0	15	0					
Notacanthidae	3	0	10	0					
ANGUILLIFORMES				**33**					
Suborder Anguilloidei				6					
Anguillidae	1	1	15	5	38	2.2		2.0	2.8–3.3
Heterenchelyidae	2	0	4	0					
Moringuidae	2	1	6	1	50				

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Muraenoidei				12					
Chlopsidae	8	0	18	0				3.9	
Muraenidae	15	3	185	12	36, 42	4.6		3.8	4.4–5.1
Myrocongridae	1	0	4	0					
Suborder Congroidei				15					
Colocongridae	1	0	5	0					
Congridae	22	2	160	5	34, 38	2.4–3.6			
Derichthyidae	2	0	3	0					
Muraenesocidae	4	1	8	1	38			2.3	
Nemichthyidae	3	0	9	0					
Nettastomatidae	6	0	38	0					
Ophichthidae	52	7	290	8	38–48				
Serrivomeridae	2	0	10	0					
Synaphobranchidae	10	1	32	1	26			3.2	
SACCOPHARYNGIFORMES				**0**					
Suborder Cyematoidei				0					
Cyematidae	2	0	2	0					
Suborder Saccopharyngoidei				0					
Eurypharyngidae	1	0	1	0					
Monognathidae	1	0	15	0					
Saccopharyngidae	1	0	10	0					
Subdivision Otocephala (= Ostarioclupeomorpha)									
CLUPEIFORMES				**30**					
Suborder Denticipitoidei				0					
Denticipitidae	1	0	1	0					
Suborder Clupeoidei				30					
Pristigasteridae	9	0	34	0					
Chirocentridae	1	0	2	0				1.6	
Clupeidae				23					
Alosinae	7	3	31	9	46, 48		2.0		2.2–2.8
Clupeinae	16	6	72	9	28, 44–48, 50–54		2.0–2.7	1.8–2.1	1.5
Dorosomatinae	6	4	22	5	48	2.0		1.8	
Pellonulinae	23	0	44	0				2.2	
Engraulidae	16	4	139	7	42, 44, 48	2.9	3.0		3.8
GONORYNCHIFORMES				**2**					
Suborder Chanoidei				1					
Chanidae	1	1	1	1	32				
Suborder Gonorynchoidei				0					
Gonorynchidae	1	0	5	0					
Suborder Knerioidei				1					
Kneriidae	4	0	30	0					
Phractolaemidae	1	1	1	1	28				
CYPRINIFORMES				**747**					
Superfamily Cyprinoidea				630					
Cyprinidae	220	180	2420	628					
Acheilognathinae	3	3	50	34	42–48	2.1–2.3	1.8–2.1		
Barbinae	?	30	?	154	48–150				
(2X)		16		75	48–50	1.5–2.2	1.4–2.5		1.9–2.4
(4X)		9		57	96–100	2.7–3.7	3.4–3.5, 4.6		
(6X)		5		22	150				
Cultrinae	?	15	?	30	48	2.6	1.8–2.4		
Cyprininae	6	4	25	22	100–162				
(4X)		4		22	100	3.4–4.5	3.1–3.8, 4.8	3.4	
(6X)		1		3	150–162	5.4	4.6–4.8, 6.1		

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Gobiobotinae	?	2	?	7	50				
Gobioninae	?	21	?	65	50	2.4–3.7	2.8–3.3		
Hypophthalmichthyinae	2	2	3	2	48		1.9–2.1		
Labeoninae	?	12	?	50	44, 48, 50		2.8	2.2–2.5	2.2–2.6
Leuciscinae	?	68	?	200	48, 50	2.0–3.7	1.8–3.2	2.5–2.8	
Rasborinae (= Danioninae)	?	18	?	46	48–78				
(2X)		16		41	48–52	2.2, 3.4–4.6	1.8–2.9, 4.4	2.8	3.2, 3.6–4.4
(2X)		3		5	70–78	2.3	3.3		
Schizothoracinae	?	12	?	29	90–148, >400				
(4X)		11		22	90–92, 98–100		3.0–3.1, 4.9		
(6X)		1		6	148		6.5–7.0		
(18X)		1		1	417–470		17.2		
Squaliobarbinae	?	3	?	3	48	2.0	2.0–2.2		
Tincinae	1	1	1	1	48	2.3	1.7–2.1		
Xenocyprinae	4	4	?	7	48		2.1–2.8		
Psilorhynchidae	2	1	6	2	50				
Superfamily Cobitoidea				117					
Gyrinocheilidae	1	1	3	1	48	1.2	1.0	1.3	1.3
Catostomidae	13	9	72	15	96–100	3.7–5.5	4.0	4.2–5.1	
Cobitidae	26	19	177	76					
Botiinae	5	5	?	20	98–100	1.6–2.1	1.8–1.9		1.7
Leptobotiinae	2	2	?	11	50–52		1.1		
Cobitinae	19	12	130	45	48–100				
Cobitis (2X)				16	48, 50	2.8–4.0	4.3		
Cobitis (3X)				1	74–75	6.0			
Cobitis (4X)				3	96–98, 100	6.8–7.6	7.2		
non-*Cobitis* (2X)				27	48, 50		2.0–2.2		2.4–2.8
non-*Cobitis* (4X)				3	100		4.5–4.6		
Balitoridae	59	13	590	24					
Nemacheilinae	29	8	420	19	44–50, 75		1.0–1.1, 2.2		
Balitorinae	29	5	170	5	48, 50		0.9		
Vaillantellidae	1	1	1	1	50				
CHARACIFORMES				**341**					
Suborder Citharinoidei				0					
Citharinidae	3	0	8	0					
Distichodontidae	17	0	90	0					
Suborder Characoidei				341					
Acestrorhynchidae	1	1	15	3	50		1.7, 3.1		
Alestiidae (Alestidae)	18	1	110	1	56				2.4
Anostomidae	12	7	137	39	54		2.6–3.5		2.8–3.4
Characidae				194					
Aphyocharacinae	2	2	10	4	50		2.5–2.7		3.4
Bryconinae	3	2	43	12	50		2.4		
Chalceinae	1	1	2	1	52, 54		2.2		2.2
Characinae	12	6	70	13	46, 50, 52		2.2–3.1		3.4
Cheirodontinae	15	9	46	16	32, 42, 50, 52		3.7		
Glandulocaudinae	19	2	50	5	52		2.5, 3.1		
Iguanodectinae	2	1	2	1	50		2.4		
Paragoniatinae	7	1	8	1	52				
Serrasalminae	15	11	80	35	54, 58, 60–64		3.2–3.6	3.0	3.2–3.4
Stethaprioninae	4	3	12	4			3.5		
Tetragonopterinae	?	20	?	91	36, 38, 46–54	2.5–4.0	2.1–4.2		3.2–4.2
Triporthinae	?	1	?	11	50, 52		2.7, 3.5		
Chilodontidae	2	2	7	2	54				
Crenuchidae	12	1	74	9	50				
Ctenoluciidae	2	2	7	2	36				
Curimatidae	8	7	95	37	46, 54, 56, 102		2.8–3.8		
Cynodontidae	4	0	14	0			2.0–2.1		

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Erythrinidae	3	3	14	11	39–42, 48–54		2.3		2.8
Gasteropelecidae	3	3	9	5	48, 52, 54		2.2–2.6		2.8
Hemiodontidae	6	3	28	7	54				
Hepsetidae	1	0	1	0					
Lebiasinidae	7	4	61	11	22–46		2.0		2.4
Parodontidae	3	2	21	8	54		2.0–2.5		
Prochilodontidae	3	2	21	12	54		3.1–3.7		
SILURIFORMES				362					
Akysidae	4	0	42	0					
Amblycipitidae	3	2	26	9	20–42				
Amphiliidae	2	0	26	0					
Ariidae	21	9	150	15	52–56	4.5		4.9	4.8–5.0
Aspredinidae	12	1	36	1	50				
Astroblepidae	1	0	54	0					
Auchenipteridae	20	4	94	5	56, 58				
Auchenoglanididae	6	0	28	0					
Austroglanidae	1	0	3	0					
Bagridae	18	10	170	33	44, 48–60	1.8	1.9–2.1		1.8–2.2
Callichthyidae				48					
Callichthyinae	5	4	13	7	56–64				
Dianema, Hoplosternum				5	60–62		1.2–1.4		
Callichthys				1	56–58		1.9		3.4
Megalechis				1	64	3.2			
Corydoradinae	4	4	164	41	40–134				
Corydoras (2X)				12	56–62, 74		1.3–3.6	3.2	
Corydoras (2X)				8	40–50, 56		4.5–4.9		4.6–6.0
Corydoras (4X)				5	92, 120–134	8.4	6.3–8.8	6.4	8.4–8.8
Cetopsidae	7	0	23	0					
Chacidae	1	0	3	0					
Clariidae	14	2	90	8	50–56, 100		1.8		2.4
Claroteidae	7	0	59	0					
Cranoglanididae	1	1	3	1	74				
Diplomystidae	2	2	6	3	56		2.6		
Doradidae	30	11	72	13	56, 58, 66		3.5		3.2
Erethistidae	6	1	14	1	50				
Heptapteridae	25	6	175	20	46, 52–58, 87		1.8–2.2		
Heteropneustidae	1	1	3	1	56				
Ictaluridae	7	5	46	33	40–62	2.0	1.9–2.1		2.4
Loricariidae				74					
Ancistrinae	27	5	217	10	38–40, 48–52				3.6
Hypoptopomatinae	16	8	79	12	54, 58, 72		1.8, 2.7		4.2
Hypostominae	?	6	?	23	52–54, 64–80		3.2–4.5	3.2–3.4	4.2
Lithogeneinae	1	0	2	0					
Loricariinae	31	7	209	18	36–74			3.0	3.2
Neoplecostominae	?	5	?	10	54		2.3		
Upsilodinae	?	1	?	1	96				
Malapteruridae	2	0	19	0					2.0
Mochokidae	11	2	179	9	54, 56			1.9, 2.8	2.2–2.4
Nematogenyidae	1	0	1	0					
Pangasiidae	3	2	28	5	58, 60				
Pimelodidae	31	14	85	30	50, 54, 56		1.1, 2.0–2.8		2.4
Plotosidae	10	1	35	2	36–38, 48			3.5	
Pseudopimelodidae	5	5	26	6	54		2.2–2.5		
Schilbeidae	15	4	56	4	58, 66				2.0
Scoloplacidae	1	1	4	1	50				
Siluridae	11	4	97	13	42, 54–60, 86	2.3	1.7–2.9		1.8

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Sisoridae				9					
Sisorinae	6	2	23	2	42, 46–48				
Glyptosterninae	11	4	89	7	36, 42, 50–56				
Trichomycteridae	41	6	201	18	32, 54, 81		2.3–2.6		
GYMNOTIFORMES				**17**					
Suborder Gymnotoidei				6					
Gymnotidae	2	2	33	6	40–48, 52–54				2.0
Suborder Sternopygoidei				11					
Apteronotidae	13	2	45	3	22, 24, 52				1.4
Hypopomidae	7	3	16	4	36–38, 42, 50				
Rhamphichthyidae	3	1	12	1	52			1.9	
Sternopygidae	5	2	28	3	28–40, 46–48				2.0
Subdivision Euteleostei									
ARGENTINIFORMES				**5**					
Suborder Argentinoidei				5					
Argentinidae	2	1	23	1	44		1.7		
Microstomatidae	11	4	38	4	36, 54, 60, 62		3.4, 6.3		
Opisthoproctidae	6	0	11	0					
Suborder Alepocephaloidei				0					
Alepocephalidae	23	0	90	0					
Bathylaconidae	2	0	3	0					
Platytroctidae	13	0	37	0					
OSMERIFORMES				**19**					
Galaxiidae	8	2	52	10	22, 30–44		1.8–2.1		
Osmeridae				9					
Hypomesinae	1	1	6	3	56				
Osmerinae	4	3	8	3	54, 56	1.2	1.5–1.7	1.4	
Plecoglossinae	1	1	1	1	56				
Salanginae	5	2	16	2	56				
Retropinnidae	3	0	5	0					
SALMONIFORMES				**85**					
Salmonidae				85					
Coregoninae	3	3	32	27	60–64, 72–86	6.0–7.1	5.1–6.9	4.0–4.9	
Thymallinae	1	1	5	3	98–110	4.3		4.0	
Salmoninae	7	7	73	55	52–92				
Brachymystax				1	90–92				
Hucho				2	82–84				
Parahucho				1	62				
Oncorhynchus				21	52, 58–70, 74	4.9–6.4	4.1–6.6	4.7–5.0	6.0–6.6
Salmo				12	54–58, 78–84	5.2–6.4	5.5–5.8	6.5	
Salvelinus				18	78–84	5.7	7.4–7.5	5.8–6.7	7.0
ESOCIFORMES				**11**					
Esocidae	1	1	6	6	50	2.3	2.2–2.7	1.8–2.3	
Umbridae	3	3	7	5	22, 44, 48, 78				
Dallia				1	78		2.5		
Novumbra				1	48		2.1		
Umbra				3	44, 22		4.8–5.0	5.1	5.4
STOMIIFORMES				**7**					
Diplophidae	3	0	8	0					
Suborder Gonostomatoidei				7					
Gonostomatidae	5	3	23	3	12, 48				
Sternoptychidae	10	2	67	4	35, 48–52				

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Phosichthyoidei				0					
Phosichthyidae	7	0	20	0					
Stomiidae	28	0	273	0				2.6	
ATELEOPODIFORMES				**0**					
Ateleopodidae	4	0	12	0					
AULOPIFORMES				**9**					
Suborder Synodontoidei				7					
Aulopidae	2	0	10	0					
Paraulopidae	1	0	10	0					
Pseudotrichonotidae	1	0	1	0					
Synodontidae	4	3	57	7	26–27, 48	2.2–2.9	1.6–2.5	2.7, 3.1	2.4
Suborder Chlorophthalmoidei				2					
Bathysauroididae	1	0	1	0					
Bathysauropsidae	1	0	3	0					
Chlorophthalmidae	2	1	19	2	24, 36				
Ipnopidae	5	0	29	0					
Notosudidae	3	0	19	0					
Suborder Alepisauroidei				0					
Alepisauridae	2	0	3	0					
Evermannellidae	3	0	7	0					
Paralepididae	13	0	56	0					
Scopelarchidae	4	0	17	0					
Suborder Giganturoidei				0					
Bathysauridae	1	0	2	0					
Giganturidae	1	0	2	0					
MYCTOPHIFORMES				**28**					
Neoscopelidae	3	1	6	1	48		2.6	5.0	
Myctophidae	32	16	240	27	44, 48		3.8–4.0		
LAMPRIFORMES				**0**					
Lampridae (= Lampididae)	1	0	2	0					
Lophotidae	2	0	3	0					
Radiicephalidae	1	0	1	0					
Regalecidae	2	0	2	0					
Stylephoridae	1	0	1	0					
Trachipteridae	3	0	10	0					
Veliferidae	2	0	2	0					
POLYMIXIIFORMES				**0**					
Polymixiidae	1	0	10	0					
Superorder Paracanthopterygii									
PERCOPSIFORMES				**1**					
Amblyopsidae	5	0	6	0					
Aphredoderidae	1	1	1	1	48				
Percopsidae	1	0	2	0					
GADIFORMES				**15**					
Bregmacerotidae	1	0	15	0					
Euclichthyidae	1	0	1	0					
Gadidae				12					
Gadinae	12	6	25	10	26, 38–48			1.7–1.9	1.8
Lotinae	3	1	5	1	48				
Ranicipitinae	1	1	1	1	48				
Macrouridae	27	0	350	0				1.5–1.9	
Melanonidae	1	0	2	0					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Merlucciidae	1	0	13	0				1.7–1.9	1.9–2.0
Moridae	18	0	105	0				1.5, 1.9	
Muraenolepididae	1	1	4	1	48				
Phycidae	5	2	25	2	28, 48			1.7	
OPHIDIIFORMES				**3**					
Suborder Ophidioidei				3					
Carapidae	7	1	31	1	36				
Ophidiidae	48	2	222	2	43, 44			1.2–1.3	1.4, 1.7
Suborder Bythitoidei				0					
Aphyonidae	6	0	22	0					
Bythitidae	16	0	62	0					
Parabrotulidae	2	0	3	0					
Superorder Acanthopterygii									
MUGILIFORMES				**18**					
Mugilidae	17	8	72	18	24, 28, 48	1.6	1.4	1.6–2.0	2.0
ATHERINIFORMES				**21**					
Suborder Atherinopsoidei				12					
Atherinopsidae	11	6	108	12	44, 46, 48			1.3	2.2
Suborder Atherinoidei				9					
Atherinidae	12	2	60	2	48			2.1	
Atherionidae	1	1	3	1	48				
Melanoteaniidae	17	3	113	6	46, 48				2.6
Notocheiridae	2	0	6	0					
Phallostethidae	5	0	22	0					
BELONIFORMES				**26**					
Suborder Adrianichthyoidei				13					
Adrianichthyidae				13					
Adrianichthyinae	2	0	5	0					
Horaichthyinae	1	0	1	0					
Oryziinae	1	1	22	13	28–42, 46, 48	2.1–2.2	1.5–1.9		2.2
Suborder Belonoidei				13					
Belonidae	10	4	34	7	48, 50, 54	2.3	2.2	2.0	2.2–2.4
Exocoetidae	8	1	52	1	48	1.9			
Hemiramphidae	12	4	109	4	40, 46, 48, 52	2.0	1.5	1.9–2.4	1.5–2.2
Scomberesocidae	2	1	4	1	42				
CYPRINODONTIFORMES				**346**					
Suborder Aplocheiloidei				205					
Aplocheilidae	2	2	7	6	38, 48		1.5	1.5	1.4
Nothobranchiidae	?	10	250	155	16–42, 46–50				2.4
Rivulidae	28	12	236	44	20, 34–48, 54				3.0
Suborder Cyprinodontoidei				141					
Anablepidae	3	1	15	1	46				
Cyprinodontidae	9	6	104	35	48, 50, 52				3.2
Fundulidae	4	2	50	24	32–34, 40–48	2.7–3.0		2.6	2.8–3.0
Goodeidae	16	16	36	36	24–30, 42, 48				
Poeciliidae				44					
Aplocheilichthyinae	1	1	?	2	48				
Procatopodinae	9	3	78	4	48				
Poeciliinae	27	8	225	38	42–48 (69, 72)	1.3–2.0	1.3–2.1	2.8	1.7–1.9
Profundulidae	1	0	5	0					
Valenciidae	1	1	2	1	48				

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
STEPHANOBERYCIFORMES				**5**					
Barbourisiidae	1	0	1	0					
Cetomimidae	9	0	20	0					
Gibberichthyidae	1	0	2	0					
Hispidoberycidae	1	0	1	0					
Megalomycteridae	4	0	5	0					
Melamphaidae	5	4	36	5	42, 46–50, 58				
Mirapinnidae	3	0	5	0					
Rondeletiidae	1	0	2	0					
Stephanoberycidae	3	0	3	0					
BERYCIFORMES				**9**					
Suborder Trachichthyoidei				5					
Anomalopidae	6	0	8	0					
Anoplogastridae	1	1	2	1	48				
Diretmidae	3	1	4	2	44–46, 70			2.9	
Monocentridae	2	1	4	1	48				
Trachichthyidae	7	1	39	1	48			1.3	
Suborder Berycoidei				1					
Berycidae	2	1	9	1	48	1.7		2.0	
Suborder Holocentroidei				3					
Holocentridae	8	3	78	3	48, 50	2.0	1.3	1.5–1.7	1.8
ZEIFORMES				**2**					
Suborder Cyttoidei				0					
Cyttidae	1	0	3	0				1.5	
Suborder Zeioidei				2					
Grammicolepididae	3	0	3	0					
Oreosomatidae	4	1	10	1	42			2.5–2.6	
Parazenidae	3	0	4	0					
Zeidae	2	1	5	1	42–44			2.5	
Zeniontidae	3	0	7	0					
GASTEROSTEIFORMES				**19**					
Suborder Gasterosteoidei				10					
Aulorhynchidae	2	0	2	0					
Gasterosteidae	5	4	10	10	42, 46	1.2		1.3	1.2–1.4
Hypoptychidae	1	0	1	0					
Indostomidae	1	0	3	0					
Suborder Syngnathoidei				9					
Aulostomidae	1	0	3	0			1.4		
Centriscidae	2	0	4	0				0.9–1.1	
Fistulariidae	1	0	4	0		1.5–1.8		1.4	
Macroramphosidae	3	1	11	2	48			1.1	
Pegasidae	2	0	5	0					
Solenostomidae	1	0	5	0					
Syngnathidae	52	4	232	7	36, 44, 48, 58			1.1–2.7	
Hippocampus, Syngnathus				4	44, 48	0.9–1.1		0.9–2.1	1.3
Nerophis				1	58	3.6–3.9			
BATRACHOIDIFORMES				**9**					
Batrachoididae	22	5	78	9	44, 46, 48				3.4–6.0
SYNBRANCHIFORMES				**8**					
Suborder Mastacembeloidei				4					
Chaudhuriidae	6	0	9	0					
Mastacembelidae	5	3	73	4	48		1.6		1.5

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Synbranchoidei				4					
Synbranchidae	4	3	17	4					
Monopterus				2	24, 42		1.2–1.6		
Synbranchus				1	42–46		5.6–8.5		
SCORPAENIFORMES				**101**					
Suborder Dactylopteroidei				1					
Dactylopteridae	2	1	7	1	48				
Suborder Scorpaenoidei				36					
Scorpaenidae	56	12	418	36					
Sebastinae	7	4	133	18	46, 48	1.8–1.9		1.9–2.0	1.9–2.2
Scorpaeninae	20	5	185	16	34–48				
Scorpaena				2	34–36, 40–48	2.8	1.8	2.9	2.8
Pterois				1	48			2.0	
Apistinae	3	0	3	0					
Tetraroginae	11	2	38	2	47–48, 50	2.1			
Synanceiinae	9	1	35	1	48	1.2, 1.8			
Caracanthidae	1	0	4	0					
Aploactinidae	17	0	38	0					
Pataecidae	3	0	3	0					
Gnathanacanthidae	1	0	1	0					
Congiopodidae	4	0	9	0					
Suborder Platycephaloidei				9					
Triglidae	10	3	105	3	47–48			1.6	1.6, 2.0
Peristediidae	4	0	36	0					
Bembridae	5	0	10	0					
Platycephalidae	18	4	65	6	48			1.4–1.8	
Hoplichthyidae	1	0	10	0					
Suborder Anoplopomatoidei				1					
Anoplopomatidae	2	1	2	1	30			1.4	1.7
Suorder Hexagrammoidei				5					
Hexagrammidae	5	2	12	5	48	1.7	1.5	1.4–1.9	1.8–1.9
Suborder Normanichthyoidei				0					
Normanichthyidae	1	0	1	0					
Suborder Cottoidei				49					
Rhamphocottidae	1	0	1	0					2.2
Ereuniidae	2	0	3	0					
Cottidae	70	16	275	34	32, 37–48, 52		1.5	1.4–1.9	1.8–1.9
Comephoridae	1	1	2	2	48				
Abyssocottidae	7	6	23	10	48				
Hemitripteridae	3	1	8	1	46			1.8–2.0	1.9
Agonidae	22	1	47	1	48			1.5	
Psychrolutidae	8	0	35	0				1.8–2.0	
Bathylutichthyidae	1	0	1	0					
Cyclopteridae	6	1	28	1	50			1.7–1.9	
Liparidae	29	0	334	0				1.5–1.8	
PERCIFORMES				**867**					
Suborder Percoidei				314					
Acropomatidae	8	0	31	0					
Ambassidae	9	3	46	4	40, 44, 48			1.1	
Aplodactylidae	1	0	5	0					
Apogonidae	23	4	273	13	34–38, 46	2.9		1.6–2.6	
Arripidae	1	0	4	0				1.4	
Banjosidae	1	0	1	0					
Bathyclupeidae	1	0	5	0					
Bramidae	7	1	22	1	54				
Caesionidae	4	0	20	0				2.2–2.3	
Callanthiidae	2	0	12	0					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Carangidae	32	13	140	26	46–50, 56	1.7	1.2–1.4	1.2–1.8	1.4–1.7
Caristiidae	2	0	5	0					
Centracanthidae	2	1	8	1	44–48				
Centrarchidae	8	8	31	23	40, 46, 48	1.9–2.1	1.9–2.2	1.5–2.3	
Centrogeniidae	1	0	1	0					
Centropomidae	1	1	12	1	48				
Cepolidae	4	0	19	0					
Chaetodontidae	11	2	122	11	48	1.5–1.6	1.1	1.4–1.7	1.7
Cheilodactylidae	5	0	22	0				1.3–1.5	
Chironemidae	2	0	5	0					
Cirrhitidae	12	0	33	0		1.5			
Coryphaenidae	1	0	2	0				1.2	
Dichistiidae	1	0	2	0					
Dinolestidae	1	0	1	0					
Dinopercidae	2	0	2	0					
Drepaneidae	1	0	3	0				1.4	
Echeneidae	4	1	8	1	42			1.4	1.4
Emmelichthyidae	3	0	15	0		2.1		1.5	
Enoplosidae	1	0	1	0					
Epigonidae	6	0	25	0					
Gerreidae	8	4	44	8	48	1.4	0.9	1.2	1.6
Glaucosomatidae	1	0	4	0					
Grammatidae	2	0	12	0					
Haemulidae	17	6	145	17	48	1.6	1.2–1.5	1.7	1.7–2.0
Inermiidae	2	0	2	0					
Kuhliidae	1	1	10	2	48				
Kyphosidae	16	4	45	7	48	1.8		1.8, 2.1	1.6, 2.2
Lactariidae	1	0	1	0					
Latidae	2	2	9	2	48			1.4	
Latridae	3	0	8	0					
Leiognathidae	4	3	30	3	48			1.0–1.4	
Leptobramidae	1	0	1	0					
Lethrinidae	5	1	39	2	48	2.8–3.2		2.2–2.5	
Lobotidae	2	1	5	1	48				
Lutjanidae	7	3	105	18	47–48	2.9	2.0–2.2	1.4–2.7	1.9, 2.6
Malacanthidae	5	0	40	0					2.0
Menidae	1	0	1	0					
Monodactylidae	2	1	5	2	48				1.8
Moronidae	3	3	8	6	48	1.6		1.9	1.8
Mullidae	6	4	62	6	44, 48	1.2–1.3	1.0	1.1–1.3	
Nandidae	4	3	21	4	46, 48				
Nematistiidae	1	0	1	0					
Nemipteridae	5	0	64	0		2.2		1.5–1.7	
Notograptidae	1	0	3	0					
Opistognathidae	3	0	78	0				2.1	
Oplegnathidae	1	1	7	2	48	1.9			
Ostracoberycidae	1	0	3	0					
Pempheridae	2	1	26	1	48	1.4			
Pentacerotidae	7	0	12	0		1.6		1.4–1.5	
Percichthyidae	11	2	34	8	48	1.9		1.7	
Percidae	10	8	201	25	48	2.3–2.4		1.8–2.1	2.4
Perciliidae	1	0	2	0					
Plesiopidae	11	1	46	1	48				
Polycentridae	4	1	4	1	46				
Polynemidae	8	1	41	1	48				
Polyprionidae	2	0	5	0				1.5–1.8	
Pomacanthidae	8	3	82	14	48, 52			1.4	
Pomatomidae	1	1	1	1	48			1.6	1.9
Priacanthidae	4	1	18	1	52	1.5		1.7–1.8	2.2

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Pseudochromidae	20	0	119	0				1.4–1.9	
Rachycentridae	1	0	1	0					1.5
Sciaenidae	70	25	270	38	46, 48	1.3, 1.9	1.2–1.6	1.3–1.5	1.5–2.0
Scombropidae	1	0	3	0					
Serranidae	64	8	475	29	48	2.1–2.7	1.8–2.2	1.3–2.5	2.4–2.6
Sillaginidae	3	1	31	1	48			1.3	
Sparidae	33	14	115	28	48	1.9	1.0–1.7	1.3–1.5	1.9–2.0
Symphysanodontidae	1	0	6	0					
Terapontidae	16	2	48	4	48	1.7		1.3–1.6	
Toxotidae	1	0	6	0		1.5			
Suborder Elassomatoidei				1					
Elassomatidae	1	1	6	1	48				
Suborder Labroidei				241					
Cichlidae	112	54	?	130					
American cichlids	?	32	?	82	38–52, 60	2.0–2.5	2.4		2.0–2.4
Asian cichlids	1	1	3	2	46, 48				
African cichlids	?	21	?	46	38–48	1.9	1.6–2.4		2.0–2.4
Embiotocidae	13	3	23	3	48				1.5–2.0
Pomacentridae	28	12	348	46					
Amphiprioninae	1	1	27	3	48	2.3–2.4		1.6–2.1	
Chrominae	5	2	?	10	28–48	2.1	2.6	1.7–2.1	2.2
Lepidozyginae	1	0	1	0					
Pomacentrinae	21	10	?	33	36, 42, 48	2.3–3.4	1.5–1.7	1.4–2.1	
Labridae	68	21	453	58	22, 32–48	1.5–3.5	1.6–2.9	1.3–2.8	1.8–2.0
Odacidae	4	0	12	0					
Scaridae	10	4	88	4	46, 48	4.2	2.5–2.8	2.9–3.2	3.8–4.6
Suborder Zoarcoidei				13					
Bathymasteridae	3	1	7	1	26				1.9
Zoarcidae	46	3	230	4	48, 72		2.9–3.2	1.6–2.2	
Stichaeidae	37	6	76	6	28, 46–48, 56				1.6
Cryptacanthodidae	1	0	4	0					
Pholidae	3	1	15	2	26, 46				
Anarhichadidae	2	0	5	0					
Ptilichthyidae	1	0	1	0					
Zaproridae	1	0	1	0					
Scytalinidae	1	0	1	0					
Suborder Notothenioidei				63					
Artedidraconidae	4	3	25	9	46			4.1	
Bathydraconidae	11	7	16	7	20, 36–38, 44–48			2.8	
Bovichtidae	3	2	11	4	48				
Channichthyidae	11	10	15	13	47–48		3.7–4.4		
Eleginopidae	1	1	1	1	48				
Harpagiferidae	1	1	6	1	48				
Nototheniidae	14	11	50	27	22–32, 46–50, 58			2.0–3.6	
Pseudaphritidae	1	1	1	1	48				
Suborder Trachinoidei				8					
Ammodytidae	8	1	23	1	46				
Champsodontidae	1	0	13	0					
Cheimarrhichthyidae	1	0	1	0					
Chiasmodontidae	4	0	15	0					
Creediidae	7	0	16	0					
Leptoscopidae	3	0	5	0					
Percophidae	11	0	44	0					
Pinguipedidae	5	1	54	3	26, 42, 48			1.1–1.2	
Trachinidae	2	2	6	2	48				
Trichodontidae	2	1	2	1	48				
Trichonotidae	1	0	8	0					
Uranoscopidae	8	1	50	1	26–32	1.5		1.4	

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Pholidichthyoidei				0					
Pholidichthyidae	1	0	2	0					
Suborder Blennioidei				27					
Blenniidae	56	13	360	25	40–48	1.6	1.2–2.4	1.0–1.7	1.7–1.9
Chaenopsidae	13	0	86	0					
Clinidae	4	1	12	1	48				
Dactyloscopidae	9	0	43	0					
Labrisomidae	15	1	105	1	48				2.0
Tripterygiidae	23	0	150	0		1.7–2.6		1.7	
Suborder Icosteoidei				0					
Icosteidae	1	0	1	0					
Suborder Gobiesocoidei				5					
Gobiesocidae	36	4	140	5	42, 46, 48				
Suborder Callionymoidei				5					
Callionymidae	13	2	182	5	32, 36–38, 42	1.2, 1.6		1.4, 2.0	
Draconettidae	2	0	12	0					
Suborder Gobioidei				125					
Rhyacichthyidae	1	0	2	0					
Odontobutidae	5	3	15	4	44	2.2–2.4	2.5		
Eleotridae	35	10	155	14					
Butinae	13	3	?	5	46, 48			2.5	
Eleotrinae	22	5	?	9	46, 48				
Ptereleotridae	5	1	36	1	46			1.2	
Xenisthmidae	6	0	12	0					
Kraemeriidae	2	0	8	0					
Gobiidae	210	49	1950	106					
Gobiinae	130	21	?	52	30, 38–50, 52		0.8–2.0	1.7–3.4	
Gobionellinae	56	15	?	37	34, 40–48, 52	2.4–3.0		2.5	2.4–2.8
Sicydiinae	7	1	?	1	44				
Oxudercinae	10	8	?	14	38, 42–48			1.9	
Amblyopinae	10	2	?	2	38, 44, 46				
Microdesmidae (= Cerdalidae)	5	0	30	0					
Schindleriidae	1	0	3	0					
Suborder Kurtoidei				1					
Kurtidae	1	1	2	1	44				
Suborder Acanthuroidei				12					
Acanthuridae	6	3	80	6	34, 36, 48	1.6–1.7	1.4	1.3–2.0	
Ephippidae	8	1	16	1	48			1.5–1.6	1.9
Luvaridae	1	0	1	0					
Scatophagidae	2	2	4	2	48			1.4	1.5
Siganidae	1	1	27	3	42, 48	1.2–1.4		1.2–1.4	
Zanclidae	1	0	1	0					
Suborder Scombrolabracoidei				0					
Scombrolabracidae	1	0	1	0					
Suborder Scombroidei				10					
Sphyraenidae	1	1	21	1	48	1.2	1.4	1.1–1.3	1.7, 2.4
Gempylidae	16	0	24	0				1.6	
Trichiuridae	10	0	39	0				1.8	
Scombridae	15	4	51	9	48	1.7		1.6–1.8	1.8–2.2
Xiphiidae	1	0	1	0				1.3	1.8
Istiophoridae	3	0	11	0				1.3	
Suborder Stromateoidei				0					
Amarsipidae	1	0	1	0					
Centrolophidae	7	0	28	0				1.4–1.6	
Nomeidae	3	0	16	0					
Ariommatidae	1	0	7	0					
Tetragonuridae	1	0	3	0					
Stromateidae	3	0	15	0					1.6
Suborder Anabantoidei (Labyrinthici, in part)				30					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Anabantidae	4	3	33	9	46, 48				
Helostomatidae	1	1	1	1	48				1.8
Osphronemidae	14	8	86	20	16, 42, 46, 48	1.1–1.9		1.3	1.2–1.6
Suborder Channoidei				11					
Channidae	2	2	29	11	32–48, 66, 104		1.3–1.9		2
Suborder Caproidei				1					
Caproidae	2	1	11	1	42–46				
PLEURONECTIFORMES				**62**					
Suborder Psettodoidei				0					
Psettodidae	1	0	3	0				1.4	
Suborder Pleuronectoidei				62					
Citharidae	5	0	6	0					
Scophthalmidae	4	2	8	3	40, 44			1.3, 1.7	
Paralichthyidae	16	6	105	14	28, 38, 46, 48	1.4	1.6	1.0–1.1	1.5–2.0
Pleuronectidae	23	12	60	21	44, 46, 48	1.2–1.3	1.3–1.5	1.1–1.7	1.3–1.9
Bothidae	20	2	140	3	38, 44	1.2			
Paralichthodidae	1	0	1	0					
Poecilopsettidae	3	0	20	0					
Rhombosoleidae	9	0	19	0					
Achiropsettidae	4	0	6	0					
Samaridae	3	0	20	0					
Achiridae	7	5	33	7	34–42				1.3
Soleidae	35	5	130	7	30, 42, 46–48	1.5		1.5–2.1	
Cynoglossidae	3	3	127	7	34, 38–42, 46	1.5		1.2	2.2
LOPHIIFORMES				**4**					
Antennariidae	12	2	42	3	46, 48				1.6
Lophiidae	4	1	25	1	46			2.1	2.0
Tetrabrachiidae	1	0	1	0				1.5	
Lophichthyidae	1	0	1	0					
Brachionichthyidae	1	0	4	0					
Chaunacidae	2	0	14	0					
Ogcocephalidae	10	0	68	0					1.5
Caulophrynidae	2	0	5	0					
Neoceratiidae	1	0	1	0					
Melanocetidae	1	0	5	0					
Himantolophidae	1	0	18	0					
Diceratiidae	2	0	6	0					
Oneirodidae	16	0	62	0			2.0		
Thaumatichthyidae	2	0	7	0					
Centrophrynidae	1	0	1	0					
Ceratiidae	2	0	4	0					
Gigantactinidae	2	0	22	0					
Linophrynidae	5	0	27	0					
TETRAODONTIFORMES				**65**					
Suborder Triacanthodoidei				0					
Triacanthodidae	11	0	21	0					
Suborder Balistoidei				31					
Triacanthidae	4	2	7	2	48			1.0	
Balistidae	11	8	40	14	40–46	1.4–1.5	1.1	1.2–1.3	1.4
Monacanthidae	32	7	102	10	33–40	1.1–1.2		0.9–1.3, 1.6	1.3–1.4
Ostraciidae	14	2	33	5	34–36, 48–50	2.0–2.2	1.9		1.7, 2.2
Suborder Tetraodontoidei				34					
Triodontidae	1	0	1	0					
Tetraodontidae	19	7	130	29	28, 34–46	0.8–0.9		0.8–1.0	0.8–1.0
Diodontidae	6	2	19	4	46, 52	1.6–1.7			1.8
Molidae	3	1	4	1	46	1.7–1.9			

Table 3.4 Class SARCOPTERYGII

Order/family/species	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Class SARCOPTERYGII									
Subclass Coelacanthimorpha									
COELACANTHIFORMES				**1**					
Latimeriidae	1	1	2	1	48=32+16MC		7.2		
Subclass Dipnotetrapodomorpha									
CERATODONTIFORMES				**5**					
Suborder Ceratodontoidei				1					
Ceratodontidae	1	1	1	1	54=34+20MC	106.0	150.0	109.0	
Suborder Lepidosirenoidei				4					
Lepidosirenidae	1	1	1	1	38	161.0	226.0–248.0		
Protopteridae	1	1	4	3	34, 68	125.0–131.0	80.0–266.0		
Protopterus annectens					34		81.0		
Protopterus dolloi					68		163.0		

Cytogenetic Approach to Fish Systematics

To clarify interrelationships of fishes cytogenetically, genome size has been studied in fishes (Hinegardner and Rosen 1972: H-13; Ojima and Yamamoto 1990: O-48; Hardie and Hebert 2004: H-40; Pie et al. 2007: P-61; Smith and Gregory 2009: S-191). However, the question of the C-value enigma has been a puzzle for almost half a century, which suggests that a simple comparison of taxa and their genome size may be insufficient for the study of genome evolution in fishes. Concerning genome size, the transposable elements, the spectrum of size and frequency of small spontaneous nucleotide insertions and deletions, and genome duplication are the important parameters in the long-term evolution of genome size (Petrov 2001: P-5; Gregory 2005: G-22).

As inferred by gene mapping analysis, inter- and intra-chromosomal rearrangements by Robertsonian translocation, tandem fusion, pericentric- and paracentric-inversion have occurred in fishes and a higher rate of chromosomal rearrangements in teleosts compared to other vertebrates has been hypothesized based on a comparison of the medaka genome with the zebrafish, pufferfish, and human genomes (Ravi and Venkatesh 2008: R-117). Therefore, synthetic analyses of karyotypes, genome sizes, and DNA sequences, and stepwise study inferring the karyotype and genome size of the latest common ancestor in monophyly from lower to higher taxa, may be necessary to clarify fish systematics.

Recently, the early fish proto-karyotype has been studied (Jaillon et al. 2004: J-21; Naruse et al. 2004: N-77; Woods et al. 2005: W-37; Kohn et al. 2006: K-141; Nakatani et al. 2007: N-75). According to Sato and Nishida (2010: S-205), whole-genome duplication (WGD), which generates many thousands of duplicate genes, is believed to be one of the major evolutionary events that shaped the genomes of vertebrates including fishes and tetrapods. Interestingly, the analysis of teleost fish genomes has revealed that teleosts experienced an additional WGD (3R-WGD), whereas tetrapods experienced only 1R- and 2R-WGD; exceptionally, some lineages of amphibians and reptiles have experienced an additional WGD. The chromosomal distribution of the homologous genes can be compared between tetrapods and teleosts by whole-genome sequence analysis, and this information can then be used to infer the karyotype of the osteichthyan ancestor. Nakatani et al. (2007: N-75) hypothesized the following karyotype evolution model in fishes based on reconstruction of the vertebrate ancestral genome. Before the first round of WGD, the vertebrate ancestor karyotype was $2n = 20–26$, and the subsequent 2R-WGD and some genome rearrangements yielded the jawed vertebrate ancestor of $2n = 80$. After the divergence of Osteichthyes and Chondrichthyes, genome rearrangements reduced the number of chromosomes in the osteichthyan ancestor to $2n = 62$. After the divergence of ray-finned and lobe-finned fishes, in the lineage of ray-finned fishes (Actinopterygii), chromosome fusions reduced the number of chromosomes and produced the teleost ancestor with $2n = 26$. Subsequently, the whole-genome duplication (3R-WGD) in the teleost ancestor doubled the number of chromosomes to $2n = 52$. The number of chromosomes in the teleost lineage has remained nearly unchanged during evolution, and the chromosome numbers of extant teleost species peak at $2n = 48$ or 50.

Database of Karyotypes: How to Use the Database

The database of fish karyotypes (Tables 4–7) is organized in the form of tables subdivided into 12 columns (A to L) as follows.

1. Column **A** contains current scientific names of karyotyped taxon. Classification of species, as a rule, followed Eschmeyer's *Catalogue of Fishes* (E-13). Classification of higher taxa than species, as a rule, followed Nelson (N-68). Hybrids were not included. Synonymy of species/subspecies followed, as a rule, Eschmeyer (E-13).
2. Column **B** includes the names used in the original karyotype papers in cases in which these differ from currently accepted classification.
3. Column **C** shows the sex of fishes studied. The majority of fishes reproduce bisexually. However, sex chromosome systems unequivocally identified by karyotypes are known only in a limited number of species. Datasets for such heterosomes were given separately for both sexes and were marked with 'F' for females and 'M' for males. For possible further items, see also column **J**.
4. Column **D** contains diploid chromosome number ($2n$), marked with an asterisk when inferred from a haploid number. B chromosomes, as a rule, were excluded from diploid chromosome number.
5. Column **E** includes the karyotype. Classification of chromosomes followed Levan et al. (L-25): M, metacentrics, SM, submetacentrics, ST, subtelocentrics, A, acrocentrics. When these could not be clearly derived from source publications, classification was as follows: meta- and/or submetacentric (M/SM), submeta- and/or subtelocentric (SM/ST), and subtelo- and/or acrocentric (ST/A). Difference in the karyotype could be attributed to different degrees of chromosome condensation, leading to differences in chromosome classification among authors. In karyotypes of cartilaginous fishes and ancient fishes such as lobe-finned, acipenseriform, and lepisosteiform fishes, small dot-like microchromosomes (MC) have been observed. They are so small that they could not be identified to any type of chromosomes defined by Levan et al. (1964: L-25) at present. It is unknown whether MC is different from M, SM, ST, and A. In this book, MC was added as an additional type to M, SM, ST, and A. As for papers in which the description of karyotype disagrees with the figures, karyotypes based on the figures, as a rule, were adopted.
6. Column **F** (NF_1) shows fundamental arm number, when M and SM are counted as two-armed.
7. Column **G** (NF_2) contains fundamental arm number, when M, SM, and ST are counted as two-armed. The arm number by Scheel (1972: S-24) differs from NF_2. As Scheel counted all chromosomes with a short arm as two-arms, acrocentrics with short arms were counted as two-arms, i.e., NF sensu Scheel $\geq NF_2$. Therefore, Scheel's arm number is shown in parentheses.
8. Column **H** includes the number of Ag-NORs. The number and position of NORs can differ by different methods such as chromomycin A_3 and silver staining. Silver staining is the method specific to NORs and studied widely. The number of Ag-NORs in the embryo tends to be larger than that of adults. Recently, 18S rDNA and 5S rDNA, which are components of NORs, have been examined by fluorescence in situ hybridization (FISH). However, the number of species for which NORs have been studied by FISH is limited.
9. Column **I** shows genome size (pg/cell). Following Gregory (G-85), the methods used to estimate genome size were listed in five categories: flow cytometry (FCM), Feulgen densitometry (FD), Feulgen image analysis densitometry (FIA), bulk fluorometric assay (BFA), and static cell fluorometry (SCF). To facilitate comparison of genome size (pg/cell), the genome sizes of standard species were updated according to Gregory (G-85): *Acipenser ruthenus* (3.8 pg), *Carassius auratus* (3.5 pg), *Cyprinus carpio* (3.4 pg), *Gallus domesticus*

(2.5 pg), *Homo sapiens* (7.0 pg), *Myxine garmani* (9.2 pg), *Mus musculus* (6.5 pg), *Oncorhynchus mykiss* (5.2 pg), *Salmo salar* (6.0 pg), *Scyliorhinus canicula* (11.4 pg), *Thymallus thymallus* (4.3 pg), and *Tinca tinca* (2.0 pg). Therefore, genome size by Ojima and Yamamoto (O-48) was revised to be 76% of their genome size in this book. The revised genome size was marked with an asterisk. Genome size, which is difficult to specify to one of different karyotypes in a given species, was shown in parentheses.

10. Column **J** contains cytogenetic information on sex chromosomes, ploidy, B chromosomes, and diploid chromosome number of the latest common ancestor (ACN, ancestral chromosome number) and others: B, B chromosomes; ploidy, 2X, 3X, 6X. ACN was inferred based on $2n$ and the number of large chromosomes (LC), which were inferred to be formed by Robertsonian fusion, being $2n$ + number of LC. The definition of ACN is the same as NAN sensu Arai and Nagaiwa (1976: A-64).
11. Column **K** includes the locality of fish analyzed in the karyotype papers. If the locality was not provided in the original source, known distributions for the species appear in parentheses.
12. Column **L** shows references numbered as provided in the References.

Table 4 Jawless fishes

Table 4.1 Class MYXINI. Order MYXINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon		Reported in	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Family/subfamily/species		karyotype paper										
Myxinidae												
Eptatretinae												
Eptatretus	*burgeri*		F, M	36	(spermatogonia 2n=52)				6.0 SCF	B in spermatogonia	Japan (Kanagawa, Ibaraki)	N-6, N-62
Eptatretus	*burgeri*	*burgeriare*	F	36	36A	36	36				Japan (Kanagawa)	K-66, K-67
Eptatretus	*cirrhatus*	Type A	F, M	34	(spermatogonia 2n=72)				4.6 SCF	B in spermatogonia	New Zealand	N-62
Eptatretus	*cirrhatus*	Type B	M	34	(spermatogonia 2n=80)					B in spermatogonia	New Zealand	N-62
Eptatretus	*okinoseanus*		F, M	34	(spermatogonia 2n=54)				5.4 SCF	B in spermatogonia	Japan (Kanagawa, Ibaraki)	N-6, N-62
Eptatretus	*stoutii*		M	34	(spermatogonia 2n=48-54)				5.6 SCF, (5.5 FD)	B in spermatogonia	Canada (off Bamfield)	N-62, A-106
Eptatretus	*stoutii*								5.4 FCM, (5.6 BFA)		N. Pacific	T-28, T-73, H-37
Myxininae												
Myxine	*garmani*		F, M	14	(spermatogonia 2n=16)				9.2 SCF		Japan (Kanagawa, Ibaraki)	N-6, N-62
Myxine	*glutinosa*		F, M	28	(germ cells 2n=42-44)	28	28				Sweden (Gullmaren Fjord)	N-47
Myxine	*glutinosa*		F, M	28	(spermatogonia 2n=44)				8.6 SCF		Sweden (Baltic)	N-62
Paramyxine	*atami*		F, M	34	(spermatogonia 2n=48)				6.9 SCF	B in spermatogonia	Japan (Kanagawa, Ibaraki)	N-6, N-62
Paramyxine	*atami*		F	36	36A	36	36				Japan (Kanagawa)	K-66, K-67
Paramyxine	*atami*		F	34	34A	34	34				Japan (Kanagawa)	K-66, K-67
Paramyxine	*sheni*		M	34	(spermatogonia 2n=66-96)					B in spermatogonia	Taiwan (Taitung)	S-68, K-140

Table 4.2 Class PETROMYZONTIDA. Order PETROMYZONTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Petromyzontidae												
Eudontomyzon	*mariae*			168							Europe	H-44
Ichthyomyzon	*fossor*			166 (mode)					2.7* FD		USA (Great lakes)	R-85, R-116
Ichthyomyzon	*gagei*	Petromyzonidae		164 (mode)	164 ST/A	164			2.6* FD		USA (AL)	H-35, R-116
Lampetra	*aepyptera*			161-168	all ST/A	161-168				ammocoetes	USA (AL)	H-25
Lampetra	*fluviatilis*			164 (mode)					2.6 FCM, 2.9* FD		UK	R-85, R-116, V-86
Lampetra	*lamottei*	*lamottenii*		166 (mode)					2.8* FD		USA (Great lakes)	R-85, R-116
Lampetra	*planeri*			164 (mode)					2.7, 2.8* FD		UK	R-85, R-116, A-106
Lampetra	*zanandreai*			142							Europe	Z-40
Lethenteron	*camtschatica*	*Entosphenus japonicus*		144-162							Japan (Hokkaido)	K-67
Lethenteron	*reissneri*	*Entosphenus*	F, M	165-174							Japan (Hokkaido)	S-13
Petromyzon	*marinus*			168	168 M/SM/ST/A				4.2 FCM, 4.2* FD		UK (England)	P-60, T-73, R-116
Petromyzon	*marinus*								3.2 BFA			H-37
Geotriidae												
Geotria	*australis*			180					3.1* FD		S. W. Australia	R-86, R-116
Mordaciidae												
Mordacia	*mordax*	Petromyzonidae		76	numerous M/SM				2.8* FD		S. E. Australia	P-59, R-116
Mordacia	*praecox*		M	76							Australia (N.S.W.)	R-84

Table 5 Class CHONDRICHTHYES

Table 5.1 Order CHIMAERIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Chimaeridae												
Chimaera	*monstrosa*			86	86 ST/A/MC	86					Sweden	N-46
Hydrolagus	*colliei*		F	ca. 58	all A/MC	ca. 58			3.0 FD, 3.2 BFA		USA (Los Angeles)	O-7, H-37

Table 5.2 Order HETERODONTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Heterodontidae												
Heterodontus	*francisci*		F	102	26 non-A + 76A		128		17.5 FCM, 14.5 FD, 13.6 BFA		(E. Pacific)	S-40, S-185, H-37
Heterodontus	*japonicus*		M	102	10 M/SM + 92 ST/A	112			27.2, 31.9 FD		Japan (Sagami Bay)	I-6

Table 5.3 Order LAMNIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Lamnidae												
Carcharodon	*carcharias*		M	82	48 non-A + 34A		130		12.9 FCM	XY?	Atlantic	S-40, M-114
Odontaspididae												
Carcharias	*taurus*			ca. 84					10.9 FCM		(global)	S-41

Table 5.4 Order CARCHARHINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Carcharhinidae												
Carcharhinus	*acronotus*		M	84	32 non-A + 52A		116		6.7 FCM, 6.8 BFA		USA (NC)	S-41, H-37
Carcharhinus	*limbatus*		M	ca. 86	ca. 50 A and others		ca. 120		7.8 FCM, 7.4 BFA		USA (NC)	S-41, H-37
Carcharhinus	*limbatus*			86	33 M/SM + 53A	119			8.2 FD		Mediterranean	S-115
Carcharhinus	*obscurus*			ca. 78	ca. 20 M/SM + others	ca. 98			5.5, 6.0 FD		Japan (Chiba)	A-105, M-133
Carcharhinus	*plumbeus*			ca. 74	ca. 18 M/SM + others	ca. 92			6.0 FD		Japan (Ogasawara)	A-105
Galeocerdo	*cuvieri*		F, M	86	38 non-A + 48A		124		8.3 FCM		USA (NC)	S-40, M-114
Galeocerdo	*cuvieri*			86	40 M/SM + 46A	126	126		(7.6* FCM)		Mediterranean	S-115, O-48
Prionace	*glauca*		F, M	86	30 M/SM + 56 ST/A	116			8.6 FD		Japan (off Sanriku)	A-105
Prionace	*glauca*			78	28 M/SM + 50 ST/A	106			8.6 FD		(global)	A-102
Prionace	*glauca*		M	78	4M + 6SM + 20 ST/A and others				(8.6 BFA)		N. Pacific	Y-4, H-37
Rhizoprionodon	*terraenovae*		M	80	44 non-A + 36A		124		7.2 FCM	sex chrom?	USA (NC)	S-40, M-114
Rhizoprionodon	*terraenovae*			90	32 M/SM + 58A	122	122					S-115
Scyliorhinidae												
Cephaloscyllium	*umbratile*		M	64	34 M/SM + 30 ST/A	98			14.7 FD		Japan (Suruga Bay)	A-101
Cephaloscyllium	*ventriosum*			64	46 non-A + 18A		110		18.1 FCM, 15.4 BFA		(E. Pacific)	S-40, H-37
Scyliorhinus	*canicula*			62	18M + 24SM + 20 A/MC	104		2	11.3 FD		Italy	S-111, R-87
Scyliorhinus	*stellaris*			72	30M + 20SM + 22 MC	122		2	12.3 FD		Italy	S-111, R-87
Scyliorhinus	*torazame*		M	64	26 M/SM + 38 ST/A	90			13.2 FD		Japan (Shimokita)	A-101
Sphyrnidae												
Sphyrna	*lewini*		F	86	20 M/SM + 66 ST/A	106			(6.1 FIA)		Japan (Ogasawara)	A-105, H-40
Sphyrna	*lewini*			78	18 non-A + 60A		96		6.6 FCM, (7.0 BFA)		(global)	S-40, H-37
Triakidae												
Mustelus	*canis*			80	44 M/SM + 36A	124	124		9.6 FD, 9.2 BFA		(W. Atlantic)	S-115, H-37
Mustelus	*manazo*		F	68	44 M/SM + 24 ST/A	112			9.3 FD		Japan (Chiba)	A-102
Triakis	*scyllia*		M	72	36 M/SM + 36 ST/A	108			9.8 FD		Japan, Pacific	A-102
Triakis	*semifasciata*			72	52 non-A + 20 A		124		9.6 BFA	XY?	(E. Pacific)	S-40, M-114, H-37

Table 5.5 Order HEXANCHIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Chlamydoselachidae												
Chlamydoselachus anguineus			M	100	12 M/SM + 88 ST/A	112			9.2 FD		Japan (Suruga Bay)	I-6
Heptranchiidae												
Heptranchias	*perlo*			ca. 72	6M + 66 ST/A	78					(global)	I-3
Notorynchidae												
Notorynchus	*cepedianus*	*maculatus*	F	104	4 non-A + 100A		108		8.8 FCM		(global)	S-40, M-114

Table 5.6 Order SQUALIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Etmopteridae												
Etmopterus	*pusillus*			86					16.1* FCM		(global)	O-48
Etmopterus	*spinax*	Squalidae	M	86	86 A/MC	86			32.3 FD		Atlantic	N-46, S-112
Oxynotidae												
Oxynotus	*centrina*			62	56 M/SM + 6A	118	118		34.0 FD		(Mediterranean)	S-113, S-185, O-74
Squalidae												
Squalus	*acanthias*		M	78	38 M/SM + 40 ST/A	116					Sweden	N-46
Squalus	*acanthias*		M	60	60 non-A		120		12.0 BFA		USA (off NC)	S-40, H-37
Squalus	*acanthias*		F	64	32 M/SM + 32 ST/A	96			14.0 FCM	ACN=66	USA (off NC)	M-114
Squalus	*acanthias*			58	56 M/SM + 2A	114	114		(11.6 FIA)			P-50, H-40

Table 5.7 Order SQUATINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Squatinidae												
Squatina	*californica*			88	26 non-A + 62A		114		18.6 BFA	XY/XX	(E. Pacific)	S-40, M-114, H-37

Table 5.8 Order TORPEDINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Narcinidae												
Narcine	*brasiliensis*	Rajiformes	F, M	28	18M + 4SM + 6ST	50	56		8.4 BFA		Gulf of Mexico	D-17, H-37
Narke	*japonica*		F	54	28 M/SM + 26 ST/A	82			24.0 FD		Japan (Izu)	I-5
Torpedinidae												
Torpedo	*californica*		F	82	4 M/SM + 78 ST/A	86			14.6 BFA		Japan (Iwate)	I-5, H-37
Torpedo	*marmorata*			86	86 ST/A	86			14.0 FD		Italy	O-74, S-111
Torpedo	*marmorata*		F, M	86	66A + 20 MC	86		3			Italy (Tyrrhenian Sea)	S-114
Torpedo	*tokionis*		M	86	86A	86	86				Japan (Suruga Bay)	A-103
Torpedo	*torpedo*	*ocellata*	F, M	66	12 M/SM + 14A + 40 MC	78		3	15.0 FD		Italy (Tyrrhenian Sea)	O-74, S-111, S-114

Table 5.9 Order RAJIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rajidae												
Amblyraja	*radiata*	*Raja*		98							Sweden	N-43
Dipturus	*batis*	*Raja*	M	98	6 M/SM + 92A	104			6.2 FD		Sweden	N-43, N-46, S-111
Raja	*asterias*			98	6 M/SM + 92A	104		8	7.0 FD		Italy	O-74, R-118, S-113
Raja	*clavata*		M	98	4 M/SM + 94 ST/A/MC	102			6.3 FD		Sweden	N-43, N-46, S-112
Raja	*eglanteria*		F, M	58	30 non-A + 28A		88		6.5 FCM	ACN=60	USA (NC)	S-40, M-114
Raja	*montagui*		M	96	18 M/SM + 16ST + 62A	114	130	12	6.9 FD		Italy (near Naples)	R-88, R-118, S-111
Raja	*polystigma*		F, M	96	18 M/SM + 16ST + 62A	114	130				Italy (near Naples)	R-112
Rhinobatidae												
Rhinobatos	*hynnicephalus*		F	60	26M + 25SM + 6ST + 3A	111	117	4	7.6* FCM		Japan (Osaka)	K-49, O-48
Rhinobatos	*hynnicephalus*		M	59	26M + 24SM + 6ST + 3A	109	115	4			Japan (Osaka)	K-49
Rhinobatos	*lentiginosus*		F	84							Gulf of Mexico	D-17
Rhinobatos	*productus*		F, M	92	44 non-A + 48A		136		8.0 FCM, 8.0 BFA	XY/XX	(E. Pacific)	S-40, M-114, H-37
Rhinobatos	*schlegelii*		F	64	55 M/SM + 9 ST/A	119			5.9 FD	ACN=70	Japan	A-110
Rhinobatos	*schlegelii*		M	63	54 M/SM + 9 ST/A	117			4.9 FCM, 5.9 FD	ACN=69	Japan	A-110, C-100

Table 5.10 Order MYLIOBATIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/specie		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Platyrhinoidei												
Platyrhinidae												
Platyrhinoidis	*triseriata*		F, M	64	32 non-A + 32A		96		15.5 FCM, 15.4 BFA	XY/XX	(E. Pacific)	S-40, M-114, H-37
Suborder Myliobatoidei												
Dasyatidae												
Dasyatis	*akajei*		F	72	34 M/SM + 38 ST/A	106			8.0, 8.4* FCM, 8.3 FD		Japan (Chiba)	A-100, C-100, O-48
Dasyatis	*americana*		F	78	9 M/SM + 69A	87	87		9.3 FCM, 11.1 FD		USA (NC)	M-114, S-115, S-185
Dasyatis	*kuhlii*			64					9.9* FCM		(Indo-West Pacific)	O-48, S-115
Dasyatis	*matsubarai*		M	64	40 M/SM + 24 ST/A	104			9.6 FD		Japan (Shimokita)	A-103
Dasyatis	*sabina*	Rajiformes	F, M	68	28 M/SM + 40 ST/A	96			10.1 FCM		Gulf of Mexico	D-17, T-73
Dasyatis	*sayi*	Rajiformes	F	68	34 M/SM + 34 ST/A	102			9.4 BFA		Gulf of Mexico	D-17, H-37
Dasyatis	*violacea*			58	46 M/SM + 12A	104	104		13.7 FD		Italy	O-74, S-113, S-115
Dasyatis	*violacea*		M						9.6 FD		Pacific	A-103
Taeniura	*lymma*		M	64	38 M/SM/ST + 26A		102	4	13.4 FIA		Bali	R-87, R-118, H-40
Gymnuridae												
Gymnura	*japonica*			56	32 M/SM + 24 ST/A	88					Japan	A-104
Gymnura	*micrura*			56	44 non-A + 12A		100		11.4 FCM, 16.2 BFA		(W. Atlantic)	S-40, H-37

Table 5.10 Order MYLIOBATIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/specie		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Myliobatidae												
Mobulinae												
Mobula	*japonica*		F	66	26M + 12SM + 28 ST/A	104			9.3 FD, 9.6 FCM		Japan (Sanriku)	A-104, C-100
Mobula	*japonica*		M	66	26M + 11SM + 29 ST/A	103			9.4 FD		Japan (Sanriku)	A-104
Myliobatinae												
Myliobatis	*aquila*			52	32 M/SM + 20A	84	84		10.8 FD		(Atlantic to Indian)	S-113
Myliobatis	*californica*		F	52	50 non-A + 2A		102		10.4 FCM, 9.8 BFA		(E. Pacific)	S-40, M-114, H-37
Myliobatis	*freminvillii*		M	52	50 non-A + 2A		102		10.6 FCM, 9.8 BFA	XY?	USA (NC)	S-40, M-114, H-37
Myliobatis	*tobijei*		M	54	40 M/SM + 14 ST/A	94			8.7 FD, 10.7 FCM		Japan (Misaki)	A-100, C-100
Rhinopterinae												
Rhinoptera	*bonasus*			64	42 non-A + 22A		106		10.0 FCM		(W. Atlantic)	S-40
Potamotrygonidae												
Paratrygon	*aiereba*		F, M	90	4M + 2SM + 10ST + 74A	96	106	3		ACN=92	Brazil (AM)	V-77
Potamotrygon	*motoro*		F, M	66	18M + 12SM + 10ST + 26A	96	106	7		ACN=92	Brazil (AM)	V-77
Potamotrygon	*orbignyi*		F	66	22M + 10SM + 8ST + 26A	98	106	8		ACN=92	Brazil (AM)	V-77
Urolophidae												
Urolophus	*aurantiacus*		F	52	44 M/SM + 8 ST/A	96			15.5 FCM, 13.1 FD		Japan	A-100, C-100
Urolophus	*halleri*			72	20 M/SM + 52A	92			13.0 BFA		(E. Pacific)	S-40, H-37

Table 6 Class ACTINOPTERYGII (OSTEICHTHYES)

Table 6.1 Order POLYPTERIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Polypteridae												
Erpetoichthys	*calabaricus*	*Calamoichthys*		36	28M + 6SM + 2ST	70	72	2			(Africa)	S-131, S-132
Erpetoichthys	*calabaricus*	*Calamoichthys*	M	36	32M + 4ST	68	72			ACN=46	(Africa)	C-13
Erpetoichthys	*calabaricus*	*Calamoichthys*	F, M	36	30M + 6SM	72	72				(Africa)	D-8
Erpetoichthys	*calabaricus*	*Calamoichthys*	F, M	36	36 M/SM	72	72		(9.1 FD, 9.8 BFA)	ACN=46	Cameroon	V-37, G-85, H-37
Polypterus	*delhezi*		F	36	26M + 10SM	72	72				(Africa)	U-52
Polypterus	*delhezi*		F, M	36	36 M/SM	72	72		9.7 FD	ACN=46	Zaire	V-37
Polypterus	*delhezi*		F	36	32M + 4SM	72	72			ACN=46	Africa (Zaire R.)	C-92
Polypterus	*endlicheri*	*endlicheri congicus*	F, M	36	32M + 4SM	72	72			ACN=46	Africa (Zaire R.)	C-92
Polypterus	*ornatipinnis*			36	26M + 10SM	72	72				(Africa)	U-52
Polypterus	*ornatipinnis*		F, M	36	36 M/SM	72	72		9.6 FD	ACN=46	(Africa)	V-37
Polypterus	*palmas*		F, M	36	24M + 12SM	72	72				(W. Africa)	D-8
Polypterus	*palmas*			36	26M + 10SM	72	72			ACN=46	(W. Africa)	U-52
Polypterus	*palmas*		F	36	32M + 4SM	72	72			ACN=46	Africa (Zaire R.)	C-92
Polypterus	*palmas*		F, M	36	36 M/SM	72	72		8.9 FD, (7.4 FIA)	ACN=46	(Africa)	V-37, H-41
Polypterus	*senegalus*			36	28M + 8SM	72	72	2			(Africa)	S-131, S-132
Polypterus	*senegalus*		F, M	36	26M + 10SM	72	72	2		ACN=46	Nigeria	M-127, U-52
Polypterus	*weeksii*		F, M	38	34 M/SM + 4A	72	72		9.8 FD	ACN=46	(Africa)	V-37

Table 6.2 Order ACIPENSERIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Acipenseridae												
Acipenser	*baeri*			ca. 248				8	8.3 FCM	4X	Russia (Siberia)	V-9, V-10, B-68, F-70
Acipenser	*brevirostrum*			372	178 M/SM + 194 ST/A	550		10	13.1 FCM, 13.8 FIA	6X	USA (FL)	K-54, B-69, H-41
Acipenser	*brevirostrum*								18.6 FIA		N. America	H-41
Acipenser	*fulvescens*		F	264	134 M/SM + 70 ST/A + 60 MC	398			8.9 FCM	4X	USA (WI)	B-69, F-62
Acipenser	*gueldenstaedtii*			250	92 M/SM + 158 A/MC	342		6-8	7.9 FCM	4X	Russia (Volga R.)	B-37, B-68, V-72
Acipenser	*medirostris*			249					8.8 FCM	4X	N. America	B-69, V-110
Acipenser	*mikadoi*	*medirostris*							14.3 FCM	6X	Far East	B-68, L-78
Acipenser	*naccarii*			ca. 239		390		8	6.3 FD	4X	Italy	F-58, F-61, F-70
Acipenser	*nudiventris*			118	54M + 5A + 59 A/MC	172			3.9 FCM	2X	Russia (Black Sea)	A-88, B-68
Acipenser	*oxyrinchus*			122	78 M/SM + 44 A/MC	200			(4.4 FIA)	2X	(Atlantic)	F-63, H-41
Acipenser	*oxyrinchus*	*oxyrhynchus desotoi*							4.6 FCM		N. America	B-69
Acipenser	*persicus*			262	134 M/SM + 128 A/MC	396				4X	Iran	N-38
Acipenser	*ruthenus*			118	82 M/SM + 36 A/MC	200		2-3	3.7 FCM	2X	Russia (Volga R.)	V-72, B-37, B-68
Acipenser	*ruthenus*			118	58M + 4A + 56 MC	176				2X	Danube R.	R-10
Acipenser	*schrenckii*			240					6.1 FD	4X	Amur R.	F-61
Acipenser	*sinensis*			264	78M + 20SM + 26 ST/A + 140 MC	362				4X	China (Hubei)	Y-15
Acipenser	*sinensis*		F, M	240	76M + 80SM + 20 ST/A + 64 MC	396			9.1 FD	4X	China (Hubei)	X-2
Acipenser	*stellatus*			118	70 M/SM + 48 A/MC	188		2-3	3.7, 4.7 FCM	2X	Caspian Sea	V-72, B-37, B-68, L-78
Acipenser	*sturio*			ca. 116		ca. 186			3.2 FD	2X	(Atlantic)	F-58, M-133
Acipenser	*transmontanus*		M	ca. 248				8	9.5 FCM	4X	N. America	B-69, F-61, F-70, V-110
Huso	*dauricus*			120					3.8 FCM	2X	Amur R.	B-68
Huso	*huso*			118	60 M/SM + 58 A/MC	178		2-3	2.4 FCM	2X	Russia (Volga R.)	B-37, B-68, V-72
Huso	*huso*			118	84 M/SM + 34 A/MC	202		4	3.6 FD	2X	(E. Europe)	F-32, F-61
Pseudoscaphirhynchus	*kaufmanni*								3.5 FCM		Amu Darya R.	B-68
Scaphirhynchus	*platorynchus*	*platorhynchus*	M	112	50 M/SM + 14A + 48 MC	162			3.5 FD	2X	USA (Great Lakes)	O-7
Scaphirhynchus	*platorynchus*								4.7 FCM		N. America	B-69
Polyodontidae												
Polyodon	*spathula*		M	120	32M + 8SM + 8A + 72 MC	160		4	3.2, 3.9 FCM	2X	USA (AL)	D-14, B-68, T-73
Polyodon	*spathula*								4.9 FCM		N. America	B-69

Table 6.3 Order LEPISOSTEIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag–NORs	Genome size (pg/cell)	Comments	Locality	Reference
Lepisosteidae												
Lepisosteus	*osseus*		F, M	56	22M + 12SM + 6ST + 16 MC	90		2			USA (Mississippi R.)	R–120
Lepisosteus	*osseus*			56	12M + 22SM + 22 ST/A	90		4			(N. America)	O–32
Lepisosteus	*oculatus*	*productus*	F	68	28 M/SM + 14A + 26 MC	96			2.8* FCM, 2.9 FD, 2.8 FIA		USA (Great Lakes)	O–7, O–48, H–40

Table 6.4 Order AMIIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag–NORs	Genome size (pg/cell)	Comments	Locality	Reference
Amiidae												
Amia	*calva*		F	46	20 M/SM + 26 ST/A	66			2.6 FD, 2.3 FIA	ACN=56	USA (Great Lakes)	O–7, H–40
Amia	*calva*		F	46	2M + 24 SM/ST + 20A		72	2	2.0 FD		(USA)	S–135

Table 6.5 Order HIODONTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag–NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hiodontidae												
Hiodon	*alosoides*	Osteoglossiformes		50	40 M/SM + 10ST	90	100		1.2 FD	ACN=56?	USA, Canada	U–68, B–14
Hiodon	*tergisus*	Osteoglossiformes		50	42 M/SM + 8 ST/A	92			1.2 FD	ACN=56	Canada (Manitoba)	B–14

Table 6.6 Order OSTEOGLOSSIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Osteoglossidae												
Arapaima	*gigas*			56	4M + 12 SM/ST + 40A		72		(1.6 FIA, 2.0 BFA)	ACN=56	(S. America)	U-51, H-13, H-40
Arapaima	*gigas*		F, M	56	28 M/SM + 28 ST/A	84		2		ACN=56	Brazil (MT)	M-147
Heterotis	*niloticus*			40	26M + 10SM + 2ST + 2A	76	78	2	2.0 FD	ACN=56	(W. Africa)	H-14
Osteoglossum	*bicirrhosum*		F	56	1SM + 1ST + 54A	57	58		1.8 FIA, 2.0 BFA	ACN=56	(S. America)	U-68, H-13, H-40
Osteoglossum	*bicirrhosum*			56	3ST + 53A	56	59			ACN=56	(S. America)	S-125
Osteoglossum	*ferreirai*			54	2M + 4SM + 14ST + 34A	60	74			ACN=56	(S. America)	S-125
Scleropages	*formosus*			50	4 M/SM + 10ST + 36A	54	64		1.9 FD	ACN=56	(SE Asia)	U-51, H-14
Scleropages	*jardini*			48	16M + 6SM + 26A	70	70	2	2.0 FD	ACN=56	(New Guinea)	H-14
Scleropages	*leichardti*			44	16M + 8SM + 6ST + 14A	68	74	2	2.0 FD	ACN=56	(N. Australia)	H-14
Pantodontidae												
Pantodon	*buchholzi*	*bucholzi*		48	12M + 12 SM/ST + 24A		72		1.5 BFA	ACN=56?	(W. Africa)	U-68, H-13
Mormyridae												
Gnathonema	*petersii*			48	10M + 6SM + 32A	64	64		2.4 BFA	ACN=56	Africa	U-68, H-13
Marcusenius	*brachistius*			48	1M + 4SM + 2ST + 41A	53	55				Africa	U-68
Notopteridae												
Chitala	*chitala*	*Notopterus*		42	42A	42	42	2	2.1* FCM	ACN=50	(Asia)	U-68, T-22, O-48
Notopterus	*notopterus*		F, M	42	42A	42	42	2			India (Haryana, WB)	R-60, R-72, K-42
Papyrocranus	*afer*			34	4SM + 30A	38	38			ACN=46	Africa	U-68
Xenomystus	*nigri*			42	42A	42	42		2.6 BFA	ACN=50	Africa	U-68, H-13

Table 6.7 Order ELOPIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Elopidae												
Elops	*saurus*		F, M	48	6 M/SM + 42 ST/A	54			2.4 BFA	ACN=54	USA (LA)	D-26, H-13
Megalopidae												
Megalops	*atlanticus*			50	50A	50	50			ACN=54	USA (Atlantic)	D-23
Megalops	*cyprinoides*	*cundinga*		46	46A	46	46				India (WB)	K-46
Megalops	*cyprinoides*		F	52	52A	52	52		(2.0 FIA)		India (Bombay)	R-66, H-40

Table 6.8 Order ANGUILLIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Anguilloidei												
Anguillidae												
Anguilla	*anguilla*		F	38	12M + 10SM + 16A	60	60			ZW, ACN=53	Poland (Krakow)	P-13, P-14
Anguilla	*anguilla*		M	38	12M + 10SM + 16A	60	60			ZZ, ACN=54	Poland (Krakow)	P-13, P-14
Anguilla	*anguilla*		F	38	12M + 10SM + 16A	60	60			ZW, ACN=53	Germany	P-10
Anguilla	*anguilla*		M	38	12M + 10SM + 16A	60	60			ZZ, ACN=54	Germany	P-10
Anguilla	*anguilla*		F, M	38	22 M/SM + 16A	60	60	2	(3.2 BFA)		Italy	S-87, H-13
Anguilla	*anguilla*	Type I		38	20 M/SM + 18A	58	58			ACN=52	(Europe)	K-88
Anguilla	*anguilla*	Type II		38	21 M/SM + 17A	59	59			ACN=53	(Europe)	K-88
Anguilla	*australis*		F, M	38	22 M/SM + 16A	60					New Zealand	S-87
Anguilla	*australis*			38	20 M/SM + 18A	58					(New Zealand)	N-28
Anguilla	*japonica*			38	20 M/SM + 18A	58				ACN=54	Japan	N-28, K-88
Anguilla	*japonica*		F, M	38	10M + 10SM + 18A	58	58				China (Wuhan)	Y-15
Anguilla	*japonica*		F	38	12M + 8SM + 18A	58	58			ZW, ACN=53	Korea (Han R.)	P-7, P-9
Anguilla	*japonica*		M	38	12M + 8SM + 18A	58	58			ZZ, ACN=54	Korea (Han R.)	P-9
Anguilla	*marmorata*			38	20 M/SM + 18A	58	58			ACN=54	Japan (Amami-oshima)	K-93
Anguilla	*rostrata*		F	38	12M + 10SM + 16A	60	60			ZW, ACN=53	USA (Philadelphia)	P-10
Anguilla	*rostrata*		M	38	12M + 10SM + 16A	60	60			ZZ, ACN=54	USA (Philadelphia)	P-10
Anguilla	*rostrata*		F, M	38	22 M/SM + 16A	60	60	2	(2.8 BFA)		USA (Boston Bay)	S-87, H-13
Anguilla	*rostrata*			38	14M + 6SM + 18A	58					USA (FL)	O-10
Anguilla	*rostrata*		F	38	10M + 10SM + 18A	58	58		(2.0 FIA)	ZW, ACN=53	USA (ME)	P-14, H-41

Table 6.8 Order ANGUILLIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Moringuidae												
Moringua	*linearis*			50							India (Porto Novo)	S-118
Suborder Muraenoidei												
Muraenidae												
Enchelycore	*nigricans*		F, M	42	6M + 8SM + 12ST + 16A	56	68	2		ACN=54	Brazil (Atlantic)	V-106
Enchelycore	*pardalis*	*Muraena*		42	8M + 2SM + 32A	52	52	2	4.6* FCM	ACN=52	Japan (Wakayama)	T-5, T-6, T-79, O-48
Gymnothorax	*eurostus*		F, M	42	12 M/SM + 30A	54	54	2		XX/XY, ACN=52	Japan (Okinawa)	T-5, T-6
Gymnothorax	*kidako*			36	16M + 8SM + 12A	60	60	2		ACN=52	Japan (Wakayama)	T-5, T-6, T-79
Gymnothorax	*miliaris*		F	42	14M + 18SM + 10ST	74	84	2		ACN=54	Brazil (Bahia)	V-106
Gymnothorax	*ocellatus*		F, M	42	16M + 18SM + 8A	76	76	2		ACN=54	Brazil (SP)	P-43
Gymnothorax	*pictus*	*Sideria picta*		42	14M + 14SM + 14A	70	70		3.8 FIA		India (WB)	K-46, H-41
Gymnothorax	*pictus*	*Sideria picta*		42	42 ST/A	42					India (Andaman Is.)	R-45
Gymnothorax	*reevesi*		F, M	42	34 M/SM + 8A	76	76				China (Guangdong)	R-90
Gymnothorax	*unicolor*		F, M	42	12 M/SM + 30A	54	54	2	4.4 BFA	ACN=54	Italy	D-5, S-9, G-85
Gymnothorax	*vicinus*			42	8M + 6SM + 28A	56	56	2		ACN=54	Brazil (RN)	V-106
Muraena	*helena*		F, M	42	18 M/SM + 24A	60	60	2	5.1 BFA	ACN=54	Mediterranean	C-99, S-9, G-85
Muraena	*pavonina*		F	42	6M + 4SM + 32A	52	52	2		ACN=54	Brazil (Atlantic)	V-106
Suborder Congroidei												
Congridae												
Ariosoma	*anagoides*	*Alloconger*	F	34	10M + 8SM + 6ST + 10A	52	58			ACN=54	Japan (Wakayama)	T-5
Ariosoma	*anago*	*Anago*		38	18 M/SM + 20A	56	56	2	3.6* FCM		Japan (Kobe)	T-8, O-48
Conger	*conger*		F, M	38	8M + 4SM + 26 ST/A	50		2	3.3 FCM	ACN=48	Mediterranean	S-47, G-85
Conger	*conger*			38	12 M/SM + 26 ST/A	50		2			Spain (Malaga)	A-46
Conger	*japonicus*		F	38	10M + 10SM + 18A	58	58		2.4* FCM	ACN=52	Japan (Wakayama)	T-5, O-48
Conger	*myriaster*	*Astroconger*	F	38	12M + 8 SM + 18A	58	58			ZW, ACN=53	Korea (Yellow Sea)	P-7, P-9
Conger	*myriaster*	*Astroconger*	M	38	12M + 8 SM + 18A	58	58			ZZ, ACN=54	Korea (Yellow Sea)	P-9
Conger	*myriaster*		F	38	14M + 4SM + 20A	56	56			ACN=54	Japan (Yamaguchi)	N-32
Conger	*myriaster*		F, M	38	8M + 10SM + 20A	56	56		2.4* FCM	ZW/ZZ, ACN=54	Japan (Kobe)	O-39, O-48
Conger	*myriaster*			38	8M + 10SM + 20A	56	56				China (Shandong)	Y-20

Table 6.8 Order ANGUILLIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Muraenesocidae												
Muraenesox	*cinereus*			38	12M + 4SM + 6ST + 16A	54	60		(2.3 FIA)		China	Z-23, H-41
Ophichthidae												
Myrophinae												
Muraenichthys	*gymnotus*		F	48	4ST + 44A	48	52			$X_1X_1X_2X_2$, ACN=48	Japan (Suruga Bay)	M-108
Muraenichthys	*gymnotus*		M	47	1M + 4ST + 42A	48	52			X_1X_2Y, ACN=48	Japan (Suruga Bay)	M-108
Ophichthinae												
Dalophis	*imberbis*		F	46	2M + 6SM + 5ST + 33A	54	59	3-4		ZW, ACN=53	Italy (Sardinia)	S-182
Dalophis	*imberbis*		M	46	2M + 6SM + 6ST + 32A	54	60	3-4		ZZ, ACN=54	Italy (Sardinia)	S-182
Echelus	*myrus*			38	20 M/SM + 18 ST/A	58		2			Spain (Malaga)	A-46
Myrichthys	*ocellatus*			38	8M + 14SM + 10ST + 6A	60	70	2		ACN=54	Brazil (RN)	V-106
Ophichthus	*altipennis*	*Pisoödonophis zophistius*		38	10M + 16SM + 4ST + 8A	64	68			ACN=54	Japan (Yamaguchi)	N-32
Ophisurus	*macrorhynchus*		F	38	20M + 14SM + 4ST	72	76			ACN=54	Japan (Yamaguchi)	N-32
Ophisurus	*serpens*	*Ophysurus*		38	16M + 20ST + 2A	54	74	2			Spain (Malaga)	T-35
Pisodonophis	*boro*			38	18M + 4SM + 4ST + 12A	60	64				India (WB)	K-42
Pisodonophis	*boro*		M	40							India (Portonovo)	N-13
Synaphobranchidae												
Synaphobranchus	*kaupi*		F	26	22 M/SM + 2ST + 2A	48	50				Japan (Hokkaido)	I-13

Table 6.9 Order CLUPEIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Clupeoidei												
Clupeidae												
Alosinae												
Alosa	*kessleri pontica*			48	2ST + 46A	48	50				former USSR	V-72
Alosa	*pseudoharengus*		F, M	48	48A	48	48		2.8 BFA	ACN=48	USA (ME, MA, NY)	M-53, H-13
Brevoortia	*aurea*		F	46	2M + 2SM + 42A	50	50	2		$X_1X_1X_2X_2$	Brasil (RJ)	B-55
Brevoortia	*aurea*		M	45	3M + 2SM + 40A	50	50	2		X_1X_2Y, ACN=48	Brasil (RJ)	B-55
Brevoortia	*patronus*		F, M	46	2M + 2SM + 42A	50	50			ACN=48	USA (Atlantic)	D-23
Brevoortia	*pectinata*			46	2M + 2SM + 42A	50	50	2			Brazil	B-86
Brevoortia	*smithi*		F, M	46	2M + 2SM + 42A	50	50			ACN=48	USA (Atlantic)	D-23
Brevoortia	*tyrannus*		F, M	46	2M + 2SM + 42A	50	50			ACN=48	USA (Atlantic)	D-23
Gudusia	*chapra*	*Gadusia*	M	46		46				ACN=46	India (WB)	K-31
Gudusia	*variegata*	*Gadusia*		46	46A	46	46			ACN=46	(Myanmer)	M-162
Clupeinae												
Clupea	*harengus*			52							USA (ME)	R-82
Clupea	*harengus*		F, M	52	6M + 2ST + 44A	58	60	2		ACN=52	N. Europe	K-81, K-82
Clupea	*harengus*		F, M	52	6M + 2ST + 44A	58	60	2			Russia (White Sea)	K-81, K-82
Clupea	*harengus*			52	8M + 4ST + 40A	60	64	2			Norwegian Sea	K-81, K-82
Clupea	*harengus*		F, M	50	6M + 2ST + 42A	56	58	2			Germany (Baltic Sea)	K-81, K-82
Clupea	*harengus harengus*			54	12-16 M/SM + 42-38 ST/A	66-70					Russia (Baltic Sea)	S-72
Clupea	*pallasi*		F, M	52	6 M/SM + 46 ST/A	58			1.9 FD	ACN=52	Japan	I-8
Clupea	*harengus pallasi*			52	8 M/SM + 44 ST/A	60			(1.8 FIA, 1.5 BFA)		Russia (White Sea)	S-72, H-13, H-40
Clupea	*pallasi marisalbi*			52	6M + 2SM + 44A	60	60			ACN=52	Russia (White Sea)	L-86
Clupea	*pallasi marisalbi*			51	7M + 2SM + 42A	60	60			ACN=52	Russia (White Sea)	L-86
Clupea	*pallasi marisalbi*			50	8M + 2SM + 40A	60	60			ACN=52	Russia (White Sea)	L-86
Corica	*soborna*			56	16M + 20SM + 20A	92	92				India (WB)	K-46
Harengula	*clupeola*			28	22M + 2SM + 2ST + 2A	52	54			ACN=50	USA (Atlantic)	D-23
Herklotsichthys	*quadrimaculatus*			48	48A	48	48		1.5* FCM		Japan	O-48
Sardinella	*melanura*			44	8 M/SM + 36 ST/A	52					India (Andaman Is.)	R-45
Sardinella	*zunasi*		F, M	48	48 ST/A	48			2.3 FD	ACN=48	Japan (Tokyo Bay)	I-8
Sardinella	*zunasi*			48	48A	48	48			ACN=48	China (Shandong)	W-7
Sardinops	*sagax*	*melanostictus*	F, M	48	48 ST/A	48			2.7 FD	ACN=48	Japan (Iwate)	I-8

Table 6.9 Order CLUPEIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Dorosomatinae												
Clupanodon	*punctatus*			48	2M + 46A	50	50			ACN=48	China (Shandong)	W-7
Dorosoma	*cepedianum*		F, M	48	2SM + 4ST + 42A	50	54		2.0 FCM	ACN=50	USA (LA)	F-26, G-85
Dorosoma	*petenense*		F, M	48	2SM + 2ST + 44A	50	52			ACN=50	USA (LA)	F-26
Gonialosa	*manmina*			38	38A	38	38				(India)	M-162
Konosirus	*punctatus*			48	48A	48	48		1.6 FCM	ACN=48	Korea (Busan)	K-125
Engraulidae												
Coilinae												
Coilia	*nasus*	*brachygnathus*	F	47	47A	47	47	2		ZO, ACN=47	China (Hubei)	H-21, Y-15
Coilia	*nasus*	*brachygnathus*	M	48	48A	48	48	2		ZZ, ACN=48	China (Hubei)	H-21, Y-15
Thryssa	*baelama*	*Thrissina*		42	42 ST/A	42					India (Andaman Is.)	R-45
Engraulinae												
Anchoa	*mitchilli*		F, M	48	48A	48	48			ACN=48	Atlantic	D-23
Engraulis	*compressa*	*Anchoa*		48		48					USA (CA)	C-46
Engraulis	*encrasicholus ponticus*			44							Russia	I-20
Engraulis	*japonicus*			48	48A	48	48		2.8* FCM		Japan	O-48
Engraulis	*mordax*			48	48A	48	48		3.0 FD, 3.8 BFA	ACN=48	(E. Pacific)	O-6, O-8, H-13

Table 6.10 Order GONORYNCHIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Chanoidei												
Chanidae												
Chanos	*chanos*			32	14M + 4SM + 14 ST/A	50				ACN=50	Taiwan	A-63
Suborder Knerioidei												
Phractolaemidae												
Phractolaemus	*ansorgei spinosus*		F, M	28	24M + 2SM + 2A	54			3.0 FD		Zaire	V-34

Table 6.11 Order CYPRINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Superfamily Cyprinoidea												
Cyprinidae												
Acheilognathinae												
Acheilognathus	*chankaensis*	*Acanthorhodeus*	F, M	44	14M + 14SM + 16 ST/A	72			1.8* FD	ACN=50	China (Hubei)	H-19, Y-15, C-83
Acheilognathus	*chankaensis*?	*Acanthorhodeus gracilis*	F, M	44	24 M/SM + 20 ST/A	68				ACN=50	Korea (Sam-rye)	L-9, L-11
Acheilognathus	*cyanostigma*		F, M	44	28 M/SM + 16 ST/A	72		2		ACN=50	Japan (Lake Biwa)	O-20, T-6, T-11
Acheilognathus	*gracilis*		F, M	42	16M + 12SM + 14ST	70	84			ACN=50	China (Wuhan)	H-23, Y-15
Acheilognathus	*imberbis*	*Paracheilognathus*	F, M	44	14M + 18SM + 12 ST/A	76				ACN=50	China (Wuhan)	H-19, Y-15
Acheilognathus	*longipinnis*		F, M	44	28 M/SM + 16 ST/A	72				ACN=50	Japan (Yodo R.)	O-20
Acheilognathus	*macropterus*	*Acanthorhodeus asmussi*	F, M	44	24 M/SM + 20 ST/A	68				ACN=50	Korea (Eui-ryeong)	L-9, L-11
Acheilognathus	*macropterus*	*Acanthorhodeus*	F, M	44	14M + 18SM + 12 ST/A	76				ACN=50	China (Wuhan)	H-19, Y-15
Acheilognathus	*macropterus*			44	14M + 16SM + 14ST	74	88	8 in embryo		ACN=50	China (Amur R.)	U-24
Acheilognathus	*melanogaster*	*moriokae*	M	44	28 M/SM + 16 ST/A	72				ACN=50	Japan (Ibaraki)	O-20
Acheilognathus	*peihoensis*	*Acanthorhodeus*	F, M	44	14M + 12SM + 8ST + 10A	70	78			ACN=50	China (Guilin)	Y-15
Acheilognathus	*rhombeus*	*rhombea*	F, M	44	28 M/SM + 16 ST/A	72				ACN=50	Korea (Ma-ryeong)	L-9, L-11
Acheilognathus	*rhombeus*		F, M	44	10M + 20 SM/ST + 14A		74			ACN=50	Korea (Geum R.)	U-33
Acheilognathus	*rhombeus*		F, M	44	14M + 16SM + 14ST	74	88			ACN=50	South Korea	U-80, U-81
Acheilognathus	*rhombeus*		F, M	45	29 M/SM + 16ST	74	90			ACN=50	South Korea	U-80, U-81
Acheilognathus	*rhombeus*			46	28 M/SM + 18ST	74	92			ACN=50	South Korea	U-80, U-81
Acheilognathus	*rhombeus*			47	27 M/SM + 20ST	74	94			ACN=50	South Korea	U-80, U-81
Acheilognathus	*rhombeus*	*rhombea*	F, M	44	14M + 14SM + 16 ST/A	72		2	(2.3* FCM, 2.0 FD)	ACN=50	Japan (Lake Biwa)	O-20, O-48, T-6, T-11
Acheilognathus	*rhombeus*	*rhombea*	F, M	44	12M + 20 SM/ST + 12A		76			ACN=50	Japan (Lake Biwa)	O-18
Acheilognathus	*tabira erythropterus*	Akahire-tabira	M	44	28 M/SM + 16 ST/A	72			(1.9 FD)	ACN=50	Japan (Ibaraki)	O-20, S-141
Acheilognathus	*tabira nakamurae*	Seboshi-tabira	F, M	44	28 M/SM + 16 ST/A	72				ACN=50	Japan (Fukuoka)	O-20
Acheilognathus	*tabira tabira*		F, M	44	14M + 14SM + 16 ST/A	72		2		ACN=50	Japan (Yodo R., Yoshii R.)	O-20, O-48, T-6, T-11
Acheilognathus	*tabira tabira*		F, M	44	12M + 20 SM/ST + 12A		76			ACN=50	Japan (Lake Biwa)	O-18
Acheilognathus	*tonkinensis*	*Acanthorhodeus*	F, M	44	14M + 14SM + 16 ST/A	72				ACN=50	China (Guilin)	Y-15
Acheilognathus	*tonkinensis*		M	44	14M + 14SM + 8ST + 8A	72	80			ACN=50	(China)	A-85
Acheilognathus	*tonkinensis*		F	44							China (Wuhan)	H-19
Acheilognathus	*yamatsutae*			44	12M + 16SM + 16 ST/A	72				ACN=50	Korea	L-9
Acheilognathus	*yamatsutae*		M	44	24 M/SM + 20 ST/A	68				ACN=50	Korea (Eui-ryeong)	L-9, L-11
Acheilognathus	*yamatsutae*	*cyanostigma*	F	44	12M + 16SM + 16 ST/A	72				ACN=50	Korea (Go-san)	L-9, L-10
Acheilognathus	*typus*	*Pseudoperilampus*	M	44	28 M/SM + 16 ST/A	72			1.9 FD	ACN=50	Japan (Chiba)	O-20, S-141
Rhodeus	*atremius atremius*	*atremius*	F, M	46	4 SM + 42 ST/A	50				ACN=50	Japan (Fukuoka)	O-20
Rhodeus	*fangi*	*atremius fangi*		46	4SM + 42ST	50	92	15 in embryo		ACN=50	China (Fujian)	U-24
Rhodeus	*fangi*	*atremius*	F, M	46	4 M/SM + 42 ST/A	50		2 (6 in embryo)		ACN=50	China (Zhejiang)	U-18
Rhodeus	*atremius suigensis*	*suigensis*	F, M	46	4SM + 42 ST/A	50				ACN=50	Japan (Yoshii R.)	O-20
Rhodeus	*notatus*	*atremius suigensis*		46	4SM + 42ST	50	92	8 in embryo		ACN=50	China (Liaoning)	U-80, U-81
Rhodeus	*notatus*	*suigensis*	F	46	4 M/SM + 42 ST/A	50				ACN=50	Korea (Go-san)	L-9, L-11

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rhodeus	*notatus*		F, M	46	4SM + 42 ST/A	50				ACN=50	Korea (Go-san)	L-9, L-10
Rhodeus	*ocellatus*		F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Korea (Jang-heung)	L-9, L-11
Rhodeus	*ocellatus*		F, M	48	10M + 24SM + 14ST	82	96			ACN=50	China (Hubei)	H-19, Y-15
Rhodeus	*ocellatus kurumeus*	*ocellatus smithii*	F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Japan (Fukuoka)	O-20
Rhodeus	*ocellatus kurumeus*			48	18M + 10SM + 20ST	76	96	2		ACN=50	Japan (Osaka)	K-22
Rhodeus	*ocellatus kurumeus*			48	14M + 14SM + 20ST	76	96	2		ACN=50	Japan (Yanagawa)	K-22
Rhodeus	*ocellatus kurumeus*			48	8M + 20SM + 20ST	76	96	1-2		ACN=50	Japan (Saga)	S-93
Rhodeus	*ocellatus ocellatus*		F, M	48	8M + 20SM + 20A	76	76	2	(2.2* FCM)	ACN=50	Japan (Kobe, Lake Biwa)	O-20, O-48, T-4, T-11
Rhodeus	*ocellatus ocellatus*		F, M	48	8M + 20 SM/ST + 20A		76			ACN=50	Japan (Osaka)	O-18
Rhodeus	*ocellatus ocellatus*			48	8M + 20SM + 20A	76	76	2 (2 in embryo)		ACN=50	China, Korea (Gyonggi)	U-24
Rhodeus	*pseudosericeus*			48	8M + 20SM + 20ST	76	96			ACN=50	Korea (Gangwon-do)	A-86
Rhodeus	*sericeus amarus*	*amarus*		48	14M + 24 SM/ST + 10A		86		2.1 FD	ACN=50	France	H-2, H-4
Rhodeus	*sericeus amarus*			48	6M + 26SM + 4ST + 12A	80	84			ACN=50	Hungary	B-54
Rhodeus	*sericeus amarus*			48	6M + 26SM + 16A	80				ACN=50	Hungary	M-64
Rhodeus	*sericeus amarus*		F, M	48	34 M/SM + 14 ST/A	82				ACN=50	Bosnia-Herzegovina	S-77
Rhodeus	*sericeus amarus*		F, M	48	14M + 12SM + 12ST + 10A	74	86				Russia (Don R.)	R-22
Rhodeus	*sericeus sericeus*	*sericeus*	F	48							China (Hubei)	H-19
Rhodeus	*sinensis*			48	8M + 20SM + 20ST	76	96	8 (15 in embryo)		ACN=50	China (Amur R.), Korea	U-24
Rhodeus	*sinensis*	*Pseudoperilampus lighti*	F, M	48	12M + 22SM + 8ST + 6A	82	90			ACN=50	China (Sichuan)	Y-15
Rhodeus	*sinensis*	*uyekii*	F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Korea (Go-san)	L-9, L-10
Rhodeus	sp.	*sinensis*		48	14M + 28SM + 6 ST/A	90				ACN=50	China (Kunming)	L-38
Rhodeus	sp.	*sinensis*	F, M	48	12M + 28SM + 8 ST/A	88				ACN=50	China (Shandong)	W-34
Rhodeus	sp.	*sinensis*	M	48							China (Wuhan)	H-19
Tanakia	*himantegus chii*	*himantegus*		48	8M + 20SM + 18ST + 2A	76	94			ACN=50	China (Shanghai)	U-22
Tanakia	*himantegus chii*			48	8M + 20SM + 18ST + 2A	76	94	2-3		ACN=50	China (Shanghai)	U-71
Tanakia	*himantegus himantegus*			48	8M + 20SM + 18ST + 2A	76	94	2-3		ACN=50	Taiwan	U-71
Tanakia	*himantegus himantegus*	*Paracheilognathus himantegus*	F, M	48	10M + 18SM + 6ST + 14A	76	82			ACN=50	(Taiwan)	A-83
Tanakia	*intermedia intermedia*	*Acheilognathus*	F, M	48	24 M/SM + 24 ST/A	72				ACN=50	Korea (Jang-heung)	L-9, L-11
Tanakia	*intermedia* subsp.	*Acheilognathus*	F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Korea (Gong-ju)	L-9, L-11
Tanakia	*koreensis*			48	8M + 20SM + 20ST	76	96	4		ACN=50	Korea (Gyongsangbuk-do)	U-24
Tanakia	*koreensis*	*Acheilognathus limbata*		48	8M + 20SM + 20ST	76	96			ACN=50	Korea (Go-san)	L-9, L-10
Tanakia	*lanceolata*	*Acheilognathus*	F, M	48	10M + 18SM + 20 ST/A	76		2	(2.1* FCM、2.1FD)	ACN=50	Japan (Lake Biwa, Fukuoka)	O-20, O-48, T-6, T-11
Tanakia	*lanceolata*	*Acheilognathus*		48	8M + 20 SM/ST + 20A		76			ACN=50	Japan (Lake Biwa)	O-18
Tanakia	*limbata*	*Acheilognathus*	F, M	48	10M + 18SM + 20 ST/A	76		2	(2.1* FCM)	ACN=50	Japan (Fukuoka, Hyogo)	O-20, O-48, T-6, T-11
Tanakia	*limbata*	*Acheilognathus*	F, M	48	28 M/SM + 20 ST/A	76		4		ACN=50	Japan	U-13
Tanakia	*limbata*			48	8M + 20SM + 20ST	76	96	1-3		ACN=50	Japan (Mie)	S-93
Tanakia	*signifer*			48	8M + 20SM + 16ST + 4A	76	92	2		ACN=50	Korea (Gangwon-do)	U-24
Tanakia	*signifer*	*Acheilognathus*		48	8M + 12SM + 28ST	68	96			ACN=50	Korea	L-15
Tanakia	*somjinensis*			48	8M + 20SM + 20ST	76	96	2-4		ACN=50	Korea	U-71

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Tanakia	*tanago*		F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Japan (Chiba)	O-20
Barbinae												
Acrossocheilus	*wenchowensis beijiangensis*		F, M	50	14M + 16SM + 14ST + 6A	80	94			ACN=50	China (Guangdong)	G-69, Y-15
Acrossocheilus	*deauratus*			50	10M + 12SM + 28A	72				ACN=50	N.E. Thailand	A-84
Acrossocheilus	*fasciatus*		F, M	50	14M + 16SM + 10ST + 10A	80	90			ACN=50	China (Guangdong)	G-69, Y-15
Acrossocheilus	*hemispinus hemispinus*		F, M	50	10M + 16SM + 8ST + 16A	76	84			ACN=50	China (Guangxi)	Y-15
Acrossocheilus	*iridescens zhujiangensis*		F, M	50	14M + 16SM + 10ST + 10A	80	90			ACN=50	China (Guangdong)	G-69, Y-15
Acrossocheilus	*labiatus*			50	16M + 12SM + 4ST + 18A	78	82			ACN=50	Taiwan	A-78
Acrossocheilus	*parallens*		F, M	50	14M + 16SM + 14ST + 6A	80	94			ACN=50	China (Guangdong)	G-69, Y-15
Acrossocheilus	*yunnanensis*			50	18M + 16SM + 16 ST/A	84			2.5 FD		China (Yunnan)	Z-5, Z-8
Acrossocheilus	*yunnanensis*		F	50	10M + 18SM + 12ST + 10A	78	90			ACN=50	China (Sichuan)	L-43, Y-15
Aulopyge	*huegeli*			100	48 M/SM + 52 ST/A	148				4X, ACN=100	Bosnia	B-20
Balantiocheilos	*melanopterus*			50	10M + 12SM + 28A	72			2.1* FCM		(S.E. Asia)	O-48
Balantiocheilos	*melanopterus*		F, M	50	6M + 18SM + 16ST + 10A	74	90	2		ACN=50	(S.E. Asia)	K-136
Barbodes	*carnaticus*			100	22M + 40SM + 22ST + 16A	162	184	6		4X, ACN=100	India (W. Ghats)	N-55
Barbonymus	*altus*	*Puntius*		50	10M + 24SM + 4ST + 12A	84	88			ACN=50	Thailand (Ayuthaya)	M-9
Barbonymus	*gonionotus*	*Puntius*		50	2M + 20SM + 4ST + 24A	72	76		(2.2 FD)	ACN=50	Thailand (Ayuthaya)	M-9, S-141
Barbonymus	*gonionotus*	*Puntius*	F, M	50	12M + 12SM + 4ST + 22A	74	78			ACN=50	Thailand	W-31
Barbonymus	*schwanenfeldii*	*Puntius*		50	6M + 28 SM/ST + 16A		84		2.2 BFA	ACN=50	(Asia)	T-60, H-13
Barbus	*ablabes*		F	50	18M + 30SM + 2 ST/A	98		2			Guinea, Africa	R-21
Barbus	*amatolicus*			48	22 M/SM + 26 ST/A	70					S. Africa	S-193
Barbus	*andrewi*			100	34 M/SM + 66 ST/A	134				4X, ACN=100	S. Africa	T-55
Barbus	*anema*			50	42 M/SM + 8A	92	92			ACN=50	Ethiopia (Alvero R.)	G-47
Barbus	*anoplus*			48	30 M/SM + 18 ST/A	78		2			S. Africa	S-193
Barbus	*anoplus*			50							S. Africa	T-59
Barbus	*argenteus*			50	44 M/SM + 6 ST/A	94		2			S. Africa	S-193
Barbus	*barbus*			100	12M + 48 SM/ST + 40A		160		3.5 FD	4X, ACN=100	France	H-2, H-4
Barbus	*bigornei*		F, M	48	18M + 30SM	96	96	2		ACN=50	Guinea	R-21
Barbus	*brevipinnis*			48	40 M/SM + 8 ST/A	88		2			S. Africa	S-193
Barbus	*bynni*		F, M	150	70 M/SM + 80 ST/A	220				6X, ACN=150	Ethiopia (L. Abaya)	G-47
Barbus	*bynni bynni*			150	50 M/SM + 100A	200				6X	Ethiopia (Baro R.)	K-108
Barbus	*bynni bynni*			150	70 M/SM + 80A	220				6X	Ethiopia (L. Abaya)	K-108
Barbus	*bynni occidentalis*		F	148						6X	W. Africa, Guinea	G-66
Barbus	*bynni waldroni*			150						6X	W. Africa	G-84
Barbus	*calidus*			100		126				6X	S. Africa	S-193
Barbus	*callensis*	*setivimensis*		100						4X	Africa	G-84
Barbus	*canis*			150	76M + 24ST + 50A	226	250			6X	Israel (Jordan R.)	G-59
Barbus	*cyclolepis*		F, M	100	26M + 16SM + 36ST + 22A	142	178	4		4X	Macedonia	R-24
Barbus	*erubescens*			100						4X	Africa	D-27

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Barbus	*ethiopicus*		M	150	40 M/SM + 110 ST/A	190				6X	Ethiopia (Meki R.)	G-47
Barbus	*eutaenia*			48		82,84					S. Africa	S-193
Barbus	*fasciolatus*	*bariloides*		48	32M + 16SM	96	96			ACN=48	(Africa)	R-4
Barbus	*goktschaicus*		F, M	100	6M + 18SM + 76 ST/A	124				4X	Armenia (Lake Sevan)	K-109
Barbus	*gurneyi*			50	26 M/SM + 24 ST/A	76		2			S. Africa	S-193
Barbus	*holotaenia*		F, M	50	24M + 26 SM/ST		100			ACN=50	(Africa)	R-4
Barbus	*hospes*			96	46 M/SM + 50 ST/A	142		2		4X	S. Africa	S-193
Barbus	*intermedius*			150	90M + 60A	240				6X	Ethiopia	G-47
Barbus	*intermedius*			150	66M + 84A	216				6X	Ethiopia	G-47
Barbus	*issenensis*			100						4X	N. Africa	G-84
Barbus	*kerstenii*		F	50	34 M/SM + 16A	84				ACN=50	Ethiopia (Lake Abaya)	G-47
Barbus	*ksibi*			100						4X	NW. Africa	G-84
Barbus	*kubanicus*	*tauricus kubanicus*		100						4X	(Russia)	V-72
Barbus	*macrops*			50	14M + 28SM + 8 ST/A	92		2		ACN=50	Guinea	R-21
Barbus	*massaensis*			100						4X	N. Africa	G-84
Barbus	*meridionalis*		M	100	22M + 20SM + 12ST + 46A	142	154			4X	Italy	C-34
Barbus	*motebensis*			50	24 M/SM + 26 ST/A	74		2			S. Africa	S-193
Barbus	*moulouyensis*			100						4X	NW. Africa	G-84
Barbus	*nasus*			100						4X	N. Africa	G-84
Barbus	*paludinosus*			50	46 M/SM + 4A	96	96			ACN=50	Ethiopia (Bulbula R.)	G-47
Barbus	*paludinosus*	developed dorsal spine		50	44 M/SM + 6 ST/A	94				ACN=50	Ethiopia (Omo R.)	G-49
Barbus	*paludinosus*	reduced dorsal spine		50	44 M/SM + 6 ST/A	94				ACN=50	Ethiopia (Omo R.)	G-49
Barbus	*paludinosus*			50	30 M/SM + 20 ST/A	80		2			S. Africa	S-193
Barbus	*parawaldroni*			150						6X	W. Africa	G-84
Barbus	*peloponnesius petenyi*	*meridionalis petenyi*	F, M	100	50 M/SM + 50 ST/A	150				4X	Bosnia-Herzegovina	S-76
Barbus	*petitjeani*		F, M	150	36M + 90 SM/ST + 24A		276			6X	W. Africa, Guinea	G-66
Barbus	*plebejus*	*barbus plebejus*	F, M	100	26M + 18SM + 18ST + 38A	144	162			4X	Italy	C-34
Barbus	*pleurogramma*			50	44 M/SM + 6 ST/A	94				ACN=50	Ethiopia (Lake Tana)	G-49
Barbus	*sacratus*			150						6X	W. Africa	G-84
Barbus	*serra*			100						4X	S. Africa	T-55
Barbus	*trevelyani*			100		128				4X	S. Africa	T-55
Barbus	*trevelyani*			96	32 M/SM + 64 ST/A	128		4		4X	S. Africa	S-193
Barbus	*trimaculatus*			48	30 M/SM + 18 ST/A	78		2			S. Africa	S-193
Barbus	*wurtzi*		F, M	150						6X	W. Africa, Guinea	G-84
Barbus	sp. 1			50	44 M/SM + 6A	94	94			ACN=50	Ethiopia (Alvero R.)	G-47
Barbus	sp. 2		F, M	50	44 M/SM + 6A	94	94			ACN=50	Ethiopia (Lake Abaya)	G-47
Barbus	sp. 3		F, M	50	48 M/SM + 2A	98	98			ACN=50	Ethiopia (Hare R.)	G-47
Caecobarbus	*geertsi*		F, M	50	12M + 28SM + 10ST	90	100			ACN=50	Zaire	V-36
Capoeta	*capoeta*			150	24M + 60SM + 14ST + 52A	234	248			6X	Iran (Roudbar)	S-1

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Capoeta	*capoeta*			150	24M + 56SM + 14ST + 56A	230	244			6X	Iran (Golestan Natn. Park)	S-1
Capoeta	*capoeta sevangi*	*Varicorhinus*	M	150	10M + 30SM + 110A	190	190			6X	Armenia (Lake Sevan)	K-109
Capoeta	*capoeta umbla*		F, M	150	86 M/SM + 64 ST/A	236				6X	Turkey (Tigris R.)	K-51
Capoeta	*damascina*			148	78 M/SM + 32ST + 38A	226	258			6X	Jordan	G-59
Capoeta	*trutta*		F, M	150	70 M/SM + 80 ST/A	220				6X	Turkey (Tigris R.)	K-51
Carasobarbus	*canis*	*Barbus*		150	76 M/SM + 24ST + 50A	226	250			6X	Middle East	G-59
Catla	*catla*		F, M	50	8M + 16SM + 14ST + 12A	74	88			ACN=50	India (WB)	M-27
Catla	*catla*			50	4M + 12SM + 34A	66	66	4		ACN=50	India	L-2
Catla	*catla*			50	10M + 16SM + 8ST + 16A	76	84	4		ACN=50	India (near Lucknow)	N-4
Catlocarpio	*siamensis*			98	18M + 54 SM/ST + 26A		170		3.5 FD	4X, ACN=98	(Asia)	S-127
Chagunius	*chagunio*		F	50	16M + 28SM + 6A	94	94			ACN=50	India (Assam)	K-46, C-108
Cyclocheilichthys	*apogon*			50	12M + 8SM + 6ST + 24A	70	76			ACN=50	Thailand (Ayuthaya)	M-9
Cyclocheilichthys	*enoplos*			50	10M + 30SM + 4ST + 6A	90	94	4		ACN=50	Thailand (Uthai Thani)	M-12
Cyprinion	*macrostomus*		F, M	50	6M + 24SM + 12ST + 8A	80	92	4		ACN=50	Turkey	Y-24
Folifer	*brevifilis brevifilis*	*Tor* (*Folifer*)	F, M	50	14M + 14SM + 16ST + 6A	78	94			ACN=50	China (Guangdong)	G-69, Y-15
Folifer	*brevifilis brevifilis*	*Tor* (*Folifer*)		50	14M + 16SM + 20 ST/A	80				ACN=50	China	Z-8
Hypselobarbus	*curmuca*	*Gonoproktopterus*		100	18M + 38SM + 28ST + 16A	156	184	6		4X, ACN=100	India (W. Ghats)	N-55
Hypsibarbus	*wetmorei*	*Puntius darphani*		50	12M + 8SM + 6ST + 24A	70	76			ACN=50	Thailand (Ayuthaya)	M-9
Labeobarbus	*aeneus*	*Barbus*		148	48 M/SM + 100 ST/A	196				6X	S. Africa (Ciskei)	O-2
Labeobarbus	*capensis*	*Barbus*		150	58 M/SM + 92 ST/A	208				6X	S. Africa (S.W. Cape)	O-2
Labeobarbus	*capensis*		M	150	16M + 58SM + 42ST + 34A	224	266			6X	S. Africa (Rondegat R.)	N-67
Labeobarbus	*intermedius*	*Barbus*	F, M	150	66 M/SM + 84 ST/A	216				6X	Ethiopia (L. Tana, Kulfo R.)	G-47, K-108
Labeobarbus	*intermedius*	*Barbus*	F, M	150	90 M/SM + 60 ST/A	240				6X	Ethiopia (Awash R.)	G-47
Labeobarbus	*kimberleyensis*	*Barbus*		148	56 M/SM + 92 ST/A	204				6X	S. Africa	O-2
Labeobarbus	*marequensis*		F, M	150	26M + 44SM + 42ST + 38A	220	262			6X	S. Africa (Marico R.)	N-67
Labeobarbus	*natalensis*	*Barbus*		150	50 M/SM + 100 ST/A	200				6X	S. Africa (Mgeni R.)	O-2
Labeobarbus	*polylepis*	*Barbus*		150	56 M/SM + 94 ST/A	206				6X	S. Africa	O-2
Labeobarbus	*polylepis*		F	150	18M + 60SM + 42ST + 30A	228	270			6X, ACN=150	S. Africa (Elands R.)	N-67
Labeobarbus	*polylepis*	*Barbus*		148	62 M/SM + 86 ST/A	210		4		6X	S. Africa	S-193
Leptobarbus	*hoevenii*			50	10M + 34 SM/ST + 6A		94			ACN=50	(Asia)	S-126
Leptobarbus	*hoevenii*			50	16M + 30SM + 2ST + 2A	96	98				(India, Thailand)	Z-29
Luciobarbus	*bocagei*	*Barbus*	F, M	100	64 M/SM + 36A	164			3.8 FCM	4X	Portugal	C-72, C-75
Luciobarbus	*brachycephalus*	*Barbus*		100	24M + 46 SM/ST + 30A		170			4X	(Caspian Sea)	V-72
Luciobarbus	*comizo*	*Barbus*	F, M	100	12M + 60SM + 28 ST/A	172			2.7 FCM	4X	Portugal	C-72, C-75
Luciobarbus	*microcephalus*	*Barbus*	F, M	100	18M + 50SM + 32 ST/A	168			3.7 FCM	4X	Portugal	C-72, C-75
Luciobarbus	*sclateri*	*Barbus*	F, M	100	10M + 44SM + 46 ST/A	154			3.7 FCM	4X	Portugal	C-72, C-75
Luciobarbus	*steindachneri*	*Barbus*	F, M	100	10M + 48SM + 42 ST/A	158			3.6 FCM	4X	Portugal	C-72, C-75
Mystacoleucus	*marginatus*			50	16M + 10SM + 24A	76	76			ACN=50	C. Thailand	A-84
Neolissochilus	*dukai*	*Barbus*		100	26M + 50 SM + 6ST + 18A	176	182			4X	India (Assam)	K-46

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Neolissochilus	*hexagonolepis*	*Acrossocheilus*		100	16M + 26SM + 58 ST/A	142				4X	Nepal	M-48
Neolissochilus	*hexagonolepis*			100	32M + 16SM + 6ST + 46A	148	154			4X	India (A.P.)	S-173
Neolissochilus	*hexagonolepis*			100	20M + 18SM + 14ST + 48A	138	152	4		4X	India (Meghalaya)	M-160
Neolissochilus	*sumatranus*	*Acrossocheilus*		98	8M + 36SM + 16ST + 38A	142	158			4X	(Asia)	S-123
Neolissochilus	sp.	*Barbus*		100	44M + 12SM + 44A	156	156			4X	India	K-46
Onychostoma	*elongatus*	*Varicorhinus*	F, M	50	12M + 12SM + 14ST + 12A	74	88			ACN=52	China (Guangdong)	G-69, Y-15
Onychostoma	*gerlachi*	*Varicorhinus*	F, M	50	12M + 12SM + 14ST + 12A	74	88			ACN=52	China (Guangdong)	G-69, Y-15
Onychostoma	*sima*	*Varicorhinus simus*	F, M	50	10M + 16SM + 16ST + 8A	76	92			ACN=52	China (Sichuan)	L-43, Y-15
Percocypris	*pingi pingi*			98	42M + 30SM + 26 ST/A	170			4.6 FD	4X, ACN=98	China (Yunnan)	Z-5, Z-8
Percocypris	*pingi regani*			98	40M + 18SM + 40 ST/A	156				4X, ACN=98	China (Yunnan)	Z-8
Poropuntius	*sinensis*	*Barbodes daliensis*		50	10M + 22SM + 18 ST/A	82				ACN=50	China (Yunnan)	Z-5
Poropuntius	*chonglingchungi*	*Barbodes lacustris*		50	12M + 18SM + 20 ST/A	80			2.3 FD	ACN=50	China (Yunnan)	Z-5, Z-8
Probarbus	*jullieni*			98	18M + 28 SM/ST + 52A		144			4X	(Asia)	S-126
Pseudobarbus	*afer*		F, M	100	12M + 40SM + 38ST + 10A	152	190			4X	S. Africa	N-63, T-55
Pseudobarbus	*afer*		F, M	100	12M + 42SM + 36ST + 10A	154	190	3		4X	S. Africa (Blindekloof)	N-63
Pseudobarbus	*asper*		F, M	100	14M + 46SM + 32ST + 8A	160	192			4X	S. Africa (Groot R.)	N-63
Pseudobarbus	*burchelli*	B type	F, M	100	10M + 42SM + 34ST + 14A	152	186			4X	S. Africa (Bainskloof)	N-63
Pseudobarbus	*burchelli*	S type	F, M	100	10M + 40SM + 36ST + 14A	150	186	3		4X, ACN=100	S. Africa (Wolvekloof)	N-63
Pseudobarbus	*burgi*		F, M	100	14M + 36SM + 38ST + 12A	150	188			4X	S. Africa (Wemmers R.)	N-63
Pseudobarbus	*phlegethon*		F, M	100	14M + 40SM + 38ST + 8A	154	192	4		4X	S. Africa (Thee R.)	N-63
Pseudobarbus	*quathlambae*			100						4X	S. Africa	O-2
Pseudobarbus	*tenuis*		F, M	100	14M + 40SM + 32ST + 14A	154	186	4		4X	S. Africa (Grobbelaars R.)	N-63
Puntioplites	*proctozysron*			50	16M + 10SM + 24A	76	76			ACN=50	Thailand (Uthai Thani)	M-12
Puntius	*arulius*			50	6M + 26 SM/ST + 18A		82			ACN=50	(Asia)	T-61
Puntius	*binotatus*			50	8M + 34 SM/ST + 8A		92			ACN=50	(Asia)	T-60
Puntius	*brevis*	*japonicus*	M, F	50	6M + 14SM + 8ST + 22A	70	78				(Asia)	K-27
Puntius	*chola*			50	2M + 4 SM/ST + 44A		56			ACN=50	(Asia)	T-61
Puntius	*chola*			50	2M + 2SM + 46A	54					India (A.P.)	S-173
Puntius	*chola*	*tetrarupagus*	M	50	2M + 2SM + 4ST + 42A	54	58			ACN=50	India (J & K)	T-52
Puntius	*conchonius*		M	50	16M + 24SM + 2ST + 8A	90	92		(2.0* FCM)		India (Simlipal Hills)	K-41, O-48
Puntius	*conchonius*			50	6M + 38 SM/ST + 6A		94		(1.9 BFA)	ACN=50	(Asia)	T-61, H-13
Puntius	*conchonius*			50	4M + 40SM + 6A	94	94				(Asia)	T-12
Puntius	*conchonius*			50					(1.7 FCM)		(Asia)	V-72, V-86
Puntius	*conchonius*		F, M	48	10M + 20SM + 10ST + 8A	78	88			ACN=50	India (J & K)	S-49
Puntius	*cumingi*			50	18M + 26 SM/ST + 6A		94			ACN=50	(Asia)	T-61
Puntius	*denisonii*			50	4M + 20SM + 18ST + 8A	74	92	8		ACN=50	India (Kerala)	N-57
Puntius	*everetti*			50	6M + 30 SM/ST + 14A		86		1.8 FCM, 2.0 BFA	ACN=50	(Asia)	T-60, V-86, H-13
Puntius	*fasciatus*			50	6M + 26 SM/ST + 18A		82			ACN=50	(Asia)	T-60
Puntius	*fasciatus*	*Barbus*	M	50	30 M/SM + 4ST + 16A	80	84		1.5 FD	2B	(Asia)	O-5

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Puntius	*filamentosus*			50	8M + 26 SM/ST + 16A		84			ACN=50	(Asia)	T-61
Puntius	*filamentosus*			50	12M + 16SM + 12ST + 10A	78	90	8		ACN=50	India (Kerala)	N-56
Puntius	*lateristriga*			50	6M + 32 SM/ST + 12A		88			ACN=50	(Asia)	T-60
Puntius	*manipurensis*		F, M	50	22M + 14SM + 6ST + 8A	86	92			ACN=50	India (Manipur)	S-74
Puntius	*melanampyx*			50	12M + 12SM + 14ST + 12A	74	86			ACN=50	India (Tamil Nadu)	K-41
Puntius	*nigrofasciatus*			50	16M + 34 SM/ST		100			ACN=50	(Asia)	T-61
Puntius	*oligolepis*			50	8M + 30 SM/ST + 12A		88			ACN=50	(Asia)	T-60
Puntius	*orphoides*			50	14M + 16SM + 4ST + 16A	80	84			ACN=50	N. Thailand	A-84
Puntius	*orphoides*			50	6M + 36 SM/ST + 8A		92		1.5 FD	ACN=50	(Asia)	T-60, S-127
Puntius	*partipentazona*			50	6M + 34 SM/ST + 10A		90			ACN=50	(Asia)	T-60
Puntius	*pentazona*			50	22M + 26 SM/ST + 2A		98			ACN=50	(Asia)	T-60
Puntius	*sarana*		M	50	12M + 14SM + 12ST + 12A	76	88				India (Haryana)	R-55
Puntius	*sarana subnasutus*			50	12M + 26SM + 8ST + 4A	88	96	8		ACN=50	India (Kerala)	N-57
Puntius	*semifasciolatus*	*Capoeta semifasciolata*	F, M	50	12M + 14SM + 14ST + 10A	76	90			ACN=50	China (Guangdong)	G-69, Y-15
Puntius	*semifasciolatus*			50	8M + 18 SM/ST + 24A		76		(1.7 FCM)	ACN=50	(Asia)	S-136, V-86
Puntius	*sophore*		F	50	2M + 4SM + 44A	56	56			ACN=50	India (Tamil Nadu)	K-41
Puntius	*sophore*		F, M	48	2M + 4SM + 42A	54	54				India (Haryana)	R-51
Puntius	*sophore*		F, M	48	4M + 2ST + 42A	52	54				India (Haryana)	R-75
Puntius	*sophore*	*chrysopterus*	F	48	4M + 6ST + 38A	52	58			ACN=50	India (J & K)	T-52
Puntius	*sophore*	*stigma*	F, M	48	4M + 2SM + 42A	54	54				India (WB)	K-42
Puntius	*sophore*	*stigma*	F, M	48	2M + 2 SM/ST + 44A		52				India (Haryana)	R-46
Puntius	*sophoroides*			50	2M + 2SM + 46A	54	54			ACN=50	Thailand (Ayuthaya)	M-9
Puntius	*stoliczkanus*			50	22M + 22SM + 4ST + 2A	94	98			ACN=50	Thailand (Mae Hong Son)	M-9
Puntius	*tetrazona*	*Barbus*	M	50	34 M/SM + 6ST + 10A	84	90		1.4 FD		(Asia)	O-5
Puntius	*tetrazona*			50					(1.5 FCM)		India	K-102, V-86
Puntius	*tetrazona*			50	6M + 28 SM/ST + 16A		84		2.0 FD, (1.9 BFA)	ACN=50	(Asia)	T-60, S-141, H-13
Puntius	*tetrazona partipentazona*	*partipentazona*		50	6M + 34 SM/ST + 10A		90			ACN=50	(Asia)	T-60
Puntius	*ticto*		F, M	50	20M + 12SM + 10ST + 8A	82	92		(1.8 FCM)		India (Jammu)	S-58, V-86
Puntius	*ticto*			50	28M + 22 SM/ST		100			ACN=50	(Asia)	T-61
Puntius	*ticto*			50	28M + 16SM + 6ST	94	100				India (A.P.)	S-173
Puntius	*titteya*			50	20M + 28 SM/ST + 2A		98		2.4 BFA	ACN=50	(Asia)	T-61, H-13
Sinocyclocheilus	*grahami grahami*			96	22M + 36SM + 38 ST/A	154				4X	China (Kunming)	L-38
Sinocyclocheilus	*grahami tingi*			96	20M + 32SM + 44 ST/A	148				4X	China (Yunnan)	L-38
Sinocyclocheilus	*grahami tingi*			96	18M + 34SM + 44 ST/A	148			4.6 FD	4X	China (Yunnan)	Z-5, Z-7, Z-8
Sinocyclocheilus	*grahami tingi*			96	14M + 34SM + 48ST/A	144					China (Yunnan)	Z-5
Sinocyclocheilus	*maculatus*			96	18M + 32SM + 46 ST/A	146			4.6 FD	4X	China (Yunnan)	Z-5, Z-7, Z-8
Spinibarbus	*hollandi*	*Barbodes caldwelli*	F, M	100	18M + 32SM + 26ST + 24A	150	176			4X, ACN=100	China (Guangdong)	G-68, Y-15
Spinibarbus	*denticulatus denticulatus*	*Barbodes*	F, M	100	18M + 32SM + 26ST + 24A	150	176			4X, ACN=100	China (Guangdong)	G-68, Y-15
Spinibarbus	*sinensis*	*Barbodes*	F, M	100	18M + 32SM + 26ST + 24A	150	176			4X, ACN=100	China (Wuhan)	G-68, Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Tor	*chelynoides*			100	20M + 30SM + 24ST + 26A	150	174	4		4X, ACN=100	India (Uttarakhand)	S-189, M-160
Tor	*douronensis*			100	22M + 30SM + 48 ST/A	152				4X, ACN=100	China	Z-8
Tor	*khudree*		F, M	100	16M + 28SM + 6ST + 50A	144	150			4X, ACN=100	India (Jammu)	K-36
Tor	*khudree*			100	16M + 16SM + 8ST + 60A	132	140			4X, ACN=100	India (Maharashtra)	L-4
Tor	*khudree*			100	18M + 16SM + 44ST + 22A	134	178	10		4X, ACN=100	India (Maharastra)	K-111
Tor	*khudree*			100	20M + 14SM + 22ST + 44A	134	156	4		4X, ACN=100	India (Karnataka)	M-160
Tor	*mussullah*			100	22M + 24SM + 24ST + 30A	146	170	4		4X, ACN=100	India (Maharastra)	K-111, M-160
Tor	*progeneius*			100	20M + 20SM + 20ST + 40A	140	160	4		4X, ACN=100	India (Assam)	S-189, M-160
Tor	*putitora*		F, M	100	10M + 24SM + 14ST + 52A	134	148			4X, ACN=100	India (U.P.)	K-33
Tor	*putitora*			100	32M + 16ST + 52A	132	148			4X, ACN=100	India (U.P.)	L-4
Tor	*putitora*			100	12M + 18SM + 70 ST/A	130				4X, ACN=100	India (U.P.)	R-71
Tor	*putitora*			100	12M + 22SM + 14ST + 52A	134	148	4		4X, ACN=100	India (Uttarakhand)	S-189, M-160
Tor	*sinensis*			100	18M + 30SM + 52 ST/A	148				4X, ACN=100	China	Z-8
Tor	*soro*			100	24M + 20SM + 6ST + 50A	144	150			4X, ACN=100	Thailand (Kanchana Buri)	M-12
Tor	*tor*	*mosal mahanadicus*		100	44M + 14SM + 42 ST/A	158				4X, ACN=100	India (Orissa)	K-41
Tor	*tor*			100	10M + 30SM + 60 ST/A	140				4X, ACN=100	India (Haryana)	R-71
Tor	*tor*		F, M	100	24M + 24SM + 6ST + 46A	148	154			4X, ACN=100	India (U.P.)	K-36
Tor	*tor*		M	100	26M + 18ST + 56A	126	144			4X, ACN=100	India (U.P.)	L-4
Tor	*tor*			100	20M + 24SM + 24ST + 32A	144	168	8		4X, ACN=100	India (Madhya Pradesh)	S-189, M-160
Varicorhinus	*beso*		F, M	150	66 M/SM + 84 ST/A	216				6X, ACN=150	Ethiopia (Blue Nile, L. Tana)	G-47, K-108
Varicorhinus	*nelspruitensis*			ca. 150						6X	S. Africa	O-2
Cultrinae												
Anabarilius	*alburnops*			48	12M + 24SM + 12ST	84	96			ACN=50	China (Kunming Lake)	Z-3
Anabarilius	*alburnops*			48	14M + 20SM + 14ST	82	96			ACN=50	China (Qilu Lake)	Z-3
Anabarilius	*andersoni*			48	12M + 24SM + 12ST	84	96			ACN=50	China (Kunming)	Z-3
Anabarilius	*grahami*			48	14M + 20SM + 14ST	82	96			ACN=50	China (Yunnan)	Z-3
Anabarilius	*macrolepis*			48	12M + 24SM + 12ST	84	96			ACN=50	China (Yunnan)	Z-3
Ancherythroculter	*kurematsui*		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Sichuan)	Y-15
Ancherythroculter	*nigrocauda*		F, M	48	20M + 24SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
Ancherythroculter	*wangi*		F, M	48	18M + 26SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
Aphyocypris	*chinensis*		M	48	16M + 26SM + 6ST	90	96		(2.3 FD)		Japan (Kyushu)	M-50, S-141
Aphyocypris	*chinensis*		F, M	48	16M + 26SM + 6 ST/A	90					Korea (Yesan-gun)	K-55, L-12
Chanodichthys	*dabryi*	*Erythroculter*	F, M	48	16M + 28SM + 4ST	92	96	7		ACN=50	China (Hubei)	L-40, R-43
Chanodichthys	*dabryi*	*Erythroculter hypselonotus*	F, M	48	16M + 24SM + 8ST	88	96			ACN=50	China (Guangdong)	L-32
Chanodichthys	*erythropterus*	*Culter*	F, M	48	16M + 26SM + 6ST	90	96	6	2.1* FD	ACN=50	China (Hubei)	L-40, R-42, C-83
Chanodichthys	*erythropterus*	*Erythroculter ilishaeformis*	F, M	48	16M + 26SM + 6ST	90	96	6	1.6* FD	ACN=50	China (Hubei)	L-40, R-43, R-105, C-83
Chanodichthys	*erythropterus*	*Erythroculter ilishaeformis*		48	20M + 28 SM/ST		96			ACN=50	(Hubei, China)	L-53
Chanodichthys	*mongolicus*	*Erythroculter*	F, M	48	14M + 28SM + 6ST	90	96		2.0* FD	ACN=50	China (Hubei)	L-40, Y-15, C-83
Chanodichthys	*mongolicus*	*Erythroculter*		48	20M + 28 SM/ST		96			ACN=50	(Hubei, China)	L-53

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Culter	*oxycephaloides*	*Erythroculter*	F, M	48	20M + 24SM + 4ST	92	96			ACN=50	China (Hubei)	L-40
Hemiculter	*bleekeri bleekeri*		M	48	16M + 26SM + 6ST	90	96			ACN=50	China (Hubei)	L-40, Y-15
Hemiculter	*eigenmanni*			48		90				ACN=50	USSR	V-3
Hemiculter	*leucisculus*		F, M	48	16M + 26SM + 6ST	90	96		2.2* FD	ACN=50	China (Hubei, Guangdong)	L-40, Y-15, C-83
Hemiculter	*nigromarginis*		F, M	48	18M + 26SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
Hemiculterella	*sauvagei*		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Sichuan)	L-32, Y-15
Hemiculterella	sp.		F	48							China (Pearl R.)	C-85
Ischikauia	*steenackeri*		F, M	48	10M + 38 SM/ST		96	6	2.6* FCM	ACN=50	Japan (Osaka, Kobe)	T-4, O-48
Megalobrama	*amblycephala*		F, M	48	18M + 26SM + 4ST	92	96	4		ACN=50	China (Hubei)	L-40, R-43, R-105, Z-1
Megalobrama	*amblycephala*		F, M	48	16M + 24SM + 6ST + 2 special				(2.4, 2.0* FD)	ACN=50	China (Hubei)	L-41, L-73, C-83
Megalobrama	*amblycephala*			48	20M + 24SM + 4ST	92	96			ACN=50	China (Hubei)	Z-1
Megalobrama	*amblycephala*			48	26M + 22SM	96	96	4	(2.9* FCM)	ACN=50	China (Shashi)	Z-22, F-5
Megalobrama	*amblycephala*			48	16M + 20SM + 12ST	84	96			ACN=50	China (Beijing)	Y-11
Megalobrama	*terminalis*			48	18M + 22SM + 8ST	88	96			ACN=50	China (Hunan)	L-63
Megalobrama	*terminalis*		F, M	48	14M + 26SM + 8ST	88	96			ACN=50	China (Hubei)	L-40, Y-15
Osteobrama	*belangeri*			50	6M + 16SM + 12ST + 16A	72	84	2-4		ACN=50	India (Manipur)	K-137
Osteobrama	*cotio*	*Rohtee*	F	48	22M + 14SM + 8ST + 4A	84	92			ACN=50	India (WB)	M-27
Osteobrama	*cotio*		F	48	18M + 24SM + 6A	90	90			ACN=50	India (Jammu)	S-56
Osteobrama	*cotio cotio*			48	24M + 14SM + 8ST + 2A	86	94			ACN=50	India (WB)	K-46
Parabramis	*pekinensis*		F, M	48	14M + 26SM + 8ST	88	96	4	1.7* FD	ACN=50	China (Hubei)	L-40, R-43, C-83
Parapelecus	*argenteus*		F, M	48	18M + 22SM + 8ST	88	96			ACN=50	China (Sichuan)	Y-15
Parapelecus	*engraulis*		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Sichuan)	L-32, Y-15
Pseudohemiculter	*dispar*		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Guangdong)	L-32, Y-15
Pseudolaubuca	*sinensis*			48					2.4* FD		China (Wuhan)	C-83
Sinibrama	*changi*		F, M	48	14M + 26SM + 8ST	88	96			ACN=50	China (Sichuan)	L-32
Sinibrama	*macrops*		F, M	48	22M + 20SM + 6ST	90	96			ACN=50	China (Guangxi)	Y-15
Sinibrama	*melrosei*		F, M	48	20M + 24SM + 4ST	92	96			ACN=50	China (Guangdong)	L-32
Cyprininae												
Carassioides	*cantonensis*		F, M	100	18M + 32SM + 18ST + 32A	150	168			4X, ACN=100	China (Guangdong)	G-68, Y-15
Carassius	*auratus*	goldfish	F, M	100	24M + 30SM + 46 ST/A	154				4X, ACN=100	China (Beijing)	W-1
Carassius	*auratus auratus*	goldfish		100	20M + 40 SM/ST + 40A		160		(4.1* FCM)	4X, ACN=100	Japan	K-115, O-48
Carassius	*auratus auratus*	*carassius auratus*, goldfish		100	20M + 28 SM/ST + 52A		148		3.7 FD	4X, ACN=100	France	H-2, H-4
Carassius	*auratus*			100	22M + 30SM + 48 ST/A	152			3.2 FD	XX/XY	China (Yunnan)	Z-2, Z-8
Carassius	*auratus*			104	20M + 84 SM/ST/A					4X, ACN=100	Italy	C-60
Carassius	*auratus auratus*		F, M	100	12M + 36SM + 52 ST/A	148		2		4X, ACN=100	China	O-29
Carassius	*auratus auratus*		F, M	100	22m + 34SM + 22ST + 22A	156	178		(3.5 FCM)	4X, ACN=100	China	Y-14, R-105, V-86
Carassius	*auratus auratus*			100	30M + 34SM + 36 ST/A	164			(3.4 FIA, 4.0 BFA)	4X, ACN=100	China (Amur)	S-62, S-64, H-13, H-41
Carassius	*auratus auratus*			100	52 M/SM + 48 ST/A	152		1-3		4X, ACN=100	Croatia	A-23, M-54
Carassius	*auratus*	var. Dongtingking		100	30M + 20SM + 26ST + 24A	150	176			4X, ACN=100	China (Lake Dongting)	Y-25

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Carassius	*auratus*	back-low type	F, M	100	22M + 30SM + 48 ST/A	152		4	3.2 FD	XX/XY	China (Kunming Lake)	W-10, Z-4, Z-8
Carassius	*auratus*	back-high type		156	30M + 46SM + 80 ST/A	232		6		6X, ACN=150	China (Yunnan)	W-10
Carassius	*auratus*	back-high type		162	36M + 56SM + 70 ST/A	254		6		6X	China (Yunnan, Er hai Lake)	W-11
Carassius	*auratus*	back-high type	F	162	33M + 53SM + 76 ST/A	248			4.6 FD	6X	China (Kunming Lake)	Z-4, Z-8
Carassius	*auratus*	Xiji colour-crucian carp		100	24M + 30SM + 46 ST/A	154				4X, ACN=100	China (Xiji)	W-2
Carassius	*auratus auratus*	Chinese crucian carp		100	12M + 36SM + 52 ST/A	148		2		4X, ACN=100	China	O-30, T-18
Carassius	*auratus auratus*	Hibuna	F	100	12M + 36SM + 52 ST/A	148		2		4X, ACN=100	Japan (Hokkaido)	O-45
Carassius	*auratus auratus*	Hibuna	F	151						3B, 6X	Japan (Hokkaido)	O-45
Carassius	*auratus auratus*	Wakin	F, M	100	20M + 40 SM/ST + 40A		160	2		4X, ACN=100	Japan (Tokyo)	K-115
Carassius	*auratus auratus*	Wakin	F, M	100	12M + 36SM + 52 ST/A	148		2		4X, ACN=100	Japan	O-12, O-30
Carassius	*auratus auratus*	Ryukin	F, M	100	12M + 36SM + 52 ST/A	148				4X, ACN=100	Japan	O-12
Carassius	*auratus auratus*	Comet	F, M	100	12M + 36SM + 52 ST/A	148				XX/XY	Japan	O-26, O-37
Carassius	*auratus auratus*	Shubunkin	F, M	100	12M + 36SM + 52 ST/A	148				XX/XY	Japan	O-26, O-37
Carassius	*auratus auratus*	Kuro-demekin		100	16M + 84 SM/ST/A					4X, ACN=100	Japan (Tokyo)	A-70
Carassius	*auratus auratus*	Ranchuu		100	16M + 42SM + 42 ST/A	158				4X, ACN=100	Japan (Tokyo)	A-70
Carassius	*auratus auratus*	Sanshiki-demekin		100	16M + 40SM + 44 ST/A	156				4X, ACN=100	Japan (Tokyo)	A-70
Carassius	*auratus auratus*	Tetsugyo	F, M	100						4X, ACN=100	Japan (Niigata)	S-156
Carassius	*auratus auratus*	Tetsugyo	F	153						6X, ACN=150	Japan (Niigata)	S-156
Carassius	*auratus buergeri*	Nagabuna	F	100	12M + 36SM + 52 ST/A	148		2		4X, ACN=100	Japan (Lake Suwa)	O-30
Carassius	*auratus gibelio*		F	162	34M + 58SM + 42ST + 28A	254				6X, ACN=150	China	Y-14, Y-15
Carassius	*auratus gibelio*			150					(5.5* FD)	6X	China (Wuhan)	C-83
Carassius	*auratus gibelio*		F, M	156	42M + 74SM + 40 ST/A	272				6X, ACN=150	China (Amur)	S-62
Carassius	*auratus gibelio*		F, M	156	44M + 64SM + 48 ST/A	264				6X, ACN=150	China (Amur, Mishan)	S-64
Carassius	*auratus gibelio*		F, M	156	42M + 74SM + 40 ST/A	272				6X, ACN=150	China (Amur, Fangzheng)	S-64
Carassius	*auratus gibelio*		F, M	162	48M + 56SM + 18ST + 40A	266	284		(6.6* FCM)	6X	China (Amur, Fangzheng)	S-46, F-5
Carassius	*auratus gibelio*		F	156	50M + 64SM + 42 ST/A	270				6X, ACN=150	China (Amur, Dedou)	S-64
Carassius	*auratus gibelio*			162	32M + 52SM + 78 ST/A	246		4		6X	China (Amur, Fangzheng)	W-10
Carassius	*auratus gibelio*		M	100	20M + 40SM + 40 ST/A	160				4X, ACN=100	Russia (Amur R.)	K-85, K-94
Carassius	*auratus gibelio*		F	156	34M + 62SM + 60 ST/A	252				6X, ACN=150	Russia (Amur R.)	K-85, K-94
Carassius	*auratus gibelio*		F	150						6X, ACN=150	Bosnia	S-80
Carassius	*auratus gibelio*			98	48 M/SM/ST + 50A		146			4X, ACN=100	Rumania (Danube plaine)	R-36
Carassius	*auratus gibelio*		F	160	46M + 82 SM/ST + 32A		288		(5.5 FCM)	6X	Czeck	P-22, G-85
Carassius	*auratus gibelio*		F, M	100	14M + 24SM + 10ST + 52A	138	148	1-4	(3.7 FCM)	4X, ACN=100	Poland	B-50, G-85
Carassius	*auratus gibelio*		F	150	26M + 50SM + 20ST + 54A	226	246	2-8		6X, ACN=150	Poland	B-50
Carassius	*auratus gibelio*	clone A		150	36M + 54SM + 36ST + 24A	240	276			6B, 6X	N. China	Z-36
Carassius	*auratus gibelio*	clone P		150	36M + 54SM + 36ST + 24A	240	276			6B, 6X	China (Jiangxi)	Z-36
Carassius	*auratus gibelio*	clone D		156	42M + 54SM + 36ST + 24A	252	288			6B, 6X	N. China	Z-36
Carassius	*auratus grandoculis*	Nigorobuna	F, M	100	12M + 36SM + 52 ST/A	148		2	2.7-4.1 FD	4X, ACN=100	Japan (Lake Biwa)	M-96, O-30, S-141
Carassius	*auratus grandoculis*	Nigorobuna	F, M	100	20M + 40SM + 40 ST/A	160				4X, ACN=100	Japan (Lake Biwa)	K-86

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Carassius	*auratus langsdorfii*	Ginbuna	F	150	28M + 56SM + 66 ST/A	234		8	(5.4* FCM)	6B, 6X	Japan (Lake Biwa)	O-30, O-48
Carassius	*auratus langsdorfii*	Ginbuna	F	150	18M + 66SM + 66 ST/A	234				4B, 6X	Japan (Lake Biwa)	T-15
Carassius	*auratus langsdorfii*	Ginbuna	F, M	100	20M + 40 SM/ST + 40A		160		(4.1* FCM, 3.4 FD)	4X, ACN=100	Japan, Taiwan, Russia	K-94, K-115, O-48, S-141
Carassius	*auratus langsdorfii*	Ginbuna	F	156	34M + 62 SM/ST + 60A		252			6X, ACN=150	Japan, Taiwan, Russia	K-94, K-115
Carassius	*auratus langsdorfii*	Ginbuna	F	206	44M + 82 SM/ST + 80A		332			8X, ACN=200	Japan (Kanto District)	K-94, K-115
Carassius	*auratus langsdorfii*	Ginbuna	F, M	100	20M + 40SM + 40A	160	160			4X, ACN=100	Japan (Hokkaido, Honshu)	M-96
Carassius	*auratus langsdorfii*	Ginbuna	F, M	ca. 150						6X, ACN=150	Japan (Hokkaido, Honshu)	M-96
Carassius	*auratus buergeri*	Ookinbuna		100	12M + 36SM + 52 ST/A	148				4X, ACN=100	Japan (Okayama)	T-15
Carassius	*auratus* subsp. 2	Kinbuna		100	12M + 36SM + 52 ST/A	148		2	3.8* FCM	XX/XY	Japan (Lake Jonuma)	O-30, O-37, O-48, U-1
Carassius	*auratus* subsp. 2	Kinbuna	F, M	100	20M + 40 SM/ST + 40A		160	2		4X, ACN=100	Japan (Ibaraki)	K-115
Carassius	*auratus* subsp. 1	*buergeri*, Nagabuna	F, M	100	20M + 40 SM/ST + 40A		160			4X, ACN=100	Japan (Lake Suwa)	K-86, K-117
Carassius	*auratus* subsp. 1	*buergeri*, Nagabuna	F	156	34M + 62 MS/ST + 60A		252			6X, ACN=150	Japan (Hokkaido)	K-86
Carassius	*auratus* subsp.		M	100	12M + 36SM + 52 ST/A	148				4X, ACN=100	Japan (Ishigaki Is.)	T-13
Carassius	*auratus*	white crucian carp	F	100	20M + 28SM + 38ST + 14A	148	186			4X, ACN=100	China (Jiangsu)	Z-18
Carassius	*carassius*		F, M	100	20M + 40SM/ST + 40A		160	1-3		4X, ACN=100	Netherlands	K-115, M-54
Carassius	*carassius*			100	48 M/SM + 52 ST/A	148			4.3 FCM	4X, ACN=100	Russia	V-72, V-86
Carassius	*carassius*			50	20M + 12SM + 10ST + 8A	82	92			2X	Rumania (Danube plaine)	R-36
Carassius	*carassius*			100	52 M/SM + 48 ST/A	152				4X, ACN=100	Bosnia	S-80
Carassius	*carassius*			100	20M + 44 SM/ST + 36A		164		3.8 FD	4X, ACN=100	France	H-2, H-4
Carassius	*cuvieri*	Gengorobuna	F, M	100	12M + 36SM + 52 ST/A	148		2	4.4* FCM, 4.8 FD	4X, ACN=100	Japan (Lake Biwa)	O-12, O-30, O-48, S-141
Carassius	*cuvieri*	*auratus cuvieri*	F, M	100	20M + 40SM + 40A	160	160			4X, ACN=100	Japan (Lake Biwa)	M-96
Cyprinus	*carpio*			104					(3.4 FCM), 3.4 BFA	4X, ACN=100		T-73, H-13
Cyprinus	*carpio*		F, M	100	12M + 36SM + 52 ST/A	148		2	4.1* FCM	4X, ACN=100	Japan	T-14, O-13, O-48
Cyprinus	*carpio*			100	20M + 32 SM/ST + 48A		152		3.6 FD	4X, ACN=100	France	H-2
Cyprinus	*carpio*	mirror carp		100	34 M/SM + 30ST + 36A	134	164	2		4X, ACN=100	Germany	A-51
Cyprinus	*carpio*			98	50 M/SM + 48 ST/A	148				4X, ACN=100	former Yugoslavia	A-27, A-28
Cyprinus	*carpio*		F, M	100	24M + 24 SM/ST + 52A		148			4X, ACN=100	Rumania, Hungary, Ukraina	R-33
Cyprinus	*carpio*			98	54 M/SM + 44 ST/A	152				4X, ACN=100	Croatia	A-24
Cyprinus	*carpio*			100					2.9*, 3.5 FD		China (Hubei)	L-41, C-83
Cyprinus	*carpio carpio*		F, M	100	22M + 34SM + 22ST + 22A	156	178			4X, ACN=100	China	Y-14, R-105
Cyprinus	*carpio carpio*	Hebao carp		100	28M + 22SM + 50 ST/A	150		2	4.1* FCM	4X, ACN=100	China (Jiangxi)	W-9, F-5
Cyprinus	*carpio carpio*	Xinguo red carp		100	28M + 22SM + 50 ST/A	150		2	4.1* FCM	4X, ACN=100	China (Jiangxi)	W-9, F-5
Cyprinus	*carpio carpio*	Pili carp		100	28M + 22SM + 50 ST/A	150		2		4X, ACN=100	China (Jiangxi)	W-9
Cyprinus	*carpio carpio*	Blue carp		100	28M + 22SM + 50 ST/A	150		2		4X, ACN=100	China (Jiangxi)	W-9
Cyprinus	*carpio*	Scattered mirror carp	M	100	20M + 26SM + 30ST + 24A	146	176		4.1* FCM	4X, ACN=100	China (Jiangsu)	Z-18, F-5
Cyprinus	*carpio*	Ogon	F	99	12M + 35 SM + 52 ST/A	146			ACN=100	4X, ACN=100	Japan	O-35
Cyprinus	*carpio*	Ogon	M	99	12M + 35 SM + 52 ST/A	146			1B, ACN=100	4X, ACN=100	Japan	O-35
Cyprinus	*carpio*	Kohaku	F, M	99	12M + 35 SM + 52 ST/A	146			1B, ACN=100	4X, ACN=100	Japan	O-35
Cyprinus	*carpio*	Kohaku	M	99	12M + 35 SM + 52 ST/A	146			2B, ACN=100	4X, ACN=100	Japan	O-35

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Cyprinus	*carpio*	Sanshoku	F	99	12M + 35 SM + 52 ST/A	146			1B, ACN=100	4X, ACN=100	Japan	O-35
Cyprinus	*carpio*	Sanshoku	M	99	12M + 35 SM + 52 ST/A	146			2-3 B, ACN=100	4X, ACN=100	Japan	O-35
Cyprinus	*carpio chilia*			100	22M + 30SM + 48 ST/A	152		2	3.3 FD	4X, ACN=100	China (Yunnan)	W-9, Z-3, Z-8
Cyprinus	*carpio chilia*			150	28M + 52SM + 70 ST/A	230				6X, ACN=150	China (Yunnan)	Z-8
Cyprinus	*carpio communis*		M	100	24M + 24SM + 52A	148				4X, ACN=100	India (WB)	K-42
Cyprinus	*carpio haematopterus*		M	100	20M + 30SM + 50 ST/A	150				XY, 4X	China	Z-8
Cyprinus	*carpio haematopterus*		F, M	100	22M + 34SM + 22ST + 22A	156	178			4X, ACN=100	China (Wuhan)	Y-15
Cyprinus	*carpio haematopterus*		F, M	100	28M + 38SM + 22ST + 12A	166	188	2		4X, ACN=100	USSR (Amur R.)	R-14
Cyprinus	*carpio rubrofuscus*			100	22M + 30SM + 48 ST/A	152			3.4 FD	XX/XY, 4X	China	Z-2, Z-8
Cyprinus	*carpio rubrofuscus*			100	26M + 36SM + 38 ST/A	162				4X, ACN=100	China	S-67
Cyprinus	*daliensis*	*yunnanensis daliensis*		100	22M + 30SM + 48 ST/A	152			3.1 FD	XX/XY, 4X	China (Yunnan)	Z-7, Z-8
Cyprinus	*longipectoralis*			100	22M + 30SM + 48 ST/A	152		2	3.7 FD	XX/XY, 4X	China (Yunnan)	W-9, Z-3, Z-8
Cyprinus	*megalophthalmus*			100	22M + 30SM + 48 ST/A	152				XX/XY, 4X	China (Yunnan)	Z-3
Cyprinus	*micristius fuxianensis*			100	22M + 30SM + 48 ST/A	152				XX/XY, 4X	China (Yunnan)	Z-3
Cyprinus	*pellegrini barbatus*			100	22M + 30SM + 48 ST/A	152			3.5 FD	XX/XY, 4X	China (Yunnan)	Z-3, Z-8
Cyprinus	*pellegrini pellegrini*			100	22M + 30SM + 48 ST/A	152				XX/XY, 4X	China (Yunnan)	Z-7, Z-8
Procypris	*rabaudi*		F, M	100	22M + 26SM + 22ST + 30A	148	170			4X, ACN=100	China (Nanchong)	Y-14, Y-15
Gobiobotinae												
Gobiobotia	*abbreviata*		F, M	50	22M + 22SM + 6ST	94	100	2		ACN=50	China (Sichuan)	L-45, Y-15, R-43
Gobiobotia	*boulengeri*		M	50	24M + 14SM + 12 ST/A	88		2		ACN=50	China (Sichuan)	L-38, R-43
Gobiobotia	*boulengeri*		F, M	50	14M + 26SM + 10ST	90	100			ACN=52	China (Sichuan)	L-45, Y-14, Y-15
Gobiobotia	*brevibarba*		M	50	12M + 30 SM/ST + 8A		92			ACN=50	Korea (Han R.)	U-33
Gobiobotia	*ichangensis*			50	32M + 12SM + 6 ST/A	94				ACN=50	China (Sichuan)	L-38
Gobiobotia	*longibarba meridionalis*		F, M	50	22M + 18SM + 10ST	90	100			ACN=50	China (Guangdong)	L-45, Y-15
Microphysogobio	*longidorsalis*		M	50	18M + 32 SM/ST		100			ACN=50	Korea (Han R.)	U-33
Microphysogobio	*longidorsalis*			50	18M + 32SM	100	100			ACN=50	Korea	L-15
Microphysogobio	*yaluensis*		M	50	18M + 32 SM/ST		100			ACN=50	Korea (Geum R.)	U-33
Microphysogobio	*yaluensis*			50	16M + 32SM + 2ST	98	100			ACN=50	Korea	L-15
Gobioninae												
Abbottina	*kiatingensis*		M	50							China (Pearl R.)	C-85
Abbottina	*labeoides*		M	50	24M + 24SM + 2ST	98	100			ACN=52	China (Guangxi, Guangdong)	Y-15
Abbottina	*rivularis*		F	50	24M + 24SM + 2ST	98	100		2.7* FD	ACN=50	China (Hubei)	L-29, Y-15, C-83
Abbottina	*rivularis*		F, M	50	22M + 24SM + 4ST	96	100			ACN=50	China (Amur)	W-14
Abbottina	*rivularis*			50	12M + 32SM + 6ST	94	100			ACN=50	Korea	L-15
Belligobio	*nummifer*		F, M	50	18M + 20SM + 10ST + 2A	88	98			ACN=52	China (Sichuan)	L-43, Y-15
Coreius	*guichenoti*		F, M	50	16M + 22SM + 10ST + 2A	88	98			ACN=50	China (Wuhan)	L-29, Y-15
Coreius	*heterodon*		F, M	50	16M + 22SM + 10ST + 2A	88	98			ACN=50	China (Hubei)	L-29, Y-15
Coreoleuciscus	*splendidus*		F, M	50	12M + 30SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
Coreoleuciscus	*splendidus*		M	50	14M + 30 SM/ST + 6A		94			ACN=50	Korea (Han R.)	U-33

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Coreoleuciscus	*splendidus*		F, M	100	36M + 64 SM/ST		200			4X, ACN=100	Korea (Geum R.)	K-10
Gnathopogon	*caerulescens*			50	12M + 24SM + 14 ST/A	86		4		ACN=50	Japan (Lake Biwa)	T-17
Gnathopogon	*caerulescens*		F, M	50	14M + 36 SM/ST		100	4		ACN=50	Japan (Lake Biwa)	U-40
Gnathopogon	*caerulescens*	*elongatus caerulescens*		50	12M + 26SM + 12 ST?A	88		2		ACN=50	Japan (Kobe, Lake Biwa)	T-4
Gnathopogon	*elongatus*			50	12M + 24SM + 14 ST/A	86		4	2.4* FCM	ACN=50	Japan (Kobe)	T-17, O-48
Gnathopogon	*elongatus*		F, M	50	14M + 36 SM/ST		100	4		ACN=50	Japan (Shiga)	U-40
Gnathopogon	*elongatus elongatus*		F, M	50	12M + 32 SM/ST + 6A		94			ACN=50	Japan (Gifu)	O-18
Gnathopogon	*imberbis*		F, M	50	22M + 24SM + 4ST	96	100			ACN=52	China (Sichuan)	L-43, Y-15
Gnathopogon	*strigatus*		F, M	50	14M + 30SM + 6 ST/A	94				ACN=50	Korea (Ko-san)	L-77
Gobio	*delyamurei*	*tauricus*		50	22M + 22SM + 6 ST/A	94				ACN=50	Ukraine (Crimea)	V-82
Gobio	*gobio*			50	22M + 26 SM/ST + 2A		98		2.8 FD	ACN=50	France	H-2, H-4
Gobio	*gobio*			50	22M + 24SM + 2ST + 2A	96	98		(3.3 FCM)	ACN=50	Rumania (Bucharest)	R-34, C-75
Gobio	*gobio*		F, M	50	38 M/SM + 12 ST/A	88				ACN=50	former Yugoslavia	S-78
Gobio	*gobio*			50	20M + 26SM + 2ST + 2A	96	98			ACN=50	former Yugoslavia	V-83
Gobio	*gobio*			50	24M + 24SM + 2 ST/A	98				ACN=50	Russia (Volga basin)	V-83
Gobio	*kubanicus*			50	20M + 28SM + 2 ST/A	98				ACN=52	Russia (Kuban R.)	V-83
Gobio	*soldatovi*		F, M	50	18M + 26SM + 4ST + 2A	94	98			ACN=50	China (Amur)	W-14
Gobio	*tenuicorpus*		F, M	50	18M + 26SM + 4ST + 2A	94	98			ACN=50	China (Amur)	W-14
Hemibarbus	*barbus*			50	16M + 26 SM + 8 ST/A	92		4	(2.5* FCM)	ACN=50	Japan (Kobe)	T-17, O-48
Hemibarbus	*barbus*		F, M	50	14M + 28 SM/ST + 8A		92			ACN=50	Japan (Lake Biwa)	O-18
Hemibarbus	*labeo*		F, M	50	18M + 22 SM/ST + 10A		90		2.1 FD	ACN=50	Korea (Han R.)	K-4
Hemibarbus	*labeo*		F, M	50	16M + 16SM + 14ST + 4A	82	96		2.1* FD	ACN=50	China (Guangdong)	L-29, Y-15, C-83
Hemibarbus	*labeo*			50							China (Amur)	W-14
Hemibarbus	*longirostris*		F, M	50	18M + 18SM + 10ST + 4A	86	96			ACN=50	China (Guangdong)	L-29, Y-15
Hemibarbus	*longirostris*		M	50	14M + 28SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
Hemibarbus	*longirostris*		F, M	50	14M + 28 SM/ST + 8A		92		2.2 FD	ACN=50	Korea (Han R.)	K-4
Hemibarbus	*longirostris*		F, M	50	16M + 28 SM/ST + 6A		94			ACN=50	Korea (Geum R.)	U-33
Hemibarbus	*maculatus*		F, M	50	16M + 14SM + 16ST + 4A	80	96	2	2.1* FD	ACN=50	China (Wuhan)	L-29, R-43, C-83
Hemibarbus	*maculatus*			50							China (Amur)	W-14
Hemibarbus	*mylodon*	*Gonoproktopterus*		50	12M + 28 SM/ST + 10A		90			ACN=50	Korea (Han R.)	U-33
Huigobio	*chenhsienensis*		F, M	50	24M + 24SM + 2ST	98	100			ACN=50	China (Guangdong)	H-22, Y-15
Paracanthobrama	*guichenoti*		F, M	50	18M + 20SM + 10ST + 2A	88	98	4	2.6 FD	ACN=50	China (Hubei)	L-29, L-41, R-43, Z-25
Paracanthobrama	*umbrifer*		F, M	50	20M + 12SM + 4ST + 14A	82	86			ACN=50	China (Guilin)	Y-15
Paraleucogobio	*strigatus*		F, M	50	14M + 16SM + 20ST	80	100			ACN=52	China (Amur)	W-14
Paraleucogobio	*strigatus*			50	14M + 30SM + 6 ST/A	94				ACN=50	Korea	L-77
Platysmacheilus	*exiguus*		F, M	50	24M + 14SM + 12ST	88	100			ACN=50	China (Guangxi)	Y-15
Pseudogobio	*esocinus*		F, M	50	16M + 28 SM/ST + 6A		94	2	3.1* FCM, 3.3 FD	ACN=50	Japan (Lake Biwa, Kobe)	T-4, O-18, O-48, S-141
Pseudogobio	*esocinus*		F, M	50	16M + 28SM + 6A	94				ACN=52	Korea (Ko-san)	L-77
Pseudogobio	*vaillanti guilinensis*		F, M	50	18M + 18SM + 12ST + 2A	86	98	2		ACN=50	China (Guilin)	L-43, Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pseudogobio	*vaillanti vaillanti*		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Guangdong)	H-22, Y-15
Pseudopungtungia	*nigra*		F, M	50	14M + 36 SM/ST		100			ACN=50	Korea (Kum R.)	K-59
Pseudopungtungia	*tenuicorpus*		M	50	20M + 30 SM/ST		100			ACN=50	Korea (Han R.)	K-59
Pseudorasbora	*parva*			50	16M + 22SM + 12 ST/A	88		4	3.1* FCM	ACN=50	Japan (Kobe)	T-17, O-48
Pseudorasbora	*parva*		F, M	50	14M + 36 SM/ST		100			ACN=50	Japan (Lake Biwa)	O-18
Pseudorasbora	*parva*			50	14M + 36SM	100	100			ACN=50	Korea	L-15
Pseudorasbora	*parva*		F, M	50	18M + 22SM + 10ST	90	100	2	2.6* FD	ACN=50	China (Hubei)	L-29, R-43, C-83
Pseudorasbora	*parva*			50					2.5 FD		China (Hubei)	L-41
Pseudorasbora	*parva*			50	20M + 26SM + 4ST	96	100			ACN=50	China (Kunming)	L-38
Pseudorasbora	*parva*		F, M	50	18M + 22SM + 10 ST/A	90				ACN=50	China (Amur)	W-14
Pseudorasbora	*pumila pumila*			50	26M + 20SM + 4ST	96	100			ACN=50	Japan (Akita)	A-78
Pseudorasbora	*pumila* subsp.		F, M	50	14M + 36 SM/ST		100			ACN=50	Japan	M-49
Pungtungia	*helzi*			50	18M + 18SM + 14 ST/A	86		4	3.0* FCM	ACN=50	Japan (Kobe)	T-17, O-48
Pungtungia	*helzi*		F, M	50	20M + 30 SM/ST		100			ACN=50	Japan (Lake Biwa)	0-18, K-10
Pungtungia	*helzi*		F, M	50	16M + 26SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
Pungtungia	*helzi*			50	16M + 22SM + 6ST + 6A	88	94			ACN=50	Korea	L-15
Rhinogobio	*cylindricus*		F, M	50	14M + 22SM + 12ST + 2A	86	98			ACN=50	China (Wuhan)	H-22, Y-15
Rhinogobio	*typus*		F, M	50	14M + 22SM + 12ST + 2A	86	98			ACN=50	China (Wuhan)	H-22, Y-15
Rhinogobio	*ventralis*		F, M	50	12M + 24SM + 12ST + 2A	86	98			ACN=50	China (Sichuan)	L-43, Y-15
Romanogobio	*banaticus*	*Gobio kessleri banaticus*		50	24M + 20SM + 4ST + 2A	94	98			ACN=50	Rumania (Uliuc village)	R-34
Romanogobio	*kessleri*	*Gobio*		50	30M + 18 SM/ST + 2A		98		3.7 FCM	ACN=50	Czech	J-12, G-85
Romanogobio	*uranoscopus*	*Gobio*		52	24M + 12SM + 12ST + 4A	88	100				Rumania (Buda village)	R-34
Romanogobio	*uranoscopus*	*Gobio*	F, M	50	30M + 18SM + 2ST	98	100			ACN=50	Slovakia	R-22
Romanogobio	*vladykovi*	*Gobio albipinnatus vladykovi*		50	28M + 20SM + 2A	98			3.4 FCM	ACN=50	Rumania (Uliuc village)	R-34, G-85
Rostrogobio	*amurensis*			50	18M + 24SM + 6ST + 2A	92	98			ACN=50	China (Amur)	W-14
Sarcocheilichthys	*biwaensis*			50	12M + 30SM + 8A	92				ACN=52	Japan (Lake Biwa)	K-12
Sarcocheilichthys	*czerskii*		M	50	18M + 32 SM/ST		100			ACN=52	Korea (Geum R.)	U-33
Sarcocheilichthys	*kiangsiensis*		M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Guangdong)	H-22, Y-15
Sarcocheilichthys	*lacustris*		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Amur)	W-14
Sarcocheilichthys	*nigripinnis czerskii*		F, M	50	18M + 22SM + 10ST	90	100			ACN=52	China (Amur)	W-14
Sarcocheilichthys	*nigripinnis morii*		F, M	50	16M + 26SM + 8 ST/A	92				ACN=52	Korea (Ko-san)	L-77
Sarcocheilichthys	*nigripinnis nigripinnis*		F, M	50	18M + 22SM + 10ST	90	100	2	2.6 FD	ACN=52	China (Hubei)	H-22, R-43, R-105, Z-28
Sarcocheilichthys	*nigripinnis nigripinnis*			50					2.5, 2.8* FD		China (Hubei)	L-41, C-83
Sarcocheilichthys	*parvus*		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Guangdong)	H-22, Y-15
Sarcocheilichthys	*sinensis sinensis*		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Wuhan)	H-22, Y-15
Sarcocheilichthys	*variegatus microoculus*	*variegatus*	F, M	50	12M + 30 SM/ST + 8A		92	4	2.8* FCM, 2.4 FD	ACN=52	Japan (Lake Biwa)	T-4, T-12, O-18, O-48
Sarcocheilichthys	*variegatus variegatus*	*variegatus*	M	50	18M + 32 SM/ST		100			ACN=52	Japan (Okayama)	U-33
Saurogobio	*dabryi*		F, M	50	18M + 26SM + 6ST	94	100			ACN=50	China (Wuhan)	H-22, Y-15
Saurogobio	*dumerili*		F, M	50	18M + 26SM + 6ST	94	100			ACN=50	China (Wuhan)	H-22, Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Saurogobio	*gymnocheilus*		F, M	50	18M + 24SM + 8ST	92	100			ACN=50	China (Wuhan)	H-22, Y-15
Squalidus	*argentatus*	*Gnathopogon*	F, M	50	22M + 26SM + 2ST	98	100			ACN=50	China (Wuhan)	K-29, Y-15
Squalidus	*biwae*			50	16M + 34SM	100	100	2		ACN=50	Japan (Yodo R.)	T-17
Squalidus	*chankaensis*	*Gnathopogon*	F, M	50	22M + 24SM + 4ST	96	100			ACN=52	China (Amur)	W-14
Squalidus	*chankaensis biwae*		F, M	50	20M + 30 SM/ST		100	2		ACN=50	Japan (Lake Biwa)	U-40
Squalidus	*chankaensis* subsp.		F, M	50	20M + 30 SM/ST		100	2		ACN=50	Japan (Hyogo, Okayama)	U-40
Squalidus	*gracilis gracilis*	*gracilis*		50	16M + 34SM	100	100			ACN=50	Japan (Lake Biwa)	K-14
Squalidus	*gracilis gracilis*		F, M	50	20M + 30 SM/ST		100	2	(2.5 FD)	ACN=50	Japan (Shiga, Okayama)	U-40, S-141
Squalidus	*gracilis majimae*		F, M	50	14M + 28SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
Squalidus	*japonicus japonicus*		F, M	50	20M + 30 SM/ST		100	2		ACN=50	Japan (Lake Biwa)	U-40
Squalidus	*nitens*	*Gnathopogon sihuensis*	F	50	22M + 24SM + 4ST	96	100			ACN=52	China (Hubei)	L-29, Y-15
Hypophthalmichthyinae												
Aristichthys	*nobilis*			48	26M + 20SM + 2ST	94	96	6		ACN=48	China (Beijing)	L-59, R-43
Aristichthys	*nobilis*		F, M	48	18M + 22SM + 8ST	88	96		1.8* FD	ACN=48	China (Wuhan)	R-105, Y-15, C-83
Aristichthys	*nobilis*			48	14M + 24SM + 10 ST/A	86			(2.3* FCM), 2.1 FD	ACN=48	China	Z-2, Z-8, F-5
Aristichthys	*nobilis*	*Hypophthalmichthys*		48	18M + 20SM + 10ST	86	96				Hungary	B-54
Hypophthalmichthys	*molitrix*			48	24M + 16SM + 8ST	88	96			ACN=48	China (Beijing)	L-60
Hypophthalmichthys	*molitrix*			48	14M + 24SM + 10A	86	86		(2.4* FCM), 2.0 FD	ACN=48	China	Z-2, Z-8, F-5
Hypophthalmichthys	*molitrix*		F, M	48	18M + 22SM + 8ST	88	96		1.8*, 2.0 FD	ACN=48	China (Wuhan)	R-105, L-41, C-83
Hypophthalmichthys	*molitrix*	*moritrix*	F, M	48	18M + 22SM + 8ST	88	96			ACN=48	China (Wuhan)	Z-26
Hypophthalmichthys	*molitrix*		F, M	48	20M + 12SM + 6ST + 10A	80	86				India (WB)	M-27
Labeoninae												
Cirrhinus	*jullieni*			50	26M + 14SM + 4ST + 6A	90	94	2		ACN=50	Thailand (Uthai Thani)	M-12
Cirrhinus	*molitorella*		F	50	20M + 26SM + 2ST + 2A	96	98			ACN=50	China (Guangsi, Guangdong)	Z-16
Cirrhinus	*molitorella*		F, M	50	16M + 24SM + 10ST	90	100	4		ACN=50	China (Guangdong)	G-69, R-43, R-105, Y-15
Cirrhinus	*mrigala*			50	10M + 12SM + 10ST + 18A	72	82	2		ACN=50	Thailand (Ayuthaya)	M-12
Cirrhinus	*mrigala*			50	4M + 18SM + 28ST	72	100			ACN=50	India	L-2
Cirrhinus	*mrigala*	*Cirrhina*	F, M	50	8M + 6SM + 14ST + 22A	64	78			ACN=50	India (Haryana)	R-55
Cirrhinus	*mrigala*			50	12M + 18SM + 6ST + 14A	80	86	2		ACN=50	India (near Lucknow)	N-4
Cirrhinus	*reba*	*Cirrhina*		50	6M + 8SM + 14ST + 22A	64	78			ACN=50	India (Haryana)	R-55
Cirrhinus	*reba*		M	48	18M + 20SM + 6ST + 4A	86	92			ACN=50	India	M-27
Crossocheilus	*latius latius*		F	50	12M + 28SM + 10A	90	90			ACN=50	India (Assam)	K-46, C-108
Crossocheilus	*latius latius*		F	50	8M + 12SM + 12ST + 18A	70	82			ACN=50	India (J & K)	T-52
Crossocheilus	*latius punjabensis*			48	12M + 36A	60					India	L-1
Discogobio	*tetrabarbatus*		F, M	50	10M + 18SM + 12ST + 10A	78	90			ACN=50	China (Guangdong)	G-69, R-43, Y-15
Garra	*cambodgigensis*	*taeniata*		50	8M + 18 SM/ST + 24A		76		2.2 BFA	ACN=50	(Asia)	S-141, H-13
Garra	*dembeensis*			50	14M + 18SM + 18A	82	82			ACN=52	Ethiopia	K-107
Garra	*gotyla gotyla*		F	50	14M + 10SM + 10ST + 16A	74	84			ACN=50	India (Jammu)	K-38
Garra	*gotyla gotyla*		F, M	50	14M + 26SM + 10A	90	90			ACN=50	India (Tamilnadu)	K-42

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Garra	*gotyla gotyla*			50	12M + 8SM + 8ST + 22A	70	78			ACN=50	India (A.P.)	S-171
Garra	*kempi*			50	14M + 14SM + 10ST + 12A	78	88			ACN=50	India (A.P.)	S-171
Garra	*lamta*		F, M	50	12M + 24SM + 2ST + 12A	86	88			ZW/ZZ	India (Bihar)	K-41
Garra	*lamta*		M	50	6M + 18SM + 12ST + 14A	74	86			ACN=50	India (Bihar)	K-32
Garra	*lissorhynchus*			50	16M + 16SM + 6ST + 12A	82	88			ACN=50	India (A.P.)	S-171
Garra	*makiensis*			50	14M + 20SM + 16A	84	84			ACN=52	Ethiopia	K-107
Garra	*mullya*			50	18M + 14SM + 10ST + 8A	82	92	2		ACN=50	India (Kerala)	N-73
Garra	*orientalis*		F, M	50	16M + 12SM + 14ST + 8A	78	92			ACN=50	China (Guangdong)	G-69, R-43, Y-15
Garra	*ornata*			50							W.C. Africa	G-84
Garra	*imberba*	*pingi pingi*		50	18M + 20SM + 12 ST/A	88				ACN=50	China (Yunnan)	Z-5
Garra	*imberba*	*pingi pingi*	F, M	50	14M + 20SM + 12ST + 4A	84	96			ACN=50	China (Sichuan)	L-43, Y-15
Garra	*quadrimaculata*			50	16M + 22SM + 12A	88	88			ACN=52	Ethiopia	K-107
Garra	*rufa obtusa*			44-52							Middle East	D-27
Garra	*rufa rufa*			44-52							Middle East	D-27
Garra	*rufa*			44	22M + 20SM + 2A	86					Turky	S-171
Garra	*surendranathanii*			50	14M + 20SM + 8ST + 8A	84	92			ACN=52	India (W. Ghats)	N-72
Garra	*variabilis*			74						3X	Middle East	D-27
Labeo	*alluaudi*			50							W. Africa	G-84
Labeo	*bata*			50	18M + 12SM + 8ST + 12A	80	88	2		ACN=50	India (Allahabad)	J-10
Labeo	*bata*		F, M	50	6M + 18SM + 16ST + 10A	74	90			ACN=50	India (WB)	M-27
Labeo	*behri*			50	12M + 8SM + 2ST + 28A	70	72			ACN=50	N.E. Thailand	A-84
Labeo	*calbasu*			50	10M + 10SM + 14ST + 16A	70	84	2		ACN=50	India (Allahabad)	J-10
Labeo	*calbasu*		F, M	50	6M + 8SM + 22ST + 14A	64	86			ACN=50	India (WB)	M-27
Labeo	*calbasu*		F, M	50	8M + 22 SM/ST + 20A		80	2		ACN=50	India (Haryana)	R-75, R-101
Labeo	*caeruleus*	*cerulaeus*	F, M	48	12M + 6SM + 6ST + 24A	66	72			ACN=48	India (Haryana)	R-55
Labeo	*coubie*			50							Mali, W. Africa	P-18
Labeo	*dero*		M	50	26M + 12SM + 2ST + 10A	88	90			ACN=50	India (Assam)	K-43
Labeo	*dero*		F, M	48	12M + 16SM + 20 ST/A	76				ACN=50	India (U.P.)	R-73
Labeo	*diplostomus*		F	50	10M + 6SM + 8ST + 26A	66	74			ACN=50	India (Jammu)	K-38
Labeo	*dussumieri*			50	12M + 12SM + 10ST + 16A	74	84	4		ACN=50	India (Kerala)	N-56
Labeo	*gonius*			54	54A	54		2			India	L-1
Labeo	*pangusia*		M	50	6M + 12SM + 16ST + 16A	68	84			ACN=50	India (J & K)	T-52
Labeo	*parvus*			50							WC. Africa	G-84
Labeo	*parvus*	*obscurus*		50							WC. Africa	G-84
Labeo	*rohita*			50	14M + 16SM + 8ST + 12A	80	88	2		ACN=50	Thailand (Ayuthaya)	M-12
Labeo	*rohita*			50	10M + 14SM + 6ST + 20A	74	80	2		ACN=50	India (Allahabad)	J-10
Labeo	*rohita*			50	10M + 20SM + 20A	80	80			ACN=50	India	L-2
Labeo	*rohita*			50	8M + 12SM + 6ST + 24A	70	76			ACN=50	India (Haryana)	R-67
Labeo	*rohita*			50	10M + 14SM + 8ST + 18A	74	82	4		ACN=50	India (near Lucknow)	N-4

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Labeo	*rohita*		F, M	50	10M + 16SM + 12ST + 12A	76	88			ACN=50	China (Guangdong)	G-69, R-43, Y-15
Labeo	*roseopunctatus*			50							Mali, W. Africa	P-18
Labeo	*rouaneti*			50							Guinea	G-84
Labeo	*senegalensis*			50							Mali, W. Africa	P-18
Labiobarbus	*lineatus*			50	20M + 10SM + 20A	80	80			ACN=50	Thailand (Ayuthaya)	M-10
Morulius	*chrysophekadion*	*Labeo*		50	14 M/SM + 18ST + 18A	64	82		2.8 FD, 2.2 FIA, 2.4 BFA	ACN=50	(Asia)	M-91, H-13, H-41
Osteochilichthys	*longidorsalis*			100	24M + 26SM + 22ST + 28A	150	172	2		4X, ACN=100	India (W. Ghats)	N-55
Osteochilus	*hasselti*			50	30M + 14SM + 6ST	94	100			ACN=50	Thailand (Ayuthaya)	M-10
Osteochilus	*vittatus*			50	16M + 30SM + 4ST	96	100			ACN=50	Thailand (Ayuthaya)	M-10
Osteochilus	*waandersi*			50	18M + 24SM + 4ST + 4A	92	96	2		ACN=50	Thailand (Kanchana Buri)	M-12
Parasinilabeo	*assimilis*		F, M	50	16M + 12SM + 18ST + 4A	78	96			ACN=50	China (Guangdong)	G-69, Y-15
Semilabeo	*notabilis*		F, M	50	8M + 10SM + 12ST + 20A	68	80			ACN=50	China (Guangdong)	G-69, Y-15
Semilabeo	*prochilus*		F	50	16M + 18SM + 14ST + 2A	84	98			ACN=52	China (Sichuan)	L-43, Y-15
Semilabeo	*prochilus*		F	50	16M + 20SM + 14ST	86	100	7		ACN=50	China (Yunnan)	W-12
Sinilabeo	*decoratus decoratus*	*decorus decorus*	F, M	50	10M + 18SM + 10ST + 12A	78	88			ACN=50	China (Guangdong)	G-69, Y-15
Sinilabeo	*decoratus tungting*		M	50	12M + 16SM + 10ST + 12A	78	88			ACN=50	China (Hunan)	Z-16
Sinilabeo	*rendahli rendahli*		F, M	50	10M + 14SM + 18ST + 8A	74	92			ACN=52	China (Sichuan)	L-43, Y-15
Leuciscinae												
Eurasian Leuciscinae												
Abramis	*brama*			50	16M + 14SM + 12ST + 8A	80	92		2.7 FCM	ACN=50	Russia	A-118, V-86
Abramis	*brama*		M	52	30 M/SM + 22 ST/A	82				ACN=52	Sweden	N-50
Abramis	*brama*		F, M	50	16M + 18SM + 16A	84	84	2		ACN=50	Poland	J-2
Abramis	*brama*			50	12M + 18 SM/ST + 20A		80		2.5 FD	ACN=50	France	H-2, H-4
Acanthobrama	*marmid*		F, M	50	16M + 26SM + 8 ST/A	92		4		ACN=50	Turkey (Dam Lake)	G-79
Achondrostoma	*arcasii*	*Rutilus*	F, M	50	16M + 30 SM/ST + 4A		96		2.8 FCM	ACN=50	Portugal	C-69, C-75
Achondrostoma	*oligolepis*			50	12M + 32SM + 6 ST/A	94		4		ACN=50	Portugal	P-76
Alburnoides	*bipunctatus*		F, M	50	38 M/SM + 12 ST/A	88				ACN=50	Bosnia-Herzegovina	S-82
Alburnus	*albidus*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Italy	B-36
Alburnus	*arborella*	*albidus arborella*		50	12M + 25SM + 13 ST/A	87				ACN=50	(Europe)	F-30
Alburnus	*alburnus*	*alburnus alborella*	F	50	16M + 10SM + 16ST + 8A	76	92		(2.6 FCM)	ACN=50	Italy	C-34, G-85
Alburnus	*alburnus*			50	16M + 20 SM/ST + 14A		86		2.7 FD	0-2 B	France	H-3, H-4, H-5
Alburnus	*alburnus*		F, M	50	14M + 14SM + 14ST + 8A	78	92		3.1 FCM	0-2 B	Germany	S-164, L-82
Alburnus	*alburnus*		F, M	50	32 M/SM + 18 ST/A	82				ACN=50	Bosnia-Herzegovina	S-82
Alburnus	*filippii*		F, M	50	16M + 16SM + 18A	82				ACN=50	Turkey	G-80
Anaecypris	*hispanica*		F, M	50	10M + 36 SM/ST + 4A		96		2.5 FCM	ACN=50	Portugal	C-69, C-75
Aspius	*aspius*		F, M	50	14M + 28SM + 8 ST/A	92		2	(2.5 FCM)	ACN=50	Danube R., Don R.	R-16, G-85
Aspius	*aspius*		F, M	52	42 M/SM + 10 ST/A	94				ACN=52	Sweden	N-50
Ballerus	*ballerus*	*Abramis*	F, M	50	16M + 20SM + 6ST + 8A	86	92		(2.3 FCM)	ACN=50	Russia	A-118, G-85
Ballerus	*ballerus*	*Abramis*		50	14M + 28 SM/ST + 8A		92			ACN=50	Russia	V-72

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ballerus	*ballerus*	*Abramis*		52		70					Sweden	N-50
Ballerus	*sapa*	*Abramis*	F, M	50	10M + 22SM + 10ST + 8A	82	92		2.2 FCM	ACN=50	Russia	A-118, G-85
Blicca	*bjoerkna*			50	14M + 26 SM/ST + 10A		90		(2.5 FCM)	ACN=50	Europe	V-72, G-85
Blicca	*bjoerkna*			50	12M + 14SM + 12ST + 12A	76	88				(Europe)	S-194
Chalcalburnus	*mossulensis*			48	12M + 20SM + 16A	80					Turkey	G-71
Chalcalburnus	*mossulensis*			50	12M + 16SM + 10ST + 12A	78	88	4		ACN=50	Turkey	Y-23
Chondrostoma	*kneri*			50	30 M/SM + 20 ST/A	80				ACN=50	former Yugoslavia	B-17
Chondrostoma	*nasus*			50	38 M/SM + 12A	88	88		(2.8 FCM)	ACN=50	Bosnia	S-85, G-85
Chondrostoma	*nasus*			50	15M + 15SM + 12ST + 8A	80	92				(Europe)	S-194
Chondrostoma	*phoxinus*			50	36 M/SM + 14 ST/A	86				ACN=50	former Yugoslavia	B-17
Chondrostoma	*soetta*		F, M	50	16M + 14SM + 14ST + 6A	80	94			ACN=50	Italy	C-34
Delminichthys	*adspersus*	*Paraphoxinus*	F, M	50	38 M/SM + 12A	88	88			ACN=50	Croatia, Bosnia	B-19
Delminichthys	*ghetaldii*	*Paraphoxinus pstrossii*	F, M	50	30 M/SM + 20 ST/A	80				ACN=50	former Yugoslavia	S-75, B-19
Elopichthys	*bambusa*		F, M	48	10M + 24SM + 12ST + 2A	82	94	4		ACN=50	China (Hubei)	Z-25, Z-28, L-42, Y-15
Eupallasella	*perenurus*		F, M	50	8M + 32SM + 10 ST/A	90		2		ACN=50	Poland	B-62
Iberochondrostoma	*almacai*			50	14M + 30 SM/ST + 6A		94	2	2.6 FCM	ACN=50	Portugal	M-141
Iberochondrostoma	*lemmingii*	*Chondrostoma*		50	12M + 32 SM/ST+6A		94		2.8 FCM	ACN=50	Iberia	C-69, C-75
Iberochondrostoma	*lusitanicum*	*Chondrostoma*	F, M	50	16M + 28 SM/ST + 6A		94		2.8 FCM	ACN=50	Portugal	C-68, C-75
Iberochondrostoma	*lusitanicum*			50	14M + 30 SM/ST + 6A		94	1-4	2.9 FCM	ACN=50	Portugal	M-141
Iberocypris	*alburnoides*	*Rutilus*	F, M	50	12M + 34 SM/ST + 4A		96		2.4 FCM	ACN=50	Portugal	C-75, C-102
Iberocypris	*alburnoides*	*Rutilus*		75	18M + 51 SM/ST + 6A		144			3X	Portugal	C-102
Iberocypris	*alburnoides*	*Tropidophoxinellus*		50, 75						2X, 3X	Portugal	M-45
Iberocypris	*alburnoides*	*Tropidophoxinellus*	F, M	50						ACN=50	Portugal	A-111
Iberocypris	*alburnoides*	*Tropidophoxinellus*	F, M	75						3X	Portugal	A-111
Iberocypris	*alburnoides*	*Tropidophoxinellus*	F, M	100						4X	Portugal	A-111
Iberocypris	*palaciosi*			50						ACN=50	Spain	E-8
Iberocypris	*palaciosi*			75						3X	Spain	E-8
Iberocypris	*palaciosi*			100						4X	Spain	E-8
Leucaspius	*delineatus*			50	14M + 30 SM/ST + 6A		94	2		ACN=50	Russia	V-72
Leucaspius	*delineatus*		F, M	50	16M + 26SM + 8 ST/A	92				ACN=50	Elbe R.	R-22
Leucaspius	*delineatus*		F, M	50	16M + 26 SM/ST + 8A		92	2		ACN=50	Elbe R., Danube R.	M-54
Leuciscus	*bergi*			50	18M + 22SM + 10A	90				ACN=50	Kyrgyzstan	M-58
Leuciscus	*idus*		F, M	50	32M + 6SM + 10ST + 2A	88	98		2.6 FCM, 3.0 BFA	ACN=50	Bosnia-Herzegovina	S-79, G-85, H-13
Leuciscus	*idus*		F, M	50	10M + 26SM + 6ST + 8A	86	92	2		ACN=50	Poland	B-66
Leuciscus	*leuciscus*		F, M	50	20M + 20SM + 8ST + 2A	90	98			ACN=50	Bosnia-Herzegovina	S-79
Leuciscus	*leuciscus*			50	16M + 22 SM/ST + 12A		88		2.6 FD	ACN=50	France	H-2, H-4
Leuciscus	*leuciscus*		F, M	50	12M + 24SM + 8ST + 6A	86	94	1-4		ACN=50	Poland	B-66
Leuciscus	*leuciscus baicalensis*	*leuciscus kirgisorum*		50	18M + 22SM + 10A	90				ACN=50	Kyrgyzstan	M-58
Leuciscus	*schmidti*			50	16M + 24SM + 10A	90				ACN=50	Kyrgyzstan	M-58

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Leuciscus	*waleckii*		F	50	18M + 20SM + 6ST + 6A	88	94	2		ACN=50	China (Nei Mongol, Gansu)	Z-17, R-42
Luciobrama	*macrocephalus*		M	48	12M + 22SM + 12ST + 2A	82	94			ACN=50	China (Hubei)	Z-28, L-42, Y-15
Ochetobius	*elongatus*		F, M	48	10M + 16SM + 22ST	74	96		1.9* FD	ACN=50	China (Hubei)	Z-28, L-42, C-83
Pachychilon	*macedonicum*		F	50	8M + 34SM + 8 ST/A	92		2		ACN=50	Macedonia	R-25
Pachychilon	*pictum*			50	8M + 22SM + 20A	80				ACN=50	(S.E. Europe)	K-133
Pachychilon	*pictum*			50							former Yugoslavia	B-19
Parachondrostoma	*arrigonis*		F, M	50	14M + 30SM + 6 ST/A	94		2		ACN=50	Spain (Valencia)	K-119
Parachondrostoma	*toxostoma*	*Chondrostoma*	F, M	50	16M + 14SM + 14ST + 6A	80	94			ACN=50	Italy	C-34
Parachondrostoma	*toxostoma*	*Chondrostoma*		50	16M + 24 SM/ST + 10A		90		2.6 FD	ACN=50	France	H-2, H-4
Pelecus	*cultratus*			50	16M + 30 SM/ST + 4A		96			ACN=50	Russia	V-72
Petroleuciscus	*borysthenicus*	*Leuciscus*	M	50	16M + 28 SM/ST + 6A		94			ACN=50	Greece	R-23
Petroleuciscus	*persidis*			50	29M + 18SM + 3ST	97	100			ACN=50	Iran (Fars)	E-7
Phoxinellus	*alepidotus*	*Paraphoxinus*		50	26 M/SM + 24 ST/A	76				ACN=50	Bosnia-Herzegovina	B-16
Phoxinus	*keumkang*	*Moroco keumgang*	F, M	50	12M + 28SM + 10 ST/A	90				ACN=50	Korea (Muju, Togu-ri)	K-55, L-12
Phoxinus	*lagowskii steindachneri*	*Moroco steindachneri*	F, M	50	12M + 28SM + 10 ST/A	90			2.4* FCM	ACN=50	Korea (Gangreung)	K-55, L-12, P-69
Phoxinus	*lagowskii steindachneri*	*Moroco steindachneri*		50	14M + 22SM + 8ST + 6A	86	94			ACN=50	Japan	O-22
Phoxinus	*oxycephalus*	*Moroco*	F, M	50	12M + 28SM + 10 ST/A	90			(2.2 FD)	ACN=50	Korea (Ochon-gun)	K-4, K-5, K-55, L-12
Phoxinus	*oxycephalus*	*Moroco*	M	50	12M + 28SM + 10 ST/A	90			2.5* FCM	ACN=50	Korea (Imjin R.)	L-13, P-69
Phoxinus	*oxycephalus*	*Moroco*	F	50	16M + 26SM + 8 ST/A	92				ACN=50	Korea (Taejong R.)	L-13
Phoxinus	*oxycephalus jouyi*	*Moroco jouyi*	F, M	50	10M + 34 SM/ST + 6A		94			ACN=50	Japan (Kumamoto)	U-33
Phoxinus	*oxycephalus jouyi*	*Moroco jouyi*		50	14M + 26SM + 10A	90		4	3.1* FCM	ACN=50	Japan (Lake Biwa, Kobe)	T-4, O-48
Phoxinus	*oxycephalus jouyi*	*Moroco jouyi*	F, M	50	18M + 24SM + 8 ST/A	92				ACN=50	Japan (Sagami R.)	L-13
Phoxinus	*oxycephalus jouyi*	*Moroco jouyi*	F, M	50	12M + 26SM + 12 ST/A	88				ACN=50	Japan (Ihara R.)	L-13
Phoxinus	*oxycephalus jouyi*	*Moroco jouyi*	F, M	50	12M + 30SM + 8 ST/A	92				ACN=50	Japan (Kanagawa)	L-13
Phoxinus	*phoxinus*		F, M	50	16M + 22SM + 12 ST/A	88				ACN=50	Korea (Chongson-gun)	K-55, L-12
Phoxinus	*phoxinus*		F, M	50	10M + 34 SM/ST + 6A		94			ACN=50	Korea (Han R.)	U-33
Phoxinus	*phoxinus*		F, M	50	8M + 32SM + 10 ST/A	90				ACN=50	Poland	B-62
Phoxinus	*phoxinus*			50	14M + 26 SM/ST + 10A		90		2.3 FD	ACN=50	France	H-2, H-4
Phoxinus	*phoxinus*		F	50	14M + 12SM + 16ST + 8A	76	92			ACN=50	Italy	C-34
Phoxinus	*phoxinus*		F, M	50	32 M/SM + 18 ST/A	82				ACN=50	Bosnia-Herzegovina	B-21
Pseudaspius	*leptocephalus*		F	50	14M + 26SM + 10 ST/A	90				ACN=50	Mongolia	R-20
Pseudochondrostoma	*duriense*	*Chondrostoma*		50					2.7 FCM		Iberia	C-75
Pseudochondrostoma	*duriense*			50	14M + 30SM + 6 ST/A	94		2		ACN=50	Portugal	P-76
Pseudochondrostoma	*polylepis*			50	14M + 30SM + 6 ST/A	94		2		ACN=50	Portugal	P-76
Pseudochondrostoma	*willkommii*	*Chondrostoma*		50					2.7 FCM		Iberia	C-75
Rhynchocypris	*lagowskii*	*Moroco*	F, M	50	12M + 28SM + 10 ST/A	90			2.0 FD	ACN=50	Korea (Mt. Sorak)	K-4, K-5, L-13
Rhynchocypris	*percnurus*	*Eupallasella perenurus*		50	8M + 32SM + 10ST	90	100	4		ACN=50	Poland	B-62
Rutilus	*aula*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Italy	B-36
Rutilus	*aula*	*Leuciscus*		50	15M + 23SM + 12 ST/A	88				ACN=50	(Europe)	F-30

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rutilus	*frisii kutum*			50	32 M/SM + 18 ST/A	82				ACN=50	(Russia)	V-72
Rutilus	*macrolepidotus*		F, M	50	14M + 32 SM/ST + 4A		96		2.8 FCM	ACN=50	Portugal	C-69, C-75
Rutilus	*pigus virgo*		F	50	16M + 24SM + 10 ST/A	90		2		ACN=50	Danube R.	R-15
Rutilus	*prespensis*			50	16M + 26SM + 8 ST/A	92				ACN=50	Greece	B-36
Rutilus	*rubilio*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Italy	B-36
Rutilus	*rubilio*		F, M	50	18M + 10SM + 16ST + 6A	78	94			ACN=50	Italy	C-34
Rutilus	*rutilus*		F, M	50	16M + 28SM + 6 ST/A	94		2	(2.6 FCM)	ACN=50	Danube R., Elbe R.	R-15, V-86
Rutilus	*rutilus*			50	16M + 28SM + 6 ST/A	94				0-1 B	Danube R.	R-13
Rutilus	*rutilus*			50	14M + 18SM/ST + 18A		82		1.9 FD	ACN=50	France	H-3, H-4
Rutilus	*rutilus*			50	26 M/SM + 24 ST/A	76				ACN=50	Sweden	N-50
Rutilus	*rutilus*		F, M	50	16M + 16SM + 10ST + 8A	82	92			ACN=50	Germany (Baltic Sea side)	K-76
Rutilus	*rutilus*		F, M	51	16M + 18SM + 10ST + 7A	85	95				Germany (Baltic Sea side)	K-76
Rutilus	*rutilus*		F, M	52	16M + 16SM + 11ST + 9A	84	95				Germany (Baltic Sea side)	K-76
Rutilus	*rutilus caspicus*			50	14M + 18SM + 12ST + 6A	82	94			ACN=50	(Caspian Sea basin)	V-72
Rutilus	*ylikiensis*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Greece	B-36
Scardinius	*acarnanicus*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Greece	B-36
Scardinius	*erythrophthalmus*			50	16M + 26SM + 8 ST/A	92		2	(2.8 FCM)	ACN=50	Italy	B-36, G-85
Scardinius	*erythrophthalmus*			50	14M + 24SM + 8ST + 4A	88	96			ACN=50	(Europe)	V-72
Scardinius	*erythrophthalmus*	*erythrophtalmus*		48	13M + 35 ST/A	61					(Europe)	F-30
Scardinius	*erythrophthalmus*			48	22 M/SM + 20ST + 6A	70	90			ACN=50	Sweden	N-50
Scardinius	*erythrophthalmus*		F, M	50	20M + 12SM + 12ST + 6A	82	94			ACN=50	Italy	C-34
Scardinius	*erythrophthalmus*			50	14M + 20 SM/ST + 16A		84		2.0 FD	ACN=50	France	H-2, H-4
Scardinius	*erythrophthalmus*		F, M	50	16M + 26 SM/ST + 8A		92	2		ACN=50	Elbe R., Danube R.	M-54
Scardinius	*erythrophthalmus*		F, M	50	30 M/SM + 20 ST/A	80				ACN=50	Bosnia	S-84
Scardinius	*graecus*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Greece	B-36
Scardinius	*scardafa*			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Italy	B-36
Squalius	*albus*	*Leuciscus cephalus albus*		50	28M + 8SM + 14A	86				ACN=50	Bosnia-Herzegovina	S-79
Squalius	*aradensis*	*Leuciscus*		50					2.4 FCM		Portugal	C-75
Squalius	*carolitertii*	*Leuciscus*		50					2.4 FCM		Iberia	C-75
Squalius	*cephalus*	*Leuciscus*		50	18M + 20 SM/ST + 12A		88		2.7 FD	ACN=50	France	H-2, H-4
Squalius	*cephalus*	*Leuciscus*	F, M	50	10M + 22SM + 10ST + 8A	82	92	2		ACN=50	Poland	B-66
Squalius	*cephalus*	*Leuciscus*		50	16M + 26SM + 8 ST/A	92		2		ACN=50	Italy	B-36
Squalius	*cephalus*	*Leuciscus*		50	34 M/SM + 16 ST/A	84				ACN=50	Croatia	A-27, A-28
Squalius	*cephalus cephalus*	*Leuciscus cephalus*	F, M	50	22M + 14SM + 14A	86				ACN=50	Bosnia-Herzegovina	S-79
Squalius	*keadicus*	*Leuciscus*		50	14M + 12SM + 10ST + 14A	76	86			ACN=50	Greece	T-54
Squalius	*pyrenaicus*	*Leuciscus*		50					2.4 FCM		Iberia	C-75
Squalius	*squalus*	*Leuciscus cephalus cabeda*		50	16M + 12SM + 12ST + 10A	78	90			ACN=50	Portugal	C-71
Squalius	*squalus*	*Leuciscus cephalus cabeda*	F, M	50	16M + 12SM + 12ST + 10A	78	90			ACN=50	Italy	C-34
Squalius	*svallize*	*Leuciscus svallize svallize*	F, M	50	20M + 12SM + 16ST + 2A	82	98			ACN=50	Bosnia-Herzegovina	S-79

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Squalius	*tenellus*	*Leuciscus turskyi tenellus*	F, M	50	18M + 16SM + 8ST + 8A	84	92			ACN=50	Bosnia-Herzegovina	S-79
Telestes	*croaticus*	*Paraphoxinus*	F, M	50	36 M/SM + 14A	86				ACN=50	Croatia	B-19
Telestes	*metohiensis*	*Paraphoxinus*	F, M	50	32 M/SM + 18A	82				ACN=50	Bosnia-Herzegovina	B-19
Telestes	*muticellus*	*Leuciscus souffia muticellus*	M	50	20M + 12SM + 8ST + 10A	82	90			ACN=50	Italy	C-34
Telestes	*polylepis*	*Chondrostoma*		50					2.7 FCM		Croatia	C-71, C-75
Telestes	*souffia*	*Leuciscus souffia agassizi*		50	20M + 22SM + 2ST + 6A	92	94			ACN=50	Bosnia-Herzegovina	S-79
Tribolodon	*ezoe*		F, M	50	10M + 20SM + 12ST + 8A	80	92			ACN=50	Japan (Hokkaido)	I-17
Tribolodon	*ezoe*			50	14M + 22SM + 8ST + 6A	86	94			ACN=50	Japan	O-22
Tribolodon	*hakonensis*		F, M	50	10M + 20SM + 12ST + 8A	80	92			ACN=50	Japan (Hokkaido)	I-17
Tribolodon	*hakonensis*			50	14M + 26SM + 10A	90		4	1.8 FD	ACN=50	Japan	T-4, S-141
Tribolodon	*hakonensis*		M	50	14M + 30SM + 6 ST/A	94				ACN=50	Korea (Hadong-gun)	K-55, L-12
Vimba	*elongatus*	*vimba* natio *carinata*	F	50	14M + 20SM + 16 ST/A	84				XX, ACN=50	Poland (Baltic Sea basin)	R-95
Vimba	*elongatus*	*vimba* natio *carinata*	M	50	13M + 20SM + 17 ST/A	83				XY, ACN=50	Poland (Baltic Sea basin)	R-95
Vimba	*vimba*		F, M	52	24-28 M/SM + 28-24 ST/A	76-80				ACN=50	Russia	S-70
Vimba	*vimba vimba*		F	50	14M + 20SM + 16 ST/A	84				XX, ACN=50	Poland (Baltic Sea basin)	R-95
Vimba	*vimba vimba*		M	50	13M + 20SM + 17 ST/A	83				XY, ACN=50	Poland (Baltic Sea basin)	R-95
North American Leuciscinae												
Acrocheilus	*alutaceus*			50				8			USA (OR)	J-6
Campostoma	*anomalum*		F, M	50	12M + 16SM + 18ST + 4A	78	96	6	2.3 FD	ACN=50	USA (TX)	G-28, G-35, G-36, G-48
Couesius	*plumbeus*	*Hybopsis plumbea*		50							Canada (Quebec)	L-16
Chrosomus	*cumberlandensis*	*Phoxinus*	F, M	50	14M + 24SM + 12 ST/A	88				ACN=50	USA (KY)	J-11
Chrosomus	*eos*			50					2.8 FCM		Canada (Quebec)	L-16, G-88
Chrosomus	*erythrogaster*			50	10M + 36SM + 4A	96			2.6 FD	ACN=50	USA (IL)	G-38, G-60
Chrosomus	*neogaeus*	*Phoxinus*	F, M	50	12M + 24SM + 14 ST/A	86			3.1 FCM, 2.8 FIA	ACN=50	USA (MI, WY)	J-11, G-88, H-41
Chrosomus	*oreas*	*Phoxinus*	F, M	50	14M + 24SM + 12 ST/A	88			2.5 FCM	ACN=50	USA (VA)	J-11, G-88
Cyprinella	*callistia*	*Notropis callistius*		50	24 M/SM + 26 ST/A	74			2.1 FD	ACN=50	USA (AL)	D-6, G-87
Cyprinella	*camura*	*Notropis camurus*		50	18M + 28 SM/ST + 4A		96			ACN=50	USA (LA)	G-33
Cyprinella	*camura*	*Notropis camurus*		50	10M + 26SM + 14 ST/A	86		2	2.4 FD	ACN=50	USA (LA)	G-43, G-87
Cyprinella	*formosa*			50	10M + 32SM + 8ST	92		2		ACN=50	USA (NM)	G-39
Cyprinella	*galactura*	*Notropis galacturus*		50	20M + 28SM + 2 ST/A	98		2		ACN=50	USA (AR)	G-43
Cyprinella	*gibbsi*			50	10M + 34SM + 6ST	94	100	2		ACN=50	USA (AL)	G-39
Cyprinella	*lepida*	*Notropis lutrensis lepidus*		50		94		2	2.5 FD		USA (TX)	A-39, A-40, G-87
Cyprinella	*lutrensis*	*Notropis*		50	50 M/SM	100	100	2	2.4 FD	ACN=50	USA (TX)	G-31, G-35, G-48
Cyprinella	*lutrensis*	*Notropis*	F, M	50	10M + 32 SM/ST + 8A		92			ACN=50	USA (TX)	L-50
Cyprinella	*lutrensis*	*Notropis*		50	10M + 34SM + 6A	94	94	2		ACN=50	USA	G-36
Cyprinella	*proserpina*	*Notropis proserpinus*	F, M	50	12M + 24SM + 14 ST/A	86		2	2.9 FD	ACN=50	USA (TX)	A-40, G-43, G-87
Cyprinella	*spiloptera*	*Notropis spilopterus*		50	8M + 38SM + 4 ST/A	96		2		ACN=50	USA (OH)	G-43
Cyprinella	*venusta*	*Notropis*		50	48 M/SM + 2 ST/A	98		2	2.4 FD	ACN=50	USA (TX)	G-31, G-35, G-48
Cyprinella	*venusta*	*Notropis venustus*	F, M	50	2M + 38SM + 10A	90				ACN=50	USA (TX)	C-6

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Cyprinella	*whipplei*	*Notropis*		50	22M + 26SM + 2 ST/A	98		2	2.5 FD	ACN=50	USA (AR)	G-38, G-43
Dionda	*argentosa*			50				2	2.1 FCM	ACN=50	USA (TX)	G-86
Dionda	*diaboli*			50				2	2.0 FCM	ACN=50	USA (TX)	G-86
Dionda	*episcopa*			50				2	2.1 FCM, 2.1 FD	ACN=50	USA (TX, NM)	G-33, G-86
Dionda	*serena*			50				2	2.0 FCM	ACN=50	USA (TX)	G-86
Dionda	sp.			50				2	2.0 FCM	ACN=50	USA (TX)	G-86
Exoglossum	*maxillingua*			48							Canada (Quebec)	L-16
Gila	*bicolor*			50	44 M/SM + 6 ST/A	94				ACN=50	USA (CA)	G-27
Gila	*elegans*			50				4			USA (NM)	J-6
Gila	*nigrescens*			50				4			USA (NM)	J-6
Gila	*orcutti*			50	14M + 24ST + 12A	88		4		ACN=50	USA (CA)	G-61, J-6
Gila	*pandora*			50				4			USA (NM)	J-6
Gila	*purpurea*			50				4			USA (AZ)	J-6
Hemitremia	*flammea*			50		96		2	2.4 FD		USA (AL)	A-39, A-40, G-87
Hesperoleucus	*symmetricus*			50	44 M/SM + 6 ST/A	94				ACN=50	USA (CA)	G-27
Hesperoleucus	*symmetricus*			50	20M + 20SM + 10A	90				ACN=50	USA (CA)	G-61
Hybognathus	*hayi*		F, M	50	10M + 36SM + 4 ST/A	96				ACN=50	USA (TX)	G-28
Hybognathus	*nuchalis*			50							USA (LA)	G-33
Hybognathus	*placitus*			50	6M + 32SM + 12 ST/A	88		2	2.8 FD	ACN=50	USA (TX)	G-36, G-87, A-39
Hybopsis	*amblops*	*Notropis* (*Hybopsis*)		50	16M + 30SM + 4A	96	96			ACN=50	USA (LA)	G-33
Lavinia	*exilicauda*			50	42 M/SM + 8 ST/A	92		4	2.5 FCM	ACN=50	USA (CA)	G-27, G-44, G-45, J-6
Lepidomeda	*albivallis*			50	12M + 32 SM/ST + 6A		94			ACN=50	USA (NV)	U-69
Lepidomeda	*mollispinis*			50	12M + 30 SM/ST + 8A		92			ACN=50	USA (AZ)	U-69
Lepidomeda	*vittata*			50	14M + 32 SM/ST + 4A		96			ACN=50	USA (AZ)	U-69
Luxilus	*albeolus*			50	8M + 32SM + 10 ST/A	90		4		ACN=50	USA (VA)	P-47
Luxilus	*cardinalis*			50	12M + 34SM + 4 ST/A	96		2		ACN=50	USA (AR)	P-47
Luxilus	*cerasinus*			50	8M + 28SM + 14 ST/A	86		2		ACN=50	USA (VA)	P-47
Luxilus	*chrysocephalus*	*Notropis*		50	48 M/SM + 2 ST/A	98		4	2.3 FD	ACN=50	USA (LA)	G-31, G-38
Luxilus	*chrysocephalus chrysocephalus*			50	6M + 40SM + 4 ST/A	96		4		ACN=50	USA (AR)	P-47
Luxilus	*chrysocephalus isolepis*			50	10M + 28SM + 12 ST/A	88		4		ACN=50	USA (AL, LA, MS)	P-47
Luxilus	*chrysocephalus isolepis*			50	10M + 28SM + 12 ST/A	88		2		ACN=50	USA (OK)	P-47
Luxilus	*coccogenis*			50	12M + 30SM + 8 ST/A	92		4		ACN=50	USA (VA)	P-47
Luxilus	*cornutus*	*Notropis*		50	6M + 40SM + 4A	96		4		ACN=50	USA (IL, MI)	G-60, P-47
Luxilus	*pilsbryi*	*Notropis*		50	14M + 34SM + 2 ST/A	98		2	2.5 FD	ACN=50	USA (MS, AR)	G-43, G-38, P-47
Luxilus	*zonatus*			50	6M + 34SM + 10 ST/A	90		2		ACN=50	USA (AR)	P-47
Luxilus	*zonistius*			50	12M + 30SM + 8 ST/A	92		2		ACN=50	USA (AL)	P-47
Lythrurus	*ardens*	*Notropis*	F, M	50	8M + 36SM + 6 ST/A	94		4	2.5 FD	ACN=50	USA (AL)	G-36, G-87, A-39
Lythrurus	*bellus*	*Notropis*		50		92			2.6 FD		USA (AL)	A-39, G-87
Lythrurus	*fumeus*	*Notropis*		50	48 M/SM + 2 ST/A	98				ACN=50	USA (TX)	G-31

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Lythrurus	*roseipinnis*	*Notropis*		50	48 M/SM + 2 ST/A	98				ACN=50	USA (LA)	G-31
Lythrurus	*umbratilis*	*Notropis*		50	50 M/SM	100		4	2.7 FD	ACN=50	USA (TX, OK)	A-40, G-31, G-38
Macrhybopsis	*aestivalis*	*Hybopsis*	F, M	50	6M + 16SM + 22ST + 6A	72	94	4	2.5 FD	ACN=50	USA (AL, TX)	G-28, G-36, G-87
Margariscus	*margarita*	*Semotilus*		50							Canada (Quebec)	L-16
Meda	*fulgida*			50	18M + 24 SM/ST + 8A		92			ACN=50	USA (AR)	U-69
Mylopharodon	*conocephalus*			50	44 M/SM + 6 ST/A	94		4	2.7 FCM	ACN=50	USA (CA)	G-27, G-44, G-45, J-6
Nocomis	*leptocephalus*			50	14M + 28SM + 8A	92	92	4	2.5 FD	ACN=50	USA (LA)	A-40, G-33, G-87
Nocomis	*micropogon*			50							USA (WV)	M-90
Notemigonus	*crysoleucus*		F, M	50	16M + 24 SM/ST + 10A		90			ACN=50	USA (TX)	L-50
Notemigonus	*crysoleucus*			50	12M + 24SM + 8ST + 6A	86	94	2	2.3 FD	ACN=50	USA (CA)	G-27, G-35, G-36, G-38, G-48
Notropis	*amabilis*			50	14M + 34SM + 2 ST/A	98		2	2.5 FD	ACN=50	USA (TX)	A-40, G-33, G-87
Notropis	*atherinoides*			50	16M + 32SM + 2 ST/A	98			2.4 FD	ACN=50	USA (TX)	G-33, G-87
Notropis	*atrocaudalis*			50	10M + 36SM + 4A	96			2.9 FD	ACN=50	USA (TX)	G-33, G-87
Notropis	*baileyi*			50	4M + 28SM + 18ST	82	100	2	2.8 FD	ACN=50	USA (MS)	G-43, G-87
Notropis	*boops*			50	6M + 32SM + 12ST	88	100	2	2.2 FD	ACN=50	USA (OK)	G-38, G-39, C-75
Notropis	*braytoni*		F, M	50	14M + 20 SM + 10ST + 6A	84	94	2	2.6 FD		USA (TX)	G-36, G-87, A-39
Notropis	*buccatus*	*Ericymba buccata*		50					2.3 FD		USA (LA)	G-33, G-87
Notropis	*buchanani*			50	8M + 36SM + 6 ST/A	94		2		ACN=50	USA (TX)	A-41
Notropis	*chrosomus*			50	42 M/SM + 8A	92	92		2.5 FD	ACN=50	USA (AL)	A-39, G-87
Notropis	*dorsalis*			50	10M + 32SM + 8ST	92	100	2		ACN=50	USA (IL)	G-39
Notropis	*jemezanus*			50	42 M/SM + 8A	92	92	2		ACN=50	USA (TX)	A-39, A-40
Notropis	*longirostris*			50	10M + 28SM + 12ST	88	100	2		ACN=50	USA (LA)	G-31, G-36
Notropis	cf *longirostris*			50	8M + 30SM + 4ST + 8A	88	92	2		ACN=50	USA (AL)	G-36, A-39
Notropis	*maculatus*			50	10M + 34SM + 6 ST/A	94		2		ACN=50	USA (LA)	A-41
Notropis	*nubilus*			50	16M + 30SM + 4 ST/A	96		2	2.4 FD	ACN=50	USA (AR)	G-38, G-43
Notropis	*oxyrhynchus*			50	48 M/SM + 2A	98	98	2	2.1 FD	ACN=50	USA (TX)	A-40, G-31, G-87
Notropis	*petersoni*			50	8M + 30SM + 12ST	88	100	4		ACN=50	USA (FL)	G-39
Notropis	*potteri*			50	12M + 34SM + 2ST + 2A	96	98	2	2.4 FD	ACN=50	USA (TX)	G-33, G-36, G-87
Notropis	*sabinae*			50	50 M/SM	100	100	4		ACN=50	USA (TX)	G-31, G-39
Notropis	*shumardi*			50	14M + 34SM + 2 ST/A	98		2	2.7 FD	ACN=50	USA (TX)	G-31, G-36, G-38
Notropis	*stilbius*			50					2.5 FD		USA (AL)	D-6, G-87
Notropis	*stramineus*			50	8M + 34SM + 8 ST/A	92		2	2.5 FD	ACN=50	USA (TX, OK)	A-41, G-38
Notropis	*stramineus*			50	16M + 34SM	100	100			ACN=50	USA (TX)	G-33
Notropis	*texanus*			50	48 M/SM + 2A	98	98	2	(2.7 FD)	ACN=50	USA (TX)	A-40, G-31, G-87
Notropis	*texanus*		F, M	50	2M + 42SM + 6A	94	94			ACN=50	USA (TX)	C-6
Notropis	*volucellus*			50	14M + 28SM + 8 ST/A	92		2	2.5 FD	ACN=50	USA (TX, AL)	A-41, G-87
Notropis	*volucellus*			50	46 M/SM + 4 ST/A	96				ACN=50	USA (TX)	G-31
Opsopoeodus	*emiliae*		F, M	48	2M + 30SM + 16A	80				ACN=50	USA (TX)	C-6
Opsopoeodus	*emiliae*	*Notropis*		50	8M + 20SM + 16ST + 6A	78	94	2	2.1 FD	ACN=50	USA (LA)	G-35, G-36, A-39

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Orthodon	*microlepidotus*			50	44 M/SM + 6 ST/A	94		4		ACN=50	USA (CA)	G-27, J-6
Phenacobius	*mirabilis*			50	18M + 28SM + 4 ST/A	96		6	3.2 FD	ACN=50	USA (TX, IL)	G-28, G-39, G-87
Pimephales	*notatus*			50	46 M/SM + 4 ST/A	96		2	2.2 FD		USA (OK)	A-39, A-40, L-46, G-38
Pimephales	*notatus*			52							Canada (Quebec)	L-16
Pimephales	*promelas*			50	14M + 34SM + 2A	98	98	4	2.2 FD	ACN=50	USA (TX)	G-33, G-38, L-46
Pimephales	*vigilax*		F, M	50	8M + 24SM + 16ST + 2A	82	98	2	2.2 FD	ACN=50	USA (TX)	G-28, G-35, G-36, G-38, G-48
Plagopterus	*argentissimus*			50	18M + 26 SM/ST + 6A		94	4		ACN=50	USA (AZ, NM)	U-69, J-6
Pogonichthys	*macrolepidotus*			50	44 M/SM + 6 ST/A	94				ACN=50	USA (CA)	G-27
Pteronotropis	*hubbsi*			50	22M + 22SM + 6ST	94	100	2		ACN=50	USA (TX)	A-41
Pteronotropis	*signipinnis*			50	22M + 22SM + 6 ST/A	94		4		ACN=50	USA (LA)	A-41
Pteronotropis	*welaka*			50	22M + 22SM + 6 ST/A	94		4		ACN=50	USA (LA)	A-41
Ptychocheilus	*grandis*			50	42 M/SM + 8 ST/A	92		4	2.6 FCM	ACN=50	USA (CA)	G-27, G-44, J-6
Ptychocheilus	*lucius*			50				4	2.5 FCM		USA (NM)	G-44, J-6
Ptychocheilus	*oregonensis*			50				4	2.8 FCM		USA (OR)	G-44, J-6
Ptychocheilus	*umpquae*			50				4	2.5-2.8 FCM		USA (OR)	G-44, J-6
Ptychocheilus	cf. *umpquae*			50				4			USA (OR)	J-6
Rhinichthys	*atratulus*			50	16M + 28SM + 2ST + 4A	94	96		2.6 FD	ACN=50	USA (NY, AL)	H-30, K-73, G-87
Rhinichthys	*cataractae*			50	16M + 28SM + 2ST + 4A	94	96	4		ACN=50	USA (NY, NM)	H-30, J-6
Rhinichthys	*cataractae*			50							USA (WV)	M-90
Rhinichthys	*cobitis*	*cobitus*		50				6			USA (AZ)	J-6
Rhinichthys	*evermanni*			50							N. America	M-61
Rhinichthys	*osculus*			50				6			USA (AZ)	J-6
Rhinichthys	cf. *osculus*			50				6			USA (OR)	J-6
Richardsonius	*balteatus*			50				8	2.5 FCM		USA (OR)	G-45, J-6
Richardsonius	*egregius*			50	36 M/SM + 14 ST/A	86		6	2.7 FCM	ACN=50	USA (CA)	G-27, G-45
Semotilus	*atromaculatus*			50	22M + 24SM + 4A	96		4	2.5 FD	ACN=50	USA (TX, MS, IL)	G-33, G-38, G-39
Semotilus	*atromaculatus*			52							Canada (Quebec)	L-16
Semotilus	*corporalis*			52					2.5 FIA		Canada (Quebec)	L-16, H-41
Rasborinae (= Danioninae)												
Amblypharyngodon	*microlepis*		F, M	50	12M + 14SM + 6ST + 18A	76	82	2		ACN=50	India (WB)	K-136
Amblypharyngodon	*mola*		F	50	12M + 20SM + 8ST + 10A	82	90			ACN=50	India (WB)	M-27
Aspidoparia	*morar*		F	50	8M + 18SM + 14ST + 10A	76	90			ACN=50	India (J & K)	T-52
Aspidoparia	*morar*		F	48	8M + 6SM + 34A	62					India (Bihar)	K-42
Aspidoparia	*morar*		M	48	14M + 28SM + 6A	90	90				India (Assam)	C-108
Barilius	*bakeri*			50	24M + 14SM + 6ST + 6A	88	94	2		ACN=50	India (W. Ghats)	N-73
Barilius	*barila*		F	50	8M + 20SM + 8ST + 14A	78	86			ACN=50	India (Bihar)	K-35
Barilius	*barna*		F	50	8M + 16SM + 12ST + 14A	74	86			ACN=50	India (WB)	K-45
Barilius	*bendelisis*		F, M	50	6M + 6SM + 10 ST + 28A	62	72			ACN=50	India (Bihar)	K-30
Barilius	*bendelisis*		F, M	50	6M + 18SM + 20ST + 6A	74	94			ACN=50	India (Jammu)	S-50

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Barilius	*bendelisis*	*bendelisis* var. *chedra*		50	24M + 4SM + 22A	78	78			ACN=50	India (Assam)	K-41
Barilius	*bendelisis*	*bendelisis* var. *cocksa*		50							India (Tamil Nadu)	K-41
Barilius	*gatensis*			50	18M + 16SM + 10ST + 6A	84	94	2		ACN=50	India (W. Ghats)	N-72
Barilius	*naseeri*			50	24M + 24SM + 2A	98	98			ACN=50	Pakistan (Punjab)	R-31
Barilius	*pakistanicus*			50	12M + 32SM + 6A	94	94			ACN=50	Pakistan (Punjab)	R-31
Barilius	*shacra*		F	52	22M + 24SM + 6A	98	98				India (WB)	K-45
Barilius	*shacra*		M	52	22M + 23SM + 7A	97	97			XY	India (Assam)	K-45
Barilius	*tileo*		M	50	12M + 32SM + 6A	94	94			ACN=50	India (Assam)	K-45
Barilius	*vagra*		M	50	27M + 17SM + 6 ST/A	94				ACN=50	India (U.P.)	R-74
Barilius	*vagra*			50	22M + 22SM + 6A	94	94			ACN=50	Pakistan (Punjab)	R-31
Chela	*cachius*	*Perilampus atpar*	F	70	16M + 6SM + 16ST + 32A	92	108			ACN=72	India (J & K)	T-52
Chela	*caeruleostigmata*	*mouhoti*		48					3.2 BFA		(Asia)	H-13
Chela	*laubuca*			50							India	L-1
Chelaethiops	*bibie*			50							E. Africa	G-84
Danio	*albolineatus*			50	10M + 39SM + 1A	99	99		2.8 FD	ACN=50	(Asia)	F-30, S-141
Danio	*rerio*			50	10M + 39SM + 1A	99	99		(3.4-3.6, 4.6 FCM)	ACN=50	(Asia)	F-30, V-86, G-85
Danio	*rerio*		F, M	50	10M + 16 SM/ST + 24A		76			ACN=50	(India)	R-51
Danio	*rerio*			50	12M + 26SM + 12ST	88	100	4		ACN=50	(Asia)	P-35
Danio	*rerio*	*Brachydanio frankei*		50							S. China	W-32
Devario	*aequipinnatus*	*Danio*		50	14M + 32SM + 4A	96	96				India (Assam)	K-41
Devario	*aequipinnatus*	*Danio*		50	8M + 28SM + 10ST + 4A	86	96			ACN=50	Thailand (Nakhonphanom)	M-166
Devario	*devario*	*Danio*		50	12M + 24SM + 10ST + 4A	86	96			ACN=50	India (Orissa)	K-41
Devario	*devario*	*Danio*		50	10M + 40 ST/A	60				ACN=50	(Asia)	F-30
Devario	*malabaricus*	*Danio*		50	10M + 40ST	60	100		2.8 FIA, 4.4 BFA	ACN=50	(Asia)	F-30, H-13, H-40
Esomus	*danrica*	*danricus*	F, M	50	12M + 16SM + 10ST + 12A	78	88			ACN=50	India (WB)	M-27
Esomus	*danrica*	*danricus*		50	10M + 18SM + 18ST + 4A	78	96			ACN=50	India (Jammu)	S-56
Hemigrammocypris	*rasborella*			48	10M + 38 SM/ST		96		1.8 FD		Japan	S-141
Leptocypris	*niloticus*			50							Africa	G-84
Opsariichthys	*bidens*		F, M	76	4M + 6SM + 4ST + 62A	86	90			ACN=76	China (Guangdong)	L-42
Opsariichthys	*bidens*		F, M	74	6M + 6SM + 4ST + 58A	86	90			ACN=74	China (Sichuan)	L-44
Opsariichthys	*bidens*			76	4M + 72A	80				ACN=76	Korea	L-15
Opsariichthys	*uncirostris amurensis*		F	76	4M + 4SM + 68A	84				ACN=76	Korea (Pongdong)	K-55, L-12
Opsariichthys	*uncirostris bidens*			74	6M + 6SM + 4ST + 58A	86	90			ACN=74	China	Y-14
Opsariichthys	*uncirostris*		F, M	78	4M + 4SM + 70A	86		4	2.3* FCM, 3.3 FD	ACN=78	Japan (Osaka, Kobe)	T-4, O-18, O-48
Raiamas	*bola*	*Barilius*		50	6M + 14SM + 10ST + 20A	70	80			ACN=50	India (Bihar)	K-35
Raiamas	*nigeriensis*			50							W. Africa	G-84
Raiamas	*senegalensis*			50							W. Africa	G-84
Raiamas	*steindachneri*			50	16M + 30SM + 4ST	96	100	2		ACN=50	Guinea	R-26
Rasbora	*argyrotaenia*			50	24M + 22SM + 4 ST/A	96				ACN=50	Thailand	M-166

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rasbora	*aurotaenia*			50	28M + 16SM + 4ST + 2A	94	98			ACN=50	Thailand (Chi Nat)	M-166
Rasbora	*daniconius*		F	50	18M + 6SM + 6ST + 20A	74	80			ACN=50	India (U.P.)	K-30
Rasbora	*rasbora*	*buchanani*	F	50	30M + 18SM + 2ST	98	100			ACN=50	India (WB)	M-27
Rasbora	*sumatrana*			50	22M + 18SM + 6ST + 4A	90	96			ACN=50	Thailand (Khanchanaburi)	M-166
Rasbora	*trilineata*			50	24M + 14SM + 12 ST/A	88				ACN=50	Thailand (Chi Nat)	M-166
Salmostoma	*bacaila*	*Chela*	F, M	50	10M + 12SM + 10ST + 18A	72	82			ACN=50	India (WB)	M-27
Securicula	*gora*			50	20M + 8SM + 22A	78				ACN=50	India	L-1
Tanichthys	*albonubes albonubes*	White cloud mountain type	F, M	50	24M + 14SM + 12 ST/A	88				ACN=50	China	A-81
Tanichthys	*albonubes* subsp.	Hong Kong type	F, M	50	22M + 22SM + 6 ST/A	94				ACN=50	China	A-81
Trigonostigma	*espei*	*Rasbora*		50	14M + 6SM + 30A	70	70			ACN=50	Thailand (Narativat)	M-166
Zacco	*platypus*		F, M	48	18M + 22 SM/ST + 8A		88	4	2.2* FCM, 2.2 FD	ACN=48	Japan (Osaka, Kobe)	T-4, O-18, O-48
Zacco	*platypus*		F, M	48	18M + 22SM + 8A	88	88			ACN=48	Korea (Yesan Pongdeng)	K-55, L-12
Zacco	*platypus*		F, M	78	4M + 4SM + 4ST + 66A	86	90			ACN=78	China (Guangdong)	L-42, C-85
Zacco	*sieboldi*	*Zacco* sp. type A	F, M	48	22M + 20SM + 6 ST/A	90				ACN=48	Japan (Yamaguchi)	N-54
Zacco	*temmincki*	*Zacco* sp. type B	F, M	48	18M + 18SM + 12 ST/A	84				ACN=48	Japan (Yamaguchi)	N-54
Zacco	*temminckii*			48	12M + 22SM + 14A	82	82	8	2.3* FCM		Japan	T-4, O-48
Zacco	*temminckii*		F, M	48	18M + 22 SM/ST + 8A		88		2.9 FD		Japan (Osaka)	O-18
Zacco	*temminckii*		F, M	48	18M + 22SM + 8A	88	88			ACN=48	Korea (Yemgye-gun)	K-55, L-12
Schizothoracinae												
Chuanchia	*labiosa*	*labioza*	F, M	92	32M + 26SM + 18ST + 16A	150	168			4X	China (Heihe R.)	Y-16
Diptychus	*maculatus*	*gymnogaster microcephalus*	F, M	100	70 M/SM + 30 ST/A	170				4X, ACN=100	Kirghiz Tan	M-60
Diptychus	*maculatus*	*gymnogaster oschanini*		100	80 M/SM + 20 ST/A	180				4X, ACN=100	Kirghiz Tan	M-60
Diptychus	*micromaculatus*		F, M	98	62 M/SM + 36 ST/A	160				4X	Kirghiz Tan	M-60
Diptychus	*sewerzowi*		F, M	98	80 M/SM + 18 ST/A	178				4X, ACN=98	Kirghiz Tan	M-60
Diptychus	sp.		F, M	98	28M + 32SM + 38 ST/A	158			4.9 FD	4X	China (Yunnan)	Z-6, Z-8
Gymnocypris	*eckloni*		F, M	94	26M + 28SM + 22ST + 18A	148	170	4		4X, ACN=100	China (Heihe R.)	Y-16, R-42
Gymnodiptychus	*dybowskii*	*Diptychus*		98	54 M/SM + 4-6 ST + 40-38 A	152	156-158			4X	Kirghiz Tan	M-60
Gymnodiptychus	*dybowskii lansdelli*	*Diptychus*	F, M	98	54 M/SM + 4ST + 40A	152	156			4X	Kirghiz Tan	M-60
Gymnodiptychus	*pachycheilus*			90-98						4X	(China)	C-74
Oxygymnocypris	*stewarti*		F, M	92	26M + 30SM + 22ST + 14A	148	170			ACN=98	China (Central Asia)	Y-16
Platypharodon	*extremus*		F, M	90	24M + 30SM + 20ST + 16A	144	164		2.7* FD	4X	China (Heihe R.)	Y-16, C-83
Ptychobarbus	*dipogon*	*Diptychus*	F, M	417-470					17.2* FD	18X	China (Tibet)	Y-17, C-83
Schizocypris	*oconnori*	*Schizothorax*	F, M	92	30M + 26SM + 20ST + 16A	148	168		2.7* FD	ACN=96	China (Central Asia)	Y-16, C-83
Schizopyge	*curvifrons*	*Schizothorax intermedius*		98-100						4X	(C. Asia)	C-74
Schizopygopsis	*pylzovi*		F, M	92	32M + 26SM + 20ST + 14A	150	170			4X, ACN=98	China (Heihe R.)	Y-16
Schizopygopsis	*younghusbandi younghusbandi*		F, M	90	26M + 28SM + 20ST + 16A	144	164			4X, ACN=98	China (Central Asia)	Y-16
Schizothoraichthys	*kumaonensis*	*Schizothorax*	F M	98	24M + 6SM + 68 ST/A	128				4X	India (U.P.)	R-74
Schizothoraichthys	*niger*	*Schizothorax*	F, M	98	22M + 26SM + 8ST + 42A	146	154			4X	India (Kashmir)	K-37
Schizothoraichthys	*progastus*		F, M	98	16M + 20SM + 12ST + 50A	134	146			4X	India (Haryana)	R-62

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Schizothoraichthys	*richardsonii*	*Schizothorax*		98	24M + 28SM + 24ST + 22A	150	174	2		4X, ACN=100	India (Beas R.)	B-5
Schizothoraichthys	*richardsonii*	*Schizothorax*		98	24M + 28SM + 24ST + 22A	150	174	4		4X, ACN=100	India (Kosi R.)	B-5
Schizothoraichthys	*richardsonii*	*Schizothorax*		98	66M + 16SM + 6ST + 10A	180	186			4X	India (Jammu)	B-5
Schizothorax	*argentatus*			98-150						4X, 6X	(Asia)	D-27
Schizothorax	*davidi*		F, M	98	20M + 34SM + 24ST + 20A	152	176			4X, ACN=104	China (Sichuan)	L-45, Y-14
Schizothorax	*grahami*		F, M	148	52M + 30SM + 66 ST/A	230			6.5 FD	6X	China (Yunnan)	Z-6, Z-7, Z-8
Schizothorax	*lissolabiatus*			148	38M + 32SM + 78 ST/A	218				6X	China (Yunnan)	Z-8
Schizothorax	*macropogon*			90-98						4X	(C. Asia)	C-74
Schizothorax	*prenanti*		F, M	148	28M + 40SM + 36ST + 44A	216	252			6X, ACN=156	China (Sichuan)	L-45, Y-14
Schizothorax	*pseudoaksaiensis issykkuli*			98-100						4X	Kazakhstan	C-74
Schizothorax	*taliensis*	*daliensis*	M	148	48M + 30SM + 70 ST/A	226			6.9 FD	6X	China (Yunnan)	Z-6, Z-7, Z-8
Schizothorax	*taliensis*	*yunnanensis daliensis*		148	48M + 28SM + 72 ST/A	224				6X	China (Yunnan)	Z-8
Schizothorax	*waltoni*		F, M	92	26M + 28SM + 22ST + 16A	146	168			4X	China (Central Asia)	Y-16
Schizothorax	sp. 1			148	50M + 28SM + 70 ST/A	226			7.0 FD	6X	China (Yunnan)	Z-6, Z-7, Z-8
Schizothorax	sp. 2			148	48M + 30SM + 70 ST/A	226				6X	China (Yunnan)	Z-8
Squaliobarbinae												
Ctenopharyngodon	*idellus*			48	16M + 20SM + 12ST	84	96		(2.4* FCM)	ACN=50	China (Beijing)	Y-11, F-5
Ctenopharyngodon	*idellus*			48	20M + 20SM + 8ST	88	96				China (Hunan)	L-63
Ctenopharyngodon	*idellus*		F, M	48	18M + 24SM + 6ST	90	96	6	2.1 FD	ACN=50	China (Hubei)	L-42, G-70, R-42, R-105
Ctenopharyngodon	*idellus*			48	18M + 22SM + 8 ST/A	88			2.0 FD	ACN=50	China (Yunnan)	Z-1, Z-8
Ctenopharyngodon	*idellus*			48	16M + 32SM	96	96		(2.0 FCM)		China (Beijing)	L-58, T-74
Ctenopharyngodon	*idellus*			48	18M + 20SM + 10ST	86	96	4	(1.9* FD)	ACN=50	China (Shashi)	Z-22, C-83
Ctenopharyngodon	*idellus*			48	14M + 24SM + 10 ST/A	86					Japan	O-16
Ctenopharyngodon	*idellus*		F, M	48	16M + 20 SM/ST + 12A		84		2.1 FD		Japan (Osaka)	O-18
Ctenopharyngodon	*idellus*		F, M	48	14M + 20SM + 8ST + 6A	82	90				India (WB)	M-27
Ctenopharyngodon	*idellus*			48	32 M/SM + 16 ST/A	80					former Yugoslavia	A-28
Ctenopharyngodon	*idellus*			48	28M + 20SM	96	96				Hungary	B-54
Mylopharyngodon	*piceus*			48	24M + 20SM + 4ST	92	96	4	(2.4* FCM)	ACN=50	China (Shashi)	Z-22, F-5
Mylopharyngodon	*piceus*			48	14M + 34 SM/ST		96			ACN=50	China (Shashi)	Z-27
Mylopharyngodon	*piceus*			48	16M + 28SM + 4ST	92	96				China (Shanghai)	L-68
Mylopharyngodon	*piceus*		M	48	18M + 24SM + 6ST	90	96		(1.9* FD)	ACN=50	China (Wuhan)	G-70, C-83
Squaliobarbus	*curriculus*		F, M	48	14M + 30SM + 4ST	92	96			ACN=50	China (Wuhan)	L-42, Y-15
Tincinae												
Tinca	*tinca*			48	14M + 12SM + 22ST	74	96				Bulgaria	P-37
Tinca	*tinca*			48	30 M/SM + 18 ST/A	78					Croatia	A-28
Tinca	*tinca*		F, M	48	36 M/SM + 12 ST/A	84				ACN=50	Bosnia-Herzegovina	B-23
Tinca	*tinca*			48	6M + 28SM + 14 ST/A	82			2.3 FCM		(Europe)	C-75, F-30
Tinca	*tinca*		M	48	8M + 12SM + 10ST + 18A	68	78			ACN=50	Italy	C-34
Tinca	*tinca*			48	20 M/SM + 16ST + 12A	68	84			ACN=50	Sweden	N-50

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Tinca	*tinca*		F, M	48	16M + 26 SM/ST + 6A		90	2			Elbe R., Danube R.	M-54
Tinca	*tinca*			48	18M + 18SM + 6ST + 6A	84	90				Hungary	B-54
Tinca	*tinca*			48	14M + 24 SM/ST + 10A		86		2.1 FD	ACN=50	France	H-2, H-4
Xenocyprinae												
Distoechodon	*tumirostris*		F, M	48	18M + 26SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
Plagiognathops	*microlepis*		F, M	48	18M + 26SM + 4ST	92	96	4	1.8* FD	ACN=50	China (Hubei)	L-28, Z-25, C-83
Pseudobrama	*simoni*	*Acanthobrama*	F, M	48	18M + 26SM + 4ST	92	96			ACN=50	China (Hubei)	L-28, Y-15
Xenocypris	*argentea*		F, M	48	20M + 26SM + 2ST	94	96	4		ACN=50	China (Hubei)	L-28, Y-15, Z-25
Xenocypris	*davidi*		F, M	48	18M + 26SM + 4ST	92	96	4	2.5* FD	ACN=50	China (Hubei)	L-28, Z-25, C-83
Xenocypris	*fangi*		F, M	48	16M + 28SM + 4ST	92	96	4		ACN=50	China (Sichuan)	Z-25, Y-15
Xenocypris	*sechuanensis*		F, M	48	18M + 26SM + 4ST	92	96	4		ACN=50	China (Sichuan)	Z-25, Y-15
Psilorhynchidae												
Psilorhynchus	*balitora*	*Psylorhynchus bolitora*		50	24M + 16SM + 10A	90				ACN=50	India (Assam)	K-41
Psilorhynchus	*sucatio*		M	50	22M + 18SM + 10A	90				ACN=50	India (Assam)	K-43
Superfamily Cobitoidea												
Gyrinocheilidae												
Gyrinocheilus	*aymonieri*			48	4M + 4SM + 4ST + 36A	56	60	2	1.2* FCM, 1.0 FD, 1.3 FIA	ACN=50	S.E. Asia	A-82, O-48, H-41
Catostomidae												
Carpiodes	*carpio*			96-100						4X	USA (KS)	U-66
Carpiodes	*cyprinus*			100					4.5 FCM	4X, ACN=100	USA	F-23
Catostomus	*catostomus*			98	8M + 6SM + 84 ST/A	112			4.2 FIA	4X	Canada (Ont.)	B-11, H-41
Catostomus	*clarki*			96-100						4X	USA (AZ)	U-66
Catostomus	*commersoni*			98	12M + 14SM + 72 ST/A	124			(5.5 FCM)	4X	Canada (Ont.)	B-11, F-23
Catostomus	*commersoni*			96-98					(5.1 FIA)	4X	USA (MI)	U-66, H-41
Catostomus	*commersoni*		F, M	100	24 M/SM + 76 ST/A	124				4X, ACN=100	USA (ME)	B-64
Catostomus	*discobolus*			96-100						4X	USA (CO)	U-66
Catostomus	*latipinnis*			96-100						4X	USA (UT)	U-66
Cycleptus	*elongatus*			96-100						4X	USA (MO)	U-66
Erimyzon	*sucetta*			96-100						4X	USA (MI)	U-66
Hypentelium	*nigricans*			96-100						4X	USA (MI)	U-66
Ictiobus	sp.			96-100						4X	USA (MO)	U-66
Minytrema	*melanops*			<96						4X	USA (MI)	U-66
Moxostoma	*duquesnei*			96-100						4X	USA (MI)	U-66
Moxostoma	*erythrurum*			96-100					4.3 FCM	4X	USA (MI)	U-66, F-23
Moxostoma	*macrolepidotum*			96-100						4X	USA (MI)	U-66
Myxocyprinus	*asiaticus*		F, M	100	18 M/SM + 82 ST/A	118				4X, ACN=100	China (Sichuan)	L-37

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Myxocyprinus	*asiaticus*			100	6M + 8SM + 86 ST/A	114				4X, ACN=100	(China)	U-37
Myxocyprinus	*asiaticus*			100	4M + 14 SM/ST + 82A		118		4.0 FD	4X, ACN=100	(China)	S-138
Cobitidae												
Botiinae												
Botia	*almorhae*			100						4X, ACN=100	(Asia)	S-157
Botia	*birdi*		M	98	14M + 18SM + 4ST + 62A	130	134			4X	India (Kashmir)	K-37
Botia	*dario*			98	32M + 6SM + 60A	136	136			4X	India (Assam)	K-41
Botia	*dario*			90	12M + 2SM + 76A	104				4X	India (Assam)	R-65
Botia	*dayi*		F, M	98						4X	India (U.P.)	R-74
Botia	*histrionica*			100						4X	(Asia)	S-157
Botia	*lohachata*			100	28M + 26 SM/ST + 46A		154		1.9 FD	4X, ACN=100	(Asia)	S-144
Botia	*lohachata*		F, M	98	16M + 20SM + 62 ST/A	134				4X	India (U.P.)	R-74
Botia	*rostrata*			98	22M + 8SM + 2ST + 66A	128	130			4X	India (WB)	K-46
Botia	*striata*			100	20M + 26 SM/ST + 54A		146			4X, ACN=100	(Asia)	S-144
Chromobotia	*macracantha*	*Botia*		100	16M + 20 SM/ST + 64A		136		1.9 FD	4X, ACN=100	(Sumatra, Borneo)	S-144
Chromobotia	*macracantha*	*Botia*		98	28 M/SM + 70A	126			1.9 FD	4X	(Asia)	M-91
Sinibotia	*pulchra*	*Botia*		100	12M + 40 SM/ST + 48A		152			4X, ACN=100	(Asia)	S-144
Sinibotia	*pulchra*	*Botia*	F	100	10M + 12SM + 14ST + 64A	122	136			4X, ACN=100	China (Guilin)	Y-15
Syncrossus	*berdmorei*	*Botia*		100	8M + 14 SM/ST + 78A		122		2.0 FD	4X, ACN=100	(Myanmar)	S-144
Syncrossus	*helodes*	*Botia*		100	8M + 12 SM/ST + 80A		120		1.7 FD	4X, ACN=100	(Cambodia)	S-144
Syncrossus	*hymenophysa*	*Botia*		100	8M + 12 SM/ST + 80A		120			4X, ACN=100	(Asia)	S-144
Syncrossus	*hymenophysa*	*Botia*	F	90	4M + 86A	94				4X	India (Manipur)	R-65
Syncrossus	*reversa*			100						4X	(Indonesia)	S-157
Yasuhikotakia	*eos*			100						4X	(Laos)	S-157
Yasuhikotakia	*lecontei*	*Botia*		100	10M + 20 SM/ST + 70A		130			4X, ACN=100	(Thailand)	S-144
Yasuhikotakia	*modesta*	*Botia*		100	14M + 14 SM/ST + 72A		128		1.6* FCM, 1.2 FD	4X, ACN=100	(Thailand)	S-144, O-48
Yasuhikotakia	*morleti*	*Botia*		100	14M + 12 SM/ST + 74A		126		1.5 FD	4X, ACN=100	(Cambodia, Thailand)	S-144
Yasuhikotakia	*nigrolineata*			100						4X	(China, Yunnan)	S-157
Yasuhikotakia	*sidthimunki*	*Botia*		100	12M + 12 SM/ST + 76A		124			4X, ACN=100	(Thailand)	S-144
Leptobotiinae												
Leptobotia	*curta*			50	8M + 10SM + 32 ST/A	68		2	1.1 FD	ACN=50	Japan (Okayama)	S-17, S-144
Leptobotia	*elongata*		F, M	50	6M + 12SM + 18ST + 14A	68	86			ACN=50	China (Leshan)	Y-15
Leptobotia	*guilinensis*		F, M	50	6M + 8SM + 8ST + 28A	64	72			ACN=50	China (Guilin)	Y-15
Leptobotia	*pellegrini*		F, M	50	8M + 8SM + 12ST + 22A	66	78			ACN=50	China (Guilin)	Y-15
Leptobotia	*pellegrini*			50	6M + 22 SM/ST + 22A		78			ACN=50	(China)	S-144
Leptobotia	*taeniops*		F	50	6M + 10SM + 12ST + 22A	66	78			ACN=50	China (Nanchong)	Y-15
Leptobotia	*zebra*		F, M	50	6M + 10SM + 10ST + 24A	66	76			ACN=50	China (Guilin)	Y-15
Parabotia	*banarescui*			50	6M + 14 SM/ST + 30A		72		1.1 FD	2B, ACN=50	(China)	S-137

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Parabotia	*fasciata*		F, M	50	10M + 8SM + 14ST + 18A	68	82			ACN=50	China (Guangdong)	Y-15
Parabotia	*kwangsiensis*	*Botia*	F, M	50	10M + 6SM + 4ST + 30A	66	70			ACN=50	China (Guilin)	Y-15
Parabotia	*lijiangensis*		F, M	50	8M + 8SM + 10ST + 24A	66	76			ACN=50	China (Guilin)	Y-15
Parabotia	*maculosa*		F, M	50	8M + 8SM + 14ST + 20A	66	80			ACN=50	China (Guilin)	Y-15
Cobitinae												
Acanthopsis	*choiriorhynchos*			50	16M + 30 SM/ST + 4A		96			ACN=50	(Asia)	S-137
Acanthopsis	sp. 2			50	22M + 18SM + 4ST + 6A	90	94			ACN=50	Thailand	D-28
Canthophrys	*gongota*	*Somileptes*		50	8M + 4SM + 2ST + 36A	62	64			ACN=50	India (WB)	K-46
Cobitis	*biwae*		F, M	48	18M + 30SM	96	96			2X	Japan	K-61, K-91
Cobitis	*biwae*			48	20M + 24SM + 4A	92	92			2X	Japan (Tochigi)	U-30
Cobitis	*biwae*			46	20M + 22SM + 4A	88	88			2X	Japan (Toyama)	U-30
Cobitis	*biwae*		F, M	48	42 M/SM + 6 ST/A	90				2X	Japan (Shiga)	T-1
Cobitis	*biwae*			48	18M + 26 SM/ST + 4A		92		4.3 FD	2X	Japan (Okayama)	S-137
Cobitis	*biwae*			48	20M + 22 SM/ST + 6A		90			2X	Japan (Shiga)	U-27, U-29
Cobitis	*biwae*			48	16M + 24 SM/ST + 8A		88			2X	Japan (Kochi)	U-29
Cobitis	*biwae*			48	16M + 22 SM/ST + 10A		86	2		2X	Japan (Shimane)	U-29
Cobitis	*biwae*			96	32M + 54 SM/ST + 10A		182		(6.7* FCM)	4X	W. Japan	U-27, U-29, O-48
Cobitis	*biwae*		F, M	96	36M + 52SM + 8ST	184	192			4X	W. Japan	K-61, K-91
Cobitis	*biwae*		F, M	96	58 M/SM + 38 ST/A	154				4X	Japan (Hyogo)	H-16, O-14
Cobitis	*biwae*			96	34M + 50 SM/ST + 12A		180		7.2 FD	4X	Japan (Okayama)	S-137
Cobitis	*calderoni*		F, M	50	6M + 14SM + 30A	70				ACN=50	Portugal, Spain	M-4
Cobitis	*calderoni*			50	6M + 12SM + 32 ST/A	68				ACN=50	Portugal	V-25
Cobitis	*hankugensis*	*taenia taenia*		48	14M + 4SM + 30 ST/A	66				2X	Korea	K-56
Cobitis	*hankugensis*	*sinensis*		48	14M + 4SM + 30 ST/A	66			(2.8 FCM)	2X	Korea (Nagdong R.)	K-116, V-102
Cobitis	*koreensis pumilus*			50	10M + 12SM + 28A	72				ACN=50	Korea	K-56
Cobitis	cf. *laosensis*			48	14M + 4SM + 30 ST/A	66				2X	Korea	K-129
Cobitis	*lutheri*	*taenia lutheri*		50	10M + 6SM + 34 ST/A	66				ACN=50	Korea (Yongjin)	K-56
Cobitis	*lutheri*	*taenia lutheri*		49	11M + 6SM + 32A	66				2X	Korea (Tamjin R.)	K-129
Cobitis	*lutheri*	*taenia lutheri*		51	9M + 6SM + 36A	66				2X	Korea (Tamjin R.)	K-129
Cobitis	*lutheri*	*taenia lutheri*		50	12M + 4SM + 34A	66				2X, ACN=50	Korea (Han R.)	U-35
Cobitis	*lutheri*			50	12M + 8SM + 30 ST/A	70			3.5, 3.9 FCM	2X, ACN=50	Russia (Amur basin)	V-86, V-98, V-102
Cobitis	*maroccana*		F, M	50	6M + 12SM + 32A	68	68	2		ACN=50	Portugal, Spain	M-4, V-73
Cobitis	*melanoleuca*			50	8M + 16SM + 26 ST/A	74				2X, ACN=50	Mongolia	V-98
Cobitis	*melanoleuca*			50	6M + 16SM + 28 ST/A	72			(3.1 FCM)	2X, ACN=50	Russia (Amur basin)	V-86, V-98
Cobitis	*melanoleuca gladkovi*	*granoei*		50	8M + 18SM + 24 ST/A	76				2X, ACN=50	Russia	V-24, V-98
Cobitis	*melanoleuca gladkovi*			50	8M + 18SM + 24 ST/A	76				2X, ACN=50	Russia (Don basin)	V-98
Cobitis	*pacifica*	*taenia granoei*		50	24 M/SM + 26 ST/A	74				2X, ACN=50	Korea	K-128
Cobitis	*pacifica*	*granoei*		50	6M + 24SM + 20ST	80	100			2X, ACN=50	Korea	L-15
Cobitis	*sinensis*		F	40	20M + 8SM + 4ST + 8A	68	72			2X	China (Guilin)	Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Cobitis	*sinensis*		F	90	26M + 18SM + 16ST + 30A	134	150			4X	China (Guilin)	Y-15
Cobitis	*taenia*		F, M	48	12M + 18SM + 18 ST/A	78		2		2X	Poland	B-48, B-52
Cobitis	*taenia*		F	74	21M + 30SM + 23 ST/A	125				3X	Poland	B-48, B-52
Cobitis	*taenia*			50	8M + 16SM + 6ST + 20A	74	80			2X, ACN=50	Russia (Volga R.)	V-15
Cobitis	*taenia*			48	12M + 12SM + 10ST + 14A	72	82			2X	Russia (Volga R.)	V-15
Cobitis	*taenia*									3X, 4X, 5X	Russia (Volga R.)	V-15
Cobitis	*taenia*			48	10M + 18SM + 20 ST/A	76			(3.5 FCM)	ACN=50	Russia	V-24, V-102
Cobitis	*taenia*		F, M	50	12M + 6SM + 16ST + 16A	68	84			2X, ACN=50	Italy	C-34
Cobitis	sp.			49	9M + 24SM + 16 ST/A	82				2X	Russia (Dnepr R.)	V-19
Cobitis	sp.			50	8M + 24SM + 18 ST/A	82				2X, ACN=50	Russia (Dnepr R.)	V-19
Cobitis	sp.			74	23M + 25SM + 26 ST/A	122			6.0 FCM	3X	Russia (Dnepr R.)	V-19, V-102
Cobitis	sp.			98					7.6 FCM	4X	Russia	V-102
Cobitis	*taenia satunini*			50						2X	(Asia)	V-72
Cobitis	*taenia striata*	small race	F	50	16 M/SM + 34 ST/A	66				$X_1X_1X_2X_2$	Japan (Okayama)	S-3, S-4
Cobitis	*taenia striata*	small race	M	49	17 M/SM + 32 ST/A	66				X_1X_2Y, ACN=50	Japan (Okayama)	S-3, S-4
Cobitis	*taenia striata*	middle race	F, M	50	16 M/SM + 34A	66				2X, ACN=50	Japan (Okayama)	S-3
Cobitis	*taenia striata*	large race	F, M	98	42 M/SM + 56A	140				4X	Japan (Lake Biwa)	S-3
Cobitis	*taenia striata*		F	50	16 M/SM + 34 ST/A	66				2X, ACN=50	Japan (Yodo R.)	T-1
Cobitis	*taenia striata*			50	12M + 4SM + 34A	66	66		(3.9* FCM)	2X, ACN=50	W. Japan	U-27, U-29, O-48
Cobitis	*taenia striata*			98	20M + 22 SM/ST + 56A		140			4X	Japan (Shiga)	U-27, U-29
Cobitis	*taenia taenia*			50	12M + 4SM + 34 ST/A	66				2X, ACN=50	Japan (Fukuoka)	U-29
Cobitis	*taenia taenia*			86	32M + 32 SM/ST + 22A		150	2			Japan (Fukuoka, Nagasaki)	U-29
Cobitis	*taenia taenia*			94	26M + 32 SM/ST + 36A		152	2		4X	Japan (Fukuoka, Oita)	U-29
Cobitis	*taenia taenia*		M	50	38 M/SM + 12 ST/A	88				2X, ACN=50	Bosnia	S-81
Cobitis	*taenia taenia*		F	75	57 M/SM + 18 ST/A	132				3X	Bosnia	S-81
Cobitis	*taenia taenia*		F, M	86	64 M/SM + 22 ST/A	150					Japan (Saga)	T-1
Cobitis	*takatsuensis*			48	12M + 18 SM/ST + 18A		78			2X	W. Japan	K-60
Cobitis	*takatsuensis*			48	12M + 12SM + 24A	72				2X	Japan	K-117
Cobitis	*tetralineata*	*taenia striata*		50	10M + 6SM + 34 ST/A	66				2X, ACN=50	Korea	K-56
Cobitis	*vardarensis*			50	26M + 20SM + 4ST	96	100			2X, ACN=50	Macedonia	R-104
Iksookimia	*choii*			50	18 M/SM + 32 ST/A	68				2X, ACN=50	Korea	K-127
Iksookimia	*choii*	*Cobitis*		50	8M + 10SM + 8ST + 24A	68	76			2X, ACN=50	Amur basin	V-98
Iksookimia	*hugowolfeldi*			50	24 M/SM + 26 ST/A	74				2X, ACN=50	Korea	K-128
Iksookimia	*koreensis*	*Cobitis*		50	12M + 8SM + 30 ST/A	70				2X, ACN=50	Korea (Han R., Geum R.)	U-35
Iksookimia	*koreensis*	*Cobitis*		50	10M + 12SM + 28A	72				2X, ACN=50	Korea (Mankyong R.)	K-56
Iksookimia	*longicorpa*	*Cobitis longicorpus*		50	14M + 6SM + 30 ST/A	70				2X, ACN=50	Korea (Nakton R.)	K-116
Iksookimia	*longicorpa*	*Cobitis longicorpus*	F, M	50	12M + 8SM + 30 ST/A	70				2X, ACN=50	Korea (Nakton R.)	K-56, U-35
Iksookimia	*pumila*		F	50	22 M/SM + 28 ST/A	72				2X, ACN=50	Korea	V-98
Iksookimia	*yongdokensis*			100	44 M/SM + 56 ST/A	144				4X	Korea (Kyongsangbuk-do)	K-127

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Kichulchoia	*brevifasciata*		F, M	48	6M + 10SM + 32 ST/A	64				2X, ACN=48	Korea (Jeollanam-do)	K-128
Koreocobitis	*rotundicaudata*	*Cobitis*		50	10M + 4SM + 36 ST/A	64				2X, ACN=50	Korea (Han R.)	U-35
Lepidocephalichthys	*berdmori*		M	62	24 M/SM + 38A	86					India (Portonovo)	N-13
Lepidocephalichthys	*guntea*		F	50	18M + 18SM + 10ST + 4A	86	96	2		1B, 2X, ACN-50	India (Jammu)	S-57, K-136
Lepidocephalichthys	*guntea*		M	50	18M + 18SM + 10ST + 4A	86	96	2		2B, 2X, ACN=50	India (Jammu)	S-57, K-136
Lepidocephalichthys	*guntea* var. *balgara*		F, M	50	22M + 14SM + 2ST + 12A	86	88			2X, ACN=50	India (WB)	B-4
Misgurnus	*anguillicaudatus*		F, M	50	14 M/SM + 36 ST/A	64			(2.8 BFA)	2X, ACN=50	Japan (Hokkaido)	H-13, H-15, H-16, O-14
Misgurnus	*anguillicaudatus*		F, M	50	10M + 4SM + 36 ST/A	64				ACN=50	Japan	O-28, I-15
Misgurnus	*anguillicaudatus*			48	12M + 4SM + 32 ST/A	64				ACN=50	Japan (Shiga)	O-28
Misgurnus	*anguillicaudatus*		F	75	15M + 6SM + 54 ST/A	96				3X	Japan (Shiga)	O-28
Misgurnus	*anguillicaudatus*		F, M	100	20M + 8SM + 72 ST/A	128				4X	Japan (Shiga)	O-28
Misgurnus	*anguillicaudatus*			50	8M + 6 SM/ST + 36A		64		3.7 FD	2X, ACN=50	Japan	S-137
Misgurnus	*anguillicaudatus*			50					2.4 FCM	2X	S. Korea	L-15, P-70
Misgurnus	*anguillicaudatus*			50	10M + 4SM + 36 ST/A	64				2X, ACN=50	N. Korea	V-28
Misgurnus	*anguillicaudatus*		F	50	8M + 6SM + 36A	64	64			2X, ACN=50	China (Sichuan)	L-44, Y-15
Misgurnus	*anguillicaudatus*		F, M	100	16M + 12SM + 72A	128	128		4.6, 4.0* FD	4X	China (Hubei)	L-27, L-41, Y-15, C-83
Misgurnus	*bufoensis*			48	10M + 2SM + 36 ST/A	60					N. Korea	V-98
Misgurnus	*fossilis*			100	36 M/SM/ST + 64A		136			4X	Rumania	R-32
Misgurnus	*mohoity*			50							Russia (Amur basin)	V-98
Misgurnus	*nikolskyi*			50	8M + 6SM + 36 ST/A	64				2X, ACN=50	Russia (Far East)	V-28
Misgurnus	*nikolskyi*			50	10M + 4SM + 36 ST/A	64				ACN=50	Russia (Amur basin)	V-98
Niwaella	*delicata*	*Cobitis*	F, M	50	18 M/SM + 32 ST/A	68				2X, ACN=50	Japan (Shiga, Gifu)	O-14, T-1, H-16
Niwaella	*delicata*		F, M	50	6M + 14 SM/ST + 30A		70			2X, ACN=50	W. Japan	K-60
Niwaella	*multifasciata*			50	38 M/SM + 12 ST/A	88				2X, ACN=50	Korea	K-128
Pangio	*borneensis*	*Acanthophthalmus*		50	10M + 18 SM/ST + 22A		78		2.0 FD	2X, ACN=50	(Asia)	S-137
Pangio	*khulii*	*Acanthophthalmus*	F	50	14 M/SM + 12ST + 24A	64	76		2.0 FD	2X, ACN=50	(Asia)	M-91
Pangio	*khulii*	*Acanthophthalmus*		50	14M + 4ST + 32A	64	68		(2.4 BFA)	2X, ACN=50	Thailand	D-20, H-13
Pangio	*pangia*	*Acanthophthalmus*		50	16M + 10SM + 24A	76	76				India	L-1
Paramisgurnus	*dabryanus*		F, M	48	12M + 4SM + 32A	64			2.2, 2.0* FD	0-1 B, ACN=50	China (Hubei)	L-27, L-41, Y-15, C-83
Paramisgurnus	*dabryanus*	*Misgurnus mizolepis*		48	12M + 4SM + 32 ST/A	64				2X, ACN=50	Korea (Geum R.)	U-35
Sabanejewia	*balcanica*	*aurata balcanica*	F, M	50	4M + 12SM + 34 ST/A	66		2		2X, ACN=50	Slovakia	R-19, V-26
Sabanejewia	*caspia*			50	4M + 6SM + 22ST + 18A	60	82			2X		V-72
Sabanejewia	*caspia*			50	4M + 18SM + 28 ST/A	72				2X	(Caspian Sea basin)	V-108
Sabanejewia	*kubanica*	*aurata kubanica*		50	6M + 14SM + 30 ST/A	70				2X, ACN=50	Russia (Kuban R).	V-25
Sabanejewia	*kubanica*?	*aurata*		50	6M + 14SM + 30 ST/A	70				2X, ACN=50		V-72
Sabanejewia	*larvata*		F, M	50	4M + 6SM + 22ST + 18A	60	82			2X, ACN=50	Italy (near Torino)	L-65

Table 6.11 Order CYPRINIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Balitoridae (= Homalopteridae)												
Nemacheilinae												
Acanthocobitis	*botia*	*Nemacheilus*	F, M	50	20M + 16 SM/ST + 14A		86			ACN=50	(India)	R-51
Acanthocobitis	*botia*	*Nemacheilus aureus*		50	28M + 4SM + 18A	82	82			ACN=50	India (Orissa)	K-41
Barbatula	*barbatula*	*Nemacheilus barbatulus*	F, M	50	8M + 20SM + 22A	78	78	2		ACN=50	Swiss, Spain	M-4
Barbatula	*barbatula*	*Nemacheilus barbatulus*	F, M	50	8M + 20SM + 22 ST/A	78		2		ACN=50	Poland	B-51
Barbatula	*barbatula*	*Nemacheilus barbatulus*	F, M	50	20 M/SM + 30 ST/A	70				ACN=50	Bosnia-Herzegovina	S-83
Barbatula	*barbatula*	*Nemacheilus barbatulus*		50	8M + 20 SM/ST + 22A		78			ACN=50	Slovakia	C-73
Barbatula	*barbatula*	*Nemacheilus barbatulus*		75	12M + 30 SM/ST + 33A		117			3X	Slovakia	C-73
Barbatula	*barbatula*	*Nemachilus barbatulus*		50	6M + 12 SM/ST + 32A		68			ACN=50		V-72
Barbatula	*toni*		F, M	50	16 M/SM + 34 ST/A	66				ACN=50	Japan (Hokkaido)	H-16
Barbatula	*toni*			50	6M + 24 SM/ST + 20A		80		1.1 FD	ACN=50	Japan (Hokkaido)	S-137
Barbatula	*toni*	*Nemacheilus*	M	50	8M + 12SM + 30 ST/A	70				ACN=50	Korea (Han R., Nakton R.)	K-58
Barbatula	*toni*	*Nemacheilus*	F	50	8M + 6SM + 36 ST/A	64				ACN=50	Korea (Maeubchon R.)	K-58
Lefua	*costata*		M	50	6M + 4SM + 40 ST/A	60				ACN=50	Korea	K-58
Lefua	*echigonia*			50	4M + 8 SM/ST + 38A		62		1.0 FD	ACN=50	Japan (Kanagawa)	S-124, S-137
Lefua	*echigonia*			50	4M + 8SM + 38 ST/A	62				ACN=50	(Japan)	U-30
Lefua	*nikkonis*		F, M	50	12 M/SM + 38 ST/A	62				ACN=50	Japan (Hokkaido)	H-16
Lefua	*nikkonis*			50	4M + 24 SM/ST + 22A		78	2	0.9 FD	ACN=50	Japan (Hokkaido)	S-145
Micronemacheilus	*pulcher*		F, M	50	10M + 12SM + 12ST + 16A	72	84			ACN=50	China (Guilin)	Y-15
Micronemacheilus	*pulcher*			50	8M + 30 SM/ST + 12A		88	2		ACN=50	(China)	S-145
Nemacheilus	*mooreh*	*sinuatus*	M	50	24M + 22SM + 4A	96	96			ACN=50	India (Assam)	K-46
Nemacheilus	*selangoricus*			40	6M + 2SM + 32A	48	48			ACN=42	(Asia)	S-137
Paracobitis	*potanini*	*Nemacheilus*	F, M	48	14M + 26SM + 6ST + 2A	88	94			ACN=48	China (Ya'an, Sichuan)	Y-15
Schistura	*fasciolata*	*Nemacheilus fasciolatus*	M	44	10M + 8SM + 10ST + 16A	62	72			ACN=48	China (Guilin)	Y-15
Schistura	*fasciolata*	*Nemacheilus fasciolatus*	F, M	50	12M + 14SM + 14ST + 10A	76	90			ACN=50	China (Guilin)	Y-15
Schistura	*incerta*	*Nemacheilus incertus*	F, M	50	8M + 8SM + 4ST + 30A	66	70			ACN=50	China (Guilin)	Y-15
Schistura	*prashadi*	*Nemacheilus*		50	10M + 10SM + 4ST + 26A	70	74			ACN=50	India	L-1
Schistura	*rupecula*	*Nemacheilus rupicola*	F, M	50	20M + 8SM + 22 ST/A	78				ACN=50	India (U.P.)	R-74
Schistura	*savona*	*Nemacheilus*	F, M	36	20M + 6SM + 2ST + 8A	62	64				India (Bihar)	K-41
Triplophysa	*kungessana*	*Nemacheilus dorsalis*		50	16 M/SM + 34 ST/A	66				ACN=50	Central Asia	M-57
Triplophysa	*siluroides*			48					2.0* FD		Tibet	C-83
Triplophysa	*stoliczkai*	*Nemacheilus*		50	12 M/SM + 38 ST/A	62				ACN=50	Central Asia	M-57
Triplophysa	*strauchii*	*Nemacheilus*		50	18 M/SM + 32 ST/A	68				ACN=50	Central Asia	M-57
Balitorinae												
Beaufortia	*kweichowensis kweichowensis*			48	10M + 26 SM/ST + 12A		84	2			China	S-145
Jinshaia	*abbreviata*	*Hemimyzon abbreviata*		50							China	Y-15
Pseudogastromyzon	*myersi*			50	6M + 16 SM/ST + 28A		72		0.9 FD	ACN=50	(Asia)	S-139
Sinohomaloptera	*kwangsiensis*	*Homaloptera hoffmanni*		50	6M + 18 SM/ST + 26A		74		0.9 FD	ACN=50	(Asia)	S-139
Vanmanenia	*pingchowensis*		F, M	50	8M + 6SM + 6ST + 30A	64	70			ACN=50	China (Guilin)	Y-15
Vaillantellidae												
Vaillantella	*maassi*			50	26 M/SM + 24ST	76	100	2		ACN=50	Thailand	B-72

Table 6.12 Order CHARACIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Characoidei												
Acestrorhynchidae												
Acestrorhynchus	*altus*		F	50	8M + 22SM + 14ST + 6A	80	94			ACN=52	Brazil (MS)	F-2
Acestrorhynchus	*lacustris*		F, M	50	12M + 32SM + 4ST + 2A	94	98			ACN=52	Brazil (SP)	F-2
Acestrorhynchus	*pantaneiro*			50	36 M/SM + 14 ST/A	86			1.7 FD		Argentina	F-20, C-94
Alestiidae												
Arnoldichthys	*spilopterus*			56					2.4 BFA		(Africa)	H-13
Anostomidae												
Abramites	*hypselonotus*			54	30M + 22SM + 2ST	106	108				Argentina	F-20, O-50
Abramites	*hypselonotus*	*solarii*	F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44
Anostomus	*anostomus*?	*anostomus*		54	54 M/SM	108	108		2.8 BFA		(S. America)	O-22, H-13
Anostomus	*ternetzi*		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44, O-50
Leporellus	*vittatus*		F, M	54	30M + 24SM	108	108	2		ACN=56	Brazil (SP)	G-2, G-4
Leporinus	*acutidens*			54	28M + 26SM	108	108				Argentina	F-20
Leporinus	*affinis*			54	54 M/SM	108	108				(Brazil)	P-88
Leporinus	*amblyrhynchus*			54	54 M/SM	108	108				(S. America)	A-92
Leporinus	*brunneus*			54	54 M/SM	108	108				(Brazil, Venezuela)	A-92
Leporinus	*conirostris*		F	54	52 M/SM + 1SM + 1ST	107	108	2		ZW, ACN=54	Brazil (SP)	G-10
Leporinus	*conirostris*		M	54	52 M/SM + 2SM	108	108	2		ZZ, ACN=54	Brazil (SP)	G-10
Leporinus	*copelandii*			54	26M + 28SM	108	108				Brazil (SP)	B-32
Leporinus	*cylindriformis*			54	26M + 28SM	108	108				(Brazil)	A-92
Leporinus	*desmotes*		F	54	54 M/SM	108	108	2		ACN=56	Brazil (TO)	M-155

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Leporinus	*elongatus*		F	54	53 M/SM + 1ST	107	108	2		ZW, ACN=56	Brazil (SP)	K-135, M-77
Leporinus	*elongatus*		M	54	54 M/SM	108	108	2		ZZ, ACN=56	Brazil (SP)	K-135, M-77
Leporinus	*elongatus*	*silvestrii*	F	54	25M + 28SM + 1ST	107	108	2		ZW	Brazil (SP)	G-3, G-4, G-5
Leporinus	*elongatus*	*silvestrii*	M	54	26M + 28SM	108	108	2		ZZ, ACN=56	Brazil (SP)	G-3, G-4
Leporinus	cf. *elongatus*		F	54	26M + 27SM + 1ST	107	108	2	(2.9 FD)	ZW	Brazil (MG)	M-77, C-94
Leporinus	cf. *elongatus*		M	54	26M + 28SM	108	108	2	(2.9 FD)	ZZ	Brazil (MG)	M-77, C-94
Leporinus	cf. *elongatus*		M	81				3		3X, ZZZ	Brazil (MG)	M-153
Leporinus	*fasciatus*			54	54 M/SM	108	108				(S. America)	O-22
Leporinus	*friderici*		F, M	54	32M + 22SM	108	108	2	(2.6 FD)	0-1 B, ACN=56	Brazil (SP)	G-2, G-4, C-93, V-94
Leporinus	*friderici*		F, M	54	54 M/SM	108	108	1-5		ACN=56	Brazil (SP)	G-94, K-135
Leporinus	aff. *holostictus*			54							S. America	O-50
Leporinus	*lacustris*		F, M	54	54 M/SM	108	108	2		XX/XY, ACN=56	Brazil (SP)	G-3, G-4, M-152
Leporinus	*lacustris*			54	30M + 24SM	108	108				Argentina	F-20
Leporinus	*macrocephalus*		F	54	32M + 21SM + 1ST	107	108	2		ZW	Brazil	G-91, H-42
Leporinus	*macrocephalus*		M	54	32M + 22SM	108	108	2		ZZ	Brazil	G-91
Leporinus	aff. *maculatus*			54							S. America	O-50
Leporinus	*obtusidens*		F	54	26M + 27SM + 1ST	107	108	2	(2.8 FD)	ZW	Brazil (SP), Argentina	G-3, G-4, G-5, F-20, C-93
Leporinus	*obtusidens*		M	54	26M + 28SM	108	108	2		ZZ	Brazil (SP), Argentina	G-3, F-20
Leporinus	*obtusidens*		F	54	53 M/SM + 1ST	107	108	2		ZW, ACN=56	Brazil (SP)	K-135, M-77
Leporinus	*obtusidens*		M	54	54 M/SM	108	108	2		ZZ, ACN=56	Brazil (SP)	K-135, M-77
Leporinus	*octofasciatus*		F, M	54	32M + 22SM	108	108	2	3.5 FD	ACN=56	Brazil (SP)	G-2, G-4, C-93
Leporinus	*ortomaculatus*			54	54 M/SM	108	108				(Brazil, Venezuela)	A-92
Leporinus	*piau*			54	32M + 22SM	108	108		2.9 FD		Brazil (MG)	B-32, C-94
Leporinus	*reinhardti*		F	54	32M + 21SM + 1ST	107	108	2		ZW, ACN=56	Brazil (MG)	B-32, G-5, G-91, M-77
Leporinus	*reinhardti*		M	54	32M + 22SM	108	108	2	2.9, 3.1 FD	ZZ, ACN=56	Brazil (MG)	B-32, G-91, C-94, M-77
Leporinus	*striatus*			54	28M + 26SM	108	108				Argentina	F-20
Leporinus	*striatus*		F, M	54	28M + 26SM	108	108	2	3.1 FD, 3.4 BFA	ACN=56	Brazil (SP)	G-2, G-4, C-93, H-13
Leporinus	*taeniatus*			54	34M + 20SM	108	108				Brazil (MG)	B-32
Leporinus	*tigrinus*			54							(Brazil)	P-88
Leporinus	*trifasciatus*		F	54	53 M/SM + 1ST	107	108	2		ZW	Brazil (RO)	G-10
Leporinus	*trifasciatus*		M	54	54 M/SM	108	108	2		ZZ	Brazil (RO)	G-10
Leporinus	*trifasciatus*		F	54	22M + 31SM + 1ST	107	108			ZW, ACN=56	Brazil (Amazon basin)	V-109, K-135
Leporinus	*trifasciatus*		M	54	22M + 32SM	108	108			ZZ, ACN=56	Brazil (Amazon basin)	V-109
Leporinus	sp 2		F	54	26M + 28SM	108	108			ZW, ACN=56	Brazil (Amazon basin)	V-109
Leporinus	sp 2		M	54	26M + 28SM	108	108			ZZ, ACN=56	Brazil (Amazon basin)	V-109

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Leporinus	sp		F	54	32M + 21SM + 1ST	107	108	2		ZW, ACN=56	Brazil (MS)	G-91, K-135
Leporinus	sp		M	54	32M + 22SM	108	108	2		ZZ, ACN=56	Brazil (MS)	G-91
Pseudanos	*trimaculatus*		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44
Rhytiodus	*microlepis*			54							Brazil (AM)	B-32
Schizodon	*altoparanae*			54	54 M/SM	108	108	2		ACN=56	Brazil (SP)	M-43
Schizodon	*borellii*			54	54 M/SM	108	108				Argentina	F-20
Schizodon	*borellii*			54	32M + 22SM	108	108		(3.0 FD)		Brazil (SP)	B-32, C-94
Schizodon	*borellii*		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (Paraguay R.)	M-154
Schizodon	*fasciatus*			54	54 M/SM	108	108				Brazil	O-50
Schizodon	*fasciatus*			54	28M + 26SM	108	108	2			Brazil	P-88
Schizodon	*intermedius*		F, M	54	54 M/SM	108	108	2	2.9 FD	ACN=56	Brazil (SP)	M-43, C-93
Schizodon	*isognathus*	*isognathum*		54	54 M/SM	108	108	2		ACN=56	Brazil (Paraguay R.)	M-154
Schizodon	*knerii*			54	54 M/SM	108	108	2		ACN=56	Brazil (MG)	M-43
Schizodon	*nasutus*		F, M	54	32M + 22SM	108	108	2	3.1 FD	ACN=56	Brazil (SP)	G-2, G-4, M-43, C-93
Schizodon	*nasutus*			54	32M + 22SM	108	108	2		0-1 B	Argentina	P-81, M-43, F-20, C-98
Schizodon	*platae*			54	54 M/SM	108	108				Argentina	F-20
Schizodon	*vittatus*			54	54 M/SM	108	108	2		ACN=56	Brazil (MT)	M-43
Characidae												
Aphyocharacinae												
Aphyocharax	*alburnus*			50*						ACN=50	(S. America)	S-29
Aphyocharax	*anisitsi*	*rubropinnis*		50*					2.7 FD, 3.4 BFA	ACN=50	(S. America)	S-29, C-94, H-13
Aphyocharax	*dentatus*	*difficilis*	F, M	50	2M + 2SM + 2ST + 44A	54	56	4	(2.5 FD)	ACN=50	Brazil (Parana R.)	S-98, C-94
Inpaichthys	*kerri*		M	52	12M + 26SM + 14ST	90	104			ACN=54	(Brazil)	A-91
Bryconinae												
Brycon	*cephalus*		F, M	50	24M + 20SM + 6ST	94	100	2		ACN=52	Brazil (AM)	M-37
Brycon	cf. *cephalus*		F, M	50	24M + 26 SM/ST		100	2		ACN=52	Brazil (AM)	A-22
Brycon	cf. *cephalus*			50	20M + 22SM + 8ST	92	100	2			Brazil (AM)	P-88
Brycon	cf. *cephalus*	cf. *erythropterum*		50	20M + 22SM + 8ST	92	100	2			Brazil (AM)	P-88
Brycon	*falcatus*	*brevicauda*	F, M	50	20M + 24SM + 6ST	94	100	2		ACN=52	Brazil (MT)	M-37
Brycon	*hilarii*	*microlepis*	F, M	50	20M + 24SM + 6ST	94	100	2	2.4 FD	ACN=52	Brazil (MT)	M-37, M-151, C-94
Brycon	*insignis*		F, M	50	22M + 20SM + 8ST	92	100	2		ACN=52	Brazil (SP)	M-37
Brycon	*insignis*		F, M	50	26M + 24 SM/ST		100	2		ACN=52	Brazil (SP)	A-22
Brycon	cf. *nattereri*	cf. *reinhardtii*	M	50	22M + 28 SM/ST		100	2		ACN=52	Brazil (SP)	A-22
Brycon	*orbignyanus*		F, M	50	24M + 22SM + 4ST	96	100	2		ACN=52	Brazil (PR)	M-37

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Brycon	*orthotaenia*	*lundii*	F, M	50	22M + 24SM + 4ST	96	100	2		ACN=52	Brazil (MG)	M-37, M-151
Brycon	cf. *pesu*			50	20M + 22SM + 8ST	92	100	2			(Brazil)	P-88
Brycon	sp.		F	50	20M + 22SM + 8ST	92	100	2		ACN=52	Brazil (MT)	M-37
Brycon	sp.			50							Brazil (AM)	O-50
Salminus	*brasiliensis*	*maxillosus*	F, M	50	14M + 30SM + 6ST	94	100	2			Brazil (SP)	O-81
Salminus	*hilarii*		F, M	50	14M + 30SM + 6ST	94	100	2	(2.6 FD)		Brazil (SP)	O-81, C-93
Salminus	*hilarii*		F, M	50	12M + 18SM + 20ST	80	100			ACN=52	Brazil (SP)	M-151
Chalceinae												
Chalceus	*macrolepidotus*	Characinidae		54	32 M/SM + 22ST	86	108		2.1 FD	ACN=56	(S. America)	M-91
Chalceus	*macrolepidotus*			52	44 M/SM + 8ST	96	104		(2.2 BFA)		(S. America)	O-22, H-13
Characinae												
Charax	*leticiae*			52					2.9 FD		(S. America)	C-25, C-94
Charax	sp.		F	52	22 M/SM + 30 ST/A	74		2			Brazil (Acre)	C-25
Cynopotamus	cf. *kincaidi*			52	30 M/SM + 22 ST/A	82					Argentina	F-20
Exodon	*paradoxus*		F	52	2M + 4SM + 10ST + 36A	58	68		(3.4 BFA)	ACN=52	Brazil (MT)	V-32, H-13
Exodon	*paradoxus*			52*			(74)			ACN=52	(S. America)	S-152
Galeocharax	*gulo*		F, M	52	6M + 24SM + 22ST	82	104	2		ACN=52	Brazil (MT)	V-32
Galeocharax	*humeralis*			52	36 M/SM + 16 ST/A	88					Argentina	F-20
Galeocharax	*knerii*		F, M	52	6M + 26SM + 20ST	84	104		3.2 FD	ACN=52	Brazil (SP, MG)	F-2, C-93
Phenacogaster	aff. *microstictus*	cytotype A		52*							(S. America)	S-30
Phenacogaster	aff. *microstictus*	cytotype B		50*							(S. America)	S-30
Phenacogaster	cf. *pectinatus*		M	46	12M + 2ST + 32A	58	60	2			Brazil (Acre)	C-26
Roeboides	*descalvadensis*	*paranensis*		52	4M + 20SM + 8ST + 20A	76	84	2		ACN=52	Parana R.	V-32
Roeboides	*microlepis*	*bonariensis*		52	34 M/SM + 18 ST/A	86			2.2 FD		Argentina	F-20, C-94
Roeboides	*xenodon*		F, M	52	4M + 28SM + 16ST + 4A	84	100	2		ACN=52	Brazil (MG)	V-32
Roeboides	sp.		F, M	52	6M + 20SM + 12ST + 14A	78	90	2		ACN=52	Brazil (MT)	V-32
Cheirodontinae												
Cheirodon	sp.			52							(Brazil)	W-19
Grundulus	*bogotensis*		F, M	50	10M + 28SM + 12ST	88	100			ACN=52	Colombia	G-53
Microschemobrycon	*casiquiare*			42*							(S. America)	S-30
Nematobrycon	*palmeri*			50						ACN=52	(Colombia)	S-152
Nematobrycon	*palmeri*		F, M	50	8 M/SM + 10ST + 32A	58	68				(Colombia)	A-93
Odontostilbe	*claudiae*			52							Parana	W-19
Odontostilbe	*paranensis*		F	52	36 M/SM + 13ST + 3A	88	101			ZW, ACN=52	Brazil (SP)	W-19
Odontostilbe	*paranensis*		M	52	36 M/SM + 12ST + 4A	88	100			ZZ, ACN=52	Brazil (SP)	W-19

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Odontostilbe	*stenodon*	*Cheirodon stenodon*		52					3.7 FD		(Brazil, PR)	C-93
Paracheirodon	*axelrodi*	*Cheirodon*		52			(54)			ACN=52	(S. America)	S-153
Paracheirodon	*innesi*			32			(64)			ACN=52	(S. America)	S-153
Paracheirodon	*innesi*	*Hyphessobrycon*	M	36							Brazil, Colombia, Peru	L-75
Paracheirodon	*simulans*	*Hyphessobrycon*		50			(96)			ACN=52	(Amazon R., Orinoco R.)	S-152
Pristella	*maxillaris*	*riddlei*		52*			(74)			ACN=52	(S. America)	S-152
Probolodus	*heterostomus*			50							Brazil (SP)	O-50
Serrapinnus	*heterodon*	*Holoshestes*	F	52	37 M/SM + 12ST + 3A	89	101			ZW, ACN=52	Brazil (SP)	W-19
Serrapinnus	*heterodon*			52	16M + 20SM + 14ST + 2A	88	102	2			Brazil (Sao Francisco R.)	P-77
Serrapinnus	*heterodon*			52	15M + 20SM + 14ST + 3A	87	101				Brazil (Sao Francisco R.)	P-77
Serrapinnus	*heterodon*			52	17M + 20SM + 14ST + 1A	89	103				Brazil (Sao Francisco R.)	P-77
Serrapinnus	*notomelas*	*Cheirodon*		52						ZW/ZZ	(Brazil)	W-19
Serrapinnus	*notomelas*		F	52	16M + 23SM + 10ST + 3A	91	101	2		ZW, ACN=52	Brazil (SP)	S-201
Serrapinnus	*notomelas*		M	52	16M + 22SM + 10ST + 4A	90	100	2		ZZ, ACN=52	Brazil (SP)	S-201
Serrapinnus	*piaba*			52	16M + 20SM + 14ST + 2A	88	102	3			Brazil (Sao Francisco R.)	P-77
Serrapinnus	sp. 1		F	52	8M + 15SM + 4ST + 25A	75	79			ZW	Paraná R.	S-201
Serrapinnus	sp. 1		M	52	8M + 16SM + 4ST + 24A	76	80	3		ZZ, ACN=52	Paraná R.	S-201
Glandulocaudinae												
Gephyrocharax	*caucanus*			52*							(Colombia)	S-30
Gephyrocharax	*valencia*			52*							(Venezuela)	S-30
Glandulocauda	*melanogenys*			52	4M + 12SM + 22ST + 14A	68	90				Brazil (SP)	T-71
Glandulocauda	*melanopleura*			54	8M + 18SM + 14ST + 14A	80	94				Brazil (PR)	T-71
Mimagoniates	*lateralis*			52	6M + 20SM + 16ST + 10A	78	94				Brazil (SP)	T-71
Mimagoniates	*microlepis*			52	6M + 20SM + 18ST + 8A	78	96		3.1 FD		Brazil (SP)	T-71, C-94
Mimagoniates	*microlepis*		F, M	52	12M + 18SM + 14ST + 8A	82	96	2		ACN=52	Brazil (PR)	T-71
Iguanodectinae												
Iguanodectes	*spilurus*			50*							(S. America)	S-30
Paragoniatinae												
Prionobrama	*filigera*			52	12 M/SM + 40 ST/A	64				ACN=54	(S. America)	A-93
Serrasalminae												
Catoprion	*mento*			60							(Brazil)	P-88
Colossoma	*macropomum*		F, M	54	20M + 34SM	108	108		(3.0 FIA)	ACN=54	Brazil	A-129, H-41
Colossoma	*macropomum*			54	18M + 36SM	108	108				S. America	K-113
Colossoma	*macropomum*			54	28M + 26SM	108	108	4		ACN=54	Venezuela	N-25
Metynnis	*argenteus*			62*							(Brazil)	S-30

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Metynnis	*hypsauchen*	*schreitmuelleri*		62	60 M/SM + 2A	122	122		3.4 BFA		(S. America)	O-22, H-13
Metynnis	*lippincottianus*		F, M	62	30M + 30 SM/ST + 2A		122		(3.4 BFA)		(Brazil, French Guiana)	A-91, A- 92, H-13
Metynnis	*lippincottianus*			62	30M + 24SM + 6ST + ZW	116	122			0-2 B	Brazil (AM)	C-98
Metynnis	*lippincottianus*	cf. *roosevelti*		62	26M + 20SM + 14ST + 2A	108	122				Brazil	M-167
Metynnis	*maculatus*			62	32M + 22SM + 4ST + 4A	116	120			1B	Brazil (SP)	C-98
Metynnis	*mola*			62	60 M/SM + 2A	122	122				Brazil	J-19
Mylesinus	*paraschomburgkii*			58				6-12			Brazil (Amazon R.)	P-88
Mylesinus	*schomburgkii*	*Myleus*		58	42 M/SM + 16 ST/A	100		5-8			(Guyana, Venezuela)	P-88
Myleus	*arnoldi*	*Myloplus*		58	34 M/SM + 24 ST/A	92					(Brazil)	O-22
Myleus	*micans*		F, M	58	26M + 18SM + 8ST + 6A	102	110	4			Brazil (São Francisco R.)	A-128
Myleus	*pacu*			58	40 M/SM + 18 ST/A	98		5-9			(Guyana)	P-88
Myleus	*tiete*			58							Argentina	F-20
Myloplus	*rubripinnis*			58				5-8			(Guyana)	P-88
Mylossoma	*aureum*			54	54 M/SM	108	108	6-14			(Brazil)	P-88
Mylossoma	*duriventre*	*duriventris*		54	54 M/SM	108	108	6-14			(S. America)	P-88
Mylossoma	*duriventre*	*duriventris*		54	18M + 34SM + 2A	106	106				(S. America)	K-113
Mylossoma	*duriventre*	*duriventris*		54	50 M/SM + 4A	104	104				(S. America)	O-22
Mylossoma	*duriventre*	*duriventris*		54							Argentina	F-20
Mylossoma	*duriventre*	*paraguayensis*		54					2.9 FD		Brazil (Miranda R., MG)	C-94
Piaractus	*brachypomus*			54	28M + 26SM	108	108	2		ACN=54	Venezuela	N-25
Piaractus	*mesopotamicus*			54							Argentina	F-20
Piaractus	*mesopotamicus*	*Colossoma mitrei*	F, M	54	20M + 34SM	108	108			ACN=54	Brazil	A-129
Pristobrycon	*striolatus*			62	46 M/SM + 16 ST/A	108					(S. America)	P-88
Pygocentrus	*nattereri*			60	50 M/SM + 10A	110					(S. America)	P-84
Pygocentrus	*nattereri*	*Serrasalmus*		60							Argentina	F-20
Pygocentrus	*piraya*			60	48 M/SM + 12A	108	108				(Brazil, Sao Francisco R.)	P-84
Serrasalmus	*altispinis*			60	24M + 20SM + 6ST + 10A	104	110	9		ACN=60	Brazil (Amazon basin)	N-8
Serrasalmus	*altispinis*		F, M	60	20M + 28SM + 2ST + 10A	108	110	5-12		ACN=60	Brazil (Amazon basin)	N-71
Serrasalmus	*altuvei*			60	46 M/SM + 14 ST/A	106					(Venezuela)	P-88
Serrasalmus	*brandtii*		F, M	60	18M + 24SM + 8ST + 10A	102	110	10	(3.3 FD)	ACN=60	Brazil (MG)	C-87, C-94
Serrasalmus	*compressus*		F, M	60	18M + 30SM + 2ST + 10A	108	110	5-12			Brazil (Amazon basin)	N-71
Serrasalmus	*eigenmanni*	*Pristobrycon*		60	44 M/SM + 16 ST/A	104					(S. America)	P-88
Serrasalmus	*elongatus*		F, M	60	22M + 22SM + 4ST + 12A	104	108	5-12			Brazil (Amazon basin)	N-71
Serrasalmus	*gouldingi*			60	22M + 22SM + 6ST + 10A	104	110	8		ACN=60	Brazil (Amazon basin)	N-8
Serrasalmus	*hollandi*	Characinidae	M	64	30 M/SM + 16ST + 18A	94	110		3.4 FD		(Brazil, Guyana)	M-91

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Serrasalmus	*humeralis*			60	16M + 26SM + 6ST + 12A	102	108				Brazil (Amazon basin)	N-71
Serrasalmus	*manueli*		F, M	60	22M + 24SM + 6ST + 8A	106	112	5-12			Brazil (Amazon basin)	N-71
Serrasalmus	*marginatus*		F, M	60	16M + 26SM + 8ST + 10A	102	110	8		ACN=60	Brazil (Paraguay R.)	C-87
Serrasalmus	*marginatus*			60	18M + 26SM + 4ST + 12A	104	108				Argentina	F-20
Serrasalmus	*rhombeus*		F, M	60	30M + 16SM + 4ST + 10A	106	110	8		ACN=60	Venezuela (Bolivar)	N-60
Serrasalmus	*rhombeus*	cytotype 1	F, M	60	20M + 24SM + 6ST + 10A	104	110	5-12		ACN=60	Brazil (Amazon basin)	N-9
Serrasalmus	*rhombeus*	cytotype 2		58	22M + 24SM + 2ST + 10A	104	106	5-12		ACN=60	Brazil (Amazon basin)	N-9
Serrasalmus	*serrulatus*			60	20M + 22SM + 8ST + 10A	102	110	12		ACN=60	Brazil (Amazon basin)	N-8
Serrasalmus	*serrulatus*	*Pristobrycon*		60	44 M/SM + 16 ST/A	104		6-10			(S. America)	P-88
Serrasalmus	*spilopleura*		F, M	60	50 M/SM + 10A	110	110	5-10	(2.9 FD)		Brazil (SP)	G-90, C-93
Serrasalmus	*spilopleura*	cytotype A	F, M	60	24M + 20SM + 4ST + 12A	104	108	5-12	(3.2 FD)	ACN=60	Brazil (Amazon basin)	C-94, C-103, N-71
Serrasalmus	*spilopleura*	cytotype C		60	23M + 21SM + 4ST + 12A	104	108			ACN=60	Brazil (Central Amazon)	C-103
Serrasalmus	*spilopleura*	cytotype D		60	24M + 20SM + 4ST + 12A	104	108			ACN=60	Brazil (Central Amazon)	C-103
Serrasalmus	*spilopleura*	cytotype a	F, M	60	20M + 26SM + 4ST + 10A	106	110	10		ACN=60	Upper Parana	C-41
Serrasalmus	*spilopleura*	cytotype b	F, M	60	18M + 26SM + 4ST + 12A	104	108	12		ACN=60	Paraguay	C-41, F-20
Serrasalmus	*spilopleura*	cytotype c	F, M	60	19M + 26SM + 4ST + 11A	105	109	11		ACN=60	Lower Parana, Argentina	C-41, F-20
Stethaprioninae												
Brachychalcinus	*copei*		F, M	50	42 M/SM + 8A	92	92	2	3.5 FD	ACN=52	Brazil (Acre)	C-25, C-94
Orthospinus	*franciscensis*			50	10M + 32SM + 8A	92	92	2		ACN=52	Brazil (MG)	P-25
Orthospinus	*franciscensis*			50	22M + 20SM + 2ST + 6A	92	94	2		ACN=52	Brazil (Sao Francisco R.)	A-122
Poptella	*compressa*			50*							(Argentina)	F-20, S-30
Poptella	*paraguayensis*		F, M	50	10M + 26SM + 8ST + 6A	86	94	2	3.5 FD	ACN=52	Brazil (MS, MT)	F-39, C-94
Tetragonopterinae												
Astyanax	*abramis*			50					3.2 FD		Brazil (Miranda R., MG)	C-94
Astyanax	*altiparanae*	cytotype 1		50	10M + 26SM + 4ST + 10A	86	90	1-4		ACN=52	Brazil (PR)	P-1
Astyanax	*altiparanae*	cytotype 2		50	10M + 24SM + 4ST + 12A	84	88	1-4		ACN=52	Brazil (PR)	P-1
Astyanax	*altiparanae*	cytotype 3		50	10M + 22SM + 4ST + 14A	82	86	1-4		ACN=52	Brazil (PR)	P-1
Astyanax	*altiparanae*			50	6M + 28SM + 8ST + 8A	84	92	4		ACN=52	Brazil (Tibagi, PR)	D-29
Astyanax	*altiparanae*			50	6M + 30SM + 8ST + 6A	86	94	2		ACN=52	Brazil (Iguacu, PR)	D-29
Astyanax	*altiparanae*			50						1B	Brazil (SP)	C-98
Astyanax	*asuncionensis*			50					2.4 FD		Brazil (Miranda R., MG)	C-94
Astyanax	*bimaculatus*		F, M	50	6M + 22SM + 12ST + 10A	78	90		(2.1 FD)	ACN=52	Brazil (SP)	M-86, C-93
Astyanax	*bimaculatus*		F, M	50	10M + 18SM + 12ST + 10A	78	90	6		ACN=52	Argentina	A-14, F-20
Astyanax	*bimaculatus*			50	28 M/SM + 22 ST/A	78		2			Brazil (PR)	T-80

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Astyanax bimaculatus			50	34 M/SM + 16 ST/A	84		2			Brazil (PR)	T-80
Astyanax bimaculatus			50	40 M/SM + 10 ST/A	90		2			Brazil (PR)	T-80
Astyanax bimaculatus			50*			(96)				(Brazil)	S-152
Astyanax bimaculatus lacustris			50					2.9 FD		Brazil (MG)	C-94
Astyanax bockmanni		F, M	50	10M + 12SM + 12ST + 16A	72	84	1-4		ACN=52	Brazil	K-126
Astyanax eigenmanniorum		F, M	50	6M + 20SM + 8ST + 16A	76	84			ACN=52	Brazil (MG)	F-6
Astyanax eigenmanniorum		F, M	75	9M + 30SM + 12ST + 24A	114	126			3X	Brazil (MG)	F-6
Astyanax eigenmanniorum		F, M	48	14M + 20SM + 4ST + 10A	82	86	5		0-1 B, ACN=50	Brazil (MG)	T-77, C-98
Astyanax fasciatus		F, M	46	6M + 24SM + 8ST + 8A	76	84		(3.5 FD)	0-1 B	Brazil (MG)	M-85, C-93
Astyanax fasciatus		F, M	48	8M + 22SM + 12ST + 6A	78	90			ACN=52	Brazil (SP)	C-39
Astyanax fasciatus			48	8M + 22SM + 12ST + 6A	78	90	2		ACN=52	Brazil (SP)	P-79
Astyanax fasciatus			46	12M + 20SM + 10ST + 4A	78	88	2, 4		0-1 B, ACN=52	Brazil (SP)	P-79, P-80, C-98
Astyanax fasciatus			45	12M + 20SM + 10ST + 3A	77	87	2		ACN=52	Brazil (SP)	P-79
Astyanax fasciatus			47	12M + 19SM + 10ST + 6A	78	88	2		ACN=52	Brazil (SP)	P-79
Astyanax fasciatus			47	12M + 21SM + 10ST + 4A	80	90	2		ACN=52	Brazil (SP)	P-79
Astyanax fasciatus			47	12M + 20SM + 10ST + 5A	79	89	2		ACN=52	Brazil (SP)	P-79
Astyanax fasciatus		F, M	46	8M + 26SM + 10ST + 2A	80	90				Brazil (SP)	M-86
Astyanax fasciatus		F, M	48	8M + 24SM + 14ST + 2A	80	94				Brazil (Juquia R., SP)	M-86
Astyanax fasciatus		F, M	48	8M + 20SM + 16ST + 4A	76	92	2	(2.8 FD)	ACN=52	Brazil (MG)	P-91, C-94
Astyanax fasciatus		F, M	48	8M + 20SM + 16ST + 4A	76	92	2-5		ACN=52	Brazil (Piumhi R.)	P-91
Astyanax giton		F, M	50	6M + 8SM + 8ST + 28A	64	72	3			Brazil (RJ)	K-19
Astyanax hastatus			50	4M + 8SM + 10ST + 28A	62	72	3		ACN=52	Brazil (RJ)	K-121
Astyanax hastatus			50	8M + 10SM + 14ST + 18A	68	82	3		ACN=52	Brazil (RJ)	K-121
Astyanax hastatus			50	6M + 8SM + 4ST + 32A	64	68	2		ACN=52	Brazil (RJ)	K-121
Astyanax intermedius		F, M	50	6M + 8SM + 4ST + 32A	64	68	6			Brazil (RJ)	K-19
Astyanax janeiroensis		F, M	50	6M + 14SM + 14ST + 16A	70	84	6		ACN=52	Brazil (SP)	C-26, C-94
Astyanax jordani	*Anoptichthys*	F, M	50	40 M/SM + 10ST	90	100			ACN=52	(Mexico)	K-63
Astyanax jordani	*Anoptichthys*		50*			(92)				(S. America)	S-152
Astyanax mexicanus		F, M	50	40 M/SM + 10ST	90	100			ACN=52	USA (TX)	K-63
Astyanax aff. *mexicanus*			50	8M + 18SM + 12ST + 12A	76	88			0-2 B	Mexico	C-98
Astyanax parahybae		F, M	48	8M + 18SM + 12ST + 10A	74	86	6		ACN=52	Brazil (Paraiba basin)	C-39, K-19
Astyanax scabripinnis		F, M	50	6M + 8SM + 36A	64		4-12		0-4 B	Brazil (ES)	S-106
Astyanax scabripinnis		F	50	8M + 20SM + 6ST + 16A	78	84	3		ACN=52	Brazil (MG)	B-70
Astyanax scabripinnis		F, M	50	6M + 28SM + 6ST + 10A	84	90	3		ACN=52	Brazil (MG)	B-70
Astyanax scabripinnis		F, M	50	6M + 24SM + 8ST + 12A	80	88	5		ACN=52	Brazil (MG)	B-70

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Astyanax	*scabripinnis*		F, M	50	6M + 22SM + 10ST + 12A	78	88		(3.7 FD)	0-2 B	Brazil (SP)	F-6, S-8, M-85, C-93
Astyanax	*scabripinnis*		F	75	9M + 33SM + 15ST + 18A	117	132			0-2 B, 3X	Brazil (SP)	F-6
Astyanax	*scabripinnis*		F, M	50	6M + 22SM + 10ST + 12A	78	88			0-2 B, ACN=52	Brazil (SP, 1720m alt.)	V-39
Astyanax	*scabripinnis*		F, M	50	6M + 22SM + 10ST + 12A	78	88			0-2 B	Brazil (SP, 1920m alt.)	N-20
Astyanax	*scabripinnis*		F, M	50	6M + 22SM + 10ST + 12A	78	88			0-1 B	Brazil (SP, 1800m alt.)	N-20
Astyanax	*scabripinnis*		F, M	50	6M + 22SM + 10ST + 12A	78	88			0 B	Brazil (SP, 700m alt.)	N-20
Astyanax	*scabripinnis*		F, M	50	6M + 24SM + 6ST + 14A	80	86	2		0-1 B, ACN=52	Brazil (SP, 1800m alt.)	S-99
Astyanax	*scabripinnis*		F, M	50	4M + 10SM + 6ST + 30A	64	70	8		0 B, ACN=52	Brazil (SP, 780m alt.)	S-99
Astyanax	*scabripinnis*	cytotype I	F, M	50	4M + 26SM + 4ST + 16A	80	84	1-6		ACN=52	Brazil (SP)	S-100, S-101, S-174
Astyanax	*scabripinnis*	cytotype II	F, M	48	6M + 22SM + 8ST + 12A	76	84			ACN=52	Brazil (SP)	S-100
Astyanax	*scabripinnis*		F, M	50	6M + 30SM + 4ST + 10A	86	90	1-3		0-1 B, ACN=52	Brazil (PR, Ivai basin)	M-75, M-76
Astyanax	*scabripinnis*		F, M	50	6M + 28SM + 16A	84	84	1-4		0-2 B, ACN=52	Brazil (PR, Parana basin)	M-75, M-76
Astyanax	*scabripinnis*		F, M	48	10M + 20SM + 8ST + 10A	78	86	3		ACN=50	Brazil (PR)	A-33
Astyanax	*scabripinnis*		F, M	48	10M + 24SM + 6ST + 8A	82	88	7		ACN=50	Brazil (PR)	A-33
Astyanax	*scabripinnis*		F, M	48	8M + 24SM + 4ST + 12A	80	84	8		ACN=50	Brazil (PR, Ivai basin)	F-21
Astyanax	*scabripinnis*		F, M	48	8M + 20SM + 6ST + 14A	76	82	6		ACN=50	Brazil (PR, Ivai basin)	F-21
Astyanax	*scabripinnis*	cytotype I	F, M	50	6M + 22SM + 6ST + 16A	78	84			1B, ACN=52	Brazil (PR, Ivai basin)	F-22
Astyanax	*scabripinnis*	cytotype II	F, M	48	8M + 26SM + 6ST + 8A	82	88			3B, ACN=52	Brazil (PR, Ivai basin)	F-22
Astyanax	*scabripinnis*	cytotype III	F, M	46	8M + 22SM + 6ST + 10A	76	82			2B, ACN=50	Brazil (PR, Ivai basin)	F-22
Astyanax	*scabripinnis paranae*		F, M	50	8M + 20SM + 12ST + 10A	78	90			ACN=52	Brazil (SP)	M-86
Astyanax	*scabripinnis paranae*			50	8M + 22SM + 10ST + 10A	80	90			0-1 B	Brazil (SP)	P-82, C-98
Astyanax	*scabripinnis paranae*		F, M	50	4M + 30SM + 4ST + 12A	84	88	4		0-1 B, ACN=52	Brazil (SP)	M-135
Astyanax	aff. *scabripinnis*		F, M	48	6M + 22SM + 4ST + 16A	76	80			ACN=50	Brazil (PR)	C-79
Astyanax	aff. *scabripinnis*		F	72	9M + 33SM + 6ST + 24A	114	120	4		3X, ACN=75	Brazil (PR)	C-79
Astyanax	*schubarti*		F, M	36	16M + 14SM + 4ST + 2A	66	70			ACN=52	Brazil (SP)	M-86, M-87
Astyanax	*schubarti*			54	24M + 21SM + 6ST + 3A	99	105			3X	Brazil (SP)	M-87
Astyanax	*schubarti*		F, M	36	12M + 14SM + 10ST	62	72			0-1 B, ACN=52	Argentina	M-85
Astyanax	*schubarti*		F	36	14M + 14SM + 6ST + 2A	64	70	2		ACN=52	Argentina (Paraná)	A-14
Astyanax	*taeniatus*			50	12M + 2SM + 24ST + 12A	64	88				Brazil	S-192
Astyanax	sp. B		F, M	50	6M + 24SM + 6ST + 14A	80	86			0-2 B, ACN=52	Brazil (PR)	F-7
Astyanax	sp. C		F, M	50	4M + 22SM + 8ST + 16A	76	84	2, 4		ACN=52	Brazil (PR)	K-7
Astyanax	sp.		F, M	48	6M + 18SM + 14ST + 10A	72	86	2, 4		ACN=50	Brazil (PR, sinkhole)	M-47
Astyanax	sp.			50							Argentina	F-20
Bryconamericus	aff. *exodon*	cytotype I	F, M	52	16M + 12SM + 6ST + 18A	80	86			ACN=52	Brazil (PR)	P-2
Bryconamericus	aff. *exodon*	cytotype II	F, M	52	10M + 24SM + 6ST + 12A	86	92			ACN=52	Brazil (PR)	P-2

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Bryconamericus	aff. *iheringii*	cytotype I	F, M	52	12M + 18SM + 8ST + 14A	82	90	4		ACN=54	Brazil (PR)	C-27, P-65
Bryconamericus	aff. *iheringii*	cytotype II	F, M	52	8M + 28SM + 6ST + 10A	88	94	4		ACN=54	Brazil (PR)	C-27, P-65
Bryconamericus	aff. *iheringii*	cytotype III	F, M	52	8M + 20SM + 8ST + 16A	80	88	2		ACN=54	Brazil (Ivai R. basin)	C-27
Bryconamericus	aff. *iheringii*		F, M	52	8M + 28SM + 6ST + 10A	88	94			ACN=54	Brazil (PR)	P-65
Bryconamericus	aff. *iheringii*		F, M	52	8M + 22SM + 10ST + 12A	82	92	2		ACN=54	Brazil (PR)	P-90
Bryconamericus	*stramineus*		F	52	26 M/SM + 26 ST/A	78			3.3 FD	ACN=52	Brazil (SP)	P-38, C-93
Bryconamericus	sp. A		F	52	6M + 30SM + 6ST + 10A	88	94	2-3		ACN=54	Brazil (SP)	W-17, W-18
Bryconamericus	sp. B		F, M	52	6M + 10SM + 20ST + 16A	68	88	3		ACN=54	Brazil (SP)	W-17, W-18
Bryconamericus	sp. C		F, M	52	6M + 18SM + 14ST + 14A	76	90	4		ACN=54	Brazil (PR)	W-17, W-18
Bryconamericus	sp. D		F	52	8M + 14SM + 16ST + 14A	74	90	4		ACN=54	Brazil (MG)	W-17, W-18
Bryconamericus	sp. E		F, M	54	10M + 16SM + 22ST + 6A	80	102			ACN=54	Brazil (MG)	W-17
Bryconella	*pallidifrons*	*palifrons*		50*							(Brazil, Peru)	S-30
Bryconops	*humeralis*	*Cynopotamus*		50							Brazil	O-50
Ctenobrycon	*hauxwellianus*		F, M	50	10M + 6SM + 34ST	66	100	2		ACN=52	Brazil (Acre)	C-26
Deuterodon	*pedri*		F, M	50	14 M/SM + 36 ST/A	64				ACN=52	Brazil (SP)	P-38
Gymnocorymbus	*ternetzi*		F, M	50	14M + 12SM + 6ST + 18A	76	82		3.7 FCM, 4.2 BFA	ACN=52	Argentina	A-14, V-86, H-13
Gymnocorymbus	*ternetzi*			50			(60)			ACN=52	(S. America)	S-152
Hasemania	*nana*	*marginata*	F, M	50	12M + 18SM + 10ST + 10A	80	90			ACN=52	(Brazil, Sao Francisco R.)	A-93
Hasemania	*nana*	*marginata*		50*			(100)			ACN=52	(Brazil, Sao Francisco R.)	S-152
Hasemania	*nana*			50	8M + 42SM	100	100	2		ACN=52	Brazil, Sao Francisco R.	A-122
Hemigrammus	*analis*			54*			(82)				(S. America)	S-152
Hemigrammus	*bellottii*	*Hyphessobrycon*		48*							(S. America)	S-30
Hemigrammus	*erythrozonus*		F	48	2SM + 46 ST/A	50			(4.0* FCM)		(Guyana)	L-75, O-48
Hemigrammus	*erythrozonus*			52*			(56)			ACN=52	(Guyana)	S-152
Hemigrammus	*hyanuary*		F, M	52	22 M/SM + 30 ST/A	74					(Brazil, Peru)	A-93
Hemigrammus	*hyanuary*			54*			(70)				(Brazil, Peru)	S-152
Hemigrammus	*marginatus*		F, M	50	10M + 34SM + 6A	94	94	2		ACN=52	Brazil (PR)	P-39
Hemigrammus	*marginatus*			50*			(100)			ACN=52	(S. America)	S-152
Hemigrammus	*matei*	*mattei*		36			(70)				(Argentina)	S-152
Hemigrammus	*micropterus*			52*							(Venezuela)	S-30
Hemigrammus	*ocellifer*			38*					3.0 FCM, 3.4 BFA		(Amazon R.)	S-152, V-86, H-13
Hemigrammus	*pulcher*			50*							(Peru)	S-30
Hemigrammus	*rhodostomus*			50*			(98)			ACN=52	(Lower Amazon R.)	S-152
Hemigrammus	*rodwayi*	*Hyphessobrycon*		50*						ACN=50	(S. America)	S-29
Hemigrammus	aff. *schmardae*			52			(88)			ACN=52	(Amazon R.)	S-152

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hemigrammus	*stictus*	*Hyphessobrycon*		50			(100)			ACN=52	(Amazon R., Orinoco R.)	S-152
Hemigrammus	aff. *ulreyi*			52*			(76)			ACN=52	(Argentina, Brazil)	S-152
Hemigrammus	*unilineatus*			52*							(northern S. America)	S-30
Hemigrammus	*vorderwinkleri*			48*							(Brazil, Negro R.)	S-30
Hollandichthys	*multifasciatus*		F, M	50	10M + 12SM + 28ST	72	100	2		ACN=52	Brazil (SP)	C-26
Hyphessobrycon	aff. *agulha*			50*							(Brazil)	S-30
Hyphessobrycon	*anisitsi*		F, M	50	6M + 16SM + 12ST + 16A	72	84	0-4		ACN=52	Brazil (SP)	C-40
Hyphessobrycon	*anisitsi*	*Hemigrammus caudovittatus*		50	2M + 32SM + 16 ST/A	84			(3.8 FCM)	ACN=52	(S. America)	F-30, V-86
Hyphessobrycon	*anisitsi*	*Hemigrammus caudovittatus*		50*			(98)		(3.4 BFA)	ACN=52	(S. America)	S-152, H-13
Hyphessobrycon	*bentosi*			52*			(66)			ACN=52	(Amazon R.)	S-152
Hyphessobrycon	*bentosi*	*robertsi*		52*			(52)			ACN=52	(Amazon R.)	S-152
Hyphessobrycon	*bifasciatus*			50*			(98)			ACN=52	(Argentina, Brazil)	S-152
Hyphessobrycon	*copelandi*			52*			(100)			ACN=52	(Brazil)	S-152
Hyphessobrycon	aff. *eos*			48*							(S. America)	S-30
Hyphessobrycon	*eques*	*callistus*		52*			(90)		3.3 FCM	ACN=52	(S. America)	S-152, V-86
Hyphessobrycon	*eques*	*serpae*		52*			(82)			ACN=52	(S. America)	S-152
Hyphessobrycon	*erythrostigma*	*rubrostigma*		52*			(76)				(S. America)	S-152
Hyphessobrycon	*flammeus*		F, M	52	18 M/SM + 32ST + 2A	70	102		(2.5 FCM)		(Brazil)	A-93, V-86
Hyphessobrycon	*flammeus*			50*			(100)			ACN=52	(Brazil)	S-152
Hyphessobrycon	*griemi*			50*			(100)			ACN=52	(Brazil)	S-152
Hyphessobrycon	*griemi*			48					2.6 FD		Brazil (SP)	C-94
Hyphessobrycon	*herbertaxelrodi*			52	10 M/SM + 42 ST/A	62					(Brazil)	A-93
Hyphessobrycon	*herbertaxelrodi*			52*			(76)			ACN=52	(Brazil)	S-152
Hyphessobrycon	*heterorhabdus*			48*							(Brazil)	S-30
Hyphessobrycon	*megalopterus*	*Megalamphodus melanopterus*		52*			(94)			ACN=52	(Brazil, Bolivia)	S-152
Hyphessobrycon	*minimus*			52*							(Guyana)	S-30
Hyphessobrycon	*minor*	*'minor'*		52	14M + 12SM + 26 ST/A	78					(Guyana)	A-91
Hyphessobrycon	*peruvianus*			50*						ACN=50	(Amazon R., Peru)	S-29
Hyphessobrycon	*pulchripinnis*			50*			(82)		3.7 FCM	ACN=52	(Brazil)	S-152, V-86
Hyphessobrycon	*reticulatus*		F, M	50	14M + 20SM + 16ST	84	100		2.3 FD		Brazil (SP)	C-26, C-94
Hyphessobrycon	*rosaceus*	*ornatus*		52*							(Guyana, Suriname)	S-152
Hyphessobrycon	*rosaceus*	*Cheirodon troemneri*		50*						ACN=50	(Guyana, Suriname)	S-29, S-152, S-153
Hyphessobrycon	*santae*			50*			(90)			ACN=52	(Brazil, Sao Francisco R.)	S-152
Hyphessobrycon	*scholzei*		F, M	50	8M + 20SM + 8ST + 14A	78	86				(Lower Amazon R.)	A-93
Hyphessobrycon	*scholzei*			50*			(86)			ACN=52	(S. America)	S-152

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hyphessobrycon	*simulatus*	*Pseudopristella simulata*		52*			(74)			ACN=52	(French Guiana)	S-152
Hyphessobrycon	*sweglesi*	*Megalamphodus*		52*			(98)			ACN=52	(Colombia)	S-152
Hyphessobrycon	*tropis*			46*							(Rio Negro)	S-30
Knodus	aff. *beta*			52*			(102)				(Colombia)	S-152
Markiana	*nigripinnis*		M	52					2.2 FD		Brazil (Miranda R.)	C-94
Moenkhausia	*collettii*			50*			(94)			ACN=52	(S. America)	S-152
Moenkhausia	*costae*		F	50	50 M/SM	100	100	1-2		ACN=52	Brazil (MG)	P-38
Moenkhausia	*dichroura*			50	32M + 14SM + 4ST	96	100		2.0 FD		Brazil (MT)	P-39, C-94
Moenkhausia	*gracilima*	cytotype A		50	14M + 26SM + 6ST + 4A	90	96				Brazil (AM)	P-39
Moenkhausia	*gracilima*	cytotype B		48	4M + 24SM + 12ST + 8A	76	88				Brazil (AM)	P-39
Moenkhausia	*intermedia*		F, M	50	50 M/SM	100	100	1-2		0-1 B, ACN=52	Brazil (SP)	P-38
Moenkhausia	*intermedia*		F, M	50	16M + 34SM	100	100	2		ACN=52	Brazil (PR)	P-39
Moenkhausia	*intermedia*		F, M	50	16M + 34SM	100	100	2		0 B, ACN=52	Brazil (SP)	D-31
Moenkhausia	*oligolepis*			50*			(100)		3.2 BFA	ACN=52	(Brazil, Venezuela)	S-152, H-13
Moenkhausia	*pittieri*			50*			(92)			ACN=52	(Venezuela)	S-152
Moenkhausia	*pittieri*			50	4M + 40 SM/ST + 6A		94				(Venezuela)	A-91
Moenkhausia	*pittieri*			49	4M + 39 SM/ST + 6A		92				(Venezuela)	A-91
Moenkhausia	*sanctaefilomenae*		F, M	50	48 M/SM + 2 ST/A	98				0-3 B, ACN=52	Argentina	A-14
Moenkhausia	*sanctaefilomenae*		F, M	50	48 M/SM + 2A	98	98		(2.4 FD)	1-8 B, ACN=52	Brazil (SP)	F-35, C-94
Moenkhausia	*sanctaefilomenae*		F, M	50	12M + 36SM + 2ST	98	100	3	(2.8 FD)	0-6 B, ACN=52	Brazil (SP)	D-31, C-93
Moenkhausia	*sanctaefilomenae*		F, M	50	12M + 36SM + 2ST	98	100	2		0-2 B, ACN=52	Brazil (PR)	P-39, P-73
Moenkhausia	sp.		F, M	50	16M + 34SM	100	100	2		0 B, ACN=52	Brazil (MT)	D-31
Oligosarcus	*hepsetus*			50	2M + 16SM + 16ST + 16A	68	84	3	3.3 FD	ACN=52	Brazil	H-38, C-94
Oligosarcus	*hepsetus*		F, M	50	6M + 10SM + 16ST + 18A	66	82	2		ACN=52	Brazil (Paraiba do Sul R.)	K-21
Oligosarcus	*jenynsii*			50	2M + 24SM + 10ST + 14A	76	86	2		ACN=52	Brazil	H-38
Oligosarcus	*macrolepis*		F, M	50	8M + 20SM + 6ST + 16A	78	84			ACN=52	Brazil (MG)	F-2
Oligosarcus	*paranensis*		F, M	50					3.3 FD		Brazil (SP)	C-93
Oligosarcus	*pintoi*			50	2M + 20SM + 12ST + 16A	72	84	2		ACN=52	Brazil (SP)	H-38
Oligosarcus	*pintoi*	*Paroligosarcus*	F, M	50	24 M/SM + 26 ST/A	74				0-1 B, ACN=52	Brazil (SP)	F-56
Piabina	*argentea*		F, M	52	26 M/SM + 26 ST/A	78		1-4		ACN=52	Brazil (SP)	P-38
Piabina	*argentea*			52	8M + 14SM +16ST + 14A	74	90	2		ACN=52	Brazil (MG)	A-122
Piabina	*argentea*			52	18 M/SM + 12ST + 22A	70	82		2.4 FD	0-1 B	Brazil (SP)	C-98, C-93
Schultzites	*axerlodi*			52*							(Colombia)	S-30
Tetragonopterus	*argenteus*		F	52	16 M/SM + 2ST + 34A	68	70	2	3.0 FD	ACN=52	Argentina (Parana R.)	A-14, C-94
Tetragonopterus	*chalceus*		F, M	52	26 M/SM + 26 ST/A	78		1-2	3.9 FD	ACN=52	Brazil (MG)	P-38, C-94

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Thayeria	*boehlkei*			50*			(100)			ACN=52	(Peru, Brazil)	S-152
Triporthinae												
Triportheus	*albus*		F, M	52	14M + 20SM + 14ST + 4A	86	100	1-4		ZW/ZZ	Amazon basin	S-12
Triportheus	*culter*			52	14M + 16SM + 16ST + 6A	82	98				Amazon basin	S-12
Triportheus	*auritus*	*elongatus*	F, M	52	22M + 12SM + 16ST + 2A	86	102	1-4		ZW/ZZ	Amazon basin	S-12
Triportheus	cf. *auritus*	cf. *elongatus*	F, M	52						ZW/ZZ	Brazil (MT)	A-117
Triportheus	*angulatus*	*flavus*	F, M	52	22M + 14SM + 12ST + 4A	88	100	1-4		ZW/ZZ	Amazon basin	S-12
Triportheus	*guentheri*		F	52	20 M/SM + 12 ST/A	72		1-4		ZW, ACN=53	Brazil (MG)	A-117, S-12
Triportheus	*guentheri*		M	52	20 M/SM + 12 ST/A	72		1-4		ZZ, ACN=54	Brazil (MG)	A-117, S-12
Triportheus	*nematurus*		F	52	13M + 23SM + 16ST	88	104	3		ZW, ACN=53	Brazil (SP)	D-30
Triportheus	*nematurus*		M	52	14M + 22SM + 16ST	88	104	2		ZZ, ACN=54	Brazil (SP)	D-30
Triportheus	*nematurus*	*paranensis*	F	52	25M + 23SM + 4ST	100	104	1-4		ZW, ACN=53	Argentina	S-12
Triportheus	*nematurus*	*paranensis*	M	52	26M + 22SM + 4ST	100	104	1-4	2.7 FD	ZZ, ACN=54	Argentina	S-12, C-94
Triportheus	*pictus*			52					3.5 FD		(Brazil, Peru)	P-88, C-94
Triportheus	*pictus*			50*			(100)			ACN=52	(S. America)	S-152
Triportheus	*pictus*			52*							(Brazil)	S-30
Triportheus	*rotundatus*			52*							(Brazil)	S-30
Triportheus	*rotundatus*			50*			(100)			ACN=52	(S. America)	S-152
Triportheus	*signatus*			52						ZW/ZZ	(Parana-Paraguai basin)	A-117
Triportheus	*venezuelensis*		F	52	20M + 16SM + 16ST	88	104	2-4		ZW, ACN=55	Venezuela (Bolivar)	N-69
Triportheus	*venezuelensis*		M	52	20M + 16SM + 16ST	88	104	2-4		ZZ, ACN=56	Venezuela (Bolivar)	N-69
Chilodontidae												
Caenotropus	*labyrinthicus*		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (MT)	M-44
Chilodus	*punctatus*		F, M	54	54 M/SM	108	108	2	3.2 BFA		Brazil (AM)	M-44, H-13
Crenuchidae												
Characidium	cf. *alipioi*		F, M	50	30M + 20SM	100	100	2		ZW/ZZ	Brazil (SP)	C-91
Characidium	cf. *fasciatum*			50	32M + 18SM	100	100		2.4 FD	0-4 B, ZW/ZZ	Brazil (SP)	C-93, C-98
Characidium	*gomesi*		F, M	50	32M + 18SM	100	100	2		1-2 B, ZW/ZZ	Brazil (SP)	M-113
Characidium	cf. *gomesi*		F	50	31M + 18SM + 1ST	99	100	2-7		ZW, ACN=52	Brazil (PR)	V-91
Characidium	cf. *gomesi*		M	50	32M + 18SM	100	100	2-7		ZZ, ACN=52	Brazil (PR)	V-91
Characidium	cf. *lagosantense*		F, M	50	32M + 18SM	100	100			ACN=52	Brazil (SP)	M-74
Characidium	*lauroi*		F, M	50	24M + 24SM + 2ST	98	100	2-3			Brazil (SP)	C-91
Characidium	*oiticicai*		F	50	30M + 18SM + ZW					0-3 B, ZW	Brazil (SP)	C-98

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Characidium	*pterostictum*		F, M	50	32M + 16SM + 2ST	98	100			ACN=52	Brazil (SP)	M-74
Characidium	cf. *zebra*		F, M	50	32M + 18SM	100	100	6		0-1 B, ACN=52	Brazil (SP)	M-74, V-94
Characidium	sp.		F	50	32M + 18SM	100	100			ACN=52	Brazil (SP)	M-74
Characidium	sp.			50	32M + 16SM + 2A	98	98			0-2 B	Brazil (SP)	C-98
Ctenoluciidae												
Boulengerella	sp.			36							(S. America)	P-88
Ctenolucius	*hujeta*	*hujeti*		36	26 M/SM + 10 ST/A	62					(S. America)	A-92
Curimatidae												
Curimata	*cyprinoides*		F, M	54	44M + 10SM	108	108	2		ACN=56	Brazil (AM)	F-12, V-92
Curimata	*inornata*		F, M	54	40M + 14SM	108	108	2		ACN=56	Brazil (AM)	F-12, V-92
Curimata	*knerii*		F, M	54	40M + 12SM + 2ST	106	108	2		ACN=56	Brazil (AM)	F-12
Curimata	*ocellata*		F	56	40M + 16SM	112	112	2		ACN=56	Brazil (AM)	F-12
Curimata	*vittata*		F, M	54	42M + 12SM	108	108	2	3.0 FD	ACN=56	Brazil (AM)	F-12, V-92, C-94
Curimatella	*alburna*		M	54	46M + 8SM	108	108	2		ACN=56	Brazil (AM)	F-12
Curimatella	*dorsalis*		F, M	54	46M + 8SM	108	108	2	2.8 FD	ACN=56	Brazil (MS)	N-14, C-94
Curimatella	*dorsalis*		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B-74
Curimatella	*immaculata*		F, M	54	46M + 8SM	108	108	2			Brazil (GO)	V-92
Curimatella	*lepidura*		F, M	54	54 M/SM	108	108	2			Brazil (MG)	V-93
Curimatella	*meyeri*		F, M	54	46M + 8SM	108	108	2		ACN=56	Brazil (AM)	F-12
Curimatopsis	aff. *macrolepis*	cytotype A		52*							(S. America)	S-30
Curimatopsis	aff. *macrolepis*	cytotype B		46*							(S. America)	S-30
Curimatopsis	*myersi*		F	46	42M + 4SM	92	92	2			Brazil (MS)	N-14
Cyphocharax	*gilberti*		F, M	54	44M + 10SM	108	108	2			Brazil (SP)	V-92
Cyphocharax	cf. *gillii*		F	54	54 M/SM	108	108	2			Brazil (MT)	V-93
Cyphocharax	*gouldingi*		F, M	54	54M	108	108	2		1 B	Brazil (GO)	V-92
Cyphocharax	*modestus*	*Curimata modesta*	F, M	54	54 M/SM	108	108	2	(3.2 FD)	0-1 B	Brazil (SP)	V-30, C-93
Cyphocharax	*modestus*	*Curimata modesta*		82	82 M/SM	164	164	3		0-1 B, 3X	Brazil (SP)	V-30
Cyphocharax	*modestus*	*modesta*	F, M	54	54 M/SM	108	108	2		0-1 B, ACN=56	Brazil (PR)	M-42
Cyphocharax	*modestus*		F, M	54	54 M/SM	108	108	2		0-2 B, ACN=56	Brazil (PR)	G-95, T-82
Cyphocharax	*modestus*	*modesta*	F, M	54	54 M/SM	108	108	2			Brazil (Upper Parana)	V-93
Cyphocharax	*modestus*	*modesta*		54	54 M/SM					0-1 B	Brazil (SP)	V-94
Cyphocharax	*modestus*		F, M	54	50M + 4SM	108	108	2		1 B	Brazil (SP)	V-92
Cyphocharax	*nagelii*		F, M	54	54 M/SM	108	108	2		1 B	Brazil (Upper Parana)	V-93, C-98

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Cyphocharax	*nagelii*		F, M	54	46M + 8SM	108	108	2–9			Brazil (SP)	V–92
Cyphocharax	*platanus*		F, M	58	52 M/SM + 6ST	110	116	2			Argentina	B–74
Cyphocharax	*platanus*		F, M	58	48M + 4SM + 6ST	110	116	2			Argentina	V–92
Cyphocharax	*spilotus*		F, M	54	54 M/SM	108	108	2		0–1 B, ACN=56	Argentina	B–74, C–98
Cyphocharax	cf. *spilurus*	*spilura*	F, M	54	54 M/SM	108	108	2			Brazil (RO)	V–93
Cyphocharax	*vanderi*		F, M	54	54 M/SM	108	108	2			Brazil (SP)	V–93
Cyphocharax	*voga*		F, M	54	54 M/SM	108	108	2			Brazil (RS)	V–93
Cyphocharax	*voga*		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B–74
Potamorhina	*altamazonica*		F, M	102	2M + 2SM + 98A	106	106	2			Brazil (AM)	F–13
Potamorhina	*latior*		F, M	56	52M + 2SM + 2ST	110	112	2		ACN=56	Brazil (AM)	F–13
Potamorhina	*pristigaster*		F, M	54	44M + 10SM	108	108	2		ACN=56	Brazil (AM)	F–13
Potamorhina	*squamoralevis*		F, M	102	14 M/SM + 88A	116	116	2	3.8 FD		Argentina	B–74, C–94
Psectrogaster	*amazonica*		F, M	54	44M + 10SM	108	108	2			Brazil (MT)	V–92
Psectrogaster	*curviventris*		F, M	54	42M + 12SM	108	108	2		ACN=56	Brazil (MS)	N–14
Psectrogaster	*curviventris*		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B–74
Psectrogaster	*rutiloides*		F, M	54	42M + 12SM	108	108	2			Brazil (AM)	F–12
Steindachnerina	*amazonica*		F, M	54	42M + 12SM	108	108	3			Brazil (GO)	V–92
Steindachnerina	*brevipinna*		F, M	54	48M + 6SM	108	108	2		ACN=56	Brazil (MS)	N–14
Steindachnerina	*brevipinna*		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B–74
Steindachnerina	*conspersa*		F, M	54	46M + 8SM	108	108	2		ACN=56	Argentina	B–74
Steindachnerina	*conspersa*		F, M	54	54 M/SM	108	108	2			Brazil (MS)	V–93
Steindachnerina	*elegans*		F, M	54	54 M/SM	108	108	2	3.5 FD		Brazil (MG)	V–93, C–94
Steindachnerina	*gracilis*		F, M	54	38M + 16SM	108	108	2–6			Brazil (MT)	V–92
Steindachnerina	cf. *guentheri*		F, M	54	54 M/SM	108	108	2	3.2 FD		Brazil (Acre)	C–25, C–94
Steindachnerina	*insculpta*		F, M	54	54 M/SM	108	108	2	(2.9 FD)	0–2 B, ACN=56	Brazil (PR)	V–93, C–93, G–95
Steindachnerina	*insculpta*		F, M	54	50M + 4SM	108	108	2			Brazil (SP)	V–92
Steindachnerina	*leucisca*	*leuciscus*	F	54	48M + 6SM	108	108	2		ACN=56	Brazil (AM)	F–12
Erythrinidae												
Erythrinus	*erythrinus*		F, M	54	6M + 2ST + 46A	60	62			4B, no sex chrom.	Brazil (Birigui)	B–35
Erythrinus	*erythrinus*		F, M	54	6M + 2ST + 46A	60	62			No sex chrom.	Brazil (Penapolis)	B–35
Erythrinus	*erythrinus*		F	54	6M + 2ST + 46A	60	62			2B, $X_1X_1X_2X_2$	Brazil (Guaira, PR)	B–35, C–110
Erythrinus	*erythrinus*		M	53	7M + 2ST + 44A	60	62			X_1X_2Y, ACN=54	Brazil (Guaira, PR)	B–35, C–110
Erythrinus	*erythrinus*		F	52	6M + 2SM + 6ST + 38A	60	66	3–8		$X_1X_1X_2X_2$, ACN=54	Brazil (Manaus, AM)	B–33, B–35, C–110
Erythrinus	*erythrinus*		M	51	7M + 2SM + 6ST + 36A	60	66			X_1X_2Y, ACN=54	Brazil (Manaus, AM)	B–35, C–110

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Erythrinus	*erythrinus*		F	52	4M + 2SM + 2ST + 44A	58	60			$X_1X_1X_2X_2$, ACN=54	Brazil (Natal)	B-35, C-110
Erythrinus	*erythrinus*		M	51	5M + 2SM + 2ST + 42A	58	60			X_1X_2Y, ACN=54	Brazil (Natal)	B-35, C-110
Erythrinus	*erythrinus*			54							Argentina	F-20
Hoplerythrinus	*unitaeniatus*		F, M	48	48 M/SM	96	96			ACN=50	Brazil (AM)	G-96
Hoplerythrinus	*unitaeniatus*		F, M	48	47 M/SM + 1 ST/A	95				ACN=48	Brazil (AM)	G-96
Hoplerythrinus	*unitaeniatus*		F, M	48	46 M/SM + 2 ST/A	94					Brazil (AM)	G-96
Hoplerythrinus	*unitaeniatus*	cytotype A	F, M	48	48 M/SM	96	96			ACN=50	Brazil (RO, MS, Argentina)	G-21
Hoplerythrinus	*unitaeniatus*	cytotype B	F, M	48	46 M/SM + 2A	94	94			ACN=48	Brazil (Su)	G-21
Hoplerythrinus	*unitaeniatus*		F, M	52	46 M/SM + 6A	98	98			ACN=52	Brazil (MG)	G-21
Hoplerythrinus	*unitaeniatus*		F, M	48	44 M/SM + 4ST	92	96	2-4		No sex chrom.	Brazil (SP, MS)	D-16
Hoplerythrinus	*unitaeniatus*		F, M	52	44 M/SM + 4ST + 4A	96	100	4-6		No sex chrom.	Brazil (MG)	D-16
Hoplerythrinus	*unitaeniatus*		F	72	69 M/SM + 3 ST/A	141		3		3X	Brazil (AM)	G-20
Hoplerythrinus	*unitaeniatus*			48							Argentina	F-20
Hoplias	*lacerdae*		F, M	50	50 M/SM	100	100	2		No sex chrom.	Brazil	B-78
Hoplias	*lacerdae*		F, M	50	36M + 14SM	100	100			XX/XY, ACN=50	Brazil (SP)	B-29
Hoplias	*malabaricus*	cytotype A	F, M	42	22M + 20SM	84	84	2-6		No sex chrom.	Brazil (RS, MG)	B-61, B- 77
Hoplias	*malabaricus*	cytotype A	F, M	42	24M + 18SM	84	84	3-8	(2.3 FD)	No sex chrom.	Brazil (SP, AM, PR)	B-61, B-77, P-21, C-93
Hoplias	*malabaricus*	cytotype A	F, M	42	20M + 22SM	84	84	3-7		No sex chrom.	Brazil (SP, MT)	B-61, B- 77
Hoplias	*malabaricus*	cytotype A	F, M	42	42 M/SM	84	84			No sex chrom.	Argentina	L-90
Hoplias	*malabaricus*	cytotype B	F	42	24M + 16SM + 2ST	82	84	4-7		XX, ACN=50	Brazil (MG)	B-61, B-76
Hoplias	*malabaricus*	cytotype B	M	42	24M + 17SM + 1ST	83	84	4-7		XY, ACN=50	Brazil (MG)	B-76
Hoplias	*malabaricus*	cytotype C	F, M	40	40 M/SM	80	80			No sex chrom.	Brazil (AM, PA, RO, MT, PR)	B-61, P-21
Hoplias	*malabaricus*	cytotype C	F, M	40	40 M/SM	80	80			No sex chrom.	Argentina	L-90
Hoplias	*malabaricus*	cytotype D	F	40	40 M/SM	80	80		(2.8 BFA)	$X_1X_1X_2X_2$	Brazil (SP, MG, PR)	B-31, B-34, B- 61, H-13
Hoplias	*malabaricus*	cytotype D	M	39	39 M/SM	78	78			X_1X_2Y, ACN=48	Brazil (SP, PR)	B-31, B-34, B- 61, P-21
Hoplias	*malabaricus*	cytotype E	M	42	40 M/SM + 2A	82	82			ACN=50	Brazil (PA)	B-61
Hoplias	*malabaricus*	cytotype F	F, M	40	40 M/SM	80	80			No sex chrom.	Brazil (PA, MA, RN, MG)	B-61
Hoplias	*malabaricus*	cytotype G	F	40	40 M/SM	80	80			XX, ACN=48	Brazil (PA, RO, MT)	B-61
Hoplias	*malabaricus*	cytotype G	M	41	40 M/SM + 1A	81	81			XY_1Y_2, ACN=48	Brazil (PA, RO, MT)	B-61
Gasteropelecidae												
Carnegiella	*marthae*		F	50	20M + 12SM + 4ST + 14A	82	86	1-3		ZW, ACN=55	Brazil (AM)	T-76
Carnegiella	*marthae*		M	50	20M + 12SM + 4ST + 14A	82	86	1-3		ZZ, ACN=56	Brazil (AM)	T-76
Carnegiella	*strigata*		F	50	4M + 4SM + 2ST + 40A	58	60	1-3		ZW, ACN=56	Brazil (AM)	T-76
Carnegiella	*strigata*		M	50	4M + 4SM + 2ST + 40A	58	60	1-3		ZZ, ACN=56	Brazil (AM)	T-76

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Carnegiella	*strigata*			50–52					2.8 BFA		(S. America)	H-13
Carnegiella	*strigata*			48*								S-30
Gasteropelecus	*sternicla*			54*							(S. America)	S-30
Thoracocharax	*stellatus*			54							Paraguai R.	C-101
Thoracocharax	*stellatus*		F, M	54	6M + 6SM + 6ST + 36A	66	72	4		ZW/ZZ	Brazil (MT)	V-90
Thoracocharax	cf. *stellatus*		F	52	8M + 16SM + 4ST + 24A	76	80	2	2.2 FD	ZW, ACN=54	Brazil (Rio Branco, Acre)	C-94, C-101
Thoracocharax	cf. *stellatus*		M	52	8M + 16SM + 4ST + 24A	76	80	2	2.2 FD	ZZ, ACN=54	Brazil (Rio Branco, Acre)	C-94, C-101
Hemiodontidae												
Anodus	*elongatus*		M	54	24M + 26SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
Anodus	*elongatus*	*steatops*		54	52 M/SM + 2A	106	106				(Brazil)	A-92
Anodus	*elongatus*	*melanopogon*	F, M	54	20M + 28SM + 6ST	102	108	2		ACN=56	Brazil (AM)	P-40
Anodus	sp.		F, M	54	24M + 24SM + 6ST	102	108	2		ACN=56	Brazil (AM)	P-40
Argonectes	*longiceps*	*scapularis*		54	50 M/SM + 4ST	104	108	2			(S. America)	P-88
Hemiodus	*argenteus*	*ocellatus*	F, M	54	26M + 24SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
Hemiodus	*immaculatus*		F, M	54	22M + 26SM + 6ST	102	108	2		ACN=56	Brazil (AM)	P-40
Hemiodus	*microlepis*			54	52 M/SM + 2A	106	106				(Brazil, Venezuela)	A-92
Hemiodus	cf. *microlepis*		F, M	54	20M + 30SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
Hemiodus	*unimaculatus*		F, M	54	26M + 24SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
Lebiasinidae												
Copeina	*guttata*			42*							(S. America)	S-30
Copella	*arnoldi*			44*							(S. America)	S-30
Copella	*nattereri*			36*							(S. America)	S-30
Nannostomus	*beckfordi*		M	42	2M + 40A	44	44			ACN=44	(S. America)	A-92
Nannostomus	*beckfordi*	cytotype A		44*							(S. America)	S-30
Nannostomus	*beckfordi*	cytotype B		36*							(S. America)	S-30
Nannostomus	*eques*	*Nannobrycon*		34	34A	34					(Brazil, Peru)	A-92
Nannostomus	*eques*	*Poecilobrycon*		36*							(S. America)	S-30
Nannostomus	*harrisoni*	*Poecilobrycon*		40*							(Guyana)	S-30
Nannostomus	*marginatus*			42*							(S. America)	S-30
Nannostomus	*trifasciatus*	*erythrurus*		46*							(S. America)	S-30
Nannostomus	*trifasciatus*	*erythrurus*		38*							(S. America)	S-30
Nannostomus	*trifasciatus*	*erythrurus*		30*							(S. America)	S-30
Nannostomus	*trifasciatus*	*erythrurus*		24*							(S. America)	S-30

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Nannostomus	*unifasciatus*	*Poecilobrycon*		22*							(S. America)	S-30
Pyrrhulina	cf. *australis*		F, M	40	6ST + 34A	40	46	8		ACN=42	Brazil (SP)	O-53
Pyrrhulina	*australis*	*rachoviana*		42					(2.0 FD), 2.4 BFA		(S. America)	C-93, H-13
Pyrrhulina	sp.			42	2M + 2SM + 38 ST/A	46					Brazil	O-82
Parodontidae												
Apareiodon	*affinis*		F	55	51 M/SM + 4ST	106	110	2		ZW_1W_2, ACN=56	Brazil (MG, SP)	M-82, M-83, L-85
Apareiodon	*affinis*		M	54	50 M/SM + 4ST	104	108	2	(2.0, 2.5 FD)	ZZ, ACN=56	Brazil (MG, SP)	M-82, M-83, L-85, C-93, C-94
Apareiodon	*affinis*		F	55	47 M/SM + 8ST	102	110	2		ACN=56	Argentina	C-96
Apareiodon	*affinis*		F	55	43 M/SM + 10ST + 2A	98	108	2		ACN=55, 56	Argentina	C-96
Apareiodon	*affinis*		F	54	45 M/SM + 8ST + 1A	99	107	2		ACN=55	Argentina	C-96
Apareiodon	*affinis*		M	54	40 M/SM + 12ST + 2A	94	106	2		ACN=54	Argentina	C-96
Apareiodon	*affinis*		M	54	42 M/SM + 8ST + 4A	96	104	2		ACN=55	Argentina	C-96
Apareiodon	*ibitiensis*			54	50 M/SM + 4ST	104	108	2		ACN=56	Brazil (PR, SP)	M-83, J-8
Apareiodon	*piracicabae*		F, M	54	52 M/SM + 2ST	106	108	4		0-1 B, ACN=56	Brazil (SP)	J-8, F-56
Apareiodon	*vittatus*			54	52 M/SM + 2ST	106	108	2		ACN=56	Brazil (Timbo R)	J-8
Apareiodon	sp. A			54	50 M/SM + 4ST	104	108	2		ACN=56	Brazil (MG)	J-8
Apareiodon	sp. B			54	50 M/SM + 4ST	104	108	2		ACN=56	Brazil (MG)	J-8
Apareiodon	sp. C			54	52 M/SM + 2ST	106	108	2		ACN=54	Brazil (Araguaia R., MT)	J-8
Parodon	*hilarii*		F	54	31M + 22SM + 1ST	107	108	2		ZW, ACN=55	Brazil (MG)	M-84, J-7
Parodon	*hilarii*		M	54	32M + 22SM	108	108	2		ZZ, ACN=54	Brazil (MG)	M-84, J-7
Parodon	*nasus*		F, M	54	48 M/SM + 6ST	102	108	2		ACN=56	Brazil (MT)	B-81
Parodon	*nasus*	*tortuosus*	F, M	54	48 M/SM + 6ST	102	108	2		ACN=56	Brazil (SP)	B-81
Parodon	*nasus*	*tortuosus*	F, M	54	48 M/SM + 6ST	102	108	2		ACN=56	Brazil (PR)	J-7
Parodon	sp.		F, M	54	50 M/SM + 4ST	104	108	2		ACN=54	Brazil (MT)	J-7
Prochilodontidae												
Prochilodus	*argenteus*		F, M	54	40M + 14SM	108	108	2	3.1 FD	ACN=56	Brazil (CE)	P-20, C-94
Prochilodus	*brevis*	*cearaensis*	F, M	54	40M + 14SM	108	108	2		0-2 B, ACN=56	Brazil (CE)	P-20
Prochilodus	*costatus*	*affinis*	F, M	54	40M + 14SM	108	108	2	3.1 FD	ACN=56	Brazil (MG)	P-20, C-94
Prochilodus	*lineatus*		F, M	54	40M + 14SM	108	108		(3.4 FD)	ACN=56	Brazil (MS)	P-20, C-93
Prochilodus	*lineatus*			54	54 M/SM	108	108				Argentina	F-20
Prochilodus	*lineatus*	*platensis*		54	54 M/SM	108	108				Argentina	F-20
Prochilodus	*lineatus*		F, M	54	40M + 14SM	108	108	2		0-7 B, ACN=56	Brazil (PR, SP)	D-12, A-119, V-107
Prochilodus	*lineatus*	*scrofa*	F, M	54	40M + 14SM	108	108	2		0-5 B, ACN=56	Brazil (SP)	P-19, P-20

Table 6.12 Order CHARACIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Prochilodus	*marggravii*		F, M	54	40M + 14SM	108	108	2			Brazil (MG)	P-20
Prochilodus	*mariae*			54	40M + 14SM	108	108			0-3 B, ACN=54	Venezuela (Bolivar)	C-77, C-98
Prochilodus	*nigricans*		F, M	54	40M + 14SM	108	108	2		0-2 B, ACN=56	Brazil (AM.)	P-20, V-94
Prochilodus	*vimboides*		F, M	54	40M + 14SM	108	108			ACN=56	Brazil (SP)	P-20
Semaprochilodus	*insignis*		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM.)	F-11
Semaprochilodus	*kneri*			54	40M + 14SM	108	108	2		ACN=54	Venezuela (Bolivar)	O-78
Semaprochilodus	*laticeps*			54	40M + 14SM	108	108	2		ACN=54	Venezuela (Bolivar)	O-78
Semaprochilodus	*taeniurus*		F	54	53 M/SM + 1large M	108	108	2		ZW, ACN=55	Brazil (AM.)	F-11
Semaprochilodus	*taeniurus*		M	54	54 M/SM	108	108	2		ZZ, ACN=54	Brazil (AM.)	F-11

Table 6.13 Order SILURIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Amblycipitidae												
Amblyceps	*mangois*		F, M	36	4M + 12SM + 16ST + 4A	52	68				India (J & K)	S-48
Liobagrus	*andersoni*		F, M	28	18M + 10SM	56	56			ACN=30	Korea (Han R.)	S-94
Liobagrus	*andersoni*		F, M	28	14M + 14SM	56	56			ACN=30	Korea (Gapyeong)	K-52
Liobagrus	*anguillicauda*			34	20M + 12SM + 2ST	66	68				China (Zhejiang)	L-38
Liobagrus	*marginatoides*	*Leiobagrus*	F	30	16M + 6SM + 6ST + 2A	52	58			XX, ACN=36	China (Nanchong)	Y-15
Liobagrus	*marginatoides*	*Leiobagrus*	M	30	16M + 5SM + 7ST + 2A	51	58			XY, ACN=35	China (Nanchong)	Y-15
Liobagrus	*marginatus*		F, M	24	20M + 2SM + 2ST	46	48				China (Sichuan)	L-36
Liobagrus	*marginatus*	*Leiobagrus*	F	24	20M + 2SM + 2ST	46	48			XX, ACN=30	China (Sichuan)	L-30, Y-15
Liobagrus	*marginatus*	*Leiobagrus*	M	24	19M + 2SM + 2ST + 1A	45	47			XY, ACN=30	China (Sichuan)	L-30, Y-15
Liobagrus	*mediadiposalis*		F, M	42	26M + 16SM	84	84			ACN=42	Korea (Nakdong R.)	S-94
Liobagrus	*mediadiposalis*		F, M	42	26M + 12SM + 4 ST/A	80		2		ACN=42	Korea (Hamyang)	K-52
Liobagrus	*mediadiposalis*			28	18M + 6SM + 4ST	52	56			ACN=30	Korea (Gum R.)	U-34
Liobagrus	*nigricauda*	*Leiobagrus*	F	30	16M + 6SM + 6ST + 2A	52	58			XX, ACN=36	China (Nanchong)	Y-15
Liobagrus	*nigricauda*	*Leiobagrus*	M	30	16M + 5SM + 7ST + 2A	51	58			XY, ACN=35	China (Nanchong)	Y-15
Liobagrus	*obesus*		F, M	20	20M	40	40				Korea (Kum R.)	S-94
Liobagrus	*reinii*		F, M	38	26M + 8SM + 4ST	72	76			ACN=46	Japan (Gifu)	U-34
Liobagrus	*reinii*			38	28M + 10SM	76	76				Japan	O-22

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ariidae												
Ariopsis	*felis*	*Arius*		54	26 M/SM + 28 ST/A	80			(4.5 FCM)	ACN=54	USA (LA)	L-19, T-73
Ariopsis	*felis*	*Arius*	F, M	54	16M + 12SM + 20ST + 6A	82	102			ACN=54	Mexico	G-74
Ariopsis	*guatemalensis*	*Galeichthys caerulescens*		52	16M + 24SM + 10ST + 2A	92	102				Mexico	G-74
Bagre	*bagre*			56	24M + 26SM + 6ST	106	112				Brazil (SP)	G-52
Bagre	*marinus*			54	12M + 8SM + 34 ST/A	74			4.8 BFA		USA (LA)	F-27, H-13
Cathorops	*melanopus*	*Arius*		52	16M + 30SM + 6ST	98	104				Mexico	G-74
Cathorops	*spixii*			54							Brazil	G-52
Cathorops	sp.			54	13M + 13SM + 28ST	80	108				Brazil (SP)	B-86
Genidens	*barbus*	*Netuma barba*		56	18M + 18SM + 18ST + 2A	92	110			XX/XY	Brazil	B-86, G-52
Genidens	*genidens*			56	12M + 20SM + 20ST + 4A	88	108				Brazil (SP)	B-86, G-52
Nemapteryx	*caelata*	*Arius caelatus*		54	6M + 20SM + 28A	80	80				India (Bombay)	K-101
Nemapteryx	*nenga*	*Arius*	F, M	54	16M + 36SM + 2ST	106	108			ACN=54	India (Orissa)	C-63
Netuma	*thalassina*	*Arius serratus*	F	56	8M + 24SM + 24ST	88	112			ACN=56	India (Orissa)	C-63
Notarius	*luniscutis*	*Sciadeichthys*		56							Brazil	G-52
Plicofollis	*dussumieri*	*Arius*	F, M	54	12M + 18SM + 12ST + 12A	84	96				India (Bombay)	R-59
Sciades	*parkeri*	*Arius*		56	16M + 16SM + 22ST + 2A	88	110				Brazil (SP)	B-86
Aspredinidae												
Bunocephalus	cf. *larai*			50	6M + 8SM + 8ST + 28A	64	72	2			S. America	F-20
Auchenipteridae												
Ageneiosus	*atronasus*	*atronases*	F, M	56	16M + 16SM + 12ST + 12A	88	100	2			Brazil (AM)	F-18
Ageneiosus	*inermis*	*brevifilis*	F, M	56	20M + 16SM + 10ST + 10A	92	102	2			Brazil (AM)	F-18
Auchenipterus	*nuchalis*		F, M	58	24M + 14SM + 10ST + 10A	96	106	2		ACN=58	Brazil (PR)	R-39
Glanidium	*ribeiroi*		F, M	58	28M + 16SM + 10ST + 4A	102	112	2		ACN=58	Brazil (Iguaçu, PR)	R-39
Trachelyopterus	*galeatus*	*Parauchenipterus*	F, M	58	22M + 12SM + 6ST + 18A	92	98	2		ACN=58	Brazil (PR)	R-39
Trachelyopterus	*galeatus*			58							Argentina	F-20
Bagridae												
Bagrichthys	*macracanthus*	*Bagroides*		50	16M + 26SM + 2ST + 6A	92	94				Thailand (Nakhon Phanom)	M-8
Coreobagrus	*brevicorpus*		F, M	44	22M + 14SM + 8 ST/A	80				ACN=48	Korea (Hamyang)	K-52
Coreobagrus	*ichikawai*		F, M	56	18M + 14SM + 24 ST/A	88				ACN=56	Japan (Gifu)	U-34
Hemibagrus	*guttatus*	*Mystus*	F, M	60	20M + 12SM + 16ST + 12A	92	108			ACN=62	China (Guangdong)	Y-15
Hemibagrus	*guttatus*	*Mystus elongatus*	F, M	60	20M + 12SM + 16ST + 12A	92	108			ACN=62	China (Yangshan)	Y-15
Hemibagrus	*macropterus*	*Mystus*	F, M	60	20M + 12SM + 16ST + 12A	92	108			ACN=62	China (Wuhan)	H-20, Y-15

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hemibagrus	*macropterus*	*Mystus*		60							China	C-86
Hemibagrus	*menoda*	*Mystus*		48	12M + 12ST + 24A	60	72				India	L-1
Hemibagrus	*menoda*			58	22M + 20SM + 16A	100	100			ACN=58	India (WB)	D-34
Hemibagrus	*menoda menoda*	*Mystus*	F	56	36M + 16SM + 4A	108					India (Assam)	K-46, C-108
Hemibagrus	*menoda menoda*	*Mystus corsula*	M	58	22M + 20SM + 16A	100		2			India (WB)	B-4
Hemibagrus	*nemurus*	*Mystus bleekeri*	F, M	56	20M + 14SM + 10ST + 12A	90	100				India (Jammu)	S-55
Hemibagrus	*nemurus*	*Mystus bleekeri*		56	32M + 14SM + 10A	102	102				India (Assam)	K-46, C-108
Hemibagrus	*wyckii*	*Mystus*		54	16M + 14SM + 24A	84				ACN=54	Thailand (Nakhon Phanom)	M-8
Horabagrus	*brachysoma*			60	28M + 20SM + 8ST+ 4A	108	116	2		ACN=60	India (Kerala)	N-56
Horabagrus	*nigricollaris*			60	26M + 20SM + 10ST + 4A	106	116	2			India (Kerala)	N-57
Mystus	*cavasius*			58	18M + 16SM + 10ST + 14A	92	102	2			India (Jammu)	S-55, R-122
Mystus	*cavasius*		F, M	58	18M + 22SM + 18A	98				ACN=58	India (Orissa)	T-49
Mystus	*cavasius*		F, M	58	14M + 26SM + 4ST + 14A	98	102				India (Bihar)	K-32
Mystus	*gulio*		F, M	58	30M + 12SM + 2ST + 14A	100	102	2		ACN=58	India (WB)	M-28, D-33
Mystus	*gulio*		F	58	12M + 34SM + 4ST + 8A	104	108			XX, ACN=58	India (Orissa)	C-63
Mystus	*gulio*		M	58	13M + 33SM + 4ST + 8A	104	108			XY, ACN=58	India (Orissa)	C-63
Mystus	*tengara*		F	54	9M + 38 SM/ST + 7A		101			ZW	India (Haryana)	R-46
Mystus	*tengara*		M	54	10M + 38 SM/ST + 6A		102			ZZ	India (Haryana)	R-46
Mystus	*tengara*		F	54	25M + 18 SM/ST + 11A		97			ZW	India (Haryana)	R-75
Mystus	*tengara*		M	54	26M + 18 SM/ST + 10A		98			ZZ	India (Haryana)	R-75
Mystus	*vittatus*		F, M	54	22M + 26SM + 6ST	102	108				India (Orissa)	T-49
Mystus	*vittatus*		F, M	54	22M + 20SM + 12ST	96	108				India (Jammu)	S-55
Mystus	*vittatus*		F, M	58	10M + 30SM + 12ST + 6A	98	110			ACN=58	India (Orissa)	C-63
Mystus	*vittatus*	var. A	F, M	54	20M + 24SM + 10ST	98	108			ACN=56	India (WB)	M-23
Mystus	*vittatus*	var. B	M	58	16M + 10SM + 20ST + 12A	84	104			ACN=58	India (WB)	M-23
Mystus	*vittatus*	*vittatus vittatus*	F, M	54	28M + 22SM + 2ST + 2A	104	106	2			India (Orissa)	K-42, J-9
Pelteobagrus	*eupogon*		M	50	20M + 14SM + 16ST	84	100			ACN=52	China (Wuhan)	H-20, Y-15
Pelteobagrus	*nudiceps*		F, M	56	18M + 12SM + 26 ST/A	86			(1.8* FCM)	ACN=56	Japan (Lake Biwa)	U-34, O-48
Pelteobagrus	*nudiceps*			56	44 M/SM + 12 ST/A	100					Japan (Shimane)	F-51
Pelteobagrus	*ussuriensis*	*Pseudobagrus*	M	52	24M + 18SM + 10ST	94	104			ACN=58	China (Wuhan)	H-20, Y-15
Pelteobagrus	*ussuriensis*	*Pseudobagrus*	F, M	52	18M + 16SM + 18 ST/A	86		2		ACN=58	Korea (Kangkyeong)	K-52
Pelteobagrus	*ussuriensis*	*Pseudobagrus emarginatus*	F, M	52	24M + 10SM + 18ST	86	104			ACN=54	China (Nanchong)	Y-15
Pelteobagrus	*ussuriensis*	*emarginatus*	F, M	52	20M + 20SM + 12 ST/A	92				ACN=54	Korea (Han R.)	U-34
Pseudobagrus	*aurantiacus*		F, M	48	20M + 12SM + 16 ST/A	80				ACN=54	Japan (Kyushu)	U-25
Pseudobagrus	*aurantiacus*		F, M	48	18M + 14SM + 16 ST/A	80				ACN=54	Japan (Kumamoto)	U-34
Pseudobagrus	*crassilabris*	*Leiocassis*	F, M	52	24M + 14SM + 14ST	90	104			ACN=56	China (Wuhan)	H-20, Y-15

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pseudobagrus	*koreanus*	sp.	F, M	48	18M + 14SM + 16 ST/A	80				ACN=54	Korea (Han R.)	U-34
Pseudobagrus	*koreanus*	sp.	F, M	48	20M + 14SM + 14 ST/A	82				ACN=54	Korea (Gapyeong)	K-52
Pseudobagrus	*longirostris*	*Leiocassis*	F, M	52	20M + 16SM + 16ST	88	104			ACN=56	China (Wuhan)	H-20, Y-15
Pseudobagrus	*nitidus*	*Pelteobagrus*	F, M	52	22M + 20 SM/ST + 10A		94			ACN=54	Korea (Kangkyeong)	K-52
Pseudobagrus	*nitidus*	*Pelteobagrus*	F, M	52	20M + 16SM + 16ST	88	104			ACN=56	China (Wuhan)	H-20, Y-15
Pseudobagrus	*pratti*		M	52	20M + 14SM + 8ST + 10A	86	94			ACN=58	China (Guilin)	Y-15
Pseudobagrus	*tenius*		F, M	52	22M + 16SM + 14ST	90	104			ACN=56	China (Wuhan)	H-20, Y-15
Pseudobagrus	*tokiensis*	*aurantiacus*	F, M	56	24M + 12SM + 20 ST/A	92				ACN=56	Japan (Tokyo, Chiba, Iwate)	U-25
Pseudobagrus	*truncatus*		F, M	52	26M + 14SM + 12ST	92	104			ACN=58	China (Nanchong)	Y-15
Pseudobagrus	*vachellii*	*Pelteobagrus*	F, M	52	22M + 16SM + 14ST	90	104			ACN=56	China (Wuhan)	H-20, Y-15
Pseudobagrus	*vachellii*	*Pelteobagrus*	M	52	16M + 20SM + 16 ST/A	88		2		ACN=56	Korea (Gum R.)	U-34
Rita	*chrysea*			54	28M + 20SM + 6ST	102	108				India (Orissa)	D-2
Rita	*chrysea*			52	8M + 22SM + 2ST + 20A	82	84			ACN=52	India (WB)	K-139
Rita	*rita*		F, M	54	14M + 34SM + 6ST	102	108	2		ACN=54	India (WB)	K-42, D-33
Rita	*rita*			54	14M + 24SM + 12ST + 4A	92	104				India	M-20
Sperata	*aor*	*Aorichthys*		52	20M + 14SM + 10ST + 8A	86	96				India	L-1
Sperata	*seenghala*	*Mystus*	F	54	28M + 12SM + 8ST + 6A	94	102	2			India (Jammu)	S-55, R-122
Sperata	*seenghala*			50	10M + 14SM + 6ST + 20A	74	80	2			India	D-34
Tachysurus	*adiposalis*	*Pseudobagrus*	F, M	50	20M + 14SM + 14ST + 2A	84	98			ACN=56	China (Yangshan)	Y-15
Tachysurus	*fulvidraco*	*Pelteobagrus*	F, M	52	24M + 14SM + 10ST + 4A	90	100		1.9*, 2.0 FD	ACN=54	China (Hubei)	H-20, L-41, C-83
Tachysurus	*fulvidraco*	*Pelteobagrus*		52	22M + 12SM + 14ST + 4A	86	100	4			China (Shasi)	Z-21
Tachysurus	*fulvidraco*	*Pelteobagrus*	F, M	52	18M + 26 SM/ST + 8A		96			ACN=54	Korea (Kangkyeong)	K-52
Tachysurus	*fulvidraco*	*Pseudobagrus*	F, M	52	28M + 12SM + 12ST	92	104				China (Amur)	S-63
Tachysurus	*fulvidraco*	*Pseudobagrus*		52	22 M + 24 SM/ST + 6A		98				(Hubei, China)	L-53
Tachysurus	*fulvidraco*	*Pseudobagrus*		52	24M + 24SM + 4A	100	100				Korea	L-15
Tachysurus	*fulvidraco*		F, M	52	18M + 26SM + 8A	96	96				Korea (Kum R.)	P-68
Callichthyidae												
Callichthyinae												
Callichthys	*callichthys*		F, M	58	22M + 22SM + 14ST	102	116	2	1.9 FD, (3.4 BFA)	0-5 B, ACN=58	Brazil (SP)	O-56, H-13
Callichthys	*callichthys*		F, M	56	14M + 10SM + 32 ST/A	80		2		0-2 B	Argentina	S-11
Callichthys	*callichthys*			54	46 M/SM + 8 ST/A	100		3			Brazil (Central Amazon)	P-89
Callichthys	*callichthys*			52	44 M/SM + 8 ST/A	96					Brazil (Central Amazon)	P-89
Dianema	*longibarbis*			60	6M + 54A	66	66	2			Brazil (Central Amazon)	M-148
Dianema	*urostriatum*			62	6M + 6ST + 50A	68	74	2			Brazil (Central Amazon)	M-148
Dianema	*urostriata*		F, M	62	8M + 4SM + 4ST + 46A	74	78	2	1.2 FD	ACN=64	Brazil (SP)	O-56

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hoplosternum	*littorale*		F, M	60	4M + 4SM + 52A	68	68	2		ACN=62	Brazil (Amazon R.)	O-56, P-85
Hoplosternum	sp.			60	6M + 2SM + 52A	68	68	2	1.4 FD	ACN=62	Brazil (SP)	O-56
Hoplosternum	sp.			62	8 M/SM + 54ST	70	124	4			Brazil (Amazon R.)	P-88
Megalechis	*thoracata*	*Hoplosternum*	F, M	64	8M + 12SM + 44 ST/A	84		2	3.2 FCM	ACN=66	Brazil (Amazon R.)	P-85, V-86
Corydoradinae												
Aspidoras	*fuscoguttatus*		F, M	44	28M + 12SM + 4ST	84	88	2	1.5 FD	ACN=62	Brazil (SP)	O-56
Aspidoras	cf. *fuscoguttatus*		F, M	46	32M + 10SM + 4ST	88	92	2		ACN=58	(Brazil)	S-190
Aspidoras	*poecilus*		F	46	30M + 10SM + 6ST	86	92	2		ACN=60	Brazil (MG)	S-190
Aspidoras	*taurus*		F, M	46	30M + 10SM + 6ST	86	92	1		ACN=60	Brazil (MG)	S-190
Brochis	*britskii*		F	90	4M + 10SM + 22ST + 54A	104	126	2			Brazil (SP)	O-56
Brochis	*britskii*	*Corydoras*	F, M	90	4M + 10SM + 22ST + 54A	104	126	4		ACN=90	Brazil (MG)	S-190
Brochis	*splendens*		M	100	18M + 18SM + 20ST + 44A	136	156	4	2.3 FD	4X, ACN=100	Brazil (SP)	O-56
Corydoras	*aeneus*		F	56	32 M/SM + 24 ST/A	88			3.6 FD	XX	Brazil (Belem, PA)	T-58
Corydoras	*aeneus*		M	56	33 M/SM + 23 ST/A	89				XY	Brazil (Belem, PA)	T-58
Corydoras	*aeneus*	*schultzei*		ca. 58	48 non-A + 10A		(106)		(3.2 FIA)		(S. America)	S-27, H-40
Corydoras	*aeneus*			60	20M + 20SM + 20 ST/A	100					(Brazil)	K-17
Corydoras	*aeneus*		F, M	60	26M + 26SM + 8ST	112	120	8	2.8 FD	0-3 B, ACN=64	Brazil (SP)	O-51, O-56
Corydoras	*aeneus*		F	61	25M + 26 SM + 8ST + 2A	112	120			0-1B, ACN=64	Brazil (SP)	O-51
Corydoras	*aeneus*			60	26M + 18SM + 16ST	104	120			2B	Brazil (SP)	C-98
Corydoras	*aeneus*			134					6.3 FD	4X	Peru, Guyana	T-58
Corydoras	*aeneus*			ca. 132	90 non-A + 42A		(222)		(8.4* FCM)	4X	(S. America)	S-27, O-48
Corydoras	*aeneus*			120					8.8 BFA		(S. America)	H-13
Corydoras	*agassizii*			98	82 non-A + 16A		(180)				(S. America)	S-27
Corydoras	*araguaiaensis*		F, M	94	46M + 40SM + 8ST	180	188	6			(Brazil)	S-69
Corydoras	*arcuatus*		M	46	28M + 18SM	92	92	2	(4.5 FD)		Brazil, Peru	O-54
Corydoras	*arcuatus*			46	46 non-A		(92)				(S. America)	S-27
Corydoras	*axelrodi*			46	46 non-A		(92)				(Colombia)	S-27
Corydoras	*bondi*			46	46 non-A		(92)				(northern S. America)	S-27
Corydoras	*delphax*			84	12M + 22SM + 50 ST/A	118					(Colombia)	K-16
Corydoras	*difluviatilis*		F, M	78	6M + 2SM + 20ST + 50A	86	106	2			Brazil (SP)	S-69
Corydoras	*ehrhardti*		F, M	44	22M + 22SM	88	88	2			Brazil (SC)	S-69
Corydoras	*ehrhardti*		F, M	44	18M + 26SM	88	88	4		ACN=58	Brazil (SC)	O-55
Corydoras	*elegans*			50	50 non-A		(100)				(Brazil, Colombia, Peru)	S-27
Corydoras	*elegans*			50					6.0 BFA		(S. America)	H-13
Corydoras	*flaveolus*		F, M	58	18M + 26SM + 14ST	102	116	4	3.0 FD	ACN=58	Brazil (SP)	O-54
Corydoras	*julii*			46	32M + 14SM	92	92				(Brazil)	K-16

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Corydoras	*julii*		92	92 non-A		(184)		(8.4 BFA)		(S. America)	S-27, H-13
Corydoras	*melanistius*		46	32M + 14SM	92	92				(northern S. America)	K-16
Corydoras	*melanistius*		46	46 non-A		(92)				(S. America)	S-27
Corydoras	*melanistius*		48					6.0 BFA		(S. America)	H-13
Corydoras	*metae*	F, M	92	40M + 36SM + 6ST + 10A	168	174	6	(8.8 FD, 6.4 FIA)	4X, ACN=106	Brazil (PA)	O-54, H-41
Corydoras	*metae*		92	88 non-A + 4A		(180)				(S. America)	S-27
Corydoras	*nattereri*	M	44	18M + 26SM	88	88	2			Brazil (PR)	S-69
Corydoras	*nattereri*	F, M	44	18M + 26SM	88	88	2			Brazil (PR)	O-55
Corydoras	*nattereri*	F, M	44	20M + 24SM	88	88	2		ACN=58	Brazil (RJ)	O-52, O-55
Corydoras	*nattereri*	F, M	40	20M + 20SM	80	80	2	(3.6 FD)	ACN=58	Brazil (Bonito R., RJ)	O-52, O-55
Corydoras	*nattereri*	F, M	42	18M + 24SM	84	84	4		ACN=58	Brazil (Bigua R., SP)	O-52
Corydoras	cf. *nijsseni*	F, M	52	32M + 20SM	104	104	2			(Brazil)	S-69
Corydoras	aff. *osteocarus*		76	50 non-A + 26A		(126)				(Venezuela, Suriname)	S-27
Corydoras	*paleatus*	F, M	44	20M + 24SM	88	88	4			Brazil (RS)	S-69
Corydoras	*paleatus*	F, M	44	20M + 24SM	88	88	4-6		ACN=58	Brazil (PR, RS)	O-55
Corydoras	*paleatus*	F, M	44	22M + 22SM	88	88	4		ACN=58	Brazil (RS)	O-55
Corydoras	*panda*	F, M	46	24M + 22SM	92	92	2		ACN=58	Brazil (SP)	O-56
Corydoras	*pulcher*	M	102	10M + 14SM + 42ST + 36A	126	168	2		4X	(Brazil)	S-69
Corydoras	*punctatus*		44-46					5.8 BFA		(S. America)	H-13
Corydoras	aff. *punctatus*	F	102	10M + 14SM + 20ST + 58A	126	146	2		4X, ACN=106	Brazil (AM)	O-54
Corydoras	*rabauti*	F, M	58	20M + 22SM + 10ST + 6A	100	110	2		ACN=60	Brazil (SP)	O-56
Corydoras	*rabauti*	*myersi*	56					4.6 BFA		S. America	O-54, H-13
Corydoras	*reticulatus*	F, M	74	16M + 20SM + 12ST + 26A	110	122	2	(2.0 FD)	ACN=76	Brazil (AM)	O-54
Corydoras	*reticulatus*		74	20M + 10SM + 44 ST/A	104					(Brazil)	K-16
Corydoras	*robineae*	F, M	84	8M + 18SM + 16ST + 42A	110	126	2			(Brazil)	S-69
Corydoras	*schwartzi*	F, M	46	32M + 14SM	92	92	2	4.8 FD	ACN=62	Brazil (AM)	O-54
Corydoras	*simulatus*	M	62	32M + 18SM + 6ST + 6A	112	118	4	1.3 FD	ACN=62	Colombia	O-54
Corydoras	cf. *simulatus*	M	62	34M + 22SM + 6ST	118	124	2	1.0 FD	ACN=62	Colombia	O-54
Corydoras	*sodalis*	F, M	74	16M + 18SM + 10ST + 30A	108	118	2		ACN=84	(Brazil)	S-190
Corydoras	*trilineatus*	M	46	28M + 18SM	92	92	2	4.9 FD	ACN=58	Brazil (PA)	O-54
Corydoras	*undulatus*	F, M	52	24M + 14SM + 12ST + 2A	90	102	10			Brazil (RS)	S-69
Corydoras	*undulatus*		50					6.0 BFA			H-13
Corydoras	*zygatus*	F, M	56	18M + 20SM + 10ST + 8A	94	104	2			(Brazil)	S-69
Corydoras	sp.	M	60	38M + 16SM + 6ST	114	120	2	1.3 FD	ACN=62	Brazil (Caripi R., PA)	O-54
Corydoras	sp.	F, M	84	4M + 2SM + 18ST + 60A	90	108	10	2.4 FD	ACN=88	Brazil (Galheiro R., MG)	O-54
Corydoras	sp.		62							Argentina	F-20

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scleromystax	*barbatus*	*Corydoras*	F, M	66	38M + 22SM + 4ST + 2A	126	130	6			Brazil (SP)	S-69
Scleromystax	*barbatus*	*Corydoras*	F, M	66	38M + 22SM + 6ST	126	132	6			Brazil (PR)	S-69
Scleromystax	*barbatus*	*Corydoras*	F, M	64	38M + 20SM + 4ST + 2A	122	126	8	1.7, 1.9 FD	ACN=64	Brazil (SP)	O-55
Scleromystax	*barbatus*	*Corydoras*	F, M	66	38M + 22SM + 4ST + 2A	126	130	8		ACN=66	Brazil (PR, SC)	O-55
Scleromystax	*macropterus*	*Corydoras*	F, M	66	28M + 14SM + 16ST + 8A	108	124	6	1.4 FD	ACN=66	Brazil (SP)	O-55
Scleromystax	*prionotos*	*Corydoras*	F, M	68	14M + 12SM + 14ST + 28A	94	108	4	1.2 FD	ACN=68	Brazil (SP)	O-55
Scleromystax	*prionotos*	*Corydoras*	F	86	20M + 28SM + 20ST + 18A	134	154	4	1.6 FD	ACN=86	Brazil (RJ)	O-55
Clariidae												
Clarias	*batrachus*		F	100	4M + 6SM + 78A + 12 MC	110				XX, 4X	Thailand	W-30
Clarias	*batrachus*		M	100	4M + 7SM + 77A + 12 MC	111				XY, 4X	Thailand	W-30
Clarias	*batrachus*			56					1.6* FD		China	C-83, C-85
Clarias	*batrachus*	*Clarius*		52	6 M/SM + 46 ST/A	58					India (U.P.)	S-104
Clarias	*batrachus*			50	16M + 8SM + 14ST + 12A	74	88				India	R-52
Clarias	*batrachus*			50	18M + 20SM + 8ST + 4A	88	96				India (WB)	P-92
Clarias	*batrachus*			54					2.4 BFA			H-13
Clarias	*camerunensis*			54				2			(W. and W.C. Africa)	O-83
Clarias	*ebriensis*			50							(W. Africa)	O-83
Clarias	*fuscus*		F	56	18M + 24SM + 8ST + 6A	98	106			XX, ACN=56	China (Guangdong)	W-30
Clarias	*fuscus*		M	56	19M + 23SM + 8ST + 6A	98	106			XY, ACN=56	China (Guangdong)	W-30
Clarias	*fuscus*		F	56	20M + 22SM + 8ST + 6A	98	106			XX, ACN=56	China (Guangdong)	L-76
Clarias	*fuscus*		M	56	20M + 22SM + 8ST + 6A	98	106			XY, ACN=56	China (Guangdong)	L-76
Clarias	*fuscus*		F, M	56	18M + 14SM + 14ST + 10A	88	102				China (Guangdong)	Y-15
Clarias	*fuscus*			56	32 M/SM + 24 ST/A	88				ACN=56	Japan (Ishigaki)	A-56
Clarias	*gariepinus*		F	56	8M + 25SM + 23A	89		2		ZW, ACN=56	Africa, Israel	T-29, O-69
Clarias	*gariepinus*		M	56	8M + 24SM + 24A	88		2	(2.4 BFA)	ZZ, ACN=56	Africa, Israel	T-29, O-69, H-13
Clarias	*gariepinus*		F	56	14M + 17SM + 25A	87				ZW	Egypt	N-3
Clarias	*gariepinus*		M	56	14M + 18SM + 24A	88				ZZ	Egypt	N-3
Clarias	*gariepinus*			56	20M + 16SM + 10ST + 10A	92	102				India (introduced)	N-3
Clarias	*macrocephalus*		F, M	54	24M + 20SM + 6ST + 4A	98	104			XX/XY	Thailand	W-30
Clarias	*platycephalus*			54				2			(W. and W.C. Africa)	O-83
Heterobranchus	*longifilis*		F	52	6M + 25SM + 21A	83		2		ZW	Ivory Coast	T-29
Heterobranchus	*longifilis*		M	52	6M + 24SM + 22A	82		2		ZZ	Ivory Coast	T-29
Cranoglanididae												
Cranoglanis	*bouderius*	*sinensis*	F, M	74	8M + 16SM + 18ST + 32A	98	116			ACN=74	China	Y-15

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Diplomystidae												
Diplomystes	*camposensis*		F, M	56	16M + 24SM + 8ST + 8A	96	104	2		ACN=58	Chile	C-7
Diplomystes	*nahuelbutaensis*		M	56	14M + 26SM + 8ST + 8A	96	104	2		ACN=58	Chile	C-7
Olivaichthys	*mesembrinus*	*Diplomystes*	F, M	56	22M + 24SM + 6ST + 4A	102	108	2	2.6 FD	ACN=56	Argentina (Chubut)	O-60
Doradidae												
Doras	*eigenmanni*			66							(S. America)	E-11
Hassar	*orestis*			58	42M + 14SM + 2A	114	114	2			Brazil (MT)	M-144
Hassar	*orestis*		F, M	58	32M + 20SM + 6ST	110	116	2		ACN=58	Brazil (Xingú R., PA)	M-144
Hassar	cf. *orestis*		F, M	58	32M + 18SM + 8ST	108	116	2		ACN=58	Brazil (Jari R., PA)	M-144
Hassar	*wilderi*		F	58	32M + 16SM + 10ST	106	116	2		ACN=58	Brazil (Araguaia R., MT)	E-11
Hassar	sp.		F	58	32M + 18SM + 8ST	108	116	2		ACN=58	Brazil (Jari R., PA)	M-144
Leptodoras	*acipenserinus*			58	24M + 16SM + 14ST + 4A	98	112	2		ACN=58	Brazil (MT)	M-144
Nemadoras	*humeralis*	*Opsodoras*		58							Brazil (Amazon)	D-32
Opsodoras	*ternetzi*		F, M	58	44M + 12SM + 2A	114	114	2		ACN=58	Brazil (Xingú R., PA)	M-144
Opsodoras	sp.		F	58	21M + 18SM + 12ST + 7A	97	109	2			Brazil (MT)	M-144
Opsodoras	sp.		M	58	20M + 18SM + 12ST + 8A	96	108				Brazil (MT)	M-144
Platydoras	cf. *costatus*		F	58	26M + 16SM + 4ST + 12A	100	104	2		ACN=58	Brazil (Xingú R., PA)	M-144
Oxydoras	*niger*	*Pseudodoras*	F, M	58	20M + 16SM + 8ST + 14A	94	102	2		ACN=58	Brazil (PA)	F-16
Pterodoras	*granulosus*			58							Brazil (Parana R., PR)	J-20
Rhinodoras	*dorbignyi*		F, M	58	20M + 20SM + 4ST + 14A	98	102	2	3.5 FD	ACN=58	Brazil (SP)	F-16, F-64
Rhinodoras	sp.			58	18M + 16SM + 12ST + 12A	92	104	2			Brazil (MT)	M-144
Trachydoras	*paraguayensis*	*paraguaiensis*	F, M	56	32M + 20SM + 4ST	108	112	2		ACN=56	Argentina	F-16
Wertheimeria	*maculata*			58	24M + 14SM + 8ST + 12A	96	104	2		ACN=58	Brazil (MG)	E-11
Erethistidae												
Pseudolaguvia	*ribeiroi*	*Laguvia rebeiroi*		50	6M + 28SM + 16A	84					India (Assam)	K-46, C-108
Heptapteridae												
Cetopsorhamdia	*iheringi*	*iheringhi*		58	22M + 16SM + 10ST + 10A	96	106	2	(1.8 FD)	ACN=58	Brazil (MG, PR)	F-19, F-64
Cetopsorhamdia	*iheringi*	Pimelodidae	F, M	58	28M + 24SM + 6ST	110	116	2			Brazil (SP)	V-46
Cetopsorhamdia	sp.		F, M	58	22M + 16SM + 10ST + 10A	96	106	2		ACN=58	Brazil (SP)	F-19
Imparfinis	*borodini*	*Heptapterus longicauda*	F, M	52	22M + 26SM + 4ST	100	104	4	2.2 FD		Brazil (SP)	V-46, F-64
Imparfinis	*hollandi*	*Pariolius*		42	22M + 10SM + 4ST + 6A	74	78				Brazil (PR)	S-180
Imparfinis	*hollandi*		F, M	42	22M + 10SM + 10ST	74	84	2			Brazil (PR)	M-129
Imparfinis	*mirini*		F	58	23M + 35SM	116	116	2	1.9-2.4 FD	ZW	Brazil (SP)	V-45, F-64

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Imparfinis	*mirini*		M	58	24M + 34SM	116	116	2		ZZ	Brazil (SP)	V-45
Imparfinis	*piperatus*	cytotype A	F, M	58	32M + 26SM	116	116	2			Brazil (SP)	V-48
Imparfinis	*piperatus*	cytotype B	F, M	58	26M + 22SM + 8ST + 2A	106	114	2			Brazil (SP)	V-48
Imparfinis	cf. *piperatus*		M	56	22M + 26SM + 4ST + 4A	104	108	2			Brazil (SP)	V-48
Imparfinis	cf. *piperatus*		F, M	56	24M + 12SM + 20ST	92	112	2		ACN=58	Brazil (SP)	F-19
Imparfinis	aff. *mirini*	aff. *schubarti*	F, M	58	28M + 28SM + 2ST	114	116	2		ACN=58	Brazil (PR)	S-180, S-198
Imparfinis	aff. *mirini*	aff. *schubarti*	F, M	58	22M + 18SM + 10ST + 8A	98	108	2		ACN=58	Brazil (SP, PR)	F-19
Pariolius	cf. *longicaudus*			52	22M + 16SM + 4ST + 10A	90	94				Brazil (PR)	S-180
Pimelodella	*avanhandavae*	Pimelodidae	M	46	20M + 20SM + 6ST	86	92	2			Brazil (SP)	V-46
Pimelodella	aff. *avanhandavae*		F, M	52	30M + 22SM	104	104	2			Brazil (PR)	S-149
Pimelodella	*cristata*			52							Brazil (MT)	S-180
Pimelodella	*gracilis*			52					1.8 BFA		Brazil (MS)	S-180, H-13
Pimelodella	*kronei*		F, M	58	54 M/SM + 4ST	112	116	2		0-1 B	Brazil (SP)	A-20
Pimelodella	*meeki*	Pimelodidae	F, M	46	30M + 12SM + 4ST	88	92	2			Brazil (Tibagi R., PR)	V-95
Pimelodella	*transitoria*		F, M	58	54 M/SM + 4ST	112	116	2			Brazil (SP)	A-20, F-57
Pimelodella	sp.			46			84				S. America	L-21
Pimelodella	sp.			56							Argentina	F-20
Pimelodella	sp.			46							Argentina	F-20
Pimelodella	sp. 1		F, M	46	20M + 20SM + 6ST	86	92	2	1.1 FD		Brazil (PR)	V-84, F-64
Pimelodella	sp. 2			52	22M + 22SM + 8ST	96	104	8	2.0 FD		Brazil (PR)	V-84, F-64
Pimelodella	sp.	Rhamdiidae		46	34M + 12SM	92	92				Brazil (Tibagi R., PR)	S-166
Pimelodella	sp.		F	46	40 M/SM + 6 ST/A	86		2		XX	Brazil (MG)	D-11
Pimelodella	sp.		M	46	40 M/SM + 6 ST/A	86		2		XY	Brazil (MG)	D-11
Rhamdella	*microcephala*			56	18M + 30SM + 8ST	104	112	2			Brazil (MG)	F-29, S-180
Rhamdella	sp.	Rhamdiidae		56	26 M/SM + 30 ST/A	82					Brazil (BA)	S-166
Rhamdia	*laticauda*			58							C. America	L-21
Rhamdia	*quelen*	*branneri*		58	36M + 14SM + 4ST + 4A	108	112			0-2 B	Brazil (PR)	S-166
Rhamdia	*quelen*	*branneri*		58	30M + 10SM + 14ST + 4A	98	112			0-4 B	Brazil (PR)	C-98
Rhamdia	*quelen*	*branneri*	F, M	58	36M + 14SM + 4ST + 4A	108	112			0-4 B	Brazil (SC)	A-5
Rhamdia	*quelen*	*hilarii*	F, M	58	58 M/SM	116	116	2	(2.0-2.3 FD)	0-2 B, ACN=58	Brazil (SP)	S-166, M-13, F-64
Rhamdia	*quelen*	*hilarii*	F, M	58-63		>100		2		0-5 B	Brazil (SP)	F-15
Rhamdia	*quelen*	*hilarii*	F, M	58	26M + 16SM + 8ST + 8A	100	108	2		0 B, ACN=58	Argentina	F-19
Rhamdia	cf. *quelen*	cf. *hilarii*	F, M	58	30M + 18SM + 10ST	106	116	2		0-3 B	Brazil (SP)	V-47
Rhamdia	*quelen*		F, M	58	26M + 20SM + 6ST + 6A	104	110	2		0-4 B	Brazil (SP)	S-154
Rhamdia	*quelen*		F, M	58	26M + 22SM + 6ST + 4A	106	112	2		0 B	Brazil (PR)	S-154
Rhamdia	*quelen*			58	26M + 24SM + 8ST	108	116	2		0 B	Brazil (PR)	S-154

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rhamdia	*quelen*		F	58	26M + 16SM + 8ST + 8A	100	108	2		0 B, ACN=58	Argentina	F-19
Rhamdia	*quelen*		F, M	58	36M + 16SM + 6ST	110	116	2		0-3 B, ACN=58	Brazil (MS)	M-157
Rhamdia	*quelen*		F, M	58	36M + 16SM + 6ST	110	116			0-2 B, ACN=58	Brazil (SP, PR)	M-158
Rhamdia	*quelen*			58	36M + 16SM + 6ST	110	116			0-2 B	Brazil (SC)	M-158
Rhamdia	*quelen*	*sapo*	F, M	58	44 M/SM + 14 ST/A	102				0-1 B	Argentina	V-78
Rhamdia	*quelen*	*sapo*		56							Uruguai	S-166
Rhamdia	*quelen*	*voulezi*	F, M	58	36M + 14SM + 4ST + 4A	108	112			0-2 B	Brazil (PR)	A-5
Rhamdia	sp.		F, M	58	46 M/SM + 12ST	104	116	2		0-4 B, ACN=58	Brazil (SP)	G-13
Rhamdia	sp.		F	87	69 M/SM + 18ST (3n)	156	174	3		3X, ACN=87	Brazil (SP)	G-13
Heteropneustidae												
Heteropneustes	*fossilis*		F, M	56	14M + 26SM + 16ST	96	112				India	P-48
Heteropneustes	*fossilis*		F, M	56	18M + 10SM + 12ST + 16A	84	96				India (Jammu)	T-51
Heteropneustes	*fossilis*			56	22M + 16SM + 6ST + 12A	94	100	2			India	R-69
Heteropneustes	*fossilis*			56	18M + 18 SM/ST + 20A		92				India	R-52
Heteropneustes	*fossilis*			56	14M + 12SM + 30A	82					Thailand	D-28
Ictaluridae												
Ameiurus	*brunneus*	*Ictalurus*		62							(S.E. USA)	H-45
Ameiurus	*catus*	*Ictalurus*	F, M	48	16M + 20SM + 12ST	84	96			ACN=58	USA (AL)	L-22
Ameiurus	*melas*	*Ictalurus*	F, M	60	12M + 10SM + 12ST + 26A	82	94				USA (TN)	C-65
Ameiurus	*melas*	*Ictalurus*	M	60	16 M/SM + 44 ST/A	76				ACN=60	USA (OH)	L-21
Ameiurus	*natalis*	*Ictalurus*	F, M	62	12M + 10SM + 14ST + 26A	84	98				USA (TN)	C-65
Ameiurus	*natalis*	*Ictalurus*	M	62	22 M/SM + 40 ST/A	84				ACN=64	USA (OH, MO)	L-21
Ameiurus	*nebulosus*	*Ictalurus*	F, M	60	16 M/SM + 44 ST/A	76			1.9 FD, 2.4 BFA	ACN=60	USA (OH)	L-21, H-13
Ameiurus	*nebulosus*	*Ictalurus*	F, M	60	20 M/SM + 40 ST/A	80					Bosnia	B-22
Ameiurus	*nebulosus marmoratus*	*Ictalurus*	F, M	60	16 M/SM + 44 ST/A	76					Italy	B-10
Ameiurus	*platycephalus*	*Ictalurus*		54							(S.E. USA)	H-45
Ameiurus	*serracanthus*	*Ictalurus*	F	52	38 M/SM + 14 ST/A	90				ACN=58	USA (FL)	L-21
Ictalurus	*furcatus*			58	18M + 14SM + 26ST	90	116			ACN=58	USA (AL)	L-22
Ictalurus	*punctatus*			58	34 M/SM + 24 ST/A	92				ACN=58	USA (LA)	L-21
Ictalurus	*punctatus*		F, M	58	18M + 14SM + 26ST	90	116		(2.0 FCM, 2.1 FD)	ACN=58	USA	L-22, M-91, T-73
Noturus	*albater*			66-72		82					USA	L-21
Noturus	*elegans*		F, M	46	36 M/SM + 10 ST/A	82				ACN=54	USA (KY)	L-21
Noturus	*eleutherus*		F, M	42	24 M/SM + 18 ST/A	66				ACN=58	USA (AR, VA)	L-21
Noturus	*exilis*		F	54	14 M/SM + 40 ST/A	68				ACN=56	USA (MO)	L-21

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Noturus	*flavater*		M	44	20 M/SM + 24 ST/A	64				ACN=58	USA (MO)	L-21
Noturus	*flavipinnis*		F	52	30 M/SM + 22 ST/A	82				ACN=56	USA (VA)	L-21
Noturus	*flavus*		F, M	48	22 M/SM + 26 ST/A	70				ACN=56	USA (OH, PA)	L-20, L-21
Noturus	*flavus*		F	50	20 M/SM + 30 ST/A	70				ACN=56	USA (VA)	L-20, L-21
Noturus	*flavus*			48							USA (IN)	H-17
Noturus	*funebris*		F	44	24 M/SM + 20 ST/A	68				ACN=58	USA (LA)	L-21
Noturus	*gilberti*		M	54	28 M/SM + 26 ST/A	82				ACN=58	USA (VA)	L-21
Noturus	*gyrinus*		F, M	42	30 M/SM + 12 ST/A	72				ACN=56	USA (LA, MO, OH)	L-21
Noturus	*hildebrandi hildebrandi*		F, M	46	34 M/SM + 12 ST/A	80				ACN=58	USA (MS)	L-21
Noturus	*hildebrandi lautus*		F, M	46	34 M/SM + 12 ST/A	80				ACN=58	USA (TN)	L-21
Noturus	*insignis*		F, M	54	20 M/SM + 34 ST/A	74				ACN=58	USA (PA, NC)	L-21
Noturus	*lachneri*		F, M	42	30 M/SM + 12 ST/A	72				ACN=54	USA (AR)	L-21
Noturus	*leptacanthus*		F, M	46	26 M/SM + 20 ST/A	72				ACN=56	USA (LA)	L-21
Noturus	*miurus*			50	24 M/SM + 26 ST/A	74				ACN=58	USA (LA, MO, OH)	L-21
Noturus	*munitus*		F	42	20 M/SM + 22 ST/A	62				ACN=58	USA (LA)	L-21
Noturus	*nocturnus*		F, M	48	24 M/SM + 24 ST/A	72				ACN=58	USA (LA, MS, MO)	L-21
Noturus	*phaeus*			42	26 M/SM + 16 ST/A	68				ACN=56	USA (MS, TN)	L-21
Noturus	*stigmosus*		F	42	20 M/SM + 22 ST/A	62				NAN=54	USA (OH)	L-21
Noturus	*taylori*		F, M	40	24 M/SM + 16 ST/A	64				ACN=56	USA (AR)	L-21
Prietella	*phreatophila*			50			ca. 80	2		ACN=52?	Mexico	A-37
Pylodictis	*olivaris*			56	26 M/SM + 30 ST/A	82				ACN=60	USA (OH)	L-21
Loricariidae												
Ancistrinae												
Ancistrus	cf. *dubius*		F, M	44	18M + 10SM + 8ST + 8A	72	80	2		ZW/ZZ	Brazil (MT)	M-164
Ancistrus	cf. *dubius*		F, M	42	24M + 10SM + 8ST	76	84	2		XX/XY	Brazil (Pantanal, MT)	M-165
Ancistrus	cf. *dubius*		F, M	42	24M + 10SM + 8ST	76	84	2		no sex chrom.	Brazil (Pantanal, MT)	M-165
Ancistrus	*multispinis*	Hypostominae, Ancistrini		52	28 M/SM + 24 ST/A	80				ACN=52	Brazil (SC)	A-34
Ancistrus	*ranunculus*		F	48	19M + 9SM + 6ST + 14A	76	82	4		ZW, ACN=51	Brazil (Amazon R.)	O-80
Ancistrus	*ranunculus*		M	48	20M + 8SM + 6ST + 14A	76	82	4		ZZ, ACN=52	Brazil (Amazon R.)	O-80
Ancistrus	sp.	Purus	F	34	20M + 12SM + 2ST	66	68	2		XX, ACN=42	Brazil (Purus, AM)	O-85
Ancistrus	sp.	Purus	M	34	21M + 11SM + 2ST	66	68	2		XY, ACN=42	Brazil (Purus, AM)	O-85
Ancistrus	sp.	Trombetas	M	38	22M + 8SM + 5ST + 3A	68	73	2		ACN=48	Brazil (Trombetas, PA)	O-85
Ancistrus	sp.	Vermelho	M	42	26M + 6SM + 4ST + 6A	74	78	2		ACN=42	Brazil (Demini, AM)	O-85
Ancistrus	sp.	Macoari	F	46	18M + 12SM + 6ST + 10A	76	82	2		XX, ACN=48	Brazil (Branco, RR)	O-85
Ancistrus	sp.	Macoari	M	46	18M + 11SM + 6ST + 11A	75	81	2		XY, ACN=48	Brazil (Branco, RR)	O-85

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ancistrus	sp.	Dimona	F, M	52	16M + 8SM + 2ST + 26A	76	78	2		ACN=56	Brazil (Dimona, AM)	O-85
Ancistrus	sp. 1	Balbina	F	38	26M + 10SM + 2ST	74	76	2		XX, ACN=48	Brazil (Barretinho, AM)	O-84
Ancistrus	sp. 1	Balbina	M	39	27M + 10SM + 2ST	76	78	2		XY_1Y_2, ACN=48	Brazil (Barretinho, AM)	O-84
Ancistrus	sp. 2	Barcelos	F	52	11M + 12SM + 4ST + 25A	75	79	2		$Z_1Z_2W_1W_2$	Brazil (Demeni, AM)	O-84
Ancistrus	sp. 2	Barcelos	M	52	12M + 12SM + 4ST + 24A	76	80	2		$Z_1Z_1Z_2Z_2$	Brazil (Demeni, AM)	O-84
Ancistrus	sp.	Piagaçu	F	52	16M + 9SM + 2ST + 25A	77	79	2		ZW, ACN=52	Brazil (Purus, AM)	O-80
Ancistrus	sp.	Piagaçu	M	52	16M + 8SM + 2ST + 26A	76	78	2		ZZ, ACN=52	Brazil (Purus, AM)	O-80
Ancistrus	sp. 1			38	30 M/SM + 8ST	68	76	2			Brazil (Acre)	A-34
Ancistrus	sp. 2			52	32 M/SM + 20 ST/A	84		2		ACN=52	Brazil (SP)	A-34
Ancistrus	n. sp. 1		F	40	34M + 6SM	80	80	2		XX	Brazil (GO)	A-112
Ancistrus	n. sp. 1		M	39	33M + 6SM	78	78	2		XO	Brazil (GO)	A-112
Ancistrus	n. sp. 2		F, M	52	10M + 16SM + 12ST + 14A	78	90	2			Brazil (SC)	A-112
Baryancistrus	aff. *niveatus*			52	16M + 32SM + 4A	100	100	2			Brazil (PA)	O-79
Hemiancistrus	*spilomma*		F	52	25M + 21SM + 6ST	98	104	6		ZW, ACN=57	Brazil (MT)	O-79
Hemiancistrus	*spilomma*		M	52	24M + 22SM + 6ST	98	104	6		ZZ, ACN=58	Brazil (MT)	O-79
Hemiancistrus	*spinosissimus*		F, M	52	26M + 22SM + 4ST	100	104	2		ACN=56	Brazil (MT)	O-79
Hemiancistrus	sp.		F	52	20M + 20SM + 12 ST/A	92				ZW	Brazil (MT)	A-109
Megalancistrus	*parananus*	*aculeatus*		52	26M + 26SM	104	104	2			Brazil (PR)	A-34
Panaque	cf. *nigrolineatus*		F, M	52	26M + 20SM + 6ST	98	104				Brazil (MT)	A-109
Hypoptopomatinae												
Corumbataia	*cuestae*		F, M	54	28M + 20SM + 6 ST/A	102		2			Brazil (SP)	C-3
Hisonotus	*depressicauda*	*Microlepidogaster*	F	54	14M + 28SM + 2ST + 10A	96	98	2			Brazil (SP)	A-49
Hisonotus	*leucofrenatus*	*Microlepidogaster*	F, M	54	24M + 26SM + 2ST + 2A	104	106	1-2		ZW, 0-2 B	Brazil (SP)	A-48
Hisonotus	*leucofrenatus*	*Microlepidogaster*	F	54	22M + 26SM + 4ST + 2A	102	106	1-2		ZW, 0-2 B	Brazil (PR)	A-48
Hisonotus	*leucofrenatus*		F	54	22M +24SM + 6ST + 2A	100	106	2		ACN=58	Brazil (SC)	A-108
Hisonotus	*nigricauda*		F	54	26M + 20SM + 8ST	100	108	2		ACN=58	Brazil (RS)	A-108
Hisonotus	sp. 1			54					2.7 FD	ZW	Brazil (SP)	F-64
Hisonotus	sp. 2			54					1.8 FD	ZW	Brazil (SP)	F-64
Hisonotus	sp. A	*Microlepidogaster*	F	54	30M + 20SM + 4ST	104	108	4			Brazil (SP)	A-49
Hisonotus	sp. A			54	26M + 26SM + 2ST	106	108	2		ACN=58	Brazil (SP)	A-108
Hisonotus	sp. B	*Microlepidogaster*	F	54	22M + 28SM + 4ST	104	108	2			Brazil (SP)	A-49
Hisonotus	sp. D			54	26M + 26SM + 2ST	106	108	2		ACN=58	Brazil (SP)	A-108
Lampiella	*gibbosa*	*Hisonotus gibbosos*		58							Brazil (SP)	K-20
Macrotocinclus	*affinis*	*Otocinclus*	F, M	54	46M + 8SM	108	108	2	(4.2 BFA)		Brazil (SP)	A-49, H-13
Macrotocinclus	*affinis*	*Otocinclus*	F, M	54	40M + 12SM + 2ST	106	108	2			Brazil (RJ)	A-49
Otocinclus	aff. *vestitus*		F	72	22M + 12SM + 4ST + 34A	106	110	2		ZW	Brazil (PA)	A-49

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Parotocinclus	*maculicauda*		M	54	20M + 32SM + 2ST	106	108	2			Brazil (SP)	A-49
Pseudotocinclus	*tietensis*		F	54	26M + 22SM + 6ST	102	108	2		XX	Brazil (SP)	A-47
Pseudotocinclus	*tietensis*		M	54	27M + 21SM + 6ST	102	108	2		XY	Brazil (SP)	A-47
Pseudotothyris	*obtusa*		M	54	26M + 18SM + 4ST + 6A	98	102	2			Brazil (SP)	A-49
Hypostominae												
Corymbophanes	sp.	*Pareiorhina*		54	20M + 20SM + 14ST	94	108			ACN=54	Brazil (MG)	A-35
Hypostomus	*affinis*			66	14M + 14SM + 12ST + 26A	94	106	5			Brazil (Jacui Stream, SP)	K-20
Hypostomus	*albopunctatus*		F, M	74	10M + 20SM + 44 ST/A	104		6		ACN=76	Brazil (SP)	A-98
Hypostomus	*ancistroides*		F, M	68	16M + 18SM + 34 ST/A	102		6		ACN=76	Brazil (SP)	A-98
Hypostomus	*ancistroides*		F, M	68	18M + 10SM + 12ST + 28A	96	108	6			Brazil (SP)	A-112
Hypostomus	*ancistroides*	*Plecostomus*	F	68	10M + 28SM + 30 ST/A	106				XX	Brazil	M-66
Hypostomus	*ancistroides*	*Plecostomus*	M	68	10M + 27SM + 31 ST/A	105				XY	Brazil	M-66
Hypostomus	aff. *auroguttatus*		F	76	8M + 30SM + 38 ST/A	114		2		ACN=76	Brazil (SP)	A-98
Hypostomus	*commersoni*			68	14M + 14SM + 8ST + 32A	96	104				Argentina	F-20
Hypostomus	*goyazensis*		F, M	72	10M + 16SM + 10ST + 36A	98	108	2			Brazil (GO)	A-112
Hypostomus	*macrops*	*Plecostomus*	M	68	10M + 14SM + 44 ST/A	92					Brazil	M-66
Hypostomus	*nigromaculatus*			76	8M + 20SM + 48 ST/A	104		3		ACN=76	Brazil (SP)	R-119
Hypostomus	*nigromaculatus*			76	6M + 20SM + 50 ST/A	102		3		ACN=76	Brazil (PR)	R-119
Hypostomus	*paulinus*	*Plecostomus*	M	74	10M + 20SM + 44 ST/A	104					Brazil	M-66
Hypostomus	*plecostomus*			68					(3.2 FIA, 4.2 BFA)		(S. America)	H-13, H-41
Hypostomus	*plecostomus*?	*plecostomus*		54	24 M/SM + 12ST + 18A	78	90		3.6 FD		(S. America)	M-91
Hypostomus	*regani*		F, M	72	10M + 20SM + 42 ST/A	102				ACN=74	Brazil (SP)	A-98
Hypostomus	*regani*		F, M	72	12M + 18SM + 26ST + 16A	102	128	4			Brazil (SP)	A-112
Hypostomus	*strigaticeps*	*Plecostomus*	F, M	74	8M + 4SM + 62 ST/A	86					Brazil	M-66
Hypostomus	*tietensis*			68	14M + 12SM + 42 ST/A	94					Brazil (SP)	A-35
Hypostomus	sp.			67	15M + 12SM + 14ST + 26A	94	108			1B	Brazil (SP)	C-98
Hypostomus	sp. A		F, M	70	18M + 14SM + 38 ST/A	102		6		ACN=76	Brazil (SP)	A-98
Hypostomus	sp. B		F, M	72	12M + 18SM + 42 ST/A	102		2		ACN=76	Brazil (SP)	A-98, A-132
Hypostomus	sp. C		F, M	72	10M + 18SM + 44 ST/A	100		4	(4.3 FD)	ACN=74	Brazil (SP)	A-98, F-64
Hypostomus	sp. D_1		M	72	10M + 26SM + 36 ST/A	108		2	(4.7 FD)	ACN=74	Brazil (SP)	A-98, F-64
Hypostomus	sp. D_2		M	72	14M + 20SM + 38 ST/A	106		2	(3.7 FD)	ACN=78	Brazil (SP)	A-98, F-64
Hypostomus	sp. E		F, M	80	8M + 16SM + 56 ST/A	104		4		ACN=80	Brazil (SP)	A-98, A-132
Hypostomus	sp. 3			82	6M + 14SM + 62 ST/A	102				0-2 B	Brazil (MS)	C-98
Hypostomus	sp. 2	Rio Perdido	F, M	84	6M + 16SM + 62 ST/A	106		2		ACN=84	Brazil (MS)	C-107
Hypostomus	sp. 3	Córrego Salobrinha	F, M	82	6M + 12SM + 64 ST/A	100				ACN=82	Brazil (MS)	C-107
Hypostomus	sp. 3	Córrego Salobrinha	F, M	84	6M + 12SM + 66 ST/A	102				ACN=84	Brazil (MS)	C-107

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hypostomus	sp. F			76	10M + 16SM + 50 ST/A	102		2	(4.2, 4.9 FD)		Brazil (MG)	A-132, F-64
Hypostomus	sp. G			64	14M + 24SM + 26 ST/A	102				ZW	Brazil (MT)	A-109
Hypostomus	sp.		F	64	15M + 24SM + 25 ST/A	103		2	3.9 FD	ZW	Brazil (MT)	A-99, F-64
Hypostomus	sp.		M	64	14M + 24SM + 26 ST/A	102		2	3.9 FD	ZZ, ACN=82	Brazil (MT)	A-99, F-64
Hypostomus	sp. 1?			54	36 M/SM + 18 ST/A	90					Argentina	F-20
Hypostomus	sp. 2			72	28 M/SM + 44 ST/A	100					Argentina	F-20
Pterygoplichthys	*ambrosettii*	*Liposarcus anisitsi*	F, M	52	16M + 24SM + 8ST + 4A	92	100	2	(4.0 FD)		Brazil (SP)	A-133, F-64
Pterygoplichthys	*ambrosettii*	*Liposarcus anisitsi*	F, M	52	28M + 12SM + 8ST + 4A	92	100	2			Brazil (SP)	A-112
Pterygoplichthys	*ambrosettii*	*Liposarcus anisitsi*	F, M	52	8M + 14SM + 14ST + 16A	74	88	2			Brazil (MS).	A-112
Pterygoplichthys	*gibbiceps*	*Glyptoperichthys*	F, M	52	20M + 24SM + 8ST	96	104	2			Venezuela (Orinoco R.)	A-112
Pterygoplichthys	*joselimaianus*		F, M	52	28M + 16SM + 8 ST/A	96		2			Brazil (MG)	O-79
Pterygoplichthys	*multiradiatus*	*Liposarcus*	F, M	52	22M + 18SM + 12ST	92	104	2			Venezuela (Orinoco R.)	A-112
Pogonopoma	*wertheimeri*		F	54	20M + 30SM + 4ST	104	108			ACN=58	Brazil (Bahia)	A-109
Rhinelepis	*aspera*		F, M	54	20M + 26SM + 8ST	100	108			ACN=58	Brazil (PR)	A-109
Squaliforma	*emarginata*	*Hypostomus emarginatus*	F, M	52	16M + 30SM + 6ST	98	104			ACN=56	Brazil (MT)	A-109
Loricariinae												
Brochiloricaria	*macrodon*	*Loricaria*	M	58	18M + 2SM + 38 ST/A	78					Brazil	M-66
Harttia	*kronei*			58	40 M/SM + 18ST	98	116	2		ACN=58	Brazil (SP)	A-34
Harttia	*loricariformis*			52	32 M/SM + 20 ST/A	84		2		ACN=54	Brazil (SP)	A-34
Harttia	*loricariformis*			56	16M + 22SM + 10ST + 8A	94	104	2			Brazil (Paraitinga R., SP)	K-20
Harttia	sp.			56	14SM + 42A	70					Brazil (MG)	A-34
Loricaria	*cataphracta*	*carinata*		64	12 M/SM + 52 ST/A	76					Argentina	F-20
Loricaria	sp.			64	10M + 6SM + 4ST + 44A	80	84			1-3 B	Brazil (PR)	A-34, C-98
Loricaria	sp.			52							Brazil (PA)	A-34
Loricaria	sp.			62							Brazil (AM)	A-34
Loricariichthys	*maculatus*			56	22 M/SM + 34 ST/A	78					Argentina	F-20
Loricariichthys	*platymetopon*			54	7M + 20SM + 4ST + 23A	81	85				Argentina	F-20
Loricariichthys	*platymetopon*		F	54	7M + 20SM + 4ST + 23A	81	85	2		ZW	Brazil (Paraná R., PR)	S-186
Loricariichthys	*platymetopon*		M	54	6M + 20SM + 4ST + 24A	80	84	2		ZZ	Brazil (Paraná R., PR)	S-186
Loricariichthys	sp.			54	6M + 26SM + 4ST + 18A	86	90				Argentina	A-34
Loricariichthys	sp.			54	28M + 26A	82					Brazil (MG)	A-34
Proloricaria	*prolixa*	*Loricaria*		62	20M + 4SM + 38A	86	86			0-5 B	Brazil (PR)	A-34, C-98
Rineloricaria	*cadeae*	*cadee*		66	2M + 64 ST/A	68				ACN=66	Brazil (RS)	A-34
Rineloricaria	*cadeae*		F, M	64	2 M/SM + 62 ST/A	66		2		ACN=64	Brazil (RS)	M-168
Rineloricaria	*kronei*			64	6 M/SM + 58 ST/A	70		2		ACN=64	Brazil (SC)	A-34
Rineloricaria	*latirostris*			44	12M + 4SM + 28A	60	60				Brazil (Passa Cinco R., SP)	K-20

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rineloricaria	*latirostris*			44	10M + 4SM + 30A	58	58				Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			44	13M + 2SM + 29A	59	59				Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			44	13M + 4SM + 27A	61	61				Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			44	13M + 1SM + 30A	58	58				Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			44	10M + 3SM + 31A	57	57				Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			45	15 M/SM + 30 ST/A	60					Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			46	10M + 3SM + 33A	59	59				Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			46	14 M/SM + 32 ST/A	60					Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			47	13 M/SM + 34 ST/A	60					Brazil (Passa Cinco R., SP)	K-20
Rineloricaria	*latirostris*			36	24 M/SM + 12 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
Rineloricaria	*latirostris*			37	23 M/SM + 14 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
Rineloricaria	*latirostris*			38	22 M/SM + 16 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
Rineloricaria	*latirostris*			39	21 M/SM + 18 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
Rineloricaria	*latirostris*			40	20 M/SM + 20 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
Rineloricaria	*latirostris*			43	17 M/SM + 26 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
Rineloricaria	*latirostris*			44	16 M/SM + 28 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
Rineloricaria	*latirostris*			46	14 M/SM + 32 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
Rineloricaria	*latirostris*			47	13 M/SM + 34 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
Rineloricaria	*latirostris*			48	12 M/SM + 36 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
Rineloricaria	*parva*			48					3.2 BFA		(S. America)	G-73, H-13
Rineloricaria	*pentamaculata*		F, M	56	8 M/SM + 48 ST/A	64		2		ACN=60	Brazil (PR)	A-34, M-168
Rineloricaria	*strigilata*		F, M	68	6 M/SM + 62 ST/A	74		2		ACN=68	Brazil (RS)	M-168
Rineloricaria	sp.			70	2SM + 68A	72				ACN=70	Brazil (SP)	A-34
Sturisoma	cf. *nigrirostrum*		F, M	74	20M + 18SM + 36 ST/A	112					Brazil (MT)	A-109
Neoplecostominae												
Isbrueckerichthys	*duseni*			54	20M + 20SM + 14ST	94	108	2		ACN=56	Brazil (SP)	A-35
Kronichthys	*lacerta*			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (PR)	A-35
Kronichthys	*subteres*			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SP)	A-35
Neoplecostomus	*microps*			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SP)	A-35
Neoplecostomus	*microps*			54	24M + 20SM + 10ST	98	108	2			Brazil (Paraitinga R., SP)	K-20
Neoplecostomus	*paranensis*			54	20M + 20SM + 14ST	94	108	2	2.3 FD	0-2 B, ACN=54	Brazil (MG)	A-35, F-64, C-98
Neoplecostomus	*paranensis*			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SP)	A-35
Pareiorhaphis	*splendens*	*Hemipsilichthys*		54	20M + 30SM + 4ST	104	108	2		ACN=54	Brazil (SC, PA)	A-35
Pareiorhaphis	*steindachneri*	*Hemipsilichthys*		54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SC)	A-35
Pareiorhaphis	*vestigipinnis*	*Hemipsilichthys*		54	20M + 20SM + 14ST	94	108	2		ACN=56	Brazil (SC)	A-35
Pareiorhaphis	sp.	*Hemipsilichthys*		54	20M + 20SM + 14ST	94	108	2		ACN=56	Brazil (PR)	A-35

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pareiorhina	*rudolphi*			54	26M + 16SM + 12ST	96	108	2		ACN=54	Brazil (SP)	A-35
Upsilodinae												
Upsilodus	sp.			96	16M + 8SM + 72A	120		2			Brazil (Paraitinga R., SP)	K-20
Mochokidae												
Hemisynodontis	*membranaceus*		M	54	30 M/SM + 14ST + 10A	84	98	2		ZZ, ACN=56	Africa	A-10, O-1
Hemisynodontis	*membranaceus*		F	54	31 M/SM + 13ST + 10A	85	98	2		ZW, ACN=56	Africa	A-10, O-1
Synodontis	*bastiani*		F	54	23 M/SM + 18ST + 13A	77	95			ZW, ACN=56	Ivory Coast	A-10
Synodontis	*budgetti*		M	54	30 M/SM + 18ST + 6A	84	102	2		ACN=56	Mali	A-10, O-1
Synodontis	*courteti*		F	54	28 M/SM + 19ST + 7A	82	101			ACN=56	Mali	A-10
Synodontis	*filamentosa*	*filamentosus*	F	56	24 M/SM + 22ST + 10A	80	102	2		ACN=56	Mali	A-10, O-1
Synodontis	*ocellifer*		F	54	22 M/SM + 20ST + 12A	76	96			ACN=56	Mali	A-10
Synodontis	*schall*		F	54	24 M/SM + 17ST + 13A	78	95	2	2.2 BFA	ACN=56	Mali	A-10, O-1, H-13
Synodontis	*sorex*		M	54	26 M/SM + 16ST + 12A	80	96	2		ZZ, ACN=56	Mali	A-10, O-1
Synodontis	*sorex*		F	54	27 M/SM + 15ST + 12A	81	96	2		ZW, ACN=56	Mali	A-10, O-1
Synodontis	*violacea*	*violaceus*	M	54	32 M/SM + 14ST + 8A	86	100	2		ACN=56	Mali	A-10, O-1
Pangasiidae												
Pangasianodon	*gigas*		F, M	60	10M + 26SM + 14ST + 10A	96	110			XX/XY	Thailand (Chiang Mai)	M-30
Pangasianodon	*gigas*			60	32M + 8SM + 12ST + 8A	100	112				Thailand	D-21
Pangasianodon	*hypophthalmus*	*Pangasius*		60	20M + 12SM + 4ST + 24A	92	96				Thailand	D-21
Pangasianodon	*hypophthalmus*	*Pangasius*	M	60	12M + 12SM + 6ST + 30A	84	90	2			(Thailand)	K-136
Pangasianodon	*hypophthalmus*	*Pangasius sutchi*		60	20M + 12SM + 4ST + 24A	92	96			ACN=60	Thailand (Nakhonsawan)	M-7
Pangasius	*larnaudii*			60	24M + 20SM + 4ST + 12A	104	108			ACN=60	Thailand (Nakhonsawan)	M-7
Pangasius	*pangasius*		F	58	14M + 20SM + 2ST + 22A	92	94				India (WB)	K-42
Pangasius	*pangasius*			62	14M + 6SM + 18ST + 24A	82	100				India	M-20
Pangasius	*sanitwongsei*			60	20M + 6SM + 18ST + 16A	86	104				Thailand	D-21
Pimelodidae												
Bergiaria	*westermanni*		F, M	56	42 M/SM + 14 ST/A	98		2		0-5 B	Brazil (MG)	D-11
Calophysus	*macropterus*			50	22M + 18SM + 10A	90		2			Brazil (R. Negro)	S-166
Hemisorubim	*platyrhynchos*		F, M	56	22M + 18SM + 6ST + 10A	96	102	2		ACN=56	Brazil (Parana basin)	M-46
Iheringichthys	*labrosus*		F	56	22M + 18SM + 10ST + 6A	96	106	2			Brazil (SP)	V-47
Iheringichthys	*labrosus*		F, M	56	32M + 8SM + 6ST + 10A	96	102			0-3 B	Brazil (Lower Tibagi R., PR)	C-97
Iheringichthys	*labrosus*		F, M	56	14M + 32SM + 4ST + 6A	102	106	2		0 B, ACN=56	Brazil (Upper Tibagi R., PR)	R-124
Iheringichthys	*labrosus*		F, M	56	26M + 12SM + 6ST + 12A	94	100	2		0-1 B, ACN=56	Brazil (PR)	C-104, C-105

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Iheringichthys	*labrosus*			56							Argentina	F-20
Luciopimelodus	*pati*			50	16M + 14SM + 8ST + 12A	80	88				Argentina	S-180
Megalonema	*platanum*			54	14M + 18SM + 12ST + 10A	86	98				Argentina	S-180
Megalonema	*platanum*			54	26M + 10SM + 18ST	90	108			0-1 B	Brazil (PR)	C-98
Parapimelodus	*nigribarbis*		F, M	56	20M + 20SM + 4ST + 12A	96	100	2		ACN=56	Brazil (Porto Alegre, RS)	T-78
Parapimelodus	*valenciennis*			56							Brazil (RS)	S-166
Pimelodus	*absconditus*		F, M	56	24M + 18SM + 8ST + 6A	98	106	2			Brazil (PR)	B-46
Pimelodus	*albicans*			56							Argentina	F-20
Pimelodus	*argenteus*		F, M	56	24M + 16SM + 12ST + 4A	96	108	2			Brazil (Paraguai R.)	S-102, S-197
Pimelodus	*blochii*			56	36 M/SM + 20 ST/A	92					Brazil (MT)	B-47
Pimelodus	*clarias*			56					(2.4 BFA)		Argentina	F-20, H-13
Pimelodus	*fur*			56	30M + 14SM + 12A	100	100				S. America	L-21
Pimelodus	*fur*		F, M	54	32M + 8SM + 6ST + 8A	94	100	2		ACN=56	Brazil (MG)	G-81
Pimelodus	*heraldoi*		F, M	56	22M + 22SM + 6ST + 6A	100	106	2			Brazil (PR)	S-180, S-197
Pimelodus	*heraldoi*		F, M	56	18M + 24SM + 6ST + 8A	98	104	2		ACN=56	Brazil (PR)	T-81
Pimelodus	*maculatus*		F, M	56	22M + 16SM + 10ST + 8A	94	104	2	(2.7-2.8 FD)		Brazil (Paraguai R.)	S-102, S-197, F-64
Pimelodus	*maculatus*		F, M	56	40 M/SM + 16 ST/A	96		2			Brazil (MG)	D-11
Pimelodus	*maculatus*		M	56	41 M/SM + 15 ST/A	97		2			Brazil (MG)	D-11
Pimelodus	*maculatus*		F, M	56	20M + 20SM + 10ST + 6A	96	106	2		ACN=56	Brazil (PR)	B-46, M-161, V-46
Pimelodus	*maculatus*		F, M	56	32M + 12SM + 12ST	100	112	2		ACN=56	Brazil (MG)	G-81
Pimelodus	*maculatus*		F, M	56	24M + 20SM + 6ST + 6A	100	106	2		ACN=56	Brazil (Porto Alegre, RS)	T-78
Pimelodus	*mysteriosus*		F, M	56	26M + 20SM + 2ST + 8A	102	104	2			Brazil (Paraguai R.)	S-102, S-197
Pimelodus	*ornatus*		F, M	56	20M + 18SM + 8ST + 10A	94	102	2			Brazil (PR)	B-46
Pimelodus	*ornatus*			56							Argentina	F-20
Pimelodus	*ortmanni*		F, M	56	24M + 18SM + 8ST + 6A	98	106	2		0-4 B	Brazil (PR)	B-47
Pimelodus	*ortmanni*			56	20M + 12SM + 14ST + 10A	88	102				Brazil (PR)	B-47
Pimelodus	*paranaensis*		F, M	56	22M + 22SM + 4ST + 8A	100	104	2		ACN=56	Brazil (PR)	T-81
Pimelodus	sp.		F, M	56	41 M/SM + 15 ST/A	97		2			Brazil (MG)	D-11
Pimelodus	sp.		F, M	56	30M + 14SM + 8ST + 4A	100	108	2		0-4 B	Brazil (PR)	B-47
Pimelodus	sp.		F, M	56	32M + 12SM + 6ST + 6A	100	106	2		ACN=56	Brazil (MG)	G-81
Pinirampus	*pirinampu*		F	50	22M + 12SM + 4ST + 12A	84	88	2			Brazil (PR)	V-84
Pinirampus	*pirinampu*		F, M	50	26M + 12SM + 2ST + 10A	88	90	2			Brazil (PR)	S-146, S-147
Pseudoplatystoma	*corruscans*	*coruscans*	F, M	56	18M + 16SM + 10ST + 12A	90	100	2			Brazil (Parana basin)	M-46
Pseudoplatystoma	*corruscans*	*coruscans*		56	24M + 16SM + 8ST + 8A	96	104				Brazil	P-42
Pseudoplatystoma	*corruscans*	*coruscans*		56	20M + 16SM + 8ST + 12A	92	100	2			Brazil (MS, Paraguay R.)	S-150
Pseudoplatystoma	*corruscans*	*coruscans*		56	26M + 10SM + 6ST + 14A	92	98	2			Brazil (SP, Parana R.)	S-150

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pseudoplatystoma	*fasciatum*		F, M	56	18M + 14SM + 10ST + 14A	88	98	2		ACN=56	Brazil (AM)	F-17
Pseudoplatystoma	*fasciatum*		F, M	56	20M + 12SM + 12ST + 12A	88	100	2		ACN=56	Brazil (MS)	P-42
Pseudoplatystoma	*tigrinum*		F, M	56	18M + 16SM + 8ST + 14A	90	98	2		ACN=56	Brazil (AM)	F-17
Sorubim	*lima*		F, M	56	18M + 12SM + 14ST + 12A	86	100	2		ACN=56	Brazil (AM)	F-17
Sorubim	*lima*		F, M	56	20M + 14SM + 10ST + 12A	90	100	2		ACN=56	Brazil (Parana basin)	M-46
Sorubim	*lima*			56							Argentina	F-20
Steindachneridion	*scriptum*	*inscripta*		56							Argentina	F-20
Steindachneridion	*scriptum*	*scripta*	F, M	56	24M + 20SM + 4ST + 8A	100	104	2		ACN=56	Brazil (PR)	S-199, S-200
Steindachneridion	*melanodermatum*	sp.	F	56	20M + 24SM + 2ST + 10A	100	102	2		XX, ACN=56	Brazil (PR)	S-165, S-180, S-200
Steindachneridion	*melanodermatum*	sp.	M	56	21M + 23SM + 2ST + 10A	100	102	2		XY, ACN=56	Brazil (PR)	S-165, S-200
Zungaro	*zungaro*			56	32M + 6SM + 8ST + 10A	94	102	2			Brazil (SP)	S-148
Zungaro	*zungaro*	*Paulicea luetkeni*	F, M	56	26M + 10SM + 6ST + 14A	92	98	2		ACN=56	Brazil (Parana basin)	M-46
Plotosidae												
Plotosus	*lineatus*	*anguillaris*		48	12 M/SM + 36 ST/A	60				ACN=48	Japan (Okinawa)	A-58
Plotosus	*canius*		F, M	36	10M + 10SM + 16A	56				ACN=36	India (Orissa)	R-58
Plotosus	*canius*		F	36	14M + 12SM + 2ST + 8A	62	64			ACN=36	India (WB)	K-139
Plotosus	*canius*		F, M	36	20M + 8SM + 8 ST/A	64				ACN=36	India (Orissa)	T-49
Pseudopimelodidae												
Cephalosilurus	*apurensis*		M	54	6M + 28SM + 14ST + 6A	88	102	2		ACN=56	Venezuela (Orinoco R.)	M-142
Conorhynchos	*conirostris*	*Conorhynchus*	F, M	60	20M + 18SM + 10ST + 12A	98	108	2		ACN=60	Brazil (MG)	A-17
Lophiosilurus	*alexandri*			54	54 M/SM /ST/A			2			Brazil	M-128
Lophiosilurus	*alexandri*		F, M	54	16M + 18SM + 10ST + 10A	88	98	2		ACN=58	Brazil (MG)	A-17
Microglanis	*cottoides*		F, M	54	22M + 20SM + 12ST	96	108	2	2.5 FD		Brazil (SP)	V-46, F-64
Microglanis	aff. *cottoides*		F, M	54	10M + 32SM + 10ST + 2A	96	106	4		ACN=56	Brazil (SC)	M-142
Pseudopimelodus	*bufonius*			54	18M + 22SM + 6ST + 8A	94	100	2			Brazil (PR)	M-128
Pseudopimelodus	*bufonius*		F, M	54	12M + 30SM + 12ST	96	108	6		ACN=56	Brazil (AM)	M-142
Pseudopimelodus	*mangurus*		F, M	54	6M + 26SM + 12ST + 10A	86	98	2	2.2 FD	ACN=56	Brazil (SP)	M-128, F-64
Schilbeidae												
Ailia	*coila*			58	14M + 36SM + 8A	108	108			ACN=58	India (Assam)	K-46, C-108
Clupisoma	*garua*			56	18M + 34SM + 4A	108	108			ACN=56	India (Assam)	C-108
Clupisoma	*garua*			66	66A	66	66				India	L-1
Eutropiichthys	*vacha*		F, M	58	10M + 20SM + 12ST + 16A	88	100				India (WB)	M-28
Neotropius	*atherinoides*	*Pseudeutropius*		58	10M + 30SM + 18A	98	98			ACN=58	India (Assam)	K-46, C-108
Neotropius	*atherinoides*	*Pseudeutropius*	F, M	58	28M + 12SM + 2ST + 16A	98	100			ACN=58	India (Orissa)	R-58

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scoloplacidae												
Scoloplax	*distolothrix*		F, M	50	18M + 18SM + 10ST + 4A	86	96	2		ACN=54?	Brazil (MT)	O-72
Siluridae												
Kryptopterus	*bicirrhis*			60					1.8 BFA		(SE Asia)	H-13
Ompok	*bimaculatus*	*Callichrous*	F	42	18M + 12SM + 12A	72				XX, ACN=42	India (Haryana)	R-49
Ompok	*bimaculatus*	*Callichrous*	M	41	17M + 12SM + 12A	70				XY	India (Haryana)	R-49
Ompok	*bimaculatus*		F	42	6M + 24SM + 12A	72		2			India (WB)	K-136
Ompok	*bimaculatus*		M	41	5M + 24SM + 12A	70		2			India (WB)	K-136
Ompok	*pabda*			54	28M + 10SM + 8ST + 8A	92	100				India	D-2
Ompok	*pabo*			54	36M + 12SM + 6A	102				ACN=54	India (Assam)	K-43
Silurus	*aristotelis*	*Parasilurus*	F, M	58	30M + 20SM + 8ST	108	116				Greece	I-22
Silurus	*aristotelis*		F	58	20M + 24SM + 14 ST/A	102		2		ACN=58	Macedonia	R-121
Silurus	*asotus*	*Parasilurus*	M	58	38 M/SM + 8ST + 12A	96	104				Japan	M-92
Silurus	*asotus*	*Parasilurus*		58	46 M/SM + 12 ST/A	104		2		ACN=58	Japan (Yamaguchi)	F-51
Silurus	*asotus*	*Parasilurus*		58	44 M/SM + 14 ST/A	102			(2.3* FCM)	ACN=58	Japan (Tochigi)	A-58, O-48
Silurus	*asotus*	*Parasilurus*	F, M	58	24M + 24SM + 10 ST/A	106				ACN=58	Korea (Janghyeon)	K-52
Silurus	*asotus*		F, M	58	20M + 24SM + 10ST + 4A	102	112		(1.5* FD)	ACN=58	China (Wuhan)	H-18, Y-15, C-83
Silurus	*asotus*	*Parasilurus*		58	20M + 14SM + 6ST + 18A	92	98	2	2.9 FD		China (Shasi)	Z-21, L-41
Silurus	*asotus*	*Parasilurus*		58	20M + 24SM + 10ST + 4A	102	112				China (Amur)	Y-13
Silurus	*biwaensis*	*Parasilurus*		58	44 M/SM + 14 ST/A	102				ACN=58	Japan (Lake Biwa)	A-58
Silurus	*glanis*			48	30 M/SM + 18 ST/A	78					Yugoslavia	A-28
Silurus	*glanis*			60	28M + 26SM + 6ST	114	120			ACN=60	Czeck	R-1
Silurus	*glanis*			60	22M + 38 SM/ST		120	2		ACN=60	Czeck	R-18
Silurus	*glanis*			60	18M + 32 SM/ST + 10A		110				(Russia)	V-72
Silurus	*lithophilus*	*Parasilurus*		58	44 M/SM + 14 ST/A	102				ACN=58	Japan (Lake Biwa)	A-58
Silurus	*meridionalis*	*soldatovi meridionalis*	F, M	58	20M + 20SM + 14ST + 4A	98	112			ACN=58	China (Wuhan)	H-18, Y-15, C-83
Silurus	*microdorsalis*	*Parasilurus*	F, M	60	22M + 24SM + 14 ST/A	106				ACN=60	Korea (Janghyeon)	K-52
Silurus	*microdorsalis*?	*Parasilurus microdorsalis*		28	12M + 14SM + 2ST	54	56				Korea	L-15
Silurus	*soldatovi*			58	24M + 16SM + 14ST + 4A	98	112			ACN=58	China (Jilin)	H-34
Wallago	*attu*		F, M	86	12M + 6SM + 2ST + 66A	104	106			ACN=86	India (Haryana)	R-61
Wallago	*attu*		F, M	86	10M + 12SM + 8ST + 56A	108	116			ACN=86	India (Jammu)	S-202

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Sisoridae												
Glyptosterninae												
Euchiloglanis	*davidi*		F, M	36	8M + 6SM + 22 ST/A	50				ACN=36	China (Sichuan)	L-35
Euchiloglanis	*kishinouyei*	*Coraglanis*	F, M	50	14M + 6SM + 30 ST/A	70				ACN=50	China (Sichuan)	L-35
Glyptosternon	*reticulatum*	*Exostoma stoliczkae*		42							India	R-74
Glyptothorax	*fokiensis*	*fukiensis*	F, M	52	20M + 18SM + 14ST	90	104			ACN=52	China (Guangdong)	Y-15
Glyptothorax	*telchitta*			56	18M + 26SM + 2ST + 10A	100	102			ACN=56	India (Bihar)	K-41
Glyptothorax	*trilineatus*			52	18M + 24SM + 10A	94				ACN=52	India (Assam)	K-46, C-108
Pseudecheneis	*sulcata*	*sulcatus*	F, M	52	8M + 14SM + 30 ST/A	74				ACN=52	India (U.P.)	R-74
Sisorinae												
Gagata	*cenia*			46	4M + 8SM + 8ST + 26A	58	66			ACN=46	India (U.P.)	M-162
Gogangra	*viridescens*	*Nangra punctata*		42	14M + 20SM + 8A	76				ACN=42	India (Assam)	K-46, C-108
Gogangra	*viridescens*	*Gagata*	M	48	12M + 22SM + 4ST + 10A	82	86			ACN=48	India (Jammu)	S-52
Trichomycteridae												
Bullockia	*maldonadoi*			60	46 M/SM + 14 ST/A	106					(Chile)	A-127, B-80
Eremophilus	*mutisii*		F, M	54	30M + 20SM + 4ST	104	108	2		ACN=56	Colombia	G-53
Hatcheria	*macraei*			52	30 M/SM + 22 ST/A	82					(Chile)	A-127, B-80
Trichogenes	*longipinnis*		F, M	54	36M + 12SM + 6ST	102	108	2		ACN=56	Brazil (SP)	L-51
Trichomycterus	*alternatus*	*florensis*		54	42M + 10SM + 2ST	106	108			ACN=56	Brazil (MG)	S-109
Trichomycterus	*areolatus*			56	56 M/SM	112	112				(Chile)	A-127
Trichomycterus	*areolatus*			54	44M + 8SM + 2ST	106	108	2	(5.0 FD)	ACN=56	Chile (Osomo)	C-66
Trichomycterus	*areolatus*			55	43M + 8SM + 2ST + 2A	106	108			ACN=56	Chile (Osomo)	C-66
Trichomycterus	*areolatus*			56	42M + 8SM + 2ST + 4A	106	108			ACN=56	Chile (Osomo)	C-66

Table 6.13 Order SILURIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Trichomycterus	*auroguttatus*			54	42M + 10SM + 2ST	106	108			ACN=56	Brazil (MG)	S-109
Trichomycterus	*chiltoni*			52	44 M/SM + 8 ST/A	96					(Chile)	A-127
Trichomycterus	*davisi*		F, M	54	40M + 12SM + 2ST	106	108	2		ACN=58	Brazil (Iguaçu R.)	B-67, B-79, B-80
Trichomycterus	*davisi*			55	41M + 12SM + 2ST	108	110			ACN=58	Brazil (Iguaçu R.)	B-79
Trichomycterus	*davisi*			56	40M + 12SM + 2ST + 2A	108	110			ACN=58	Brazil (Iguaçu R.)	B-79
Trichomycterus	*davisi*			54	42M + 10SM + 2ST	106	108			ACN=58	Brazil (PR)	S-109
Trichomycterus	*davisi*		M	81	60M + 18SM + 3ST	159	162	3		3X	Brazil (PR)	B-67
Trichomycterus	cf. *iheringi*		F, M	54					2.3 FD		Brazil (SP)	F-64
Trichomycterus	aff. *itatiayae*	aff. *itatiyae*		54	42M + 10SM + 2ST	106	108			ACN=58	Brazil (PR)	S-109
Trichomycterus	*laucaensis*			58	42 M/SM + 16 ST/A	100					(Chile)	A-127, B-80
Trichomycterus	*laucaensis*			62	62 M/SM/ST		124				Chile	B-80
Trichomycterus	*paolence*		F, M	54	46M + 6SM + 2ST	106	108	2			Brazil (Itatinga, SP)	T-48, T-69
Trichomycterus	*paolence*			54	46M + 6SM + 2ST	106	108			1B	Brazil (Itatinga, SP)	T-48
Trichomycterus	*paolence*			55	46M + 6SM + 3ST	107	110				Brazil (Itatinga, SP)	T-48
Trichomycterus	*paolence*			56	46M + 6SM + 4ST	108	112			1B	Brazil (Itatinga, SP)	T-48
Trichomycterus	*paolence*	cytotype A		54	44M + 8SM + 2ST	106	108	2		ACN=56	Brazil (Botucatu, SP)	T-69
Trichomycterus	*paolence*	cytotype B		54	40M + 14SM	108	108	2		ACN=56	Brazil (Bofete, SP)	T-69
Trichomycterus	*reinhardti*			54	42M + 10SM + 2ST	106	108			ACN=56	Brazil (MG)	S-109
Trichomycterus	*spegazzinii*			54	54 M/SM	108	108				Argentina	F-20
Trichomycterus	*stawiarski*			54	42M + 8SM + 4ST	104	108			ACN=58	Brazil (Iguaçu R.)	B-80
Trichomycterus	sp.			54	42M + 10SM + 2ST	106	108			ACN=58	Brazil (Iguaçu R.)	B-80
Trichomycterus	sp.		F, M	54					2.6 FD		Brazil	L-51, F-64
Trichomycterus	sp. B			54	42M + 8SM + 4ST	104	108			0-2 B	Brazil (PR)	C-98
Vandellia	*cirrhosa*			32							(S. America)	L-51

Table 6.14 Order GYMNOTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Gymnotoidei												
Gymnotidae												
Electrophorus	*electricus*			52	42 M/SM + 10A	94					Brazil (AM, GO)	A-125
Gymnotus	*carapo*			54	54 M/SM	108	108			ACN=54	Brazil (SP)	A-125
Gymnotus	*carapo*			54	44M + 8SM + 2ST	106	108	2		ACN=54	Brazil (SP)	F-71, F-72
Gymnotus	*carapo*			54	52 M/SM + 2 ST/A	106				X_1X_2Y	Brazil (PR)	A-125
Gymnotus	*carapo*		F, M	54	54 M/SM	108	108	2		ACN=54	Brazil (SP)	F-34
Gymnotus	*carapo*		F, M	52	50 M/SM + 2 ST/A	102		2			Brazil (SP)	F-34
Gymnotus	*carapo*			48	34 M/SM + 14 ST/A	82					Brazil (AM)	F-34
Gymnotus	*carapo*		F, M	42	32 M/SM + 10 ST/A	74					Brazil (PA)	F-34
Gymnotus	*carapo*			40	36 M/SM + 4 ST/A	76					Brazil (PR)	A-125
Gymnotus	*carapo*			54	54 M/SM	108	108	2		ACN=54	Argentina	F-20
Gymnotus	*carapo*			38					2.0 BFA		(S. America)	H-13
Gymnotus	*carapo*			81	78 M/SM + 3 ST/A	159				3X	Brazil (SP)	A-125
Gymnotus	*inaequilabiatus*			52	40M + 10SM + 2 ST/A	102		2		ACN=52	Brazil (SP)	F-71, F-72
Gymnotus	*pantanal*			40	14 M/SM + 26 ST/A	54					Brazil (Pantanal)	A-125
Gymnotus	*pantherinus*			52	38M + 8SM + 6 ST/A	98					East basin	A-125
Gymnotus	*pantherinus*			52	38M + 8SM + 6 ST/A	98		2		ACN=52	Brazil (SP)	F-71, F-72
Gymnotus	*paraguensis*		F, M	54	50 M/SM + 4 ST/A	104		3		ACN=54	Brazil (MG)	V-85
Gymnotus	*sylvius*			40	30 M/SM + 10 ST/A	70		2			Brazil	A-15
Gymnotus	*sylvius*			40	30 M/SM + 10 ST/A	70					Parana River	A-125
Gymnotus	*sylvius*			40	30 M/SM + 10 ST/A	70					Brazil (SP)	A-125
Gymnotus	*sylvius*			40	28M + 10SM + 2 ST/A	78		2		ACN=50	Brazil (SP)	F-71, F-72
Gymnotus	*sylvius*		F, M	40	36 M/SM + 4 ST/A	76		2			Brazil (MG)	V-85
Gymnotus	sp.		M	50	26 M/SM + 24 ST/A	76		2		ACN=52	Brazil (MG)	V-85
Gymnotus	sp.		F	52	50 M/SM + 2 ST/A	102					Brazil (SP)	F-34
Gymnotus	sp.		F	40	14 M/SM + 26 ST/A	54				$X_1X_1X_2X_2$	Brazil (PR)	A-125
Gymnotus	sp.		M	39	14 M/SM + 25 ST/A	53				X_1X_2Y	Brazil (PR)	A-125
Gymnotus	sp.		F	40	14 M/SM + 26 ST/A	54		2		$X_1X_1X_2X_2$	Argentina	S-155
Gymnotus	sp.		M	39	15 M/SM + 24 ST/A	54		2		X_1X_2Y	Argentina	S-155

Table 6.14 Order GYMNOTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Sternopygoidei												
Apteronotidae												
Apteronotus	*albifrons*		F, M	24	14M + 2SM +2ST + 6A	40	42				(Brazil)	H-29
Apteronotus	*albifrons*			24	14M + 2SM + 2ST + 6A	40	42			0-4 B	Brazil (PR)	C-98
Apteronotus	*albifrons*		F, M	24	12M + 4SM + 2ST + 6A	40	42	2			Brazil (PA)	A-18
Apteronotus	*albifrons*			22					1.4 BFA		(Brazil)	H-13
Apteronotus	sp.			52	46 M/SM + 6 ST/A	98					Brazil (SP)	A-125
Parapteronotus	*bonapartii*	*Apteronotus anas*		52	30M + 12SM + 10A	94					Brazil (Manaus)	A-125
Parapteronotus	*hasemani*	*Apteronotus*		52	26M + 16SM + 10A	94					Brazil (Manaus)	A-125
Hypopomidae												
Brachyhypopomus	*brevirostris*			36	4M + 2SM + 8ST + 22A	42	50				Brazil (AM)	A-125
Brachyhypopomus	*pinnicaudatus*		F	42	42A	42	42			$X_1X_1X_2X_2$	Brazil (SP)	A-113
Brachyhypopomus	*pinnicaudatus*		M	41	1M + 40A	42	42			X_1X_2Y, ACN=42	Brazil (SP)	A-113
Hypopomus	*artedi*			38	32 M/SM + 6 ST/A	70					Brazil (AM)	A-125
Hypopygus	*lepturus*			50	16M + 20SM + 10ST + 4A	86	96				Brazil (PA)	A-125
Rhamphichthyidae												
Rhamphichthys	cf. *marmoratus*			52	38M + 10SM + 4ST	100	104				Brazil (AM)	A-125
Sternopygidae												
Eigenmannia	*humboldtii*			40	8 M/SM + 32 ST/A	48					Brazil (PR)	A-125
Eigenmannia	*virescens*			40							Argentina	F-20
Eigenmannia	*virescens*		F, M	38	16 M/SM + 22 ST/A	54		2		no sex chrom.	Brazil (SP)	A-114
Eigenmannia	*virescens*		F	38	16 M/SM + 22 ST/A	54		2		XX, ACN=44	Brazil (SP)	A-114
Eigenmannia	*virescens*		M	38	16 M/SM + 22 ST/A	54		2		XY, ACN=44	Brazil (SP)	A-114
Eigenmannia	*virescens*		F	38	23 M/SM + 15 ST/A	61		2		ZW, ACN=44	Brazil (MG)	A-115
Eigenmannia	*virescens*		M	38	22 M/SM + 16 ST/A	60		2		ZZ, ACN=44	Brazil (MG)	A-115
Eigenmannia	*virescens*		F	38	15 M/SM + 23 ST/A	53		2		ZW, ACN=44	Brazil (PA)	A-115, S-206
Eigenmannia	*virescens*		M	38	14 M/SM + 24 ST/A	52		2		ZZ, ACN=44	Brazil (PA)	A-115, S-206
Eigenmannia	sp.		F	31	13 M/SM + 18 ST/A	44		2		ACN=32	Brazil (PA)	A-19
Eigenmannia	sp.		F, M	32	12 M/SM + 20 ST/A	44		2		ACN=32	Brazil (PA)	A-19
Eigenmannia	sp.			46	20 M/SM + 26 ST/A	66		3		3X	Brazil (PA)	A-19
Eigenmannia	sp.		F	30	6M + 24 ST/A	36		2			Brazil (PA)	M-169
Eigenmannia	sp.		M	29	7 M/SM + 22 ST/A	36					Brazil (PA)	A-125
Eigenmannia	sp.	cytotype A		36	14 M/SM + 22ST/A	50		2			Brazil (SP)	M-169

Table 6.14 Order GYMNOTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Eigenmannia	sp.	cytotype B		36	8 M/SM + 28 ST/A	44		2			Brazil (SP)	M-169
Eigenmannia	sp.	cytotype C		36	16 M/SM + 20 ST/A	52		2		ACN=44	Brazil (MG)	M-169
Eigenmannia	sp.			34	24 M/SM + 10 ST/A	58		2		ACN=44	Brazil (MG)	M-169
Eigenmannia	sp.			34					2.0 BFA		(S. America)	H-13
Eigenmannia	sp. 1		F, M	28	14 M/SM + 14 ST/A	42		2		ACN=32	Brazil (SP)	A-125, A-131
Eigenmannia	sp. 2		F	32	8 M/SM + 24A	40	40	2		$X_1X_1X_2X_2$	Brazil (SP)	A-116, A-130
Eigenmannia	sp. 2		M	31	9 M/SM + 22A	40	40	2		X_1X_2Y, ACN=44	Brazil (SP)	A-116, A-130
Sternopygus	*macrurus*		M	46	30M + 16SM	92	92	2		ACN=46	Brazil (AM)	A-21
Sternopygus	*macrurus*		F	46	32M + 14SM	92	92	2		ACN=46	Brazil (MG)	A-21
Sternopygus	*macrurus*		F, M	46	28M + 18SM	92	92	2		ACN=46	Brazil (SP)	A-21
Sternopygus	*macrurus*			48					2.0 BFA		(S. America)	H-13

Table 6.15 Order ARGENTINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Argentinidae												
Argentina	*silus*		M	44	17 M/SM + 27A	61	61		1.7 FD	ACN=47	(N. Atlantic)	E-2
Microstomatidae (= Bathylagidae)												
Bathylaginae												
Bathylagoides	*wesethi*	*Bathylagus*	F	36	20M + 14SM + 2 satellited chrom.					XX	USA (off CA)	C-46, C-48
Bathylagoides	*wesethi*	*Bathylagus*	M	36	19M + 14SM + 1A + 2 satellited chrom.				3.5 FD	XY	USA (off CA)	C-45, C-48, E-2
Leuroglossus	*stilbius*	*Bathylagus*	M	62	14M + 9SM + 1A + 2 satellited chrom. + 36 MC				3.4 FD	XY	USA (off CA)	C-46, C-48, E-2
Lipolagus	*ochotensis*	*Bathylagus*	M	54	9M + 2SM + 43A	65				XY, ACN=60	USA (off CA)	C-46, C-48, E-2
Pseudobathylagus	*milleri*	*Bathylagus*	F	60	12M + 4SM + 2A + 2 satellited chrom. + 40 MC				6.3 FD	XX	USA (off CA)	E-2, E-6, C-46
Pseudobathylagus	*milleri*	*Bathylagus*	M	60	11M + 4SM + 2A + 2 satellited chrom + 41 MC					XY	USA (off CA)	C-48

Table 6.16 Order OSMERIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Galaxiidae												
Brachygalaxias	*bullocki*		F, M	38	10M + 16SM + 12A	64	64			ACN=44	Chile	C-5
Brachygalaxias	*bullocki*		F, M	40	18M + 8SM + 14 ST/A	66		4			Chile	C-82
Brachygalaxias	*gothei*		F, M	40	12M + 6SM + 22 ST/A	58					Chile	C-82
Galaxias	*auratus*		F, M	32	10M + 2SM + 6ST + 14A	44	50			ACN=44	Tasmania	J-14
Galaxias	*brevipinnis*		F, M	44	6M + 8SM + 2ST + 28A	58	60			ACN=44	Tasmania	J-14
Galaxias	*fontanus*		F, M	44	10M + 8SM + 12ST + 14A	62	74			ACN=44	Tasmania	J-14
Galaxias	*johnstoni*		F, M	44	4M + 10SM + 8ST + 22A	58	66			ACN=44	Tasmania	J-14
Galaxias	*maculatus*		F, M	22	8M + 12SM + 2A	42	42			ACN=42	Chile, Australia	C-5
Galaxias	*maculatus*		F, M	22	8M + 10SM + 4ST	40	44			ACN=44	New Zealand	M-62
Galaxias	*maculatus*		F, M	22	18M + 4SM	44	44		(2.1* FD)	ACN=44	Tasmania	J-14, J-17
Galaxias	*platei*		F	30	2M + 16SM + 12A	48	48			Sex chrom.	Chile	C-5
Galaxias	*platei*		M	30	1M + 18SM + 11A	49	49		(1.8* FD)	Y chrom., ACN=42	Chile	C-5, J-18
Galaxias	*tanycephalus*		F, M	32	10M + 2SM + 4ST + 16A	44	48			ACN=44	Tasmania	J-14
Galaxias	*truttaceus*		F, M	32	10M + 2SM + 2ST + 18A	44	46			ACN=44	Tasmania	J-14
Osmeridae												
Hypomesinae												
Hypomesus	*olidus*			56	22 M/SM + 34 ST/A	78					Russia	V-72
Hypomesus	*olidus*			56	4M + 12SM + 40A	72	72				China	Z-23
Hypomesus	*pretiosus*			50±					1.5 FD	Figure absent	USA	O-8, O-11
Hypomesus	*transpacificus nipponensis*		F, M	56	26SM + 30A	82	82	2		ACN=56	Japan (Shimane)	K-69
Osmerinae												
Mallotus	*villosus*		F, M	54	26 M/SM + 28 ST/A	80				ACN=56	Barents Sea	G-89
Osmerus	*eperlanus*			54	16 M/SM + 38 ST/A	70			(1.2 FCM)	ACN=56	Sweden	N-42, V-86
Osmerus	*eperlanus*		F, M	56	10M + 18SM + 28 ST/A	84		2		ACN=56	Poland (Lake Galadus)	O-77
Osmerus	*eperlanus*			56		68					Russia (White Sea)	L-88
Spirinchus	*starksi*			50±					1.7 FD	Figure absent	USA	O-8, O-11
Plecoglossinae												
Plecoglossus	*altivelis*			56	12 M/SM/ST + 44A		68			ACN=56	Japan (Lake Biwa)	Y-8
Salanginae												
Neosalanx	*taihuensis*			56	50M + 6SM	112	112			ACN=56	China (Lake Taihu)	S-121
Salangichthys	*microdon*			56							Japan	N-37

Table 6.17 Order SALMONIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Salmonidae												
Coregoninae												
Coregonus	*albula*		M	80	14M + 2SM + 64 ST/A	96					Sweden	N-41, V-41
Coregonus	*albula*			81	14M + 2SM + 4ST + 61A	97	101	4		0-2 B	Finland	J-3
Coregonus	*albula*			80	14M + 2SM + 4ST + 60A	96	100			ACN=100	Finland	J-3
Coregonus	*artedi*			80	14M + 2SM + 4ST + 60A	96	100			ACN=100	USA (Lake Huron)	P-33
Coregonus	*artedii*			80	16M + 10SM + 54A	106	106		6.5 FD		USA (Lake Superior)	B-43
Coregonus	*autumnalis*			78-80		96-98			6.0, 6.4 FCM		Europe, N. America	P-34
Coregonus	*chadary*			80-84		98-100					Russia	P-34
Coregonus	*clupeaformis*			80	20M + 8SM + 52A	108	108		6.9 FD		USA (Lake Superior)	B-43
Coregonus	*clupeaformis*			80	20 M/SM + 60A	100	100	2	(4.9 FIA)	ACN=100	Canada (Ontario)	P-31, P-33, H-41
Coregonus	*hoyi*			80	10M + 8SM + 62A	98	98		5.5 FD		USA (Lake Superior)	B-43
Coregonus	*hoyi*			80	14M + 2SM + 4ST + 60A	96	100			ACN=100	USA (Lake Michigan)	P-33
Coregonus	*lavaretus*			80	12 M/SM + 68 ST/A	92				ACN=100?	Sweden	N-45
Coregonus	*lavaretus*		M	80	18 M/SM + 62 ST/A	98					Sweden	N-45
Coregonus	*lavaretus ludoga*			80	22M + 58 ST/A	102					Russia (Siberia)	V-43
Coregonus	*lavaretus maraenoides*			80	22M + 58 ST/A	102					Russia (Siberia)	V-43
Coregonus	*muksun*			78		100					Russia	P-34
Coregonus	*nasus*			80	10 M/SM + 2ST + 68A	90	92			ACN=100	Sweden	N-45
Coregonus	*nasus*			60	30M + 8SM + 22 ST/A	98			(7.1 FCM)	3B, ACN=100	Russia (Anadyr River)	F-41, L-34
Coregonus	*nasus*			58-60	22-24 M + 10SM + 24-28 ST/A	92					Russia (E. Siberia Sea)	V-42
Coregonus	*nigripinnis*			80	14M + 2SM + 4ST + 60A	96	100			ACN=98	Canada (Lake Nipigon)	P-33
Coregonus	*peled*			80	12 M/SM + 68 ST/A	92					Sweden	N-45
Coregonus	*peled*			80	18 M/SM/ST + 62A		98			ACN=100	Sweden	N-45
Coregonus	*peled*			74	22 S/SM + 52 ST/A	96					Russia	V-43
Coregonus	*peled*			76							(Europe)	J-4
Coregonus	*pidschian*		M	80	18 M/SM + 62 ST/A	98				ACN=100	Sweden	N-45
Coregonus	*pidschian*	*lavaretus pidschian*		80	22M + 58 ST/A	102					Russia (Siberia)	V-43
Coregonus	*pidschian*	*lavaretus pidschian*		80-82	12-14 M + 8SM + 62-58 ST/A	102					Russia (E. Siberia Sea)	V-42
Coregonus	*reighardi*			80	12M + 12SM + 56A	104	104		6.0 FD		USA (Lake Huron)	B-43
Coregonus	*sardinella*		F	80	8M + 10SM + 62 ST/A	98				XX, 1-6 B	Russia (Anadyr River)	F-45
Coregonus	*sardinella*		M	81	9M + 10SM + 62 ST/A	100				XY_1Y_2, 1-6 B	Russia (Anadyr River)	F-42, F-45
Coregonus	*tugun*			86	12M + 8SM + 66A	106	106			ACN=100	Russia (Siberia)	V-43
Coregonus	*ussuriensis*			80	20 M/SM + 60 ST/A	100				ACN=100	Russia	V-43
Coregonus	*ussuriensis*			80-82	10-12 M + 8SM + 64-60 A	100					Russia (Far East)	V-41

Table 6.17 Order SALMONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Coregonus	*widegreni*	*lavaretus baeri*		80	12M + 4SM + 64 ST/A	96					Russia	V-41
Coregonus	*zenithicus*			80	10M + 8SM + 62A	98	98		5.3 FD		USA (Lake Superior)	B-43
Coregonus	*zenithicus*			80	14M + 2SM + 4ST + 60A	96	100	2		ACN=98	Canada (Lake Nipigon)	P-33
Coregonus	sp.			80	12M + 6SM + 62A	98	98			ACN=98	Russia (Anadyr R.)	V-43
Coregonus	sp.		F, M	80	14M + 16 SM/ST + 50A		110	5		ACN=99	Italy (Bolsena)	S-89
Coregonus	sp.		F, M	80	14M + 15 SM/ST + 51A		109	3		ACN=99	Italy (Bracciano)	S-89
Prosopium	*abyssicola*			72	12M + 16SM + 44A	100	100				USA (Bear Lake)	B-44
Prosopium	*coulteri*			82	10M + 8SM + 64A	100	100		5.1 FD	ACN=100?	USA (Lake Superior)	B-43
Prosopium	*cylindraceum*			78	12M + 10SM + 56A	100	100		5.0 FD, 4.0 FIA		USA (Lake Superior)	B-43, H-41
Prosopium	*gemmifer*	*gemmiferum*		64	24M + 12SM + 28A	100	100				USA (Bear Lake)	B-44
Prosopium	*spilonotus*			74	12M + 14SM + 48A	100	100				USA (Bear Lake)	B-44
Prosopium	*williamsoni*			78	8M + 14SM + 56A	100	100				USA	B-44
Stenodus	*leucichthys*			74	20M + 14SM + 40A	108	108		(6.5 FD)		USA (AK)	B-45, B-43
Stenodus	*leucichthys nelma*			76	22 M/SM/ST + 54A		98			ACN=100	Russia (Anadyr R.)	F-46
Thymallinae												
Thymallus	*arcticus*			100	58 SM/M + 10ST + 32A	158	168		(3.9-4.0 FIA)	ACN=102	Russia (upper Ob R.)	S-44, H-40
Thymallus	*arcticus*			102	56 SM/M + 10ST + 36A	158	168			ACN=102	Russia (upper Ob R.)	S-44
Thymallus	*arcticus*			98	52 M/SM + 10ST + 36A	150	160				Russia (lower Ob R.)	S-44
Thymallus	*grubei*			98-100	46-50 M/SM + 10-18 ST + 34-44A					ACN=100?	Russia (Far East)	M-16
Thymallus	*grubei*			98	32M + 18SM + 14ST + 34A	148	162				Russia (Far East)	M-16
Thymallus	*thymallus*			102	68 M/SM + 34A	170	170		(4.3 FCM)	ACN=102	Russia (Sylva R.)	S-43, V-86
Thymallus	*thymallus*			104	66 M/SM + 38A	170	170				Russia (Sylva R.)	S-43
Thymallus	*thymallus*			102	58 M/SM + 10ST + 34A	160	170			short-cycle type	Russia (Kama basin)	S-45
Thymallus	*thymallus*			102	58 M/SM + 10ST + 34A	160	170			middle-cycle type	Russia (Kama basin)	S-45
Thymallus	*thymallus*			104	56 M/SM + 10ST + 38A	160	170			long-cycle type	Russia (Kama basin)	S-45
Thymallus	*thymallus*		M	102	68 M/SM/ST + 34A		170				Sweden	N-41
Thymallus	*thymallus*							2			Europe	K-2
Thymallus	*thymallus*							1-4			Poland	J-5
Salmoninae												
Brachymystax	*lenok*			92	16M + 12SM + 64 ST/A	120				ACN=100	Russia	V-44
Brachymystax	*lenok*		F, M	90	26 M/SM + 64 ST/A	116				ACN=100	Korea	K-3
Hucho	*hucho*			82	26M + 6SM + 12ST + 38A	114	126			ACN=100	former Yugoslavia	R-5
Hucho	*hucho*			82	26M + 4SM + 12ST + 40A	112	124			ACN=100	Slovakia	R-5
Hucho	*taimen*			84	20M + 12SM + 52 ST/A	116				ACN=100	Russia	V-44
Hucho	*taimen*			82	22M + 8SM + 12ST + 40A	112	124				Russia (Amur R.)	F-50

Table 6.17 Order SALMONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hucho	*taimen*			83	22M + 7SM + 12ST + 42A	112	124				Russia (Amur R.)	F-50
Parahucho	*perryi*			62	42 M/SM + 4ST + 16A	104	108	2		ACN=102	Japan (Hokkaido)	C-38, U-72
Parahucho	*perryi*			62	38 M/SM + 8ST + 16A	100	108				Russia	V-72
Oncorhynchus	*aguabonita*	*Salmo*		58	44M + 2SM + 2ST + 10A	104	106		5.0* FCM	ACN=102	USA (CA)	M-71, G-25, J-15
Oncorhynchus	*apache*	*Salmo*		56	50 M/SM + 6 ST/A	106				ACN=102	USA (AZ)	M-71, G-26
Oncorhynchus	*chrysogaster*	*Salmo*		60		102					Mexico	P-34
Oncorhynchus	*clarkii alvordensi*	*Salmo*		64	40 M/SM + 24 ST/A	104					USA (OR)	G-26
Oncorhynchus	*clarkii bouvieri*	*Salmo*		64	38M + 2SM + 24A	104	104		5.0* FCM		USA (WY)	L-70, J-15
Oncorhynchus	*clarki clarki*	*Salmo*		68	36 M/SM + 32 ST/A	104			(5.2* FCM)	ACN=100	USA (CA)	G-26, G-97, J-15
Oncorhynchus	*clarki clarki*	*Salmo*		70	36 M/SM + 34 ST/A	106		2			USA (WA)	G-26, P-31
Oncorhynchus	*clarki henshawi*	*Salmo*		64	40 M/SM + 24 ST/A	104				ACN=100	USA (CA)	G-26, G-97
Oncorhynchus	*clarki henshawi*	*Salmo*		64	42 M/SM + 22 ST/A	106					USA (NV)	G-26
Oncorhynchus	*clarki lewisi*	*Salmo*		66	34M + 4SM + 12ST + 16A	104	116			ACN=100	USA (MT)	L-70
Oncorhynchus	*clarki lewisi*	*Salmo*		64	42 M/SM + 22 ST/A	106					USA (MT, WY)	G-26
Oncorhynchus	*clarki* subsp.	*Salmo*		64	42 M/SM + 22 ST/A	106					USA (NV)	G-26, M-71
Oncorhynchus	*gilae*	*Salmo*		56	49 M/SM + 7A	105	105			ACN=100	USA (NM)	B-13
Oncorhynchus	*gilae*	*Salmo*		56	48 M/SM + 8A	104	104				USA (NM)	B-13
Oncorhynchus	*gorbuscha*		F, M	52	48 M/SM + 4ST	100	104	2	(5.1* FCM, 4.5 FD)	ACN=100	Japan (Hokkaido)	M-95, J-15, P-93
Oncorhynchus	*gorbuscha*			52	52 M/SM	104	104			XX/XY	USA (AK)	S-71, P-62
Oncorhynchus	*gorbuscha*			52			104				Russia (Kamchatka)	G-56
Oncorhynchus	*keta*			74	26 M/SM + 6ST + 42A	100	106		(5.3* FCM, 5.5 FD)	ACN=100	Japan (Hokkaido)	S-14, J-15, O-33
Oncorhynchus	*keta*			74	28 M/SM + 46 ST/A	102			(5.0 FIA)		Japan	U-72, H-41
Oncorhynchus	*keta*			74	32 M/SM/ST + 42A		106			ACN=100	Japan (Hokkaido)	I-11
Oncorhynchus	*keta*			74	28 M/SM + 46 ST/A	102		2		XX/XY	USA (WA)	S-71, P-31, P-62
Oncorhynchus	*keta*			74	26M + 6SM + 42A	106	106				Russia (Kamchatka)	G-55
Oncorhynchus	*kisutch*			60	48 M/SM + 12ST	108	120		(5.2* FCM, 6.1 FD)		Japan	U-72, J-15, O-8
Oncorhynchus	*kisutch*			60	38M + 8SM + 14 ST/A	106					Korea?	K-118
Oncorhynchus	*kisutch*			60	44M + 14-16 ST + 2-0 A	104	118-120			ACN=102	Russia (Kamchatka)	G-55
Oncorhynchus	*kisutch*		F, M	60	34M + 8SM + 14ST + 4A	102	116				Russia (Pacific)	S-61
Oncorhynchus	*kisutch*			60	38M + 12SM + 10 ST/A	110		2		ACN=102	USA	U-67, P-93
Oncorhynchus	*kisutch*			60	52 M/SM + 8 ST/A	112		2			USA (WA)	S-71, P-31
Oncorhynchus	*masou*	Sakuramasu		66	38 M/SM + 28 ST/A	104			(5.1* FCM, 4.1 FD)		Japan	U-72, J-15, O-8
Oncorhynchus	*masou*			66	36 M/SM + 22ST + 8A	102	124	2		ACN=100	Japan (Hokkaido)	C-38
Oncorhynchus	*masou*			66	34 M/SM + 32 ST/A	100					Russia	V-72
Oncorhynchus	*masou ishikawae*	*rhodurus* var. *macrostomus*		66	34 M/SM + 24ST + 8A	100	124		5.9* FCM	ACN=100	Japan	M-95, O-48

Table 6.17 Order SALMONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Oncorhynchus	*masou ishikawae*	*masou,* Amago		66	38 M/SM + 28 ST/A	104					Japan	U-72, F-52
Oncorhynchus	*masou ishikawae*	*masou* var. *ishikawae*		66	34 M/SM + 24ST + 8A	100	124			ACN=100	Japan	M-95
Oncorhynchus	*masou masou*	*masou* var. *masou*	F, M	66	34 M/SM + 24ST + 8A	100	124		6.6 FD	ACN=100	Japan	M-95, O-33
Oncorhynchus	*masou* subsp.	*rhodurus* var. *rhoduru*	F, M	66	34 M/SM + 24ST + 8A	100	124		4.3 FD	ACN=100	Japan	M-95, O-33
Oncorhynchus	*masou* subsp.	Biwamasu		66							Japan	F-52
Oncorhynchus	*mykiss*	*Parasalmo*		58	46M + 2ST + 10A	104	106		(5.2 FD)	XY, ACN=100	Russia (Kamchatka)	F-40, F-43, G-85
Oncorhynchus	*mykiss*	*Salmo*		58	46 M/SM + 2ST + 10A	104	106		(5.2, 5.4 FCM)	ACN=100	Russia (Kamchatka)	G-58, V-86
Oncorhynchus	*mykiss*	*Salmo*		60-62		106-108				diadromous	Russia (Kamchatka)	V-2
Oncorhynchus	*mykiss*	*Salmo*		58-60		104				lacustrine	Russia (Kamchatka)	V-2
Oncorhynchus	*mykiss*	*Salmo*		58	46M + 2ST + 10A	104	106				USA, Canada, Russia	O-64
Oncorhynchus	*mykiss*	*Salmo*		60	44M + 4ST + 12A	104	108				USA (WA), Canada	O-64
Oncorhynchus	*mykiss*	*Salmo,* Nijimasu		60							culture pond, Japan	F-52
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		64							Mexico	N-21
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		58-60		104		2	(4.9* FCM)		USA (AK-CA)	P-54, P-93, T-47, J-15
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		58							USA (AK, ID)	T-47, P-78
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		58-63		104					UK (Scotland)	H-6
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		60	44 M/SM + 16 ST/A	104			(4.8 FIA)		USA (MI)	M-71, G-26, H-41
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		58-60		104					USA (WA)	T-44
Oncorhynchus	*mykiss*	*Salmo gairdnerii*	F, M	58	46M + 2ST + 10A	104	106			XX/XY	USA (WA)	T-45
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		60	44 M/SM + 2ST + 14A	104	106				USA (MI)	C-81
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		90	66 M/SM + 3ST + 21A	156	159			3X	USA (MI)	C-81
Oncorhynchus	*mykiss*	*Salmo gairdnerii*	F, M	60	44 M/SM + 2ST + 14A	104	106	2		ACN=100	Japan	M-95, U-6
Oncorhynchus	*mykiss*	*Salmo gairdnerii*	F, M	60	44 M/SM + 2ST + 14A	104	106	2		XX/XY, ACN=100	Japan	U-6
Oncorhynchus	*mykiss*	*Salmo gairdnerii*	F, M	62	42 M/SM + 2ST + 18A	104	106	2		XX/XY, ACN=100	Japan (Tochigi)	U-6
Oncorhynchus	*mykiss*	*Salmo gairdnerii*	F, M	61	43 M/SM + 1ST + 17A	104	105	2		XX/XY, ACN=100	Japan (Tochigi)	U-6
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		60	44 M/SM + 16 ST/A	104					Japan	U-78
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		60	44 M/SM + 16 ST/A	104				ACN=100	Croatia	A-26
Oncorhynchus	*mykiss*	*Salmo gairdnerii*		62		104					Russia	V-2
Oncorhynchus	*mykiss*	*Salmo gairdneri aquilarum*		58	46 M/SM + 2ST + 10A	104	106				USA (CA)	B-60
Oncorhynchus	*mykiss irideus*	*Salmo irideus*		60	44 M/SM + 16A	104	104			ACN=100	Rumania (Carpathians)	R-35
Oncorhynchus	*mykiss irideus*	*Salmo irideus*		62	44 M/SM + 18A	106	106			ACN=102	Rumania (Carpathians)	R-35
Oncorhynchus	*mykiss irideus*	*Salmo irideus*		61	42 M/SM + 19A	103	103			ACN=101	Rumania (Carpathians)	R-35
Oncorhynchus	*mykiss irideus*	*Salmo irideus*		58	42 M/SM + 16A	100	100				Rumania (Carpathians)	R-35
Oncorhynchus	*mykiss*			58, 60							USA (CA, ID)	P-78
Oncorhynchus	*mykiss*	PdD 66		58	46 M/SM + 2ST + 10A	104	106				former Czechoslovakia	F-28

Table 6.17 Order SALMONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Oncorhynchus	*mykiss*	PdD 66		60	44 M/SM + 2ST + 14A	104	106				former Czechoslovakia	F-28
Oncorhynchus	*nerka*			58	44M + 2SM + 12A	104	104		(6.1 FD)	ACN=102	Russia (Kamchatka)	G-55, O-33
Oncorhynchus	*nerka*		F	58	44 M/SM + 2ST + 12A	102	104				Russia (Kamchatka)	S-60, S-61
Oncorhynchus	*nerka*		M	57	45 M/SM + 2ST + 10A	102	104				Russia (Kamchatka)	S-60, S-61
Oncorhynchus	*nerka*		F	58		104				Sex chrom.	Russia	F-44
Oncorhynchus	*nerka*		M	57		104				Sex chrom.	Russia	F-44
Oncorhynchus	*nerka*			56	46 M/SM + 10A	102	102				Canada (B.C.)	S-71
Oncorhynchus	*nerka*		F	58	44 M/SM + 2ST + 12A	104	104	2	(5.5-5.9* FCM)	$X_1X_1X_2X_2$	USA (WA)	T-46, J-15, P-31, P-93
Oncorhynchus	*nerka*		M	57	45 M/SM + 2ST + 10A	102	104			X_1X_2Y	USA (WA)	T-46
Oncorhynchus	*nerka*	Himemasu	F	58	46 M/SM + 12A	104	104		(6.1 FD)	$X_1X_1X_2X_2$	Japan (Tochigi)	U-5, U-72, O-33
Oncorhynchus	*nerka*	Himemasu	M	57	47 M/SM + 10A	104	104			X_1X_2Y	Japan (Tochigi)	U-5, U-72
Oncorhynchus	*nerka*	Himemasu		58	44 M/SM + 2ST + 12A	102	104			ACN=102	Japan	S-14, M-95
Oncorhynchus	*penshinensis*	*Salmo*	F, M	58	46 M/SM + 2ST + 10A	104	106			ACN=102	Russia (Kamchatka)	G-58
Oncorhynchus	*tshawytscha*			68	32M + 4SM + 32A	104	104	2	(5.2* FCM, 4.9 FIA)	ACN=100	USA, E. Pacific	P-28, P-93, J-15, H-41
Oncorhynchus	*tshawytscha*			68	36 M/SM + 32A	104	104				USA (WA)	S-71
Oncorhynchus	*tshawytscha*		M	68	32 M/SM + 28ST + 8A	100	128			ACN=100	W. Pacific	M-95
Oncorhynchus	*tshawytscha*			68			120				Russia (Kamchatka)	G-56
Oncorhynchus	sp.	*Salmo*		58		104					USA (CA., OR)	G-26
Salmo	*carpio*			80		98					Italy	P-34
Salmo	*ischchan aestivalis*			82	18M + 64A	100	100			ACN=100	Armenia (Sevan basin)	D-22, R-98
Salmo	*ischchan danilewskii*			82	16M + 66A	98	98			ACN=100	Armenia (Sevan basin)	D-22, R-98
Salmo	*ischchan gegarkuni*			80	18M + 62A	98	98			ACN=100	Armenia (Sevan basin)	D-22, R-98
Salmo	*ischchan ischchan*			80	16M + 64A	96	96			ACN=98	Armenia (Sevan basin)	D-22, R-98
Salmo	*letnica*			80		104					Macedonia	P-34
Salmo	*marmoratus*			80	22 M/SM + 58A	102	102			ACN=100	Croatia	A-26
Salmo	*obtusirostris*	*Salmothymus o. oxyrhynchus*		82	12 M/SM + 70A	94	94			ACN=98	former Yugoslavia	B-18
Salmo	*salar*			54	18 M/SM + 36A	72	72	2		ACN=92	Atlantic	U-73
Salmo	*salar*		F, M	58	16 M/SM + 42A	74	74		(6.2 FCM)	ACN=98	Russia (Lake Onega)	Z-11, V-86
Salmo	*salar*			56	14 M/SM + 42A	70	70			ACN=94	Russia (Lake Onega)	Z-11
Salmo	*salar*			56	18 M/SM + 38A	74	74			ACN=98	Russia (White Sea basin)	Z-33
Salmo	*salar*			57	16 M/SM + 41A	73	73			ACN=97	Russia (White Sea basin)	Z-33
Salmo	*salar*			58	14M + 2SM + 42A	74	74			ACN=98	Russia (Lake Ladoga)	Z-10
Salmo	*salar*			58	14 M/SM + 44A	72	72			ACN=98	Russia (Neva)	B-7, B-8
Salmo	*salar*			58	16 M/SM + 42A	74	74				Russia (Neva)	B-7, B-8
Salmo	*salar*			58	16 M/SM + 42A	74	74			ACN=98	Sweden	N-39, N-48

Table 6.17 Order SALMONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Salmo	*salar*			56	16 M/SM + 40A	72	72				Sweden	N-39
Salmo	*salar*			58	10M + 6SM + 42A	74	74			ACN=98	Norway	B-42
Salmo	*salar*			57-59							Norway	G-23
Salmo	*salar*			58	16 M/SM + 42A	74	74		(6.0* FCM)	ACN=98	UK (Scotland)	H-7, J-15
Salmo	*salar*			58	16M + 42 ST/A	74					UK (Scotland)	H-10
Salmo	*salar*			57	17 M/SM + 40A	74	74			ACN=98	UK (Scotland)	H-7
Salmo	*salar*			56	18 M/SM + 38A	74	74			ACN=98	UK (Scotland)	H-7
Salmo	*salar*			58	16 M/SM + 42A	74	74				Canada (Chaleur Bay)	N-48
Salmo	*salar*			56				2	(6.2-6.5 FIA)		Atlantic	P-31, P-54, H-40
Salmo	*salar salar*			54-56		72						B-63
Salmo	*salar salar*			54	18 M/SM + 36 ST/A	72						B-63
Salmo	*salar sebago*			56-57		72					(USA, Lake Sebago)	B-63
Salmo	*salar sebago*			56	16 M/SM + 40 ST/A	72					(USA, Lake Sebago)	B-63
Salmo	*trutta*			82	16M + 66A	98	98		(6.1 FCM)		Armenia (Marmarik R.)	R-99, V-86
Salmo	*trutta*			84	16M + 68A	100	100		(5.9 FCM)	ACN=100	Armenia (Argichi R.)	R-99, T-73
Salmo	*trutta*			80	14M + 8SM + 58A	102	102	2			Poland	W-29
Salmo	*trutta*			77-82	20-25 M/SM + 52-62 ST/A	102					Germany	Z-14
Salmo	*trutta*		F, M	80	20 M/SM + 60 ST/A	100				ACN=100	Sweden (Morrum)	N-44, N-51
Salmo	*trutta*			80						migratory	Norway	G-23
Salmo	*trutta*			80	22M/SM + 58A	102	102	4	(5.2* FCM)	ACN=100	UK (Scotland)	H-6, J-15
Salmo	*trutta*			80	21M/SM + 59A	101	101				UK (Scotland)	H-6
Salmo	*trutta*			78	20 M/SM + 58A	98	98				Armenia (Veda R.)	D-22
Salmo	*trutta*		F	80	18 M/SM + 62 ST/A	98				ACN=100	Japan (Tochigi)	U-77
Salmo	*trutta*	*trutta fario*		80	24 M/SM + 56A	104	104		(6.3 FCM, 5.8 FD)	ACN=100	Rumania (Carpathians)	R-35, G-85
Salmo	*trutta*	*trutta fario*		80	22 M/SM/ST + 58A		102			ACN=100	Spain	M-81
Salmo	*trutta*	*trutta fario*		79	23 M/SM/ST + 56A		102				Spain	M-81
Salmo	*trutta*	*trutta* m. *fario*		80	20 M/SM + 60 ST/A	100				ACN=100	Croatia	A-26
Salmo	*trutta*	*trutta* m. *fario*		80	22 M/SM + 58 ST/A	102					Poland	W-28
Salmo	*trutta*	*trutta* m. *trutta*		80	14M + 8SM + 58A	102	102	2		migratory	Poland	W-29
Salmo	*trutta*	*trutta* m. *trutta*		80	14M + 8SM + 58A	102	102	2-3	(5.9 FCM, 5.5 FD)		Spain (Galicia)	M-40, M-137, G-85
Salmo	*trutta oxianus*			80	18 M/SM + 62 ST/A	98					Kyrgyzstan (Kyzylsu R.)	M-59
Salvelinus	*albus*			78-80		98					Russia	P-34
Salvelinus	*alpinus*			82-84	16-18 M/SM + 64-68 ST/A	100					Russia (Kamchatka)	V-74
Salvelinus	*alpinus*			82	18 M/SM + 64 ST/A	100				ACN=98	Russia (Kamchatka)	V-74
Salvelinus	*alpinus*			80	20 M/SM + 60 ST/A	100				ACN=98	Russia (Kamchatka)	V-74

Table 6.17 Order SALMONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Salvelinus	*alpinus*			78	20 M/SM + 58A	98	98		6.9 FD	ACN=98	UK (Scotland)	H-9, H-28
Salvelinus	*alpinus*			82				4-8	(5.8, 6.7 FIA)		(N. Europe)	P-54, P-93, H-41
Salvelinus	*alpinus*			78-80							Norway	G-23
Salvelinus	*alpinus*	*Salmo*	M	80	20 M/SM + 60 ST/A	100					Sweden	N-44
Salvelinus	*boganidae*			76-78		98					Russia (Lake Elgygytgyn)	P-34
Salvelinus	*confluentus*			78	24 M/SM + 54 ST/A	102		2		ACN=98	USA (MT)	C-38
Salvelinus	*elgyticus*		F, M	78	18M + 2SM + 58 ST/A	98		2		ACN=96	Russia (Lake Elgygytgyn)	F-48
Salvelinus	*elgyticus*		F, M	77	19M + 2SM + 56 ST/A	98		2		ACN=96	Russia (Lake Elgygytgyn)	F-48
Salvelinus	*elgyticus*		M	76	20M + 2SM + 54 ST/A	98				ACN=96	Russia (Lake Elgygytgyn)	F-48
Salvelinus	*fontinalis*			84				8-12	(5.7* FCM)		USA	K-73, P-54, J-15
Salvelinus	*fontinalis*		F, M	84	18 M/SM + 66 ST/A	102			(6.5 FD)	ACN=98	Japan	U-2, O-33
Salvelinus	*fontinalis*		F, M	84	16 M/SM + 6ST + 62A	100	106				Japan	M-95
Salvelinus	*fontinalis*			84	16 M/SM + 68 ST/A	100			(6.5 FIA, 7.0 BFA)		N. America	U-67, B-63, H-39, H-40
Salvelinus	*kronocius*	*kronicus*		78-82		100					Russia (Kamchatka)	P-34
Salvelinus	*leucomaenis*			84	16 M/SM + 2ST + 66A	100	102				Russia	V-72
Salvelinus	*leucomaenis*		F, M	84	14M + 4SM + 66 ST/A	102				ACN=98	Russia (Prymorye)	F-47
Salvelinus	*leucomaenis imbrius*	Gogi		84	16 M/SM + 2 SM/ST + 66 ST/A	100/102					Japan (Hyogo)	U-72
Salvelinus	*leucomaenis imbrius*	Gogi		84	16 M/SM + 68 ST/A	100		2		ACN=98	Japan (Shimane)	C-38
Salvelinus	*leucomaenis leucomaenis*	Amemasu	F, M	84	16 M/SM + 2ST + 66A	100	102		(7.5 FD)	ACN=98	Japan (Hokkaido)	A-2, U-72, O-33
Salvelinus	*leucomaenis leucomaenis*	Amemasu		84	16 M/SM + 2 SM/ST + 66 ST/A	100/102					Japan (Hokkaido)	U-72
Salvelinus	*leucomaenis leucomaenis*	Amemasu		84	16 M/SM + 68 ST/A	100		2		ACN=98	Japan (Hokkaido)	C-38
Salvelinus	*leucomaenis pluvius*	Nikkoiwana	F, M	84	16 M/SM + 2 SM/ST + 66 ST/A	100/102					Japan (Tochigi)	U-72, U-77
Salvelinus	*leucomaenis pluvius*	Nikkoiwana		84	16 M/SM + 68 ST/A	100		2		ACN=98	Japan (Toyama)	C-38
Salvelinus	*levanidovi*			78-80		98					Russia	P-34
Salvelinus	*malma*		F, M	82	14M + 4SM + 64 ST/A	100				ACN=98	Russia (Prymorye)	F-47
Salvelinus	*malma krascheninnikovi*			82	16 M/SM + 66 ST/A	98		2		ACN=98	Japan (Hokkaido)	C-38
Salvelinus	*malma lordi*			82	16 M/SM + 66 ST/A	98		2		ACN=98	USA (AK)	C-38, U-14
Salvelinus	*malma malma*	Oshorokoma	F, M	82	16 M/SM + 4ST + 62A	98	102			ACN=98	Japan (Hokkaido)	A-2, M-95
Salvelinus	*malma malma*	Oshorokoma	F, M	82	16 M/SM + 2 SM/ST + 64 ST/A	98/100				ACN=98	Japan (Hokkaido)	U-2, U-72
Salvelinus	*malma miyabei*	Miyabeiwana		82	16 M/SM + 66 ST/A	98		2		ACN=98	Japan (Hokkaido)	C-38
Salvelinus	*malma miyabei*	Miyabeiwana		82	18 M/SM + 64 ST/A	100				ACN=98	Japan (Hokkaido)	U-2, U-72
Salvelinus	*namaycush*			84	16 M/SM + 68 ST/A	100		8-12	5.7-6.3 FIA	XX/XY	N. America	B-63, P-34, P-54, H-40
Salvelinus	*taranetzi*			76-78		98-100					Russia	P-34
Salvethymus	*svetovidovi*		F, M	56	38M + 4SM + 14A	98	98			ACN=98	Russia (Lake Elgygytgyn)	F-49

Table 6.18 Order ESOCIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Esocidae												
Esox	*a. americanus*			50	50A	50	50	2	2.4 FD	ACN=50	Canada, USA	B-12, R-115
Esox	*a. vermiculatus*			50	50A	50	50	2	2.3 FD, 2.1 FIA	ACN=50	Canada (Ontario)	B-12, R-115, H-40
Esox	*lucius*			50	50A	50	50		(2.3 FCM, 2.2 FIA)		USA	A-32, V-86, H-41
Esox	*lucius*			50	50A	50	50	2	2.7 FD	ACN=50	Canada, UK	B-12, R-115
Esox	*lucius*		M	50	50A	50	50			ACN=50	Sweden	N-40
Esox	*masquinongy*			50	50A	50	50		2.6 FD	ACN=50	Canada (Ontario)	B-12
Esox	*masquinongy*			50	50A	50	50	2			N. USA, Canada	R-115
Esox	*niger*			50	50 ST/A	50			(1.8 FIA)		N. America	B-63, H-41
Esox	*niger*			50		50	50	2			USA (NC)	R-115
Esox	*niger*			50					2.4 FD	ACN=50	USA (NC)	B-12
Esox	*reichertii*			50	50 ST/A	50			2.6 FD	ACN=50	Russia (Amur R.)	B-12, B-63
Umbridae												
Dallia	*pectoralis*			78	18M/SM + 60 ST/A	96		2	2.5 FD		USA (AK)	B-12, R-115
Novumbra	*hubbsi*		F, M	48	4M + 10SM + 14ST + 20A	62	76	4	2.1 FD	ACN=48	USA (WA)	B-12, C-80
Umbra	*krameri*			44	44A	44	44	2		ACN=44	Slovakia	R-2, R-12
Umbra	*limi*			22	22M	44	44		(5.0 FD, 5.1 FIA)	ACN=44	Canada (Ontario)	B-12, H-40
Umbra	*limi*			22	18M + 4SM	44	44	2	(5.4 BFA)		USA (NY)	K-72, K-73, H-13, H-26
Umbra	*pygmaea*			22	22M	44	44	2	4.8 FD	ACN=44	USA (NC)	B-12, R-115

Table 6.19 Order STOMIIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Gonostomatoidei												
Gonostomatidae												
Bonapartia	*pedaliota*			48*							Atlantic	P-46
Gonostoma	*elongatum*			ca. 48*							Atlantic	P-46
Sigmops	*bathyphilum*	*Gonostoma*		12*							Atlantic	P-46
Sternoptychidae												
Sternoptychinae												
Argyropelecus	*affinis*	*pacificus*		50	20 M/SM + 28A + 2 satellited chrom.					ACN=52	USA (off CA)	C-46
Argyropelecus	*hemigymnus*	*intermedius*		52	26M + 10SM + 10A + 6 satellited chrom.					ACN=52	USA (off CA)	C-46
Argyropelecus	*lychnus*			48	20M + 10SM + 12A + 6 satellited chrom.					ACN=52	USA (off CA)	C-46
Sternoptyx	*diaphana*		M	35	16M + 8SM + 5A + 6 satellited chrom.					XO	USA (off CA)	C-46, C-48

Table 6.20 Order AULOPIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Synodontoidei												
Synodontidae												
Saurida	*elongata*		F	48	47A + 1 MC	48				ZW	Japan (Yamaguchi)	N-35
Saurida	*elongata*		M	48	48A	48	48			ZZ, ACN=48	Japan (Yamaguchi)	N-35
Saurida	*elongata*		F	48	47A + 1 MC	48				ZW	Japan (Wakayama)	U-44
Saurida	*elongata*		M	48	48A	48	48		2.8* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44
Saurida	sp. 2	*undosquamis*, Ma-eso	F	48	47A + 1 MC	48				ZW	Japan (Yamaguchi)	N-35
Saurida	sp. 2	*undosquamis*, Ma-eso	M	48	48A	48	48			ZZ, ACN=48	Japan (Yamaguchi)	N-35
Synodus	*fuscus*			48	48A	48	48			ACN=48	Japan	I-21
Synodus	*hoshinonis*		F	48	2ST + 45A + 1 MC	48	50	1		ZW	Japan (Wakayama)	U-44
Synodus	*hoshinonis*		M	48	2ST + 46A	48	50		2.2* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44
Synodus	*lucioceps*		F	48	28 M/SM + 20 ST/A	76			2.5 FD	ACN=48	USA (CA)	C-54, E-2
Synodus	*ulae*		F	48	47A + 1 MC	48		1		ZW	Japan (Wakayama)	U-44
Synodus	*ulae*		M	48	48A	48	48		2.9* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44
Trachinocephalus	*myops*		F	27	23M + 1ST + 2A + 1 MC	50	51	2		ZW_1W_2	Japan (Wakayama)	U-44
Trachinocephalus	*myops*		M	26	24M + 2A	50	50		2.7* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44
Suborder Chlorophthalmoidei												
Chlorophthalmidae												
Chlorophthalmus	*albatrossis*			36				2			Japan (Suruga Bay)	O-65
Chlorophthalmus	sp.	Bake-aome-eso		24	24M	48	48			ACN=48	Japan	I-21

Table 6.21 Order MYCTOPHIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Neoscopelidae												
Scopelengys	*tristis*		M, F	48	2SM + 46A	50	50		2.6 FD	ACN=48	USA (off CA)	C-54, E-2
Myctophidae												
Bolinichthys	*photothorax*	*Lepidophanes*		48*							Atlantic	P-45
Bolinichthys	*supralateralis*	*Lepidophanes*		48*							Atlantic	P-45
Ceratoscopelus	*townsendi*			48	48 ST/A	48				ACN=48	USA (off CA)	C-54
Ceratoscopelus	*warmingii*	*warmingi*		48*							Atlantic	P-45
Diaphus	*brachycephalus*			48*							Atlantic	P-45
Diaphus	*dumerilii*	*dumerili*		48*							Atlantic	P-45
Diaphus	*fragilis*			48*							Atlantic	P-45
Diaphus	*rafinesquii*	*rafinesquei*		48*							Atlantic	P-45
Diaphus	*theta*			48						ACN=48	USA (off CA)	C-54
Electrona	*risso*	*rissoi*		48*							Atlantic	P-45
Hygophum	*hygomii*	*hygomi*		48*							Atlantic	P-45
Lampadena	*chavesi*			48*							Atlantic	P-45
Lampadena	*urophaos*			44	44 ST/A	44				ACN=48	USA (off CA)	C-54
Lepidophanes	*guentheri*			48*							Atlantic	P-45
Lobianchia	*gemellarii*			48*							Atlantic	P-45
Myctophum	*nitidulum*			48						ACN=48	USA (off CA)	C-54
Myctophum	*phengodes*	*Ctenoscopelus*		48*							Atlantic	P-45
Nannobrachium	sp. *"ater"*	*Lampanyctus*		48*							Atlantic	P-45
Nannobrachium	*nigrum*	*Lampanyctus niger*		50*							Atlantic	P-45
Nannobrachium	*regale*	*Lampanyctus regalis*	M	48	48A	48	48			ACN=48	USA (off CA)	C-54
Nannobrachium	*ritteri*	*Lampanyctus*	F	48	48A	48	48		4.0 FD	XX, ACN=48	USA (off CA)	C-48, C-54, E-2
Nannobrachium	*ritteri*	*Lampanyctus*	M	47	1SM + 46A	48	48		4.0 FD	XO, ACN=48	USA (off CA)	C-48, C-54, E-2
Notoscopelus	*resplendens*			48							Atlantic	P-45
Parvilux	*ingens*		M	49	1 M/SM + 48 ST/A	50			(3.9 FD)		USA (off CA)	C-46, C-48, E-2
Parvilux	*ingens*	*Lampanyctus*		50?							USA (off CA)	C-54
Protomyctophum	*crockeri*			48	48A	48	48			ACN=48	USA (off CA)	C-54
Stenobrachius	*leucopsarus*			48	48A	48	48			ACN=48	USA (off CA)	C-54
Symbolophorus	*californiensis*			48	2SM + 46A	50	50			ACN=48	USA (off CA)	C-46, C-54
Triphoturus	*mexicanus*		M	48	48A	48	48		3.8 FD	ACN=48	USA (off CA)	C-54, E-2

Table 6.22 Order PERCOPSIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Aphredoderidae												
Aphredoderus	*sayanus*			48	2M + 18 SM/ST + 28A		68		1.2 FD	ACN=50	USA (TX)	G-82

Table 6.23 Order GADIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Gadidae												
Gadinae												
Eleginus	*gracilis*		F	26	22M + 4A	48	48				Japan (Hokkaido)	I-14
Eleginus	*navaga*			26	20M + 6A	46	46				Russia	V-72
Eleginus	*navaga*		F, M	26	22M + 4A	48	48			ACN=46	Russia (White Sea)	K-83
Eleginus	*navaga*			27		49					Russia (White Sea)	L-88
Gadus	*macrocephalus*		F	44	10M + 10ST + 24A	54	64		1.7 FIA	ACN=46	Japan (Hokkaido)	I-14, H-40
Gadus	*morhua*			46					(1.9 FIA)		Sweden	J-1, N-49, H-41
Gadus	*morhua*			46	10 M/SM + 36 ST/A	56				ACN=46	UK	F-4
Gadus	*morhua*			45	11 M/SM + 34 ST/A	56				ACN=46	UK	F-4
Gadus	*morhua*			46		52					Russia (White Sea)	L-88
Gadus	*ogac*	*morhua marisalbi*		46	8 M/SM + 38 ST/A	54					Russia	V-72
Gadus	*ogac*	*morhua marisalbi*	F, M	46	6M + 2SM + 10ST + 28A	54	64				Russia (White Sea)	K-83
Micromesistius	*poutassou*			44							Sweden	N-49
Pollachius	*pollachius*			38	10M + 28 ST/A	48				ACN=44	Sweden	N-49
Pollachius	*virens*			40	10M + 30 ST/A	50				ACN=46	Sweden	N-49
Theragra	*chalcogramma*		F, M	44	10M + 4ST + 30A	54	58		1.8 FIA	ACN=46	Japan (Hokkaido)	I-14, H-40
Trisopterus	*minutus*			48							Sweden	N-49
Lotinae												
Lota	*lota*		F, M	48	12M + 18SM + 14ST + 4A	78	92				Europe	R-9, K-83
Ranicipitinae												
Raniceps	*raninus*			48	30 M/SM + 18 ST/A	78				ACN=48	Sweden	N-49
Muraenolepididae												
Muraenolepis	*marmoratus*		M	48	4M + 2SM + 42 ST/A	54				ACN=48	Antarctica	D-4

Table 6.23 Order GADIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Phycidae												
Gaidropsarus	*mediterraneus*			28	24 M/SM + 4A	52	52			ACN=48	Black Sea	V-5
Gaidropsarus	*mediterraneus*	A karyotype	F, M	28	24 M/SM + 4A	52	52				Italy (Palermo)	V-50
Gaidropsarus	*mediterraneus*	B karyotype	F, M	28	18M + 5SM + 5A	51	51				Italy (Palermo)	V-50
Gaidropsarus	*mediterraneus*	C karyotype	F, M	28	22 M/SM + 6A	50	50	2			Italy (Palermo)	V-50
Phycis	*phycis*		F	48	48A	48	48			ACN=48	Spain	A-30

Table 6.24 Order OPHIDIIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Ophidioidei												
Carapidae												
Carapus	*acus*		F, M	36	2SM + 34A	38	38	2		ACN=36	Italy (Palermo)	V-55
Ophidiidae												
Ophidion	*barbatum*	A-type	F, M	44	44A	44	44			ACN=44	Italy (Palermo)	V-75
Ophidion	*barbatum*	B-type	F, M	43	1M + 42A	44	44			ACN=44	Italy (Palermo)	V-75
Parophidion	*vassali*	A-type	F, M	44	44A	44	44			ACN=44	Italy (Palermo)	V-75
Parophidion	*vassali*	B-type	F, M	43	1M + 42A	44	44			ACN=44	Italy (Palermo)	V-75

Table 6.25 Order MUGILIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Mugilidae												
Agonostomus	*monticola*		F, M	48	2ST + 46A	48	50	2		ACN=48	Panama, Venezuela	N-64
Chelon	*labrosus*		F, M	48	2ST + 46A	48	50			ACN=48	Italy (Tyrrhenian Sea)	C-30, C-32
Liza	*aurata*		F, M	48	2ST + 46A	48	50		2.3 FD	ACN=48	Mediterranean	C-9, C-32
Liza	*haematocheila*			48	48A	48	48			ACN=48	China (Shandong)	Y-20, Z-37
Liza	*parsia*	*Mugil*	M	48	48A	48	48			ACN=48	India (WB)	K-28
Liza	*ramada*		F, M	48	2ST + 46A	48	50		1.6 FCM	ACN=48	Italy (Tyrrhenian Sea)	C-30, C-32, G-85
Liza	*saliens*		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy	C-32, G-75
Mugil	*cephalus*		F, M	48	48A	48	48			ACN=48	Italy (Rome)	C-32
Mugil	*cephalus*			48	48A	48	48	1-2	(2.4 FD)	ACN=48	Europe, USA, Australia, Taiwan	C-9, C-30, R-92
Mugil	*cephalus*			48	48A	48	48		(1.6 FIA)	ACN=48	USA (LA)	L-18, H-40
Mugil	*cephalus*			48	48A	48	48			ACN=48	India (A.P.)	L-3
Mugil	*cephalus*		F, M	48							India (Portonovo)	N-13
Mugil	*cephalus*		F, M	48	48A	48	48		(1.6* FCM)	ACN=48	China	L-54, Y-21, O-48
Mugil	*curema*			28	20M + 4ST + 4A	48	52		(1.4 FD)	ACN=48	USA (LA)	L-18, G-85
Mugil	*curema*			28	20M + 4ST + 4A	48	52	2		ACN=48	Brazil (PR)	N-74
Mugil	*curema*			24	22M + 2SM	48	48	2		ACN=48	Venezuela (Margarita Is.)	N-52, N-74, R-94
Mugil	*gaimardianus*		F, M	48	48A	48	48			ACN=48	Panama	N-52
Mugil	*gaimardianus*			48	48A	48	48			ACN=48	Venezuela (Margarita Is.)	N-52
Mugil	*liza*			48	48A	48	48	2		ACN=48	Venezuela (Margarita Is.)	R-94
Mugil	*platanus*			48	48A	48	48	2		ACN=48	Brazil (SP)	J-13
Mugil	*rubrioculus*			48	48A	48	48	2		ACN=48	Venezuela (Margarita Is.)	N-66
Mugil	*trichodon*		F, M	48	48A	48	48	2		ACN=48	Venezuela (Margarita Is.)	N-53
Oedalechilus	*labeo*		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy (Tyrrhenian Sea)	C-32, R-93
Paramugil	*parmatus*	*Liza macrolepis*	F, M	48	48A	48	48			ACN=48	India (Orissa)	C-61
Paramugil	*parmatus*	*Liza oligolepis*	F, M	48	48A	48	48			ACN=48	India (Orissa)	C-61
Rhinomugil	*corsula*	*Mugil*		48	48A	48	48			ACN=48	India (WB)	N-18, K-26
Valamugil	*speigleri*	*Mugil*	F, M	48	48A	48	48			ACN=48	India (Orissa)	R-57
Valamugil	*speigleri*		M	48	48A	48	48			ACN=48	India (WB)	K-136

Table 6.26 Order ATHERINIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Atherinopsoidei												
Atherinopsidae												
Atherinopsinae												
Basilichthys	*australis*		F, M	48	4M + 4SM + 40 ST/A	56				ACN=48	Chile (Augostura)	G-1
Basilichthys	*microlepidotus*		F, M	46	2M + 8SM + 36 ST/A	56				ACN=46	Chile (Petorca)	G-1
Odontesthes	*bonariensis*			48							Argentina	F-20
Odontesthes	*bonariensis*	Atherinidae	F, M	48	4 M/SM + 44 ST/A	52		1-4			Italy (Lake Nemi)	S-170
Odontesthes	*bonariensis*	Atherinidae		48	3 M/SM + 45 ST/A	51					Italy (Lake Nemi)	S-170
Odontesthes	*bonariensis*	Atherinidae		48	2SM + 46 ST/A	50					Italy (Lake Nemi)	S-170
Odontesthes	*bonariensis*	Atherinidae		48	2M + 46 ST/A	50					Italy (Lake Nemi)	S-170
Odontesthes	*bonariensis*	*Basilichthys*		48	4SM + 44 ST/A	52				ACN=48	(introduced, Japan)	A-76
Menidiinae												
Chirostoma	*attenuatum*			48	4M + 24SM + 2ST + 18A	76	78				Mexico	U-50
Chirostoma	*estor*			48	12M + 8SM + 12ST + 16A	68	80			ACN=48	Mexico (Michoacán)	U-50
Chirostoma	*grandocule*			48							Mexico	U-50
Chirostoma	*jordani*			48	8M + 12SM + 10ST + 18A	68	78			ACN=48	Mexico (Lake Chapultepec)	U-50
Chirostoma	*patzcuaro*			44	12ST + 32A	44	56				Mexico (Michoacán)	U-50
Labidesthes	*sicculus*		F, M	48	12M + 22SM + 14 ST/A	82			1.3 FIA		USA	K-100, H-40
Membras	*martinica*		F, M	48	18M + 18SM + 12 ST/A	84					USA (LA)	K-100
Menidia	*beryllina*		F, M	48	8M + 18SM + 22 ST/A	74				freshwater	USA (LA)	K-100
Menidia	*beryllina*		F, M	48	10M + 24SM + 14 ST/A	82				marine	USA (LA)	K-100
Menidia	*menidia*			48	4M + 14SM + 12ST + 18A	66	78				USA (Long Island)	W-16
Suborder Atherinoidei												
Atherinidae												
Atherina	*boyeri*	*mochon caspia*		48	6SM + 42 ST/A	54					Russia	V-72
Atherina	*boyeri*	*mochon pontica*		48	6SM + 42 ST/A	54					Russia	V-72
Hypoatherina	*valenciennei*	*bleekeri*		48	4M + 44SM	96	96	2		ACN=48	Japan (Wakayama)	K-50
Atherionidae												
Atherion	*elymus*			48	2SM + 10ST + 36A	50	60			ACN=48	Japan (Chiba)	A-71
Melanotaeniidae												
Bedotia	*geayi*			48			(72)				Madagascar	S-24
Marosatherina	*ladigesi*	*Telmaterina*		48			(86)				(Sulawesi)	S-24
Melanotaenia	*fluviatilis*			48					2.6 BFA		(Australia)	H-13
Melanotaenia	*goldiei*	*nigricans*		48					2.6 BFA		(Papua New Guinea)	H-13
Melanotaenia	*maccullochi*			46	46A	46	46				Australia	S-24
Melanotaenia	cf. *splendida*	*Nematocentris* cf. *rubrostriatu*	M	48	48A	48	48			ACN=48	(Australia)	A-71

Table 6.27 Order BELONIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Adrianichthyoidei												
Adrianichthyidae												
Oryziinae												
Oryzias	*celebensis*		F, M	36	8M + 4SM + 24A	48	48	2	1.7 FD	ACN=44	Sulawesi	U-53, U-59
Oryzias	*curvinotus*			48	2M + 14SM + 32 ST/A	64		2	1.5 FD	XX/XY, ACN=48	China (Hainan Is.)	U-57, T-85
Oryzias	*dancena*	*melastigma*	F, M	48	48A	48	48	2	1.8 FD	XX/XY, ACN=48	India (Chidambaram)	U-58, U-59, T-85
Oryzias	*hubbsi*	*javanicus*		48	48A	48	48		1.8 FD	ZZ/ZW, ACN=48	Indonesia (Jakarta)	U-59, T-85
Oryzias	*javanicus*		M	48	2ST + 46A	48	50	2	1.7 FD	ZZ/ZW, ACN=48	Thailand (Phuket), Singapore	M-6, U-55, U-59, T-85
Oryzias	*latipes*		M	48	20 M/SM + 28A	68			(2.2 BFA)	ACN=48	Japan	O-15, H-13
Oryzias	*latipes*		F, M	48	4M + 16SM + 2ST + 26A	68	70	2	(2.1* FCM), 1.7 FD	XX/XY, ACN=48	Japan (Ehime)	U-54, O-48, T-85
Oryzias	*latipes*			48	4M + 18SM + 4ST + 22A	70	74	2	1.7 FD	ACN=48	Japan (Aomori)	U-59
Oryzias	*latipes*	Himedaka	F, M	48	20 M/SM + 2ST + 26A	68	70			ACN=48	Japan	A-53
Oryzias	*latipes*			48	22 M/SM + 26 ST/A	70				ACN=48	Korea	P-71
Oryzias	*latipes*			48	10M + 10SM + 2ST + 26A	68	70			ACN=48	Korea (Japan Sea side)	U-61, K-57
Oryzias	*luzonensis*		F, M	48	14M + 34SM	96	96	2	1.9 FD	XX/XY, ACN=48	Philippines (Solsona)	F-38, T-85
Oryzias	*marmoratus*			42	2M + 4SM + 36A	48	48	2		ACN=48	Sulawesi	U-75
Oryzias	*matanensis*			42	2M + 4SM + 2ST + 34A	48	50	2		ACN=48	Sulawesi	U-75
Oryzias	*mekongensis*			48	2M + 8SM + 24ST + 14A	58	82		1.5 FD	XX/XY, ACN=48	N.E. Thailand	U-60, M-6, T-85
Oryzias	*minutillus*			42	42A	42	42	2		ACN=42	S. and NE Thailand	M-11
Oryzias	*minutillus*			42	2SM + 40A	44	44	2		ACN=42	SE Thailand	M-11
Oryzias	*minutillus*			40	2M + 2SM + 36A	44	44	2		ACN=42	SE Thailand	M-11
Oryzias	*minutillus*			34	8M + 2SM + 24A	44	44	2	1.5 FD	XX/XY, ACN=42	C. Thailand (Bangkok)	M-5, M-6, M-11, T-85
Oryzias	*minutillus*			32	10M + 2SM + 20A	44	44	2		ACN=42	N. Thailand	M-11
Oryzias	*minutillus*			30	12M + 2SM + 16A	44	44	2	1.5 FD	XX/XY, ACN=42	C. and N. Thailand (Chiang Mai)	M-5, M-11, U-59, T-85
Oryzias	*minutillus*			28	14M + 2SM + 12A	44	44	2		ACN=42	C. Thailand	M-11
Oryzias	*nigrimas*			38	6M + 4SM + 28A	48	48	2		ACN=44	Sulawesi	U-75
Oryzias	*sinensis*	*latipes*		46	12M + 12SM + 22A	70	70			ACN=48	Korea (Yellow Sea side)	K-57
Oryzias	*sinensis*			46	6M + 16SM + 2ST + 22A	68	70			ACN=48	Korea	U-61
Oryzias	*sinensis*			46	22 M/SM + 24 ST/A	68				ACN=48	Korea	P-71
Oryzias	*sinensis*	*latipes*		46	6M + 18SM + 4ST + 18A	70	74			ACN=48	China (Shanghai)	U-59, C-58

Table 6.27 Order BELONIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Belonoidei (= Exocoetoidei)												
Exocoetidae												
Cheilopogon	*agoo agoo*	*Cypselurus*		48					1.9* FCM		Japan	O-48
Hemiramphidae												
Dermogenys	*pusilla*	*pusillus*		48			(58)		1.5 BFA		E. Asia	S-24, H-13
Hemiramphus	*brasiliensis*	*marginatus*		52	52 ST/A	52					India (Goa)	R-45
Hyporhamphus	*kurumeus*	*Hemiramphus*	F, M	40	2M + 38A	42			1.3* FD	ACN=48	China (Hubei)	Z-28, H-32, C-83
Rhynchorhamphus	*georgii*	*Hemiramphus*		46	6 M/SM + 40 ST/A	52					India (Goa)	R-45
Belonidae												
Potamorrhaphis	cf. *eigenmanni*		F, M	54	6 M/SM + 48 ST/A	60		2			Argentina (Misiones)	P-15
Potamorrhaphis	*guianensis*			48					2.4 BFA		(S. America)	H-13
Pseudotylosurus	*microps*	*Strongylura*	F, M	50	50 ST/A	50		2		0-2 B, ACN=50	Argentina (Misiones)	P-15
Strongylura	*incisa*			48					2.2* FCM		Japan	O-48
Strongylura	*leiura*	*Tylosurus leiurus*		48	48 ST/A	48					India (Goa)	R-45
Strongylura	*strongylura*		F, M	50	16M + 14SM + 20A	80	80			ACN=50	India (Orissa)	R-57
Strongylura	*strongylura*	*Tylosurus strongylurus*		48	48 ST/A	48					India (Tamil Nadu)	R-45
Xenentodon	*cancila*		F, M	48	16M + 18SM + 6ST + 8A	82	88				India (Jammu)	S-51
Xenentodon	*cancila*		F	48	30M + 2SM + 2ST + 14A	80	82			ACN=48	India (WB)	N-16
Xenentodon	*cancila*			48	24M + 8SM + 4ST + 12A	80	84			ACN=48	Thailand	D-20
Scomberesocidae												
Cololabias	*saira*		M	42							N. Pacific	Y-2

Table 6.28 Order CYPRINODONTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Aplocheiloidei												
Aplocheilidae (Asian rivulines)												
Aplocheilus	*blockii*			48	2 M/SM + 46 ST/A	50	(70)				S. India	S-24, S-158
Aplocheilus	*dayi*			48	6 M/SM + 42 ST/A	54	(86)			ACN=48	Ceylon	S-24, S-158
Aplocheilus	*lineatus*			48	48 ST/A	48	(60)				S. India	S-24, S-158
Aplocheilus	*panchax*			38	12 M/SM + 26 ST/A	50	(56)				India, Thailand	S-24, S-158
Aplocheilus	*panchax*		F	38	13M + 9SM + 4ST + 12A	60	64			ZW	India (WB)	K-31
Aplocheilus	*panchax*		M	38	14M + 8SM + 4ST + 12A	60	64		(1.5 FD, 1.4 BFA)	ZZ	India (WB)	K-31, U-59, H-13
Aplocheilus	*werneri*			48			(88)				Ceylon	S-24
Pachypanchax	*playfairii*			48	22 M/SM + 26 ST/A	70	(96)		1.5 FIA	ACN=48	Seychelles	S-24, S-158, H-41
Nothobranchiidae (African rivulines)												
Aphyosemion	*ahli*	AHL-NN		40	12SM + 6ST + 22A	52	58			ACN=44	E. Cameroon (Nyong)	S-158
Aphyosemion	*ahli*	AHL-NS		38	2M + 2SM + 12ST + 22A	42	54			ACN=42	E. Cameroon (Nyong)	S-158
Aphyosemion	*ahli*	AHL-ED		38	4M + 2SM + 6ST + 26A	44	50			ACN=42	E. Cameroon	S-158
Aphyosemion	*ahli*	AHL-MB		36	8 M/SM + 28A	44	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*ahli*	AHL-SA		34	6M + 2SM + 2ST + 24A	42	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*ahli*	AHL-BE		26	10M + 2SM + 2ST + 12A	38	40			ACN=40	E. Cameroon	S-158
Aphyosemion	*ahli*	AHL-CO		20	20 M/SM	40	40			ACN=40	E. Cameroon	S-158
Aphyosemion	*ahli*	AHL-BN, KI, LO		22	22 M/SM	44	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*alpha*	*Chromaphyosemion*	F, M	38	2SM + 12ST+ 24A	40	52	2		ACN=42	N.W. Gabon	V-71
Aphyosemion	*amoenum*	AMO-TY		34			(44)				E. Cameroon	S-158
Aphyosemion	*australe*	AUS-CA		30	6M + 2SM + 22A	38	38			ACN=42	Gabon	S-158
Aphyosemion	*australe*	AUS-LI		34	2M + 2SM + 30A	38	38			ACN=42	Gabon	S-158
Aphyosemion	*bamilekorum*	BAM-TY		34	6M + 6SM + 22 ST/A	46	(66)			ACN=40	E. Cameroon	S-158
Aphyosemion	*batesii*	BAT-AK		34	34 M/SM	68	68			ACN=44	E. Cameroon	S-158
Aphyosemion	*batesii*	*splendidum* SPL-DJ		32			(60)				Congo	S-158
Aphyosemion	*bitaeniatum*	BIT-BI		34	2M + 4SM + 8ST + 20A	40	48			ACN=42	Cameroon	S-158
Aphyosemion	*bitaeniatum*	BIT-LO		36	6SM + 2ST + 28A	42	44			ACN=40	Cameroon (Kribi)	S-158
Aphyosemion	*bitaeniatum*	BIT-EC		26	14 M/SM + 2ST + 10A	40	42			ACN=40	Cameroon (Rio Muni)	S-158
Aphyosemion	*bitaeniatum*	BIT-KA		36	2M + 2ST + 32A	38	40			ACN=44	Cameroon	S-158
Aphyosemion	*bitaeniatum*	BIT-DI		38	6ST + 32A	38	44			ACN=42	E. Cameroon	S-158
Aphyosemion	*bitaeniatum*	BIT-BA, EK, MB, NN, TK		38	2ST + 36A	38	40			ACN=42	Cameroon	S-158
Aphyosemion	*bitaeniatum*	BIT-IJ		40	4M + 2ST + 34A	44	46			ACN=42	S.W. Nigeria	S-158
Aphyosemion	*bitaeniatum*	*Chromaphyosemion*, Afanyangan	F, M	40	10 M/SM/ST + 30A		50	2		ACN=44	Cameroon	V-97
Aphyosemion	*bivittatum*	BIV-ES		34	4M + 4SM + 2ST + 24A	42	44			ACN=42	E. Cameroon	S-24
Aphyosemion	*bivittatum*	BIV-NE		36	2M + 2ST + 32A	38	40			ACN=44	W. Cameroon	S-158
Aphyosemion	*bivittatum*	BIV-NW		32	8SM + 4ST + 20A	40	44			ACN=44	W. Cameroon	S-158

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Aphyosemion	*bivittatum*	*Chromaphyosemion* 'Funge'		36	3 M/SM + 1ST + 32A	39	40	2		ACN=40	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/4	F, M	34	3 M/SM + 3ST + 28A	37	40	2		ACN=40	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/6		34	4 M/SM + 6ST + 24A	38	44	2		ACN=42	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/6		33	7 M/SM + 4ST + 22A	40	44	2		ACN=42	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/6		31	9 M/SM + 4ST + 18A	40	44	2		ACN=42	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/6		30	8 M/SM + 6ST + 16A	38	44	2		ACN=42	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/6		29	11 M/SM + 4ST + 14A	40	44	2		ACN=42	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* CO3/9	F, M	32	6 M/SM + 4ST + 22A	38	42	2		ACN=40	Cameroon	V-81
Aphyosemion	*bivittatum*	*Chromaphyosemion* KVO3/34	F, M	32	6 M/SM + 4ST + 22A	38	42	2		ACN=40	Cameroon	V-81
Aphyosemion	*bualanum*	BUA-BA		40	4M + 4SM + 4ST + 28A	48	52			ACN=44	E. Cameroon	S-158
Aphyosemion	*bualanum*	BUA-ND		38	2M + 4SM + 10ST + 22A	44	54			ACN=44	W. Cameroon	S-158
Aphyosemion	*bualanum kekemense*	BUA-KE		36	4SM + 32 ST/A	40	(72)			ACN=42	S.W. Cameroon	R-30
Aphyosemion	*buytaerti*	BUY-AQ		38			(58)				Congo	S-158
Aphyosemion	*calliurum*	CAL-IJ		32	2M + 4SM + 26A	38	38			ACN=42	S.W. Nigeria	S-158
Aphyosemion	*calliurum*	CAL-DM, ME		20	20 M/SM	40	40			6B, ACN=44	E. Cameroon (Nyong)	S-158
Aphyosemion	*calliurum*	CAL-CM		24	16 M/SM + 8A	40	40			ACN=44	E. Cameroon (Nyong)	S-158
Aphyosemion	*calliurum*	CAL-BK, MO, MU		20	20 M/SM	40	40			ACN=44	E. & W. Cameroon	S-158
Aphyosemion	*calliurum*	CAL-NK		20	18 M/SM + 2ST	38	40			ACN=44	E. Cameroon	S-158
Aphyosemion	*calliurum*	CAL-WC		20	20 M/SM	40	40				Cameroon	S-158
Aphyosemion	*calliurum*	CAL-NT		18	18 M/SM	36	36			ACN=44	E. Cameroon	S-158
Aphyosemion	*cameronense*	CAM-MI		34	4M + 2SM + 6ST + 22A	40	46			ACN=44	E. Cameroon	S-158
Aphyosemion	*cameronense*	CAM-LN		34	4M + 2SM + 4ST + 24A	40	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*cameronense*	CAM-BE, EC, YA		34							E. Cameroon	S-158
Aphyosemion	*cameronense*	CAM-MA		32			(46)				W. Cameroon	S-24
Aphyosemion	*cameronense*	CAM-KO		30			(46)				E. Cameroon	S-24
Aphyosemion	*cameronense*	CAM-NG		28	14 M/SM + 2ST + 12A	42	44				E. Cameroon	S-158
Aphyosemion	*cameronense*	CAM-LW		24	14 M + 6ST + 4A	38	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*celiae*	CEL-BA, BU, MA		20	20 M/SM	40	40			ACN=44	W. Cameroon	S-158
Aphyosemion	*celiae*	*celiae winifredae* WIN-TY		20	20 M/SM	40	40			ACN=40	W. Cameroon	S-158
Aphyosemion	*chauchei*	CHO		24	12 M/SM + 12A	36	36			ACN=40	Congo	H-33
Aphyosemion	*christyi*	CHR-SA		36	36A	36	36				Zaire	H-33, S-158
Aphyosemion	*christyi*	CHR		18	16M + 2SM	36	36			ACN=40	Zaire	S-28, S-158
Aphyosemion	*christyi*	*shoutedeni* SCH-AQ		22	10M + 4SM + 8A	36	36			ACN=40	Zaire	H-33, S-28, S-158
Aphyosemion	*coeleste*	COL-TY		32	4 M/SM + 28 ST/A	36					Gabon	S-158
Aphyosemion	*coeleste*	COL-TI		30	6 M/SM + 24 ST/A	36					Congo	S-158
Aphyosemion	*cognatum*	COG-AQ		28	6M + 2SM + 20A	36	36			ACN=40	Congo	S-158
Aphyosemion	*cognatum*	COG		30	6 M/SM + 24A	36	36				Congo	S-158
Aphyosemion	*congicum*	*melanopteron* MET		30	6M + 24A	36	36			ACN=40	Zaire	S-24, S-28, H-33

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Aphyosemion	*cyanostictum*	CYA-AQ		34	14 M/SM + 6ST + 14A	48	54			ACN=38	N. Gabon	S-158
Aphyosemion	*decorsei*	DEC-KCF 5		24	18 M/SM + 6ST	42	48			ACN=42	Zaire	H-33
Aphyosemion	*elberti*	*rubrifascium*		38			(40)				Cameroon	S-159
Aphyosemion	*elberti kekemense*	*kekemense* KEK-TY		36	6 M/SM + 30 ST/A	42	(72)			ACN=42	E. Cameroon	S-158
Aphyosemion	*elegans*	ELE-SA		20	12M + 4SM + 4A	36	36			ACN=38	Congo	S-28, S-158, H-33
Aphyosemion	*escherichi*	*simulans* SIM-AQ		40			(70)				Gabon	S-158
Aphyosemion	*exigoideum*	EXO-AQ		22			(42)				Gabon	S-158
Aphyosemion	*exiguum*	EXI-NG		36	20 M/SM + 16ST	56	72			ACN=42	E. Cameroon	S-158
Aphyosemion	*franzwerneri*	FRA-TY		22	22 M/SM	44	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*fulgens*	FUL-AQ		38	38A	38	38				N. Gabon	S-158
Aphyosemion	*gabunense*	MRG-AQ		36			(64)				Gabon	S-158
Aphyosemion	*gabunense*	GAB-AQ		40			(54)				Gabon	S-158
Aphyosemion	*georgiae*	GEO-AQ		36	4SM + 32A	40	40				Gabon	S-158
Aphyosemion	*georgiae*	GEO-AQ		34	4 M/SM + 30A	38	38				Gabon	S-158
Aphyosemion	*herzogi*	HEZ-AQ		34			(68)				N. Gabon	S-158
Aphyosemion	*kouamense*	*Chromaphyosemion*	F, M	38	10ST + 28A	38	48	2		ACN=42	N. W. Gabon	V-71
Aphyosemion	*labarrei*	LAB-AQ		28	8M + 12SM + 2ST + 6A	48	50			ACN=44	Congo	S-158
Aphyosemion	*labarrei*	LAB-NSC-4		26	20 M/SM + 4ST + 2A	46	50			ACN=44	Congo	S-158
Aphyosemion	*lamberti*	LAI-AQ		36	2M + 6SM + 4ST + 24A	44	48			ACN=44	Gabon	H-33, S-158
Aphyosemion	*loennbergii*	LOE-NS		38	2M + 4SM + 6ST + 26A	44	50			ACN=42	E. Cameroon	S-158
Aphyosemion	*loennbergii*	LOE-KI		34	2M + 6SM + 6ST + 20A	42	48			ACN=42	E. Cameroon	S-158
Aphyosemion	*loennbergii*	LOE-MO		32	4M + 6SM + 4ST + 18A	42	46			ACN=42	E. Cameroon	S-158
Aphyosemion	*loennbergii*	*pappenheimi* PAP-BI		32			(52)				E. Cameroon	S-158
Aphyosemion	*loennbergii*	*Chromaphyosemion* KV03/38	F	34	20 M/SM/ST + 14A		54	2		XX	Cameroon	V-97
Aphyosemion	*loennbergii*	*Chromaphyosemion* KV03/38	M	34	19 M/SM/ST + 15A		53	2		XY	Cameroon	V-97
Aphyosemion	*loennbergii*	*Chromaphyosemion* C03/29	F, M	34	8 M/SM/ST + 26A		42			XX/XY	Cameroon	V-97
Aphyosemion	*louessense*	LOU-AQ		40	2 M/SM + 38 ST/A	42	(74)				Congo	H-33
Aphyosemion	*louessense*	LOU-MI		20	16M + 4SM	40	40			ACN=40	Congo	S-158
Aphyosemion	*lugens*	*Chromaphyosemion*	F, M	36	2M + 34A	38	38	2		ACN=42	S. W. Cameroon	V-71
Aphyosemion	cf. *lugens*	*Chromaphyosemion* CMM36		28	12 M/SM/ST + 16A		40	2			Cameroon	V-97
Aphyosemion	*lujae*		M	40*							(Zaire)	G-65
Aphyosemion	*maculatum*	MAL-AQ		34			(44)				N. Gabon	S-158
Aphyosemion	*malumbresi*	*Chromaphyosemion* GEMHS00/31	F, M	24	20 M/SM/ST + 4A		44	2		XX/XY	Cameroon	V-97
Aphyosemion	*melanogaster*	*Chromaphyosemion* KV03/41	F, M	36	14 M/SM/ST + 22A		50	2		XX/XY	Cameroon	V-97
Aphyosemion	*microphtalmum*	MIP-AQ		38	16 M/SM + 22 ST/A	54	(76)			ACN=42	Congo, Gabon	S-158
Aphyosemion	*mimbon*	MIM-AQ		30			(50)				Gabon	S-158
Aphyosemion	*obscurum*	*Panchax obscurus*		34			(40)				Cameroon	S-159
Aphyosemion	*ocellatum*	OCE-AQ		30			(54)				Congo, Gabon	S-158

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Aphyosemion	*ogoense*	OGO-AQ		40	18 M/SM + 22 ST/A	58	(72)			ACN=40	Gabon	S-158
Aphyosemion	*ogoense*	OGO-BA		32			(56)				C. Congo	S-158
Aphyosemion	*ogoense caudofasciatum*	CAU-AQ		38			(76)				S. Congo	S-158
Aphyosemion	*ogoense pyrophore*	PYR-AQ		38			(64)				S. Congo	S-158
Aphyosemion	*ogoense ottogartneri*	OTT-AQ		40	12 M/SM + 28 ST/A	52	(76)			ACN=44	C. Congo	S-24, S-158
Aphyosemion	*pascheni*	PAS-TY		24	18 M/SM + 4ST + 2A	42	46			ACN=42	E. Cameroon	S-158
Aphyosemion	*pascheni*	PAS-AQ		24			(48)			ACN=42	E. Cameroon	S-158
Aphyosemion	*primigenium*	PRI-AQ		22			(42)				Gabon	S-158
Aphyosemion	*punctatum*	PUC-OV		24	22 M/SM + 2ST	46	48				Gabon	H-33
Aphyosemion	*punctulatum*	*Chromaphyosemion* CMM22	F, M	36	8 M/SM/ST + 28A		44	2		ACN=42	Cameroon	V-97
Aphyosemion	*raddai raddai*	RAD-TY		32	12 M/SM + 20A	44	44			ACN=44	E. Cameroon	S-158
Aphyosemion	*rectogoense*	REC		18	18 M/SM	36	36			ACN=44	Gabon	H-33
Aphyosemion	*riggenbachi*	RIG-YA		38	38 ST/A	38	(42)			ACN=42	E. Cameroon (Dibonba)	S-158
Aphyosemion	*riggenbachi*	RIG-GI		34	4SM + 30A	38	38			ACN=40	E. Cameroon (Vuri)	S-158
Aphyosemion	*riggenbachi*	RIG-SA		30	2M + 8SM + 20A	40	40			ACN=36	E. Cameroon (Sabaga)	S-158
Aphyosemion	*riggenbachi*	RIG-WN		20	12M + 8SM	40	40			ACN=42	E. Cameroon (Wuri)	S-158
Aphyosemion	*riggenbachi*	*Chromaphyosemion* KVO3/16	M	36	2SM + 2ST + 32A	38	40	6		ACN=40	E. Cameroon	V-80
Aphyosemion	*riggenbachi*	*Chromaphyosemion* KVO3/27	F, M	30	8 M/SM + 8ST + 14A	38	46	2		ACN=38	E. Cameroon	V-80
Aphyosemion	*riggenbachi*	*Chromaphyosemion* KVO3/25	F, M	24	12 M/SM + 8ST + 4A	36	44	2		ACN=38	E. Cameroon	V-80
Aphyosemion	*riggenbachi*	*Chromaphyosemion* KVO3/28	F, M	20	16 M/SM + 4ST	36	40	2, 4		ACN=36	E. Cameroon	V-80
Aphyosemion	*riggenbachi*	*Chromaphyosemion* KVO3/29	F, M	20	16 M/SM + 4ST	36	40	2		ACN=36	E. Cameroon	V-80
Aphyosemion	*schioetzi*	SIO-AQ		18	18 M/SM	36	36			ACN=36	C. Africa	H-33
Aphyosemion	*schluppi*	SLU-AQ		28	12 M/SM + 16 ST/A	40	(54)			ACN=40	S. Gabon	S-158
Aphyosemion	*splendopleure*	*Chromaphyosemion* Bioko		38	4ST + 34A	38	42	2		ACN=42	Cameroon	V-97
Aphyosemion	*striatum*	STR-AQ		40	4 M/SM + 36 ST/A	44	(66)			ACN=44	N. Gabon	S-158
Aphyosemion	*thysi*	THY-AQ		28			(52)				S. Congo	S-158
Aphyosemion	*volcanum*	VOL-TY		36	2M + 2ST + 32A	38	40			ACN=44	W. Cameroon	S-158
Aphyosemion	*volcanum*	*Chromaphyosemion*	F, M	38	2ST + 36A	38	40	2		ACN=44	W. Cameroon	V-79
Aphyosemion	*wachtersi*	WAC-AQ		34			(68)				Congo	S-158
Aphyosemion	*wildekampi*	WIL-TY		30	4M + 2SM + 24A	36	36			ACN=40	E. Cameroon	H-33, S-158
Aphyosemion	*zygaima*	ZYG-MI		20			(40)				Congo	S-158
Archiaphyosemion	*guineense*	*Aphyosemion* GUI-AQ		38	2M + 6SM + 2ST + 28A	46	48			ACN=44	Upper Niger	S-158
Callopanchax	*monroviae*	*Aphyosemion*		46						annual	Liberia	S-158
Callopanchax	*occidentalis*	*Roloffia o. occidentalis*	M	46*							Sierra Leone	G-65
Callopanchax	*occidentalis*	*Aphyosemion* OCC-AQ		46	32 M/SM + 14 ST/A	78	(92)			ACN=46	Sierra Leone	S-24, S-158
Callopanchax	*toddi*	*Roloffia occidentalis toddi*	M	46*							Sierra Leone	G-65
Callopanchax	*toddi*	*Aphyosemion* TOD-TY		46	32 M/SM + 14 ST/A	78	(86)			ACN=46	Sierra Leone	S-24, S-158
Chromaphyosemion	*poliaki*		F, M	38	2ST + 36A	38	40	2		ACN=44	W. Cameroon	V-79

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Chromaphyosemion	sp.	GEMHS00/41	F, M	36	8 M/SM/ST + 28A		44	2		XY	Rio Muni	V-97
Epiplatys	*annulatus*	*Aplocheilus*		50	20 M/SM + 30 ST/A	70	(86)				Guinee, Liberia	S-24, S-158, S-159
Epiplatys	*ansorgii*	*Aplocheilus*		46	4 M/SM + 42 ST/A	50	(88)				Gabon	S-158
Epiplatys	*barmoiensis*	*Aplocheilus* BAR		34	14 M/SM + 20 ST/A	48	(54)			ACN=46	Sierra Leone, W. Liberia	S-24, S-158
Epiplatys	*berkenkampi*	*Aplocheilus*		48	2 M/SM + 46A	50	50				Gabon	S-158
Epiplatys	*bifasciatus*		M	40							Volta	S-18
Epiplatys	*bifasciatus*	*Aplocheilus*		40	8M + 32A	48	48			ACN=48	W. Africa to Nile	S-24, S-159
Epiplatys	*chaperi*	*Aplocheilus*		50	50 ST/A	50	(56)				Ghana, Ivory Coast	S-24, S-159
Epiplatys	*chaperi schreiberi*	*Aplocheilus*		50			(52)				Ghana	S-158
Epiplatys	*chaperi sheljuzhkoi*	*Aplocheilus*		50			(52)				Ivory Coast	S-158
Epiplatys	*dageti*		M	50							Monrovia	S-18
Epiplatys	*dageti*	*Aplocheilus*		50	32 M/SM + 18 ST/A	82	(92)				Ghana to Liberia	S-24, S-159
Epiplatys	*dageti monroviae*	*Aplocheilus*		50			(92)				Liberia	S-158
Epiplatys	*duboisi*	*Aplocheilus*		48*		48	(52)				Congo	S-24, S-159
Epiplatys	*esekanus*	*Aplocheilus*		42	8M + 34A	50	50				E. Cameroon	S-24, S-159
Epiplatys	*fasciolatus fasciolatus*	*Aplocheilus*		40	10 M/SM + 30 ST/A	50	(76)			ACN=48	Guinee, Liberia	S-24, S-158, S-159
Epiplatys	*fasciolatus*		M	38							Sierra Leone	S-18
Epiplatys	*fasciolatus*	*Aplocheilus*		38			(76)				Guinee, Liberia	S-24, S-159
Epiplatys	*fasciolatus*	*Aplocheilus*		36			(76?)				Guinee, Liberia	S-24, S-159
Epiplatys	*grahami*	*Aplocheilus*		48	2SM + 46A	50	50			ACN=48	Nigeria to Congo	S-24
Epiplatys	*grahami*	*Aplocheilus nigromarginatus*		48			(50)				Cameroon	S-158
Epiplatys	*huberi*	*Aplocheilus*		46	6 M/SM + 40A	52	52				S.W. Gabon	S-158
Epiplatys	*lamottei*	*Aplocheilus* LAM		48	4 M/SM + 44A	52	52			ACN=48	Liberia	S-158
Epiplatys	*maeseni*	*Aphyosemion* MAE-AQ		42			(52)				Ivory Coast	S-158
Epiplatys	*mesogramma*	*Aplocheilus*		48	48A	48	48				C. Afrin Rep.	S-158
Epiplatys	*multifasciatus*	*Aplocheilus*		46	14 M/SM + 32 ST/A	60	(92)				Zaire	S-158
Epiplatys	*multifasciatus*	*Aplocheilus boulengeri*		46	14 M/SM + 32 ST/A	60	(92)				Congo	S-158
Epiplatys	*olbrechtsi*	*Aplocheilus*		38	12 M/SM + 26 ST/A	50	(76)				Ivory Coast	S-158
Epiplatys	*roloffi*	*Aplocheilus*		46			(92)				Liberia	S-158
Epiplatys	*sangmelinensis*	*Aplocheilus*		48*		48	48				E. Cameroon	S-24, S-159
Epiplatys	*sexfasciatus*	*Aplocheilus*		48	48 ST/A	48	(50)				Ghana to Gabon	S-24, S-159
Epiplatys	*sexfasciatus rathkei*	*Aplocheilus*		48			(50)				W. Cameroon	S-158
Epiplatys	*singa*	*Aplocheilus*		42			(58)				Zaire	S-158
Epiplatys	*spilargyreius*		M	34							Nigeria	S-18
Epiplatys	*spilargyreius*	*Aplocheilus*		34*			(48)				W. Africa to Nile	S-24, S-159
Fenerbahce	*formosus*	*Adamas* FOR-AQ		24	24A	24	24				Zaire	S-158
Foerschichthys	*flavipinnis*	FLA-AQ		40			52				Nigeria	S-158
Fundulopanchax	*arnoldi*	*Aphyosemion*		38	10 M/SM + 28 ST/A	48	(62)			ACN=42	Nigeria	S-24, S-159

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Fundulopanchax	*cinnamomeum*	*Aphyosemion* CIN-TY		40	4M + 4SM + 32 ST/A	48	(64)			ACN=44	Cameroon	S-24, S-158, R-29
Fundulopanchax	*fallax*	*Aphyosemion schwoiseri*		44			(48)				W. Cameroon	S-158
Fundulopanchax	*filamentosum*	*Aphyosemion* FIL-IJ		36	4 M/SM + 2ST + 30A	40	42			ACN=40	Nigeria	S-24, S-158
Fundulopanchax	*filamentosum*	*Aphyosemion* FIL-AQ		30	8M + 2ST + 20A	38	40			ACN=38	Nigeria	S-24, S-158
Fundulopanchax	*filamentosum*	*Aphyosemion* FIL-AQ		30	6M + 10ST + 14A	36	46			ACN=38	Nigeria	S-24, S-158
Fundulopanchax	*gardneri*	*Aphyosemion* GAR-GE		40	4M + 6SM + 30 ST/A	50	(68)				W. Cameroon	S-24, S-158, S-159
Fundulopanchax	*gardneri*	*Aphyosemion* GAR-MI		38			(68)				Nigeria	S-158
Fundulopanchax	*gardneri*	*Aphyosemion* GAR-EG		36	4 M/SM + 32 ST/A	40	(68)				Nigeria	S-24
Fundulopanchax	*gardneri*	*Aphyosemion* GAR-OW		36	4 M/SM + 32 ST/A	40	(66)				Nigeria (Owo)	S-158
Fundulopanchax	*gardneri clausen*	*Aphyosemion* CLA		36	4 M/SM + 32 ST/A	40	(66)				Nigeria	S-158
Fundulopanchax	*gardneri lacustre*	*Aphyosemion*	F	39	3M + 4SM + 12ST + 20A	46	58			ACN=42	W. Cameroon	R-29
Fundulopanchax	*gardneri lacustre*	*Aphyosemion*	M	37	5M + 4SM + 12ST + 16A	46	58			ACN=42	W. Cameroon	R-29
Fundulopanchax	*gardneri mamfense*	*Aphyosemion*	F	40	16 M/SM + 2ST + 22A	56	58			ACN=42	W. Cameroon	R-29
Fundulopanchax	*gularis*	*Aphyosemion gulare* GUL-AQ		32	32A	32	32			ACN=40	Nigeria	S-24, S-158
Fundulopanchax	*gularis*	*Aphyosemion gulare*	M	36							Nigeria	G-65
Fundulopanchax	*intermittens*	*Aphyosemion*		33, 36							Cameroon	S-158
Fundulopanchax	*kribianus*	*Aphyosemion* KRI-TY		44			(48)				E. Cameroon	S-158
Fundulopanchax	*marmoratum*	*Aphyosemion* MAM-TY		40	6 M/SM + 10ST + 24A	46	56			ACN=42	W. Cameroon	S-158, S-159
Fundulopanchax	*mirabilis*	*Aphyosemion mirabile*		32-38			(60)				W. Cameroon	S-158
Fundulopanchax	*mirabilis*	*Aphyosemion mirabile* MIR-TY		30	30 M/SM/ST		(60)				W. Cameroon	S-158
Fundulopanchax	*mirabilis*	*Aphyosemion mirabile*		38	20 M/SM + 18 ST/A	58	(60)				W. Cameroon	S-158
Fundulopanchax	*mirabilis*	*Aphyosemion mirabile mirabile*	F	37	19 M/SM + 18A	56	56			ACN=42	W. Cameroon	R-29
Fundulopanchax	*moensis*	*Aphyosemion mirabile moense* MOE-IN		32			(60)				W. Cameroon	S-158
Fundulopanchax	*moensis*	*Aphyosemion mirabile moense* MOE-TY		38			(66)				W. Cameroon	S-158
Fundulopanchax	*ndianus*	*Aphyosemion ndianum* NDI-AQ		40	40A	40	40			ACN=44	E. Nigeria	S-158
Fundulopanchax	*oeseri*	*Aphyosemion s. santaisabellae*		40	6 M/SM + 10ST + 24A	46	56			ACN=42	Fernando Po	S-24, S-158
Fundulopanchax	*puerzli*	*Aphyosemion* PUE-TY		38	2SM + 2ST + 34A	40	42			ACN=40	E. Cameroon	R-28, S-158
Fundulopanchax	*robertsoni*	*Aphyosemion* ROS-TY		42	20 M/SM + 22 ST/A	62	(78)			ACN=44	W. Cameroon	R-28, S-158
Fundulopanchax	*rubrolabialis*	*Aphyosemion rubrolabiale* RUL-MB		44	6M + 6SM + 2ST + 30A	56	58			ACN=44	W. Cameroon	R-28, S-158
Fundulopanchax	*rubrolabialis*	*Aphyosemion rubrolabiale* RUL-YO		40	10 M/SM + 8ST + 22A	50	58			ACN=44	W. Cameroon	S-158
Fundulopanchax	*rubrolabialis*	*Aphyosemion rubrolabiale*		40	8SM + 2ST + 30A	48	50				W. Cameroon	R-28
Fundulopanchax	*scheeli*	*Aphyosemion* SCE-AQ		40	10 M/SM + 30 ST/A	50	(76)			ACN=42	S.E. Nigeria, Cameroon	S-24
Fundulopanchax	*schwoiseri*	*Aphyosemion*		44			(48)				W. Cameroon	S-158
Fundulopanchax	*sjostedti*	*Aphyosemion* SJO-AQ		40	40A	40	40			ACN=42	W. Cameroon	S-158
Fundulopanchax	*traudeae*	*Aphyosemion mirabile traudeae*		37							W. Cameroon	R-29
Fundulopanchax	*walkeri*	*Aphyosemion* WAL-AQ		36	12 SM + 24 ST/A	48	(70)			ACN=40	Ivory Coast	S-158
Nimbapanchax	*petersii*	*Aphyosemion* PET-AQ		40	10M + 30A	50	50			ACN=44	Ivory Coast	S-24, S-158

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Nimbapanchax	*viridis*	*Aphyosemion viride* VIR-AQ		40	10M + 30A	50	50			ACN=48	Liberia	S-158
Nothobranchius	*eggersi*			36			(66)				S. Tanzania	S-158
Nothobranchius	*elongatus*			38			(76)				Kenya	S-158
Nothobranchius	*foerschi*		F, M	34	12 M/SM + 22A	46	46			ACN=42	Tanzania	E-5
Nothobranchius	*foerschi*	FOE-AQ		34			(46)				Tanzania	S-158
Nothobranchius	*furzeri*	FUR-TY		38			(76)				Rhodesia	S-158
Nothobranchius	*guentheri*		F	36	2M + 34A	38	38			$X_1X_1X_2X_2$, ACN=44	Zanzibar	E-5
Nothobranchius	*guentheri*		M	35	2M + 1SM + 32A	38	38			X_1X_2Y, ACN=44	Zanzibar	E-5
Nothobranchius	*guentheri*	GUE-ZA		36	4 M/SM + 32A	40	40				Zanzibar	S-158
Nothobranchius	*hengstleri*			38	6 M/SM + 32 ST/A	44				ACN=42	Mozambique	W-35
Nothobranchius	*janpapi*	JAN-TY		38			(70)				Tanzania	S-158
Nothobranchius	*jubbi cyaneus*	CYN-WA		34			(68)				Kenya	S-158
Nothobranchius	*jubbi jubbi*	JUB-TY		34			(66)				Kenya	S-158
Nothobranchius	*kirki*	KIR-TY		36			(58)				Malawi	S-24, S-158
Nothobranchius	cf. *kirki*	"KIR"		44			(84)				Malawi	S-158
Nothobranchius	*kiyawensis*	*Aphyosemion seymouri* SEM-VO		28	2M + 26 ST/A	30	(52)			ACN=38	Ghana	S-158
Nothobranchius	*korthausae*	KOR-TY		36			(42)				Tanzania	S-158
Nothobranchius	*kuhntae*	KUH-AQ		38			(66)				Mozambique	S-158
Nothobranchius	*lourensi*	LOR-AQ		32	4M + 28A	36	36				Tanzania	S-158
Nothobranchius	*lucius*			36	22 M/SM + 14 ST/A	58				ACN=42	Tanzania	W-35
Nothobranchius	*makondorum*			38	18 M/SM + 20 ST/A	56				ACN=42	Tanzania, Mozambique	W-35
Nothobranchius	*melanospilus*			38	14 M/SM + 24 ST/A	52				ACN=42	Tanzania	W-35
Nothobranchius	*melanospilus*	MEP-DS		38			(76)				Tanzania	S-158
Nothobranchius	*melanospilus*		F, M	36	2M + 34 ST/A	38	(76)			ACN=44	Tanzania	E-5
Nothobranchius	*microlepis*	MIL-WA		24			(26)				Kenya, Somalia	S-158
Nothobranchius	*palmqvisti*		F, M	36	4M + 32 ST/A	40				ACN=42	Kenya, Tanzania	E-5
Nothobranchius	*palmqvisti*	PAL 1956 strain		34			(40)				Kenya, Tanzania	S-24, S-158
Nothobranchius	*palmqvisti*	PAL 1957 strain		34	12M + 22A	46	46			ACN=38	Kenya, Tanzania	S-24, S-158
Nothobranchius	*patrizii*		F, M	36	12 M/SM + 24 ST/A	48				ACN=44	Kenya, Somalia	E-5
Nothobranchius	*patrizii*			36			(72)				Somali	S-158
Nothobranchius	*polli*	PLL-ZA		36			(72)				Zaire	S-158
Nothobranchius	*rachovii*		F, M	16	8M + 6SM + 2A	30	30			ACN=42	Somalia	K-106, E-5
Nothobranchius	*rachovii*	RAC-AQ		18	12 M/SM + 6A	30	30				Mozambique	S-24, S-158, S-159
Nothobranchius	*steinforti*	STI-AQ		36			(72)				Tanzania	S-158
Nothobranchius	*thierryi*			42			(48)			ACN=48	W. Africa	S-24
Nothobranchius	*thierryi*	*Fundulosoma* THI-AQ	M	43	4 M/SM + 39A	47	47				Ghana	S-158
Scriptaphyosemion	*bertholdi*			42			(>44)				Sierra Leone	S-158
Scriptaphyosemion	*bertholdi*	*Roloffia*	M	42							Sierra Leone	G-65

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scriptaphyosemion	*brueningi*		M	42			ca. 44				Sierra Leone	S-158
Scriptaphyosemion	*brueningi*	*Roloffia*	M	42*							Sierra Leone	G-65
Scriptaphyosemion	*chaytori*	*Roloffia*	M	42							Sierra Leone	G-65
Scriptaphyosemion	*fredrodi*	*Aphyosemion* FRE-TY		42	2 M/SM + 40A	44	44				Sierra Leone	S-158
Scriptaphyosemion	*geryi*	*Aphyosemion* GER-AQ		40	2M + 38A	42	42			ACN=44	Guinee, Sierra Leone	S-158
Scriptaphyosemion	*geryi*	*Roloffia*	M	40	2M + 38A	42	42				Sierra Leone	G-65
Scriptaphyosemion	*geryi*	*Aphyosemion guineense* GUI-AQ		38	2M + 6SM + 2ST + 28A	46	48			ACN=46	Guinee, Sierra Leone	S-158
Scriptaphyosemion	*geryi*	*Roloffia guineensis*	M	40							Sierra Leone	G-65
Scriptaphyosemion	*guignardi*	*Aphyosemion* GUG-TY		40	4 M/SM + 36A	44	44				W. Guinea	S-158
Scriptaphyosemion	*liberiense*	*Aphyosemion*		42			(44)				Liberia	S-24
Scriptaphyosemion	*liberiense*	*Roloffia calabaricus*		42*							(Africa)	G-93
Scriptaphyosemion	*liberiense*	*Aphyosemion melantereon* MEL-AQ		48	2M + 46A	50	50				Liberia	S-158
Scriptaphyosemion	*roloffi*	*Aphyosemion* ROL-AQ		42	2M + 40A	44	44			ACN=44	Sierra Leone	S-158
Scriptaphyosemion	*roloffi*	*Roloffia*	M	42							Sierra Leone	G-65
Scriptaphyosemion	*roloffi*	*Roloffia caldal*		42							(Africa)	G-93
Scriptaphyosemion	*schmitti*	*Aphyosemion*		40			(60)				Liberia	S-158
Rivulidae (New World rivulines)												
Aphyolebias	*peruensis*	*Pterolebias*		54*			(90)				Upper Amazon	S-26
Austrofundulus	*limnaeus*		F, M	44	12M + 16SM + 16A	72					Venezuela	E-4
Austrofundulus	*transilis*		F, M	44	12M + 16SM + 16A	72				ACN=46	Venezuela	E-4
Austrofundulus	*transilis*			44			(80)			ACN=46	Venezuela	S-24
Austrolebias	*adloffi*	*Cynolebias*	F, M	48	2SM + 46A	50		2		ACN=48	Brazil (RS)	G-15
Austrolebias	cf. *adloffi*	*Cynolebias* sp.		48	4 M/SM + 44 ST/A	52		6			Uruguay	G-14
Austrolebias	cf. *adloffi*	*Cynolebias* sp.		46	6 M/SM + 40 ST/A	52					Uruguay	G-14
Austrolebias	cf. *adloffi*	*Cynolebias* sp.		48	8 M/SM + 40 ST/A	56					Uruguay	G-14
Austrolebias	*affinis*	*Cynolebias*	F	48	2M + 2SM + 44A	52	52	4		ACN=48	Uruguay (Tacuarembo)	G-15
Austrolebias	*affinis*	*Cynolebias*	F	49	2M + 2SM + 45A	53	53	4			Uruguay (Tacuarembo)	G-15
Austrolebias	*alexandrii*	*Cynolebias*	F, M	48	4SM + 6ST + 38A	52	58	2		ACN=48	Uruguay (Salto)	G-15
Austrolebias	*alexandrii*	*Cynolebias*	F, M	48	4SM + 10ST + 34A	52	62			ACN=48	Uruguay (Salto)	G-15
Austrolebias	*arachan*	*Cynolebias uruguayensis*		48	4 M/SM + 44 ST/A	52		3			Uruguay	G-92
Austrolebias	*arachan*	*Cynolebias uruguayensis*		48	2 M/SM + 46 ST/A	50		3			Uruguay	G-92
Austrolebias	*bellotti*	*Cynolebias*	M	48	4 M/SM + 44 ST/A	52		5-6			Uruguay	G-14
Austrolebias	*bellotti*	*Cynolebias*	M	48	6 M/SM + 42 ST/A	54					Argentina	G-14
Austrolebias	*bellotti*	*Cynolebias*		48			52				La Plata	S-24
Austrolebias	*charrua*	*Cynolebias*		48	2 M/SM + 46 ST/A	50				ACN=48	Uruguay	G-17
Austrolebias	*charrua*	*Cynolebias*		48	4 M/SM + 44 ST/A	52				ACN=48	Uruguay	G-17
Austrolebias	*charrua*	*Cynolebias*		48	6 M/SM + 42 ST/A	54				ACN=48	Uruguay	G-17

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Austrolebias	*charrua*	*Cynolebias*		48	8 M/SM + 40 ST/A	56				ACN=48	Uruguay	G-17
Austrolebias	*cheradophilus*	*Cynolebias*		40	4 M/SM + 36 ST/A	44		4			Uruguay	H-43
Austrolebias	*cinereus*	*Cynolebias*	F	44	4M + 2SM + 14ST + 24A	50	64	2		ACN=46	Uruguay (Colonia)	G-16
Austrolebias	*duraznensis*	*Cynolebias*	M	48	4M + 6ST + 38A	52	58	3			Uruguay (Durazno)	G-15
Austrolebias	*duraznensis*	*Cynolebias*	F, M	48	2M + 2SM + 6ST + 38A	52	58	3		ACN=48	Uruguay (Durazno)	G-15
Austrolebias	*gymnoventris*	*Cynolebias*	F, M	48	2M + 2SM + 10ST + 34A	52	62	2		ACN=48	Uruguay (Rocha)	G-15
Austrolebias	*luteoflammulatus*	*Cynolebias*	F, M	34	16 M/SM + 6ST + 12A	50	56	4		ACN=48	Uruguay (Rocha)	G-14
Austrolebias	*melanoorus*	*Cynolebias*	F, M	48	2SM + 22ST + 24A	50	72	2		ACN=48	Uruguay (Tacuarembo)	G-16
Austrolebias	*nigripinnis*	*Cynolebias*	F, M	48	8 M/SM + 40 ST/A	56		5-6		ACN=48	Uruguay (Salto)	G-14
Austrolebias	*nigripinnis*	*Cynolebias*	M	48	6 M/SM + 8ST + 34A	54	62			ACN=48	Uruguay (Artigas)	G-14
Austrolebias	*nigripinnis*	*Cynolebias*		48			(74)				La Plata	S-24
Austrolebias	*nioni*	*Cynolebias*	F, M	46	2M + 6SM + 34ST + 4A	54	88	2		ACN=48	Uruguay (Tacuarembo)	G-16
Austrolebias	*vazferreirai*	*Cynolebias*		46	2M + 2SM + 30ST + 12A	50	80	2		ACN=48	Uruguay (Cerro Largo)	G-16
Austrolebias	*vazferreirai*	*Cynolebias*		46	2M + 4SM + 24ST + 16A	52	76			ACN=48	Uruguay (Cerro Largo)	G-16
Austrolebias	*viarius*	*Cynolebias*	M	46	2M + 2ST + 42A	48	50	6		ACN=48	Uruguay	G-14
Austrolebias	*viarius*	*Cynolebias*	M	48	2 M/SM + 46 ST/A	50				ACN=48	Uruguay	G-14
Cynopoecilus	*melanotaenia*			44			(52)				Brazil	S-24
Cynopoecilus	*melanotaenia*	*Cynolebias*	F, M	44	14 M/SM + 30 ST/A	58		5			Uruguay	G-14
Gnatholebias	*zonatus*	*Pterolebias*	F, M	42	12 M/SM + 30A	54	54			ACN=46	Venezuela	E-3
Kryptolebias	*brasiliensis*	*Rivulus dorni*		48*			(70)				Brazil (RJ)	S-24
Kryptolebias	*marmoratus*	*Rivulus*		48			(52)			hermaphrodite	USA (FL), Cuba	S-24
Kryptolebias	*marmoratus*	*Rivulus*		48	4 M/SM + 46 ST/A	52		2		ACN=48	America	S-92
Kryptolebias	*ocellatus*	*Rivulus*		48			(54)				Brazil	S-24
Megalebias	*prognatus*	*Cynolebias*	F, M	36	12M + 6ST + 18A	48	54	3			Uruguay (Rocha)	G-14
Megalebias	*prognatus*	*Cynolebias*	M	36	10 M/SM + 6ST + 20A	46	52			ACN=48	Uruguay (Rocha)	G-14
Megalebias	*wolterstorffi*	*Cynolebias*	M	46	4 M/SM + 42 ST/A	50		5			Uruguay	G-14
Nematolebias	*whitei*	*Cynolebias*		46			(92)				Brazil (RJ)	S-24
Pterolebias	*hoignei*		F	46	6M + 40A	52	52			ACN=46	Venezuela	E-3
Pterolebias	*hoignei*		M	46	6M + 3SM + 37A	55	55			Y chrom.	Venezuela	E-3
Pterolebias	*hoignei*		F, M	46	6M + 4SM + 36A	56	56			ACN=46	Venezuela	E-4
Pterolebias	*longipinnis*			20	20A	20	20				(Lower Amazon)	S-24, K-106
Rachovia	*brevis*		F, M	44	12M + 14SM + 18A	70	70			ACN=46	Venezuela	E-4
Rachovia	*hummelincki*		F, M	44	10M + 10SM + 24A	64	64			ACN=46	Venezuela	E-4
Rachovia	*maculipinnis*	*Pterolebias*		44			(80)				Venezuela	S-24
Rachovia	*maculipinnis*	*maculipinna*	F, M	44	20M + 12SM + 12A	76	76			ACN=48	Venezuela	E-4
Rachovia	*pyropunctata*		F, M	44	10M + 8SM + 26A	62	62			ACN=46	Venezuela	E-4
Rachovia	*stellifer*	*Rivulus*	F, M	48	18M + 8SM + 22A	74	74			ACN=48	Venezuela	E-4
Rivulus	*agilae*			44	8M + 2SM + 14ST + 20A	54	68	4		ACN=46	French Guyana	Z-41

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rivulus	*cylindraceus*			48			(58)				Cuba	S-24
Rivulus	*hartii*			44			(56)				S. America	S-24
Rivulus	*holmiae*			44			(72)				S. America	S-24
Rivulus	*magdalenae*	*milesi*		46			(92)			ACN=48	Colombia	S-24
Rivulus	*ornatus*			40			(66)			ACN=46	Lower Amazon	S-24
Rivulus	*strigatus*			46			(88)				Amazon	S-24
Rivulus	*urophthalmus*			46			(86)				Lower Amazon	S-24
Rivulus	*urophthalmus*			44					3.0 BFA		(S. America)	H-13
Terranatos	*dolichopterus*	*Austrofundulus*		44			(54)				Venezuela	S-24
Suborder Cyprinodontoidei												
Anablepidae												
Anableps	*dowi*		F, M	46	46 ST/A	46				ACN=46	Mexico (Tehuantepec)	M-69
Cyprinodontidae (pupfishes)												
Cyprinodontinae												
Aphanius	*asquamatus*	*Kosswigichthys*		48*							Turkey	K-9
Aphanius	*dispar*			48*							Middle East	K-9
Aphanius	*fasciatus*		F, M	48	48 ST/A	48		1-8		ACN=48	Italy (Sicily)	V-69
Aphanius	*iberus*			48*							Spain	K-9
Aphanius	*mento*	*cypris*		48							Iraq, Turkey	K-9
Aphanius	*persicus*			48	22SM + 26ST	70	96			ACN=48	Iran (Fars)	E-12
Aphanius	*sophiae*			48	28SM + 20ST	76	96			ACN=48	Iran (Fars)	E-12
Aphanius	*sophiae*			48*							Iran	K-9
Cyprinodon	*alvarezi*		F	48						X_1X_1	Mexico	H-1
Cyprinodon	*atrorus*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	Mexico	S-108
Cyprinodon	*beltrani*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	Mexico	S-108
Cyprinodon	*bifasciatus*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	Mexico	S-108
Cyprinodon	*bovinus*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108
Cyprinodon	*dearborni*		F, M	48	2M + 10SM + 36 ST/A	60		2		ACN=48	Venezuela (Margarita Is.)	N-61
Cyprinodon	*elegans*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108
Cyprinodon	*eximius*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108
Cyprinodon	*fontinalis*			48	2M + 6ST + 40A	50	56				Mexico	S-160
Cyprinodon	*hubbsi*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (FL)	S-108
Cyprinodon	*macularius*			48	2M + 46A	50	50				USA (Death Valley)	T-62
Cyprinodon	*macularius*			48	2M/SM + 46 ST/A	50					USA (CA)	T-56
Cyprinodon	*nevadensis amargosae*			48	2M + 46A	50	50				USA (Death Valley)	T-62
Cyprinodon	*pecosensis*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Cyprinodon	*radiosus*			48	2M + 46A	50	50				USA (Death Valley)	T-62
Cyprinodon	*rubrofluviatilis*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (OK)	S-108
Cyprinodon	*salinus*			48	2M + 46A	50	50				USA (Death Valley)	T-62
Cyprinodon	*tularosa*			48	2M + 14SM + 32ST	64	96				USA (NM)	M-150
Cyprinodon	*variegatus*		F, M	48	2M + 14SM + 32ST	64	96		(3.2 BFA)	ACN=48	USA (LA)	S-59, H-13
Cyprinodon	*variegatus*		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX, FL), Mexico	S-108
Garmanella	*pulchra*		F	48	2M + 46 ST/A	50				$X_1X_1X_2X_2$, ACN=48	Yucatan Peninsula	L-26
Garmanella	*pulchra*		M	47	3 M/SM + 44 ST/A	50				X_1X_2Y, ACN=48	Yucatan Peninsula	L-26
Jordanella	*floridae*		F, M	48	2M + 46 ST/A	50					Mexico	L-26
Megupsilon	*aporus*		F	48	2M + 6SM + 40 ST/A	56				$X_1X_1X_2X_2$, ACN=48	Mexico (Nuevo Leon)	M-68, H-1
Megupsilon	*aporus*		M	47	3M + 6SM + 38 ST/A	56				X_1X_2Y, ACN=48	Mexico (Nuevo Leon)	M-68, H-1
Orestias	*agassii*		F, M	48	2M + 4SM + 14ST + 28A	54	68			ACN=48	Chile (Altiplano)	L-74, V-76, V-111
Orestias	*ascotanensis*		F, M	48	2M + 4SM + 4ST + 38A	54	58			ACN=48	Chile (Altiplano)	V-76, V-111
Orestias	*chungarensis*		F, M	50	2M + 2SM + 20ST + 26A	54	74			5B, ACN=48	Chile (Altiplano)	V-76, V-111
Orestias	*laucaensis*		F	50							Chile	V-76
Orestias	*laucaensis*		M	51							Chile	V-76
Orestias	*luteus*			48*							Peru (Lake Titicaca)	L-74
Orestias	*parinacotensis*			48	2M + 4SM + 10ST + 32A	54	64			ACN=48	Chile (Altiplano)	V-76, V-111
Orestias	*piacotensis*		F, M	50	2M + 2SM + 12ST + 34A	54	66			2B, ACN=48	Chile (Altiplano)	V-76, V-111
Fundulidae (topminnows and killifishes)												
Adinia	*xenica*	*multifasciatus*		32			(64)				USA (TX)	S-24
Adinia	*xenica*		F, M	32	16M + 6SM + 10ST	54	64			ACN=48	USA (LA)	S-59
Fundulus	*catenatus*			46						ACN=48	USA	C-52
Fundulus	*chrysotus*			34	14M + 20 ST/A	48		4		ACN=48	USA (FL)	C-52
Fundulus	*cingulatus*			46	2M + 44 ST/A	48		2		ACN=48	USA (FL)	C-52
Fundulus	*confluentus*			48	48 ST/A	48		2		ACN=48	USA (FL)	C-52
Fundulus	*diaphanus*		F, M	48	4SM + 44A	52	52		3.0 FCM	ACN=48	USA (CT)	C-52, A-87, G-85
Fundulus	*diaphanus*		F	48	4SM + 44A	52	52	2		ACN=48	USA (CT, NY)	C-49, H-27
Fundulus	*diaphanus*		M	48	2M + 2SM + 44A	52	52	2		ACN=48	USA (CT, NY)	C-49, H-27
Fundulus	*grandis*		F, M	48	4ST + 44A	48	52			ACN=48	USA (LA)	S-59
Fundulus	*grandis*			48	2SM + 46 ST/A	50		4		ACN=48	USA (FL)	C-52
Fundulus	*heteroclitus*			48	48 ST/A	48		2	(2.7 FCM, 2.6 FIA)	ACN=48	USA (CT)	C-49, C- 52, G-85, H-40
Fundulus	*heteroclitus*		M	48	48 ST/A	48				ACN=48	USA (ME)	K-99
Fundulus	*heteroclitus*	*Valencia lozanoi*	F, M	48	2SM + 10ST + 36A	50	60			ACN=48	S. W. Spain	B-27
Fundulus	*kansae*			48	48A	48	48	2		ACN=48	USA (MO)	C-52
Fundulus	*lineolatus*			46	2M + 44 ST/A	48		2		ACN=48	USA (FL)	C-52
Fundulus	*luciae*			32	16M + 4SM + 12 ST/A	52		2		ACN=48	USA (CT)	C-52

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Fundulus	*majalis*		F, M	48	2SM + 46 ST/A	50		2	(2.8 BFA)	ACN=48	USA (CT)	C-49, C-52, H-13
Fundulus	*notatus*			44	6M + 12ST + 26A	50	62			ACN=48	USA (AL)	B-38
Fundulus	*notatus*		F, M	40	10M + 12ST + 18A	50	62			ACN=48	USA (MS, TN, TX)	B-38, S-42
Fundulus	*notatus*			40	10M + 2SM + 28 ST/A	52		2		ACN=48	USA (MO)	C-52
Fundulus	*notti*			46	2M + 44 ST/A	48		2		ACN=48	USA (FL)	C-52
Fundulus	*notti*			48							USA (AL)	D-6
Fundulus	*olivaceus*			48	2M + 2SM + 44 ST/A	52		2		ACN=48	USA (MO)	C-52
Fundulus	*olivaceus*		F, M	48	2M + 12SM + 34A	62	62				USA (TX)	C-6
Fundulus	*olivaceus*		F, M	48	2M + 12ST + 34A	50	62			ACN=48	USA (AL, MS, TX)	B-38, S-42
Fundulus	*parvipinnis*		F, M	48	2SM + 46A	50	50				USA (CA)	K-99
Fundulus	*parvipinnis*		F	48	2SM + 46A	50	50			XX, ACN=48	USA (CA)	C-49
Fundulus	*parvipinnis*		M	48	1SM + 47A	49	49			XY, ACN=48	USA (CA)	C-49
Fundulus	*parvipinnis*			48	48A	48	48	2		ACN=48	USA (CA)	C-52
Fundulus	*pulvereus*			48	48 ST/A	48		2		ACN=48	USA (AL)	C-52
Fundulus	*rathbuni*			48	2SM + 46 ST/A	50		2		ACN=48	USA (NC)	C-52
Fundulus	*sciadicus*			44	4M + 2SM + 38 ST/A	50		2		ACN=48	USA (MO)	C-52
Fundulus	*seminolis*			48	48A	48	48	2		ACN=48	USA (FL)	C-52
Fundulus	*similis*		F, M	48	2SM + 46A	50	50	2		ACN=48	USA (FL)	C-52, S-59
Fundulus	*stellifer*			48						ACN=48	USA	C-52, D-6
Fundulus	*waccamensis*			48	4SM + 44 ST/A	52		2		ACN=48	USA (NC)	C-52
Fundulus	*zebrinus*			48						ACN=48	USA	C-52
Goodeidae												
Goodeinae												
Allodontichthys	*hubbsi*		F	42	8M + 34 SM/ST/A		54			ACN=48	Mexico (Jalisco)	M-70, U-65, U-70
Allodontichthys	*hubbsi*		M	41	9M + 32 SM/ST/A		54			ACN=48	Mexico (Jalisco)	M-70, U-65, U-70
Allodontichthys	*tamazulae*			48	2M + 2SM + 44 ST/A	52				ACN=48	Mexico	U-70
Allodontichthys	*zonistius*			48	2M + 2SM + 44 ST/A	52				ACN=48	Mexico	U-70
Allodontichthys	sp.			48	2M + 2SM + 44 ST/A	52				ACN=48	Mexico	U-70
Alloophorus	*robustus*			30	20M + 2ST + 8 ST/A	50				ACN=48	Mexico	U-70
Allotoca	*catarinae*	*Neoophorus*		46	2M + 4ST + 40A	48	52			ACN=48	Mexico	U-70
Allotoca	*diazi*	*Neoophorus*		46	2M + 4ST + 40A	48	52			ACN=48	Mexico	U-70
Allotoca	*dugesi*			26	22M + 4 SM/ST		52			ACN=48	Mexico	U-70
Allotoca	*dugesi*			26	22M + 4ST	48	52				W. Mexico	B-63, S-160
Allotoca	*goslinei*		F, M	48	6ST + 42A	48	54			ACN=48	Mexico (Jalisco)	S-73
Allotoca	*maculata*			48	4ST + 44A	48	52			ACN=48	W. Mexico	S-160, U-70
Allotoca	*meeki*	*Neoophorus*		46	2M + 6ST + 38A	48	54			ACN=48	Mexico	U-70
Ameca	*splendens*		F, M	26	22M + 2SM + 2A	50	50			ACN=48	Mexico (Pacific side)	M-72, U-70

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ataeniobius	*toweri*			48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
Chapalichthys	*encaustus*			36	12M + 4SM + 16ST + 4A	52	68			ACN=48	Mexico	U-70
Chapalichthys	*pardalis*			36	12M + 2SM + 8ST + 14A	50	58			ACN=48	Mexico	U-70
Characodon	*lateralis*			24	24M	48	48			ACN=48	Mexico	F-59, U-70
Girardinichthys	*multiradiatus*			48	10ST + 38A	48	58			ACN=48	Mexico	U-70
Girardinichthys	*viviparus*			48	10ST + 38A	48	58			ACN=48	Mexico	U-70
Goodea	*atripinnis*			48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
Goodea	*gracilis*			48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
Goodea	*luitpoldi*			48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
Hubbsina	*turneri*			48	48 ST/A	48				ACN=48	Mexico	U-70
Ilyodon	*furcidens*		F, M	48	8ST + 40A	48	56			ACN=48	Mexico	U-70, M-163
Ilyodon	*furcidens*			48	7ST + 41A	48	55			ACN=48	Mexico (Pacific side)	T-57
Ilyodon	*furcidens*			48	2 M/SM + 11ST + 35A	50	61			ACN=48	Mexico (Pacific side)	T-57
Ilyodon	*furcidens*			48	4 M/SM + 12ST + 32A	52	64			ACN=48	Mexico (Pacific side)	T-57
Ilyodon	*furcidens*			48	6M + 3SM + 10ST + 29A	57	67			ACN=48	Mexico (Pacific side)	T-57
Ilyodon	*furcidens*			48	12 M/SM + 17ST + 19A	60	77			ACN=48	Mexico (Pacific side)	T-57
Ilyodon	*lennoni*		F	48	2SM + 46 ST/A	50				ACN=48	Mexico (Guerrero)	M-163
Ilyodon	*lennoni*		M	48	48 ST/A	48				ACN=48	Mexico (Guerrero)	M-163
Ilyodon	*whitei*		F, M	48	8ST + 40A	48	56			ACN=48	Mexico	U-70
Ilyodon	*whitei*		F	48	1M + 47 ST/A	49				ZW, ACN=48	Mexico (Guerrero)	M-163
Ilyodon	*whitei*		M	48	48 ST/A	48				ZZ, ACN=48	Mexico (Guerrero)	M-163
Ilyodon	*xantusi*		F, M	48	8ST + 40A	48	56			ACN=48	Mexico	U-70, M-163
Skiffia	*bilineata*			48	4M + 2SM + 34ST + 8A	54	88			ACN=48	Mexico	U-70
Skiffia	*francesae*			48	2M + 6SM + 40A	56	56			ACN=48	Mexico	U-70
Skiffia	*lermae*			26	22M + 4A	48	48			ACN=48	Mexico	U-70
Skiffia	*multipunctata*			46	4M + 4ST + 38A	50	54			ACN=48	Mexico	U-70
Xenoophorus	*captivus*		F	48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
Xenotaenia	*resolanae*		F	48	48 ST/A	48				ACN=48	Mexico	U-70
Xenotoca	*eiseni*		M	48	6ST + 42A	48	54			ACN=48	Mexico	U-70
Xenotoca	*melanosoma*			48	8ST + 40A	48	56			ACN=48	Mexico	U-70
Xenotoca	*variata*			48	4ST + 44A	48	52			ACN=48	Mexico	U-70
Zoogoneticus	*quitzeoensis*			28	22M + 6 ST/A	50					Mexico (Pacific side)	B-63

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Poeciliidae												
Aplocheilichthyinae												
Aplocheilichthys	*hutereaui*	*schalleri*		48	28ST + 20A	48	76				Mozambique	S-31
Aplocheilichthys	*spilauchen*			48			(94)				Africa	S-24
Procatopodinae												
Micropanchax	*macrophthalmus*	*Aplocheilichthys*		48		48	(48)			ACN=48	Nigeria	S-24
Poropanchax	*normani*	*Aplocheilichthys*		48		48	(48)			ACN=48	Africa	S-24
Procatopus	*aberrans*			48			(96)				Nigeria, Cameroon	S-24
Procatopus	*similis*			48*			(96)				Nigeria, Cameroon	S-24
Poeciliinae												
Gambusia	*affinis affinis*	*affinis*	F	48	1M + 47A	49	49		(1.8* FCM)	ZW, ACN=49	Japan (Kochi)	I-16, O-48
Gambusia	*affinis affinis*	*affinis*	M	48	48A	48	48			ZZ, ACN=48	Japan (Kochi)	I-16
Gambusia	*affinis affinis*	*affinis*	F	48	1M + 2SM + 45A	51	51		(1.9 FCM)	ZW, ACN=49	USA (CA, TX)	C-47, G-85
Gambusia	*affinis affinis*	*affinis*	M	48	2SM + 46A	50	50			ZZ, ACN=48	USA (CA, TX)	C-47
Gambusia	*affinis affinis*		F	48	1M + 47A	49	49			ZW, ACN=49	USA (AL, MS, AR, MO)	B-39
Gambusia	*affinis affinis*		M	48	48A	48	48			ZZ, ACN=48	USA (AL, MS, AR, MO)	B-39
Gambusia	*affinis holbrooki*		F, M	48	48A	48	48		(1.5 FCM, 1.7 BFA)	ACN=48	USA (NC)	R-81, T-73, H-13
Gambusia	*affinis holbrooki*		F, M	48	48A	48	48			ACN=48	USA (NC, SC, FL, AL)	B-39
Gambusia	*affinis holbrooki*		F, M	48	48A	48	48			ACN=48	India (J & K)	S-53, K-103
Gambusia	*affinis holbrooki*		F, M	48	48A	48	48	4		ACN=48	Italy, Cyprus	L-66, V-68, R-100
Gambusia	*affinis holbrooki*		F, M	48	1SM + 47A	49	49			ACN=48	Italy (Palermo)	V-68
Gambusia	*affinis holbrooki*		F, M	48	2SM + 46A	50	50			ACN=48	Italy (Palermo)	V-68
Gambusia	*gaigei*		F	48	1M + 47A	49	49			ZW, ACN=48	USA (TX)	C-4
Gambusia	*gaigei*		M	48	48A	48	48			ZZ, ACN=48	USA (TX)	C-4
Gambusia	*hurtadoi*		F	48	1M + 47A	49	49			ZW, ACN=48	Mexico	C-4
Gambusia	*hurtadoi*		M	48	48A	48	48			ZZ, ACN=48	Mexico	C-4
Gambusia	*luma*		F, M	48	48A	48	48			ACN=48	Belize	W-26
Gambusia	*marshi*		F, M	42	42A	42	42			ACN=48	Mexico	C-4
Gambusia	*nobilis*		F	48	1M + 47A	49	49			ZW, ACN=48	USA (TX)	C-4
Gambusia	*nobilis*		M	48	48A	48	48			ZZ, ACN=48	USA (TX)	C-4
Gambusia	*puncticulata puncticulata*		F	48	5 M/SM + 43A	53	53			ACN=48	Cuba	R-7
Gambusia	*puncticulata puncticulata*		M	48	6 M/SM + 42A	54	54				Cuba	R-7
Gambusia	*regani*		F, M	48	48A	48	48			ACN=48	Mexico	C-4
Gambusia	*rhizophorae*		F, M	48	2M + 4SM + 42A	54	54			ACN=48	USA (FL)	W-26
Gambusia	*sexradiata*		F	48	48A	48	48			ACN=48	Belize	W-26
Gambusia	*vittata*		F, M	48	48A	48	48			ACN=48	Mexico	C-4
Gambusia	*xanthosoma*		F, M	48	2M + 4SM + 42A	54	54			ACN=48	Cayman Islands	W-26
Gambusia	sp.			48	48A	48	48				Tenerife	S-24
Girardinus	*falcatus*	*Glaridichthys*	F, M	48	48A	48	48			ACN=48	Cuba	R-7
Girardinus	*metallicus*			48	2SM + 46A	50	50				(Cuba)	F-67
Limia	*vittata*		M	46	46A	46	46		1.9 FD	ACN=48	Cuba	R-7, G-85
Phalloceros	*caudimaculatus*			48							Argentina	F-20

Table 6.28 Order CYPRINODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Poecilia	*formosa*			46	46A	46	46	2	1.9 FCM	ACN=48	Mexico (Tamaulipas)	G-8, L-82
Poecilia	*formosa*		F	69	69A	69	69	4	3.1 FCM	3X	Mexico (Tamaulipas)	G-8, L-82
Poecilia	*latipinna*			46		46			2.0 FCM, 1.9 FD		Mexico	K-73, L-82, G-85
Poecilia	*latipinna*		F	46	46A	46	46	1-4		ZW	Mexico	S-188
Poecilia	*latipinna*		M	46	46A	46	46	1-2		ZZ	Mexico	S-188
Poecilia	*latipunctata*		F, M	46	46 ST/A	46	46	8	1.8 FD	ACN=48	Mexico (Tamps)	G-7, G-85
Poecilia	*mexicana*			46					2.0 FCM, 1.5-1.8 FD		Mexico	G-7, G-85, L-82
Poecilia	*mexicana mexicana*		F, M	46	46A	46	46	4			Mexico	S-187
Poecilia	*mexicana mexicana*			69	69A	69	69		2.2 FD	3X	Mexico	S-187
Poecilia	*reticulata*	*Lebistes reticulatus*		46	46A	46	46		2.0 FCM, 1.5 FD	ACN=48	(Mexico)	I-16, C-109, V-86
Poecilia	*sphenops*	*Mollienesia*	F	46	1M + 45A	47	47			ZW	India	R-48
Poecilia	*sphenops*	*Mollienesia*	M	46	46A	46	46			ZZ	India	R-48
Poecilia	*sphenops*	*Mollienesia*	F, M	46	46A	46	46		(1.9 FD)	ACN=48	Japan	I-16, G-85
Poecilia	*velifera*			46							Mexico	G-7
Poecilia	*vivipara*			48	48A	48	48				Brazil	O-50
Poeciliopsis	*baenschi*			48	48A	48	48				(Mexico, Pacific)	F-67
Poeciliopsis	*latidens*			48					1.3 FD		Mexico	S-161, C-109
Poeciliopsis	*latidens*			72						3X	Mexico	S-161
Poeciliopsis	*lucida*			48					1.3 FCM, 1.4 FD	ACN=48	Mexico	S-161, C-109, G-85
Poeciliopsis	*monacha*			48					1.3 FCM, 1.3 FD		Mexico	S-183, C-109, G-85
Poeciliopsis	*occidentalis*			48					1.4 FD		(S. USA, N. Mexico)	S-207, C-109
Poeciliopsis	*viriosa*			48					1.4 FD		Mexico	S-183, C-109
Quintana	*atrizona*		F, M	48	48A	48	48			ACN=48	Cuba	R-7
Xenophallus	*umbratilis*			46	2SM + 44A	48	48				Costa Rica (Atlantic)	F-67
Xiphophorus	*helleri*		F, M	48	48A	48	48		1.9* FCM, 1.9 BFA	ACN=48	(C. America)	I-16, O-48, H-13
Xiphophorus	*helleri*		M	48	48A	48	48		1.5 FCM, 1.6 FD		(C. America)	O-4, G-85, T-72
Xiphophorus	*maculatus*		F, M	48	48A	48	48		(1.8* FCM, 1.9 BFA)	ACN=48	(C. America)	I-16, O-48, H-13
Xiphophorus	*maculatus*			48	48A	48	48		1.5 FCM	XY/XX	(C. America)	C-55, S-24, T-72
Xiphophorus	*montezumae*		F	48	48A	48	48		1.5 FCM	ACN=48	(Mexico)	L-75, T-72
Xiphophorus	*xiphidium*		M	48	48A	48	48			ACN=48	(Mexico)	L-75
Valenciidae												
Valencia	*hispanica*			48			(92)				(Spain)	S-24

Table 6.29 Order STEPHANOBERYCIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Melamphaidae												
Melamphaes	*acanthomus*		M	48	48A	48	48			ACN=48	USA (off CA)	C-46
Melamphaes	*parvus*		M	50	50A	50	50			XY, ACN=50	USA (off CA)	C-48
Poromitra	*crassiceps*		M	58	56 M/SM/ST/A + 2 satellited chrom.						USA (off CA)	C-46
Scopeloberyx	*robustus*		M	42	40A + 2 satellited chrom.					XY, ACN=44	USA (off CA)	C-46, C-48
Scopelogadus	*mizolepis bispinosus*		M	46	46A	46	46			XY, ACN=48	USA (off CA)	C-46, C-48

Table 6.30 Order BERYCIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Trachichthyoidei												
Anoplogasteridae												
Anoplogaster	*cornuta*		M	48	2SM + 46A	50	50			ACN=50	USA (off CA)	C-46
Diretmidae												
Diretmus	*argenteus*		M	44-46	2 macro. + 42-44 normal						Atlantic	P-74
Diretmus	sp. C		M	70±							Atlantic	P-74
Monocentridae												
Monocentris	*japonica*			48	48A	48	48			ACN=48	Japan (Chiba)	A-67
Monocentris	*japonica*			48	2ST + 46A	48	50			ACN=48	Japan (Suruga Bay)	M-104
Trachichthyidae												
Hoplostethus	*mediterraneus*			48	2ST + 46A	48	50			ACN=48	Japan (Suruga Bay)	M-104
Suborder Berycoidei												
Berycidae												
Beryx	*splendens*		F	48	4M + 8SM + 36A	60	60	2	1.7* FCM	$X_1X_1X_2X_2$, ACN=48	Japan (Izu Peninsula)	O-43, O-48
Beryx	*splendens*		M	47	5M + 8SM + 34A	60	60			X_1X_2Y, ACN=48	Japan (Izu Peninsula)	O-43

Table 6.30 Order BERYCIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Holocentroidei												
Holocentridae												
Holocentrus	*adscensionis*			50			78		1.3 FD, 1.8 BFA		Brazil (CE, RN)	G-12, G-85, H-13
Myripristis	*jacobus*			48		48	48				Brazil (RN, SPR)	G-12
Sargocentron	*rubrum*	*Adioryx ruber*		48	48A	48	48			ACN=48	Japan (Yakushima Is.)	A-67

Table 6.31 Order ZEIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Zeioidei												
Oreosomatidae												
Allocyttus	*verrucosus*			42	42A	42	42			ACN=48	Japan (Hokkaido)	S-140
Zeidae												
Zeus	*faber*		F	44	44A	44	44	2		ACN=46	Italy (Palermo)	V-57, V-64
Zeus	*faber*		M	42	1ST + 41A	42	43	2		Y chrom., ACN=46	Italy (Palermo)	V-64

Table 6.32 Order GASTEROSTEIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Gasterosteoidei												
Gasterosteidae												
Apeltes	*quadracus*		F	46	12M + 19SM + 15 ST/A	77				ZW, ACN=46	USA (ME)	C-50
Apeltes	*quadracus*		M	46	12M + 20SM + 14 ST/A	78			(1.2 BFA)	ZZ, ACN=46	USA (ME)	C-50, H-13
Culaea	*inconstans*		F, M	46	8SM + 38A	54	54		1.3 FIA, 1.3 BFA	ACN=46	USA (NY)	C-50, H-13, H-40
Gasterosteus	*aculeatus*		F, M	42	6M + 6SM + 30 ST/A	54			(1.4 BFA)	XX/XY, ACN=42	USA (ME)	C-50, H-13, P-97
Gasterosteus	*aculeatus*		F, M	42	8M + 12SM + 14ST + 8A	62	76	2	(1.2 FCM)	ACN=42	Germany	K-75, V-86
Gasterosteus	*aculeatus aculeatus*			42	16 M/SM + 10ST + 16A	58	68			XX/XY, ACN=42	Japan (Fukui)	M-93, M-94, P-97
Gasterosteus	*aculeatus microcephalus*			42	16 M/SM + 10ST + 16A	58	68			ACN=42	Japan (Gifu)	M-93
Gasterosteus	*wheatlandi*		F, M	42	4M + 6SM + 32 ST/A	52				XX/XY, ACN=42	USA (ME)	C-50, P-97
Pungitius	*platygaster*			42							Russia	V-72
Pungitius	*pungitius*		F, M	42	16M + 12SM + 14A	70	70			ACN=42	USA (ME)	C-50
Pungitius	*pungitius*		F, M	42	14M + 12SM + 8ST + 8A	68	76	2		ACN=42	Germany	K-75
Pungitius	*pungitius*	Kitanotomiyo		42	12 M/SM + 10ST + 20A	54	64			ACN=42	Japan	M-94
Pungitius	*pungitius*	Kitanotomiyo	F	42	2M + 8 SM/ST + 32A		52			ACN=42	Japan (Hokkaido)	S-134
Pungitius	*sinensis*			42	8 M/SM + 8ST + 26A	50	58			ACN=42	Japan (Fukui)	M-93, M-94
Pungitius	*tymensis*			42	12 M/SM + 10ST + 20A	54	64			ACN=42	Japan	M-94
Pungitius	sp.	Musashitomiyo		42	12 M/SM + 10ST + 20A	54	64			ACN=42	Japan	M-94
Pungitius	sp.	Musashitomiyo		42	2M + 8 SM/ST + 32A		52			ACN=42	Japan (Saitama)	S-134
Suborder Syngnathoidei												
Macroramphosidae												
Macroramphosus	*gracilis*	*japonicus*		48	48A	48	48	2		ACN=48	Japan (Suruga Bay)	M-107
Macroramphosus	*scolopax*	*sagifue*		48	48A	48	48	2		ACN=48	Japan (Suruga Bay)	M-107
Syngnathidae												
Hippocampinae												
Hippocampus	*guttulatus*		M	44	2 M/SM + 42A	46	46	2	0.9 FCM	ACN=44	Italy (Venice)	V-70
Hippocampus	*hippocampus*		M	48	10ST + 38A	48	58	2	1.0 FCM	ACN=48	Italy (Venice)	V-70
Hippocampus	*hippocampus*?	*hippocampus*	F, M	44	2M + 42A	46	46				Italy (Palermo)	V-56
Hippocampus	*ramulosus*		F, M	48	48A	48	48			ACN=48	Italy (Palermo)	V-56
Syngnathinae												
Doryichthys	*boaja*	*Microphis*		36	4M + 4SM + 6ST + 22A	44	50			ACN=42	Thailand	D-20
Nerophis	*ophidion*		M	58	50 M/SM + 8ST	108	116	3	3.6 FCM	4X, fresh water	Italy (Venice)	V-70
Syngnathus	*abaster*		M	44	44A	44	44	2-4	1.0 FCM	ACN=44, marine	Italy (Venice)	V-70
Syngnathus	*typhle*		M	44	44A	44	44	4	1.1 FCM	ACN=44, marine	Italy (Venice)	V-70

Table 6.33 Order BATRACHOIDIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Batrachoididae												
Amphichthys	*cryptocentrus*			46	4M + 2SM + 40A	52	52			ACN=48	Venezuela	N-24
Batrachoides	*manglae*			46	6M + 6SM + 34A	58	58			ACN=48	Venezuela	N-24
Batrachoides	*pacifici*		F, M	46	6M + 6SM + 34A	58	58			ACN=48	Panama (Pacific coast)	N-23
Halobatrachus	*didactylus*		F, M	46	8M + 12SM + 26 ST/A	66		2		ACN=48	Spain (Bay of Cadiz)	P-3
Porichthys	*notatus*		F	48	10M + 20SM + 18A	78	78		4.4 BFA		E. Pacific	C-46, H-13
Porichthys	*plectrodon*		F, M	44	8M + 10SM + 6ST + 20A	62	68	2		ACN=48	Venezuela	N-26
Porichthys	*porosissimus*		F, M	44	14 M/SM + 30 ST/A	58		1-3	3.4 BFA	ACN=48	Brazil (RJ)	B-58, H-13
Thalassophryne	*maculosa*		F, M	46	8M + 6SM + 32 ST/A	60				ACN=48	Venezuela	N-24
Thalassophryne	*maculosa*		F, M	46	12M + 6SM + 20ST + 8A	64	84	2		ACN=48	Venezuela	N-27
Thalassophryne	*nattereri*		F, M	46	8M + 8SM + 24ST + 6A	62	86	2		ACN=48	Brazil (RN)	C-106

Table 6.34 Order SYNBRANCHIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Mastacembeloidei												
Mastacembelidae												
Macrognathus	*aculeatum*		M	48	8M + 2SM + 38A	58	58			ACN=48	India (WB)	M-26
Macrognathus	*aculeatum*		F, M	48	8M + 2SM + 38A	58	58			ACN=48	India (Bihar)	K-42
Macrognathus	*aculeatum*		F, M	48	10M + 38A	58	58	2			India (Haryana)	R-76
Macrognathus	*aculeatum*		F	48							India (Portonovo)	N-13
Macrognathus	*pancalus*	*Mastacembelus*	F, M	48	14M + 12SM + 14ST + 8A	74	88			ACN=48	India (Bihar)	K-42
Macrognathus	*pancalus*	*Mastacembelus*	F	48	16M + 6SM + 8ST + 18A	70	78			ACN=48	India (WB)	M-26
Mastacembelus	*armatus*		F, M	48	14M + 2SM + 4ST + 28A	64	68	2		ACN=48	China (Guangdong, Guilin)	Y-15
Mastacembelus	*armatus*		F	48	10M + 4SM + 2ST + 32A	62	64	2			India (WB)	M-28, D-34
Mastacembelus	*armatus*		F, M	48	10M + 6SM + 4ST + 28A	64	68	2	1.4 FD	ACN=48	(Asia)	O-57
Sinobdella	*sinensis*	*Mastacembelus aculeatus*	F	48	16M + 4SM + 2ST + 26A	68	70		(1.8* FD)	XX, ACN=48	China (Guilin)	Y-15, C-83
Sinobdella	*sinensis*	*Mastacembelus aculeatus*	M	48	15M + 4SM + 3ST + 26A	67	70			XY, ACN=48	China (Guilin)	Y-15
Sinobdella	*sinensis*	*Mastacembelus aculeatus*	F, M	48	16M + 4SM + 28A	68	68			XX/XY	China (Hubei)	L-55

Table 6.34 Order SYNBRANCHIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Synbranchoidei												
Synbranchidae												
Monopterus	*albus*	*Fluta alba*	F, M	24	24A	24	24			ACN=24	Japan (Nara)	K-65
Monopterus	*albus*			24	24A	24	24		(1.3*, 1.6 FD)	ACN=24	China (Hubei)	L-39, C-83
Monopterus	*albus*			24	24A	24	24			ACN=24	China	L-61, Y-12
Monopterus	*albus*	*alba*	F	24	24A	24	24			ACN=24	India (Manipur)	R-56, R-64
Monopterus	*cuchia*	*Amphipnous*		42	2M + 4SM + 14ST + 22A	48	62				India (WB)	K-46
Monopterus	*cuchia*	*Amphipnous*	F, M	42	4SM + 38A	46	46			ACN=42	India (Assam)	R-64
Ophisternon	*bengalense*	*Synbranchus bengalensis*	F	46	6 M/SM + 40A	52	52				India (Portonovo)	N-13
Synbranchus	*marmoratus*		F, M	44	4 M/SM + 40 ST/A	48		4		0-2 B	Argentina	S-10, C-98
Synbranchus	*marmoratus*		F	44	4 M/SM + 40 ST/A	48		2		ACN=48	Brazil (CE, SP)	F-57
Synbranchus	*marmoratus*		F, M	42	4 M/SM + 38 ST/A	46		2		ACN=48	Brazil (MS, GO, SP)	F-57
Synbranchus	*marmoratus*			46	6 M/SM + 40 ST/A	52		2			Brazil (SP)	F-57
Synbranchus	*marmoratus*			42	4M + 6SM + 8ST + 24A	52	60		7.6-8.5 FD	ACN=48	Brazil (SP)	T-75
Synbranchus	*marmoratus*			42	4M + 2SM + 8ST + 28A	48	56		6.6-7.4 FD	ACN=48	Brazil (PR)	T-75
Synbranchus	*marmoratus*			42	4M + 2SM + 8ST + 28A	48	56		6.6 FD	ACN=48	Brazil (MS)	T-75
Synbranchus	*marmoratus*			44	4M + 2SM + 8ST + 30A	50	58		7.9 FD	ACN=48	Brazil (SP)	T-75
Synbranchus	*marmoratus*			46	4M + 2SM + 8ST + 32A	52	60		6.4 FD	ACN=48	Brazil (PR)	T-75
Synbranchus	*marmoratus*			46	6M + 2SM + 6ST + 32A	54	60		5.6 FD	ACN=48	Brazil (MS)	T-75

Table 6.35 Order SCORPAENIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Dactylopteroidei												
Dactylopteridae												
Dactylopterus	*volitans*			48	16M + 14SM + 6ST + 12A	78	84				Brazil (RJ)	B-86
Suborder Scorpaenoidei												
Scorpaenidae												
Sebastinae												
Helicolenus	*dactylopterus*		F, M	48	2M + 46A	50	50			ACN=48	Italy (Palermo)	V-54
Helicolenus	*dactylopterus*		F, M	47	3M + 44A	50	50			ACN=48	Italy (Palermo)	V-54
Helicolenus	*hilgendorfi*			48			52				Japan	Y-22
Sebastes	*hubbsi*		M	46	4M + 42A	50	50			ACN=48	Japan (Sanriku)	I-4, N-33
Sebastes	*hubbsi*			48	3M + 2ST + 43A	51	53				China	Z-23
Sebastes	*inermis*			48	2M + 46A	50	50			ACN=48	Japan	N-33
Sebastes	*inermis*			48			50		(1.9* FCM)		Japan	Y-22, O-48
Sebastes	*iracundus*		M	48							W.N. Pacific	I-12
Sebastes	*joyneri*			48	2M + 46A	50	50			ACN=48	Japan (Izu)	I-4
Sebastes	*longispinis*			48	2M + 46A	50	50			ACN=48	Japan	N-33
Sebastes	*matsubarae*			48			50				Japan	Y-22
Sebastes	*oblongus*		F, M	48	2SM + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
Sebastes	*pachycephalus nudus*		F, M	48	2M + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
Sebastes	*schlegeli*			48	2M + 2ST + 44A	50	52			ACN=48	Japan	N-33
Sebastes	*schlegeli*		M	48	2M + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
Sebastes	*schlegeli*			48	2M + 2SM + 44A	52	52			ACN=48	China (Liaoning)	Z-15
Sebastes	*schlegeli*		F, M	48	2M + 46A	50	50	2		ACN=48	China (Shandong)	Y-18, W-8
Sebastes	*taczanowskii*		M	48	2M + 46A	50	50			ACN=48	Japan (Hokkaido)	S-15
Sebastes	*thompsoni*		F	48	2SM + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
Sebastes	*trivittatus*		M	48	2M + 46A	50	50			ACN=48	Japan (Hokkaido)	I-4
Sebastes	*vulpes*			48	2M + 46A	50	50			ACN=48	Japan (Hokkaido)	I-4
Sebastiscus	*albofasciatus*			48			52				Japan	Y-22
Sebastiscus	*marmoratus*			48	2M + 46A	50	50		(1.8* FCM)	ACN=48	Japan	N-33, Y-22, O-48
Sebastiscus	*marmoratus*			48	2SM + 46A	50	50			ACN=48	China	P-4
Sebastiscus	*marmoratus*		F, M	48	2M + 46A	50	50		1.6* FCM	ACN=48	Korea (Busan)	P-70
Sebastolobus	*macrochir*		M	46							Okhotsk Sea	I-12

Table 6.35 Order SCORPAENIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scorpaeninae												
Dendrochirus	*zebra*		F, M	48	4M + 6ST + 38A	52	58	2		ACN=48	Indonesia (Java)	C-23
Pterois	*lunulata*			48	2M + 10SM + 18 ST + 18A	60	78			ACN=48	Japan	N-33
Pterois	*lunulata*		F, M	48	2M + 12ST + 34A	50	62	2		ACN=48	Indonesia (Java)	C-23
Pterois	*radiata*		F, M	48	4M + 8ST + 36A	52	60	2		ACN=48	Indonesia (Java)	C-23
Pterois	*volitans*			48	2M + 10ST + 36A	50	60	2	2.0 FIA	ACN=48	Indonesia (Java)	C-23, H-41
Scorpaena	*brasiliensis*		F, M	46	2M + 12SM + 32 ST/A	60		2	2.8 BFA	ACN=48	Brazil (RJ)	C-78, H-13
Scorpaena	*isthmensis*		F, M	40	6M + 8SM + 26 ST/A	54		2		ACN=46	Brazil (RJ)	C-78
Scorpaena	*izensis*			48			56				Japan	Y-22
Scorpaena	*miostoma*	*neglecta miostoma*		48			82				Japan	Y-22
Scorpaena	*miostoma*	*neglecta miostoma*		48	6SM + 22ST + 20A	54	76			ACN=48	Japan (Suruga Bay)	M-118
Scorpaena	*notata*		F, M	34	26ST + 8A	34	60	2			Italy (Senigallia)	C-16
Scorpaena	*notata*			34	24ST + 10A	34	58	2	1.1 FD	ACN=48	Spain (Malaga)	T-34
Scorpaena	*notata*	*ustulata*		34	10 M/SM + 24 ST/A	44					Croatia	S-195
Scorpaena	*onaria*	*neglecta neglecta*		48	6SM + 32ST + 10A	54	86			ACN=48	Japan (Suruga Bay)	M-118
Scorpaena	*onaria*	*neglecta neglecta*		47	7SM + 32ST + 8A	54	86				Japan (Suruga Bay)	M-118
Scorpaena	*onaria*	*neglecta neglecta*		48	6M + 14SM + 18ST + 10A	68	86			ACN=48	Japan	N-33
Scorpaena	*onaria*	*neglecta neglecta*		47	7M + 14SM + 18ST + 8A	68	86			ACN=48	Japan	N-33
Scorpaena	*onaria*	*neglecta neglecta*		48			56				Japan	Y-22
Scorpaena	*porcus*		F, M	42	4M + 2SM + 10ST + 26A	48	58	2	(2.8 FCM)	ACN=46	Italy (Senigallia)	C-16, V-86
Scorpaena	*porcus*			42	6M + 10ST + 26A	48	58	2	1.8 FD	ACN=46	Spain (Malaga)	T-34, C-9
Scorpaena	*porcus*		M	42	6M + 10ST + 26A	48	58				Italy (Roma)	C-31
Scorpaena	*porcus*			42	16 M/SM + 26A	58	58				Croatia	S-195
Scorpaena	*scrofa*			46	20ST + 26A	46	66				Italy	T-34
Scorpaenodes	*littoralis*		F	36	32 M/SM + 2ST + 2A	68	70	2			Japan (Chiba)	A-54, T-6
Scorpaenodes	*littoralis*			36	32M + 2ST + 2A	68	70				Japan (Suruga Bay)	M-118
Scorpaenopsis	*cirrosa*	*cirrhosa*		48	4ST + 44A	48	52			ACN=48	Japan (Suruga Bay)	M-118
Scorpaenopsis	*gibbosa*		M	48	10ST + 38A	48	58	2		ACN=48	Indonesia (Java)	C-23
Tetraroginae												
Paracentropogon	*rubripinnis*	*Hypodytes*		48	4 M/SM + 44 ST/A	52			(2.1* FCM)	ACN=48	Japan (Chiba, Kanagawa)	A-54, O-48
Paracentropogon	*rubripinnis*	*Hypodytes*	F	48	2M + 46A	50	50			$X_1X_1X_2X_2$	S. Japan	U-41
Paracentropogon	*rubripinnis*	*Hypodytes*	M	47	3M + 44A	50	50			X_1X_2Y, ACN=48	S. Japan	U-41
Tetraroge	*niger*		M	50							India (Portonovo)	N-13

Table 6.35 Order SCORPAENIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Synanceiinae												
Inimicus	*japonicus*			48	10M + 4SM + 2ST + 32A	62	64			ACN=48	Japan	N-33
Suborder Platycephaloidei												
Triglidae												
Chelidonichthys	*lucernus*	*Trigla lucerna*	F, M	48	2M + 2SM + 2ST + 42A	52	54			ACN=48	Italy (Palermo)	V-54
Chelidonichthys	*lucernus*	*Trigla lucerna*	F, M	47	3M + 2SM + 2ST + 40A	52	54			ACN=48	Italy (Palermo)	V-54
Chelidonichthys	*lucernus*	*Trigla lucerna*		48	2M + 4SM + 2ST + 40A	54	56	2		ACN=48	Italy (Senigallia)	C-16
Chelidonichthys	*lucernus*	*Trigla lucerna*		47	3M + 4SM + 2ST + 38A	54	56	2		ACN=48	Italy (Senigallia)	C-16
Chelidonichthys	*lucernus*	*Trigla lucerna*		48							Russia	V-72
Prionotus	*punctatus*			100-102		100-102					Brazil (RJ)	B-86
Trigloporus	*lastoviza*		F, M	48	6M + 4ST + 38A	54	58	2		ACN=48	Italy (Palermo)	C-16
Platycephalidae												
Inegocia	*guttata*			48	20M + 10SM + 6ST + 12A	78	84			ACN=48	Japan (Izu)	I-2
Onigocia	*macrolepis*			48	48A	48	48			ACN=48	Japan (Izu)	I-2
Onigocia	*spinosa*			48	32M + 12SM + 4ST	92	96			ACN=48	Japan (Izu, Tokyo)	I-2
Platycephalus	sp. 2	*indicus*		48	2SM + 6ST + 40A	50	56			ACN=48	Japan (Iwate)	I-2
Platycephalus	*indicus*			48	2M + 8SM + 2ST + 36A	58	60	2	(1.6 FIA)	ACN=48	China (Shandong)	K-96, H-41
Platycephalus	*indicus*			48	4M + 6SM + 2ST + 36A	58	60			ACN=48	China (Shandong)	Z-37
Platycephalus	*indicus*			48	10 M/SM + 38 ST/A	58					India (Portonovo)	N-13
Platycephalus	*indicus*	*Thysanophrys*	F	48	2SM + 10ST + 36A	50	60			ACN=48	India (Orissa)	C-61
Platycephalus	*tuberculatus*			48	4M + 4SM + 6ST + 34A	56	62			ACN=48	India (WB)	N-17
Thysanophrys	*chiltonae*			48	22M + 12SM + 10ST + 4A	82	92			ACN=48	Japan (Okinawa)	I-2
Suborder Anoplopomatoidei												
Anoplopomatidae												
Erilepis	*zonifer*			30	22M + 6SM + 2ST	58	60				N. Pacific	I-21
Erilepis	*zonifer*			30	22M + 6SM + 1ST + 1A	58	59				N. Pacific	I-21
Erilepis	*zonifer*			30	18M + 4SM + 4ST + 4A	52	56				N. Pacific	I-21
Erilepis	*zonifer*			30	18M + 2SM + 4ST + 6A	50	54				N. Pacific	I-21

Table 6.35 Order SCORPAENIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Hexagrammoidei												
Hexagrammidae												
Hexagrammos	*agrammus*	*Agrammus*		48	8M + 26SM + 14ST	82	96			ACN=48	Japan (Hokkaido)	M-51
Hexagrammos	*agrammus*	*Agrammus*	F, M	48	8M + 26SM + 14ST	82	96			ACN=48	China (Liaoning)	Z-15
Hexagrammos	*lagocephalus*			48	2M + 6SM + 28ST + 12A	56	84			ACN=48	Japan (Hokkaido)	M-51
Hexagrammos	*otakii*			48	6M + 12SM + 22ST + 8A	66	88		(1.7* FCM)	ACN=48	Japan (Yamaguchi)	N-36, O-48
Hexagrammos	*otakii*		F, M	48	6M + 8SM + 12ST + 22A	62	74			ACN=48	China (Liaoning)	Z-15
Hexagrammos	*otakii*		F, M	48	6M + 16SM + 20ST + 6A	70	90	2		ACN=48	China (Shandong)	Y-18
Hexagrammos	*otakii*			48	6M + 20SM + 16ST + 6A	74	90				China	W-8
Hexagrammos	*stelleri*		F	48	4M + 12SM + 12ST + 20A	64	76			ACN=48	Japan (Hokkaido)	M-51
Pleurogrammus	*azonus*			48	18M + 8SM + 12ST + 10A	74	86			ACN=48	Japan (Hakodate)	M-51
Suborder Cottoidei												
Cottidae												
Alcichthys	*alcicornis*		F, M	48	2M + 6SM + 40 ST/A	56			1.5 FD	ACN=48	Japan (Iwate)	T-64
Artedius	*fenestralis*		M	48	10M + 10SM + 10ST + 18A	68	78			ACN=48	USA (WA)	I-7
Artedius	*lateralis*		M	48	8M + 12SM + 12ST + 16A	68	80			ACN=48	USA (WA)	I-7
Batrachocottus	*baicalensis*		M	48	6M + 6SM + 36 ST/A	60				ACN=50	Russia (Lake Baikal)	S-167, S-168
Batrachocottus	*multiradiatus*		F, M	48	12M + 8SM + 18ST + 10A	68	86			ACN=48	Russia (Lake Baikal)	S-167, S-168
Clinocottus	*analis*			48*					1.9 BFA		USA (CA)	C-46, H-13
Cottocomephorus	*grewingkii*		F, M	48	10M + 6SM + 32 ST/A	64				ACN=48	Russia (Lake Baikal)	S-168
Cottocomephorus	*inermis*		M	48	6M + 8SM + 34 ST/A	62				ACN=48	Russia (Lake Baikal)	S-168
Cottus	*gobio*		F, M	48	10 M/SM + 38 ST/A	58		4		ACN=48	Italy (Vicenza)	V-62
Cottus	*gobio*		F, M	48	6 M/SM + 42 ST/A	54					Bosnia-Herzegovina	B-24
Cottus	*gobio*			52	6 M/SM + 46A	58	58				Poland	S-107
Cottus	*hangiongensis*		F	48	6 M/SM + 42 ST/A	54				ACN=48	Japan (Hokkaido)	A-1
Cottus	*kazika*		F, M	40	18 M/SM + 22 ST/A	58				ACN=48	Japan (Hokuriku)	A-4
Cottus	*nozawae*		F, M	48	10 M/SM + 38 ST/A	58				ACN=48	Japan (Hokkaido)	A-1
Cottus	*paulus*	*pygmaeus*		48		48					USA (AL)	G-32
Cottus	*poecilopus*			48	8 M/SM + 40A	56	56				Europe	S-107
Cottus	*pollux*		F, M	48	10 M/SM + 38 ST/A	58		2		ACN=48	Japan	A-4
Cottus	*pollux*		F, M	48	4M + 6SM + 16ST + 22A	58	74			ACN=48	Japan (Sanriku)	I-7
Cottus	*reinii*		F	48	12 M/SM + 36 ST/A	60				ACN=48	Japan (Iwate)	A-4

Table 6.35 Order SCORPAENIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Gymnocanthus	*intermedius*		F, M	44	2M + 4SM + 38 ST/A	50			1.5 FD	ACN=48	Japan (Iwate)	T-64
Gymnocanthus	*tricuspis*			46	4M + 42A	50	50		(1.5 FIA)		Russia	L-87, H-40
Gymnocanthus	*tricuspis*			46	3M + 1SM + 42A	50	50				Russia	L-87
Icelus	*cataphractus*		M	40	12M + 12SM + 16 ST/A	64			1.5 FD		Japan (Iwate)	T-64
Leocottus	*kesslerii*	*Cottus*	M	48	6 M + 4SM + 38 ST/A	58				ACN=48	Russia (Lake Baikal)	S-167, S-168
Myoxocephalus	*brandti*		F, M	44	2M + 18ST + 24A	46	64			ACN=44	Russia (Amur Bay)	R-103
Myoxocephalus	*jaok*		F, M	24	16M + 4SM + 4A	44	44			ACN=42	Russia (Far East)	R-113
Myoxocephalus	*ochotensis*		F, M	42	2M + 20ST + 20A	44	64			ACN=42	Russia (Sea of Okhotsk)	R-114
Myoxocephalus	*scorpius*			36	8M + 2SM + 2ST + 24A	46	48		1.7 FIA		Russia	V-72, H-40
Myoxocephalus	*scorpius*			37	7M + 2SM + 2ST + 26A	46	48				Russia	V-72
Myoxocephalus	*scorpius*			38	6M + 2SM + 2ST + 28A	46	48				Russia	V-72
Myoxocephalus	*stelleri*			40	6 M/SM + 34 ST/A	46		4		ACN=42	Russia (Far East)	M-67
Ocynectes	*maschalis*		F, M	46	4M + 6SM + 36 ST/A	56				ACN=46	Japan (Kanagawa)	A-72
Oligocottus	*maculosus*		F	48	14M + 14SM + 6ST + 14A	76	82			ACN=48	USA (WA)	I-7
Oligocottus	*snyderi*			48*							USA	C-46
Paracottus	*knerii*		F, M	48	8M + 6SM + 34 ST/A	62				ACN=48	Russia (Lake Baikal)	S-167, S-168
Pseudoblennius	*cottoides*		F	46	4M + 8SM + 34 ST/A	58				ACN=46	Japan (Kanagawa)	A-72
Pseudoblennius	*marmoratus*	Type A		46	4M + 8SM + 34 ST/A	58				ACN=48	Japan (Chiba, Kanagawa)	A-72
Pseudoblennius	*marmoratus*	Type B	F	46	4M + 7SM + 35 ST/A	57				ACN=48	Japan (Chiba, Kanagawa)	A-72
Pseudoblennius	*marmoratus*	Type C	M	46	4M + 6SM + 36 ST/A	56				ACN=48	Japan (Chiba, Kanagawa)	A-72
Pseudoblennius	*percoides*			46	10SM + 36 ST/A	56			1.1 FCM	ACN=48	Korea (Busan)	K-125
Trachidermis	*fasciatus*			40	24 M/SM + 16 ST/A	64				ACN=48	Japan (Fukuoka)	A-4
Trachidermis	*fasciatus*			40		60					China (Shanghai)	C-43
Triglopsis	*quadricornis*	*Tryglopsis*		32	12 M/SM + 20ST	44	64		1.8 FIA		Russia, White Sea	L-87, L-88, H-41
Comephoridae												
Comephorus	*baicalensis*		F	48	8M + 40 ST/A	56				ACN=48	Russia (Lake Baikal)	S-168
Comephorus	*dybowski*			48	2M + 2SM + 44 ST/A	52					Russia (Lake Baikal)	S-168

Table 6.35 Order SCORPAENIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Abyssocottidae												
Abyssocottus	*gibbosus*			48	10M + 12SM + 26 ST/A	70					Russia (Lake Baikal)	S-168
Abyssocottus	*korotneffi*		F, M	48	8M + 16SM + 14ST + 10A	72	86			ACN=48	Russia (Lake Baikal)	S-167, S-168
Asprocottus	*herzensteini*			48	10M + 10SM + 28 ST/A	68					Russia (Lake Baikal)	S-168
Asprocottus	*platycephalus*		F, M	48	8M + 10SM + 30 ST/A	66				ACN=48	Russia (Lake Baikal)	S-167, S-168
Cottinella	*boulengeri*		F	48	6M + 12SM + 30 ST/A	66				ACN=48	Russia (Lake Baikal)	S-167, S-168
Cyphocottus	*megalops*	*Limnocottus*	F, M	48	14M + 2SM + 32 ST/A	64				ACN=50	Russia (Lake Baikal)	S-167, S-168
Limnocottus	*bergianus*			48	8M + 12SM + 28 ST/A	68					Russia (Lake Baikal)	S-168
Limnocottus	*griseus*			48	8M + 12SM + 28 ST/A	68					Russia (Lake Baikal)	S-168
Limnocottus	*pallidus*			48	8M + 14SM + 26 ST/A	70					Russia (Lake Baikal)	S-168
Procottus	*major*		F, M	48	10M + 16SM + 22 ST/A	74				ACN=48	Russia (Lake Baikal)	S-167, S-168
Hemitripteridae												
Hemitripterus	*villosus*			46	20M + 16SM + 10A	82	82			ACN=46	China (Liaoning)	M-36
Agonidae												
Agonus	*cataphractus*			48							Russia	V-72
Cyclopteridae												
Cyclopterus	*lumpus*			50	8SM + 12ST + 30A	58	70			ACN=50	Canada (Atlantic)	L-33
Cyclopterus	*lumpus*			50		54					Russia (White Sea)	L-88

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Percoidei												
Ambassidae (= Chandidae)												
Chanda	*nama*			48	12ST + 36A	48	60			ACN=48	India	Z-20
Chanda	*nama* ?	*Ambassis nama*	F, M	40	2M + 12SM + 26A	54	54			ACN=46	India (Orissa)	T-53
Chanda	*nama*		F	48	2SM + 46A	50	50			ACN=48	India (WB)	K-34
Parambassis	*siamensis*	*Chanda*		40	4M + 6ST + 30A	44	50			ACN=48	Thailand	D-20
Parambassis	*wolffii*			48	48A	48	48				Thailand	D-28
Pseudambassis	*ranga*	*Chanda*	M	44	4M + 40A	48	48			ACN=46	India (Orissa)	K-41
Pseudambassis	*ranga*	*Chanda*		48	2ST + 46A	48	50			ACN=48	India	Z-20
Apogonidae												
Apogon	*binotatus*			36	14 M/SM + 22 ST/A	50				ACN=46	USA (FL)	R-109
Apogon	*binotatus*			36	26 M/SM + 10 ST/A	62				ACN=44	USA (WI)	R-109
Apogon	*binotatus*			35	14 M/SM + 21 ST/A	49				ACN=45	USA (FL)	R-109
Apogon	*doederleini*			46	2M + 6SM + 38 ST/A	54			2.4 FIA	ACN=46	Japan (Wakayama)	O-41, H-40
Apogon	*endekataenia*		M	46	46 ST/A	46			2.1 FIA		India (Andaman Is.)	R-45, H-41
Apogon	*endekataenia*			46	2M + 4SM + 16ST + 24A	52	68			ACN=46	Japan	M-111
Apogon	*imberbis*			36		56				ACN=46	Spain	A-32
Apogon	*lineatus*			46	2M + 4SM + 2ST + 38A	52	54			ACN=46	Japan	M-111
Apogon	*maculatus*			34	27 M/SM + 7 ST/A	61				ACN=44	Puerto Rico	R-110
Apogon	*moluccensis*		M	46	46 ST/A	46			2.1 FIA		India (Andaman Is.)	R-45, H-40
Apogon	*notatus*		F, M	46	2M + 4SM + 40 ST/A	52				ACN=46	Japan (Wakayama)	O-41
Apogon	*notatus*		F, M	46	2M + 5SM + 39 ST/A	53				ACN=46	Japan (Wakayama)	O-41
Apogon	*notatus*		F, M	46	2M * 4SM + 40 ST/A	52				ACN=46	Japan	O-41, M-111
Apogon	*pseudomaculatus*	*Apogon* (*Apogon*)		36	30 M/SM + 2ST + 4A	66	68			ACN=46	(Puerto Rico)	R-79, R-110
Apogon	*semilineatus*			46	2M + 4SM + 20ST + 20A	52	72			ACN=46	Japan (Suruga Bay)	M-101
Apogon	*semilineatus*			46	2M + 6SM + 38 ST/A	54				ACN=46	Japan (Wakayama)	O-41
Nectamia	*fusca*	*Apogon nubilus*		46	2M + 44 SM/ST/A				2.6 FIA	ACN=46	(Pacific)	R-79, H-41
Phaeoptyx	*pigmentaria*			38	6M + 32 SM/ST/A					ACN=46	(Atlantic)	R-79
Sphaeramia	*orbicularis*	*Apogon*		46	4SM + 42 ST/A	50				ACN=46	(Indo-West Pacific)	O-41

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Bramidae												
Brama	*japonica*		F, M	54							N. Pacifuc	Y-3
Carangidae												
Alectis	*ciliaris*			48	48A	48	48			ACN=48	Japan (Izu Peninsula)	M-97
Alepes	*djedaba*	*Selar kalla*	F, M	56	56A	56	56			ACN=56	India (Orissa)	C-64
Alepes	*melanoptera*	*Selar malam*	F, M	48	2SM + 46A	50	50			ACN=48	India (Orissa)	C-64
Atropus	*atropos*	*atropus*	M	48	48A	48	48			ACN=48	India (Orissa)	D-3
Atule	*mate*	*Caranx*		50	14SM + 36A	64				ACN=50	USA (Hawaii)	L-8
Carangoides	*armatus*		M	48	2ST + 46A	48	50			ACN=48	India (Orissa)	D-3
Carangoides	*equula*	*Caranx*		48	2ST + 46A	48	50			ACN=48	Japan (Izu Peninsula)	M-97
Carangoides	*praeustus*	*proeustus*	M	48	10 M/SM + 38A	58	58			ACN=48	India (Orissa)	D-3
Caranx	*latus*			46	46A	46	46	2	1.2 FD		Brazil (RJ)	B-86
Caranx	*sansun*		F	48	2SM + 46A	50	50				India (Orissa)	P-16
Caranx	*sexfasciatus*			48	2ST + 46A	48	50			ACN=48	Japan (Izu Peninsula)	M-97
Chloroscombrus	*chrysurus*			48	48A	48	48		1.6 BFA		Brazil (RJ)	B-86, H-13
Megalaspis	*cordyla*		F	50	2ST + 48A	50	52			ACN=50	India (Orissa)	C-64
Scomberoides	*lysan*	*Chorinemus tolooparah*	M	48	4 M/SM + 44A	52	52			ACN=48	India (Orissa)	D-3
Selene	*setapinnis*			46	2SM + 44A	48	48				Brazil (RJ)	B-86
Selene	*vomer*			48	2ST + 46A	48	50	2		ACN=48	Brazil (SP)	R-108
Seriola	*dumerili*			48	2SM + 2ST + 44A	50	52	2	1.5 FIA	ACN=48	Italy (Sicily)	S-91, H-40
Seriola	*dumerili*			48	2SM + 46A	50	50			ACN=48	Italy (Sicily)	V-52
Seriola	*dumerili*			47	1M + 2SM + 44A	50	50			ACN=48	Italy (Sicily)	V-52
Seriola	*nigrofasciata*		F, M	48	48A	48	48		1.4 FD	ACN=48	India (Orissa)	T-53
Seriola	*quinqueradiata*			48	2SM + 2ST + 44A	50	52		1.7* FCM	ACN=48	Japan (Iwate)	I-1, O-48
Trachinotus	*carolinus*			48	8 M/SM + 40A	56	56	2		ACN=48	Brazil (SP)	R-108
Trachinotus	*falcatus*			48	10 M/SM + 38A	58	58	2	1.7 BFA	ACN=48	Brazil (SP)	R-108, H-13
Trachinotus	*goodei*			48	4 M/SM + 44A	52	52	2		ACN=48	Brazil (SP)	R-108
Trachinotus	*ovatus*		M	48	2M + 4SM + 42 ST/A	54				ACN=48	India (Orissa)	C-64
Trachurus	*japonicus*			48	4M + 14SM + 12ST + 18A	66	78			ACN=48	Japan (Izu Peninsula)	M-97
Trachurus	*mediterraneus ponticus*			48	4M + 6SM + 38 ST/A	58				ACN=48	Black Sea	V-5
Trachurus	*mediterraneus*			48	4M + 4SM + 14ST + 26A	56	70	2		ACN=48	Italy (Ancona)	C-14
Trachurus	*trachurus*		F, M	48	2SM + 46A	50	50	2		ACN=48	Italy (Ancona)	C-14

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Centracanthidae												
Spicara	*maena*	*smaris*		46	8M + 4SM + 2ST + 32A	58	60			ACN=48	Black Sea	V-4
Spicara	*maena*	*smaris*		45	9M + 4SM + 2ST + 30A	58	60			ACN=48	Black Sea	V-4
Spicara	*maena*	*smaris*		44	10M + 4SM + 2ST + 28A	58	60			ACN=48	Black Sea	V-4
Spicara	*maena*	*flexuosa*		46	8M + 4SM + 2ST + 32A	58	60			ACN=48	Black Sea	S-7, V-11
Spicara	*maena*	*flexuosa*		45	9M + 4SM + 2ST + 30A	58	60			ACN=48	Black Sea	S-7, V-11
Spicara	*maena*	*flexuosa*		44	10M + 4SM + 2ST + 28A	58	60			ACN=48	Black Sea	S-7, V-11
Spicara	*maena*			48	4M + 2SM + 10ST + 32A	54	64			ACN=48	Black Sea	S-7, V-4, V-11
Centrarchidae												
Acantharchus	*pomotis*		F, M	48	48A	48	48			ACN=48	USA (NC)	R-80
Ambloplites	*rupestris*		F, M	48	48A	48	48		2.3 FIA	ACN=48	USA (NC, WV)	R-80, H-40
Archoplites	*interruptus*		F	48	2ST + 46A	48	50			ACN=48	USA (CA)	B-83
Centrarchus	*macropterus*		F	48	48A	48	48			ACN=48	USA (NC)	R-80
Enneacanthus	*chaetodon*			48	48A	48	48			ACN=48	USA (NC)	R-80
Enneacanthus	*gloriosus*			48	48A	48	48			ACN=48	USA (NC)	R-80
Enneacanthus	*obesus*			48	48A	48	48			ACN=48	USA (NC)	R-80
Lepomis	*auritus*			48	48A	48	48		2.1 FD	ACN=48	USA (NC)	R-80
Lepomis	*cyanellus*			48	48A	48	48		(2.0 FD)	ACN=48	USA (NC)	O-6, R-80
Lepomis	*cyanellus*		F, M	46	2SM + 44A	48	48			ACN=48	USA (WV)	R-80
Lepomis	*cyanellus*		M	48	48A	48	48			ACN=48	USA (CA)	B-15
Lepomis	*cyanellus*		M	47	1M + 46A	48	48			ACN=48	USA (CA)	B-15
Lepomis	*cyanellus*		M	46	2SM + 44A	48	48			ACN=48	USA (CA)	B-15
Lepomis	*gibbosus*		F, M	48	48A	48	48		(1.9 FIA)	ACN=48	USA (NC, WV)	R-80, B-63, H-40
Lepomis	*gibbosus*			46	10M + 36 ST/A	56				ACN=48	(USA)	F-30
Lepomis	*gulosus*	*Chaenobryttus*		48	48A	48	48			ACN=48	USA (NC)	R-80
Lepomis	*humilis*			48					2.0 FD		USA	A-38
Lepomis	*humilis*			46	2SM + 44A	48	48			ACN=48	USA (KY)	R-80
Lepomis	*macrochirus*		F, M	48	48A	48	48		1.9* FCM, 1.9 FD	ACN=48	USA (WV)	R-80, B-63, O-48
Lepomis	*marginatus*			48	48A	48	48		2.2 FD	ACN=48	USA (NC)	R-80
Lepomis	*megalotis*			48	48A	48	48		2.1* FCM, 2.1 FD	ACN=48	USA (TN)	R-80, O-48
Lepomis	*microlophus*		M	48	48A	48	48		2.0 FD	ACN=48	USA (NC, VA)	R-80
Lepomis	*symmetricus*		F, M	40	8 M + 32 ST/A	48				ACN=48	USA (MS)	T-43
Lepomis	*symmetricus*		F, M	41	7M + 34 ST/A	48				ACN=48	USA (MS)	T-43

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Lepomis	*symmetricus*		F, M	39	9M + 30 ST/A	48				ACN=48	USA (MS)	T-43
Lepomis	*symmetricus*		M	38	10M + 28 ST/A	48				ACN=48	USA (MS)	T-43
Micropterus	*dolomieui*		M	46	2SM + 44A	48	48		2.0 FIA	ACN=48	USA (WV)	R-80, B-63, H-40
Micropterus	*punctulatus*		F, M	46	2 M/SM + 44 ST/A	48				sex chrom.	USA (TX)	T-40
Micropterus	*salmoides*		F, M	46	2 M/SM + 44A	48	48		2.0* FCM	ACN=48	USA (WV)	T-40, T-73, R-80, O-48
Micropterus	*treculi*		F, M	46	2 M/SM + 44 ST/A	48				sex chrom.	USA (TX)	T-40
Pomoxis	*annularis*			48	48A	48	48		2.1 FCM	ACN=48	USA (NC)	R-80
Pomoxis	*nigromaculatus*		F	48	48A	48	48			ACN=48	USA (NC, WV)	R-80
Centropomidae												
Centropomus	*parallelus*			48	48A	48	48	2			Brazil (RJ)	B-86
Chaetodontidae												
Chaetodon	*auriga*			48	48A	48	48		1.4 FIA	ACN=48	Japan (Okinawa)	A-61, H-40
Chaetodon	*auripes*	*collaris*		48	48A	48	48			ACN=48	Japan (Chiba, Kagoshima)	A-61
Chaetodon	*auripes*			48	48A	48	48		1.5* FCM		Japan	O-48
Chaetodon	*collare*			48	48A	48	48	2		ACN=48	India (Kerala)	N-65
Chaetodon	*lunula*			48	48A	48	48			ACN=48	Japan (Yakushima)	A-61
Chaetodon	*plebeius*	*Megaprotodon*		48	2M + 46A	50	50			ACN=48	Japan (Tanegashima)	A-61
Chaetodon	*sedentarius*			48		48					Brazil (ES)	G-12
Chaetodon	*striatus*		F, M	48	48A	48	48	2		ACN=48	Brazil (RN, BA)	A-7
Chaetodon	*strigangulus*	*Megaprotodon*		48	2SM + 46A	50	50			ACN=48	Japan (Okinawa)	A-61
Chaetodon	*trifasciatus*			48	48A	48	48			ACN=48	Japan (Okinawa)	A-61
Chaetodon	*vagabundus*			48	48A	48	48		1.7 FIA	ACN=48	Japan (Okinawa)	A-61, H-40
Heniochus	*acuminatus*			48	48A	48	48			ACN=48	Japan (Wakayama)	A-77
Echeneidae												
Remora	*remora*		M	42	42 ST/A	42					India (Andaman Is.)	R-45
Gerreidae												
Diapterus	*olithostomus*		F, M	48	48A	48	48	2		ACN=48	Brazil (RN)	M-121
Eucinostomus	*argenteus*		F, M	48	48A	48	48	2		ACN=48	USA (FL), Puerto Rico	R-96
Eucinostomus	*gula*		F, M	48	48A	48	48	2	1.6 BFA	ACN=48	USA (FL)	R-96, H-13
Eucinostomus	*harengulus*		F, M	48	48A	48	48	2		ACN=48	USA (FL)	R-96

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Eugerres	*plumieri*		F, M	48	48A	48	48	2		ACN=48	USA (FL)	R-96
Gerres	*filamentosus*	*Gerreis*		48	4M + 44A	52	52				India (WB)	K-46
Gerres	*oblongus*		M	50*					1.4* FCM		India (Andaman Is.)	R-45, O-48
Gerres	*oyena*			48	48 ST/A	48				ACN=48	Japan (Wakayama)	A-77
Haemulidae (= Pomadasyidae)												
Anisotremus	*moricandi*			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
Anisotremus	*surinamensis*			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
Anisotremus	*virginicus*			48	48A	48	48	2		ACN=48	Brazil (RN, RJ)	G-12, N-59
Conodon	*nobilis*			48	48A	48	48			ACN=48	Brazil (RN)	G-12
Haemulon	*aurolineatum*			48	48A	48	48		(1.5 FD)	ACN=48	Brazil (RN, RJ)	G-12, N-59
Haemulon	*aurolineatum*		F, M	48	48A	48	48	2		ACN=48	Venezuela	N-59
Haemulon	*bonariense*		F, M	48	48A	48	48	2		ACN=48	Venezuela	N-59
Haemulon	*flavolineatum*			48					(1.8 BFA)		Brazil (RN)	G-12, H-13
Haemulon	*flavolineatum*		F, M	48	48A	48	48	2	(1.3 FD)	ACN=48	Venezuela	R-106
Haemulon	*parra*			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
Haemulon	*plumierii*			48	48A	48	48	2	(2.0 BFA)	ACN=48	Brazil (RN)	G-12, N-59, H-13
Haemulon	*plumierii*		F, M	48	48A	48	48	2		ACN=48	Venezuela	N-59
Haemulon	*sciurus*			48	48A	48	48		(1.7 BFA)	ACN=48	W. Atlantic	R-41, H-13
Haemulon	*sciurus*			46	2 SM/ST + 44A		48		(1.2 FD)		W. Atlantic	R-41
Haemulon	*striatum*			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
Hapalogenys	*analis*	*mucronatus*		48	2M + 8SM + 14ST + 24A	58	72			ACN=48	China	Y-20
Hapalogenys	*nigripinnis*	*nitens*		48	2M + 8SM + 2ST + 36A	58	60			ACN=48	China	Y-20
Orthopristis	*ruber*		F, M	48	2SM + 46 ST/A	50		2		ACN=48	Brazil (RJ)	B-65
Pomadasys	*argenteus*	*hasta*		48	48A	48	48			ACN=48	India (WB)	K-139
Pomadasys	*corvinaeformis*			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
Pomadasys	*commersonnii*	*Pristipoma operculare*		48	48A	48	48			ACN=48	India (Bombay)	R-63
Kuhliidae												
Kuhlia	*boninensis*			48	2SM + 46A	50	50			ACN=48	Japan (Okinawa)	A-77
Kuhlia	*mugil*	*taeniura*		48	2SM + 46A	50	50			ACN=48	Japan (Chiba)	A-77

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Kyphosidae												
Girellinae												
Girella	*melanichthys*			48	48A	48	48	4		ACN=48	Japan (Yamaguchi)	N-29
Girella	*melanichthys*		F	48	48A	48	48	4		ACN=48	Japan (Wakayama)	U-38
Girella	*punctata*			48	48A	48	48	2		ACN=48	Japan (Wakayama)	U-83
Kyphosinae												
Kyphosus	sp.	*bigibbus*		48	2SM + 2ST + 44A	50	52		1.8* FCM		Japan	O-48
Kyphosus	*cinerascens*			48	2SM + 46A	50	50	2		ACN=48	Japan (Noto Peninsula)	T-21
Kyphosus	*vaigiensis*	*lembus*		48	2SM + 46A	50	50	2		ACN=48	Japan (Noto Peninsula)	T-21
Kyphosus	*bigibbus*	sp.		48	2SM + 46A	50	50	2		ACN=48	Japan (Noto Peninsula)	T-21
Microcanthinae												
Microcanthus	*strigatus*			48	2SM + 46A	50	50			ACN=48	Japan (Chiba)	A-61
Scorpidinae												
Labracoglossa	*argentiventris*		F, M	48	48A	48	48		1.8* FCM	ACN=48	Japan (Shizuoka)	M-103, O-48
Latidae												
Lates	*calcarifer*	*calcerifer*	M	48	2M + 6SM + 2ST + 38A	56	58		1.4 FIA	ACN=48	India (WB)	K-31, H-40
Lates	*calcarifer*	Centropomidae		48						ACN=48	India (Portonovo)	N-13
Psammoperca	*waigiensis*			48	48A	48	48	2		ACN=48	Thailand (Gulf of Siam)	U-39
Leiognathidae												
Gazza	*minuta*		F	48	48A	48	48			ACN=48	India (Orissa)	P-16
Leiognathus	*nuchalis*			48	48 ST/A	48				ACN=48	Japan (Suruga Bay)	A-77
Photopectoralis	*bindus*	*Leiognathus*	M	40	40 ST/A	40			1.3 FIA		India (Goa)	R-45, H-40
Lethrinidae												
Lethrinus	*nebulosus*			48	48A	48	48			ACN=48	China	Z-39
Lethrinus	*xanthochilus*			48	48A	48	48		2.8* FCM		Japan	O-48
Lobotidae												
Lobotus	*surinamensis*		F, M	48	2SM + 46A	50	50			ACN=48	India (Orissa)	T-53

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Lutjanidae												
Lutjanus	*alexandrei*		F, M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
Lutjanus	*analis*		M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
Lutjanus	*analis*			48	48A	48	48	2		ACN=48	Venezuela	N-70
Lutjanus	*argentimaculatus*			48	48A	48	48			ACN=48	China	C-12
Lutjanus	*argentimaculatus*		F, M	48	48A	48	48			ACN=48	India (Orissa)	P-16, K-46
Lutjanus	*bohar*			48	48A	48	48		2.4 FIA	ACN=48	China	C-12, H-40
Lutjanus	*cyanopterus*		M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
Lutjanus	*erythropterus*			48	48A	48	48			ACN=48	China	C-12, Y-26
Lutjanus	*griseus*		F, M	48	48A	48	48	2-4		ACN=48	Venezuela	N-70
Lutjanus	*jocu*		F, M	48	48A	48	48	4		ACN=48	Brazil (RN)	R-111
Lutjanus	*johnii*			48	48A	48	48			ACN=48	China (Zhanjiang)	L-81
Lutjanus	*kasmira*		M	48	48A	48	48			ACN=48	India (Orissa)	C-61
Lutjanus	*kasmira*		F, M	48	48A	48	48	2	2.9* FCM	ACN=48	Japan (Okinawa)	U-79
Lutjanus	*quinquelineatus*		F	48	48A	48	48	2	2.9* FCM	$X_1X_1X_2X_2$	Japan (Okinawa)	U-79
Lutjanus	*quinquelineatus*		M	47	1M + 47A	48	48	2	2.9* FCM	X_1X_2Y, ACN=48	Japan (Wakayama, Okinawa)	U-79
Lutjanus	*russelli*			48	48A	48	48	2	2.3 FIA	ACN=48	Thailand (Gulf of Siam)	U-38, H-40
Lutjanus	*sanguineus*		M	48	48A	48	48			ACN=48	India (Goa)	R-45
Lutjanus	*sebae*			48	48A	48	48		1.6 FIA	ACN=48	China (Hainan)	Y-26, H-41
Lutjanus	*synagris*		F, M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
Lutjanus	*synagris*	cytotype I	F, M	48	48A	48	48	2		ACN=48	Venezuela	N-70
Lutjanus	*synagris*	cytotype II		47	1M + 46A	48	48	2		ACN=48	Venezuela	N-70
Lutjanus	*vitta*			48	48A	48	48		2.0 FIA	ACN=48	China (Zhanjiang)	L-81, H-41
Ocyurus	*chrysurus*			48	48A	48	48		2.2 FD, 2.6 BFA		Brazil (RN)	G-12, H-13
Ocyurus	*chrysurus*			48	48A	48	48	2		ACN=48	Brazil (RN), Venezuela	R-111, N-76
Rhomboplites	*aurorubens*		F, M	48	2ST + 46A	48	50	2		ACN=48	Venezuela	N-76
Monodactylidae												
Monodactylus	*argenteus*		F, M	48	48A	48	48		(1.8 BFA)	ACN=48	(Asia)	S-129, H-13
Monodactylus	*argenteus*			48							India (Portonovo)	N-13
Monodactylus	*sebae*		M	47	1M + 46A	48	48			XO, ACN=48	W. Africa	S-129
Monodactylus	*sebae*		F	48	48A	48	48			XX, ACN=48	W. Africa	S-129

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Moronidae												
Dicentrarchus	*labrax*	Serranidae	F, M	48	48A	48	48	2		XX/XY	Spain (Malaga)	C-11
Dicentrarchus	*labrax*		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy (Tyrrhenian Sea)	V-63, C-31
Dicentrarchus	*labrax*			48	48 ST/A	48		1-2	(1.6 FCM)	ACN=48	Italy	S-90
Dicentrarchus	*labrax*	Serranidae		48	2SM + 46A	50	50	2			USSR (Black Sea)	A-90
Dicentrarchus	*punctatus*		F, M	48	48 ST/A	48		2		ACN=48	Egypt	S-90
Dicentrarchus	*punctatus*		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy (Palermo)	V-63
Lateolabrax	*japonicus*	Serranidae	F, M	48	48A	48	48	2		ACN=48	Japan (Shimane)	K-70, K-82, T-27
Lateolabrax	*japonicus*	Serranidae		48	48A	48	48			ACN=48	China (Shandong)	W-7, Y-20, Y-21
Lateolabrax	*japonicus*	sea bass	F, M	48	48A	48	48		1.7 FCM	ACN=48	Korea (Chungchongnam-do)	P-12
Lateolabrax	*latus*	Serranidae	F, M	48	2ST + 46A	48	50	2		ACN=48	Japan (Shimane)	K-70, K-82, T-27
Lateolabrax	sp.	spotted sea bass	F, M	48	48A	48	48		1.7 FCM	ACN=48	Korea (Chungchongnam-do)	P-12
Morone	*americana*	Serranidae		48	48A	48	48			ACN=48	E. USA	B-64
Morone	*saxatilis*			48	2SM + 8ST + 38A	50	58		(1.9 FIA, 1.8 BFA)	ACN=48	USA (NY)	R-27, H-13, H-41
Morone	*saxatilis*			48	2SM + 6ST + 40A	50	56			ACN=48	USA (NY)	R-27
Mullidae												
Mulloidichthys	*flavolineatus*			48	48A	48	48		1.2* FCM		Japan	O-48
Mullus	*argentinae*			44	2SM + 42A	46	46				Brazil	B-86
Mullus	*barbatus*			44	4 M/SM + 40A	48	48			ACN=48	Monaco	L-5
Mullus	*barbatus*			44	6 M/SM + 38A	50	50			ACN=48	Monaco	L-5
Mullus	*barbatus*		F, M	44	6 M/SM + 16ST + 22A	50	66			ACN=48	Italy (Palermo)	V-66
Mullus	*surmuletus*		F, M	48		50			1.3 FD		Spain (Malaga)	C-9
Mullus	*surmuletus*		F, M	44	8 M/SM + 16ST + 20A	52	68			ACN=48	Italy (Palermo)	V-66
Parupeneus	*spilurus*			44	8M + 8SM + 28 ST/A	60		2		ACN=48	Japan (Chiba)	A-74
Upeneus	*parvus*		F, M	44	8 M/SM + 36 ST/A	52				0-4 B, ACN=48	Brazil (RJ)	P-83
Upeneus	*tragula*		M	50	50 ST/A	50					India (Andaman Is.)	R-45
Nandidae												
Badinae												
Badis	*badis*			48	26 M/SM + 22A	74	74				India (Assam)	K-46
Badis	*badis*		F, M	46	10M + 4SM + 32A	60	60			ACN=48	India (Orissa)	T-53
Badis	*badis*		F, M	46	6M + 40A	52	52			ACN=48	India (Jammu)	S-54

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Nandinae												
Nandus	*nandus*		F	48	6M + 28SM + 14A	82	82			ACN=48	India (WB)	N-16
Nandus	*nandus*		F, M	48	4M + 36SM + 6ST + 2A	88	94			ACN=48	India (WB)	M-26
Nandus	*nandus*		F, M	48	4M + 30SM + 6ST + 8A	82	88	4		ACN=48	India (WB)	K-136
Nandus	*nandus*		M	48	4M + 18SM + 14ST + 12A	70	84			ACN=48	India (Jammu)	S-54
Nandus	*oxyrhynchus*			48	14M + 8SM + 6ST + 20A	70	76			ACN=48	Thailand	D-28
Pristolepidinae												
Pristolepis	*marginata*			48	48A	48	48	2		ACN=48	India (Kerala)	N-58
Oplegnathidae												
Oplegnathus	*fasciatus*			48	2SM + 46A	50	50		1.8* FCM	ACN=48	Japan	N-29, M-111, O-48
Oplegnathus	*fasciatus*		F, M	48	2 M/SM + 46A	50	50	2	1.3 FD	ACN=48	Korea	K-53
Oplegnathus	*fasciatus*			48	2M + 2ST + 44A	50	52			ACN=48	(China)	Z-39
Oplegnathus	*punctatus*			48	2SM + 46A	50	50			ACN=48	Japan	M-111
Pempheridae												
Pempheris	*schwenkii*	*xanthoptera*		48	2SM + 46 ST/A	50			1.4* FCM	ACN=48	Japan (Tanegashima)	A-74, O-48
Percichthyidae												
Coreoperca	*herzi*			48	2SM + 46 ST/A	50				ACN=48	Korea (Chungchongnam-do)	U-28
Coreoperca	*herzi*			48							Korea	L-15
Coreoperca	*kawamebari*			48	4SM + 44 ST/A	52			1.8* FCM	ACN=48	Japan (Hyogo)	U-28, O-48
Siniperca	*chuatsi*		F, M	48	24 SM/ST + 24A		72		(1.7* FD)	ACN=48	China	Y-10, C-83
Siniperca	*chuatsi*			48	22ST + 26A	48	70			ACN=48	China (Hubei)	L-53
Siniperca	*kneri*			48	6SM + 14ST + 28A	54	68			ACN=48	China	Y-15
Siniperca	*obscura*			48	4SM + 14ST + 30A	52	66			ACN=48	China	Y-15
Siniperca	*roulei*	*Coreosiniperca*	M	48	2SM + 10ST + 36A	50	60			ACN=48	China	Y-15
Siniperca	*scherzeri*			48	6SM + 14ST + 28A	54	68			ACN=48	China	Y-15
Siniperca	*scherzeri*	black variant	F, M	48	4SM + 44 ST/A	52			1.4 FD	ACN=48	Korea (Han R.)	P-11
Siniperca	*scherzeri*	gold variant	F, M	48	4SM + 44 ST/A	52			1.4 FD	ACN=48	Korea (Han R.)	P-11
Siniperca	*undulata*		F, M	48	2SM + 16ST + 30A	50	66			ACN=48	China	Y-15

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Percidae												
Ammocrypta	*vivax*			48	12M + 32SM + 4 ST/A	92				ACN=48	USA (TX)	G-30
Etheostoma	*blennioides blennioides*			48	2M + 46A	50				ACN=48	USA (OH)	R-91
Etheostoma	*blennioides pholidotum*			48	2M + 1SM + 45A	51				ACN=48	USA (OH)	R-91
Etheostoma	*caeruleum*			48	8 M/SM + 40 ST/A	56				ACN=48	Canada (Ontario)	D-1
Etheostoma	*caeruleum*	*camurum caeruleum*		48	4M + 2SM + 42A	54	54			ACN=48	USA (OH)	R-91
Etheostoma	*camurum*			48	2M + 2SM + 44A	52	52			ACN=48	USA (OH)	R-91
Etheostoma	*ditrema*			48		52					N. America	G-32
Etheostoma	*exile*			48	4M/SM + 44 ST/A	52				ACN=48	Canada (Ontario)	D-1
Etheostoma	*flabellare*			48	4M/SM + 44 ST/A	52				ACN=48	Canada (Ontario)	D-1
Etheostoma	*flabellare flabellare*			48	4M + 44A	52	52			ACN=48	USA (OH)	R-91
Etheostoma	*nigrum*			48	6 M/SM + 42 ST/A	54				ACN=48	Canada (Ontario)	D-1
Etheostoma	*nigrum nigrum*			48	2M + 2SM + 44A	52	52			ACN=48	USA (OH)	R-91
Etheostoma	*swaini*			48		52					N. America	G-32
Gymnocephalus	*baloni*		M	48	10M + 32SM + 6ST	90	96			ACN=48	Danube R., Europe	R-11
Gymnocephalus	*cernuus*	*Acerina cernua*	M	48							Sweden	N-40
Gymnocephalus	*cernuus*	*cernua*	F, M	48	4M + 22SM + 16ST + 6A	74	90	2		ACN=48	Germany (Baltic Sea)	K-77
Gymnocephalus	*cernuus*	*Acerina cernua*		48	4M + 22SM + 16ST + 6A	74	90			ACN=48	Hungary	B-84
Gymnocephalus	*cernuus*		F, M	48	2M + 32SM + 8ST + 6A	82	90			ACN=48	Danube R., Europe	R-11
Gymnocephalus	*schraester*		F, M	48	10M + 32SM + 6ST	90	96			ACN=48	Danube R., Europe	R-11
Perca	*flavescens*			48	48 ST/A	48			1.9 FIA, 2.4 BFA	ACN=48	Canada (Ontario)	D-1, H-13, H-40
Perca	*fluviatilis*		F, M	48	2M + 24SM + 12ST + 10A	74	86	2		ACN=48	Germany (Baltic Sea)	K-78
Perca	*fluviatilis*		F, M	48	2M + 28SM + 10ST + 8A	78	88		(2.4 FCM)	ACN=48	Elbe R., Danube R	R-11, V-86
Perca	*fluviatilis*			48	2M + 32SM + 6ST + 8A	82	88			ACN=48	Hungary	B-84
Perca	*fluviatilis*			48	16SM + 20ST + 12A	64	84			ACN=48	Macedonia	K-8
Percarina	*demidoffi*			48	14M + 14SM + 20 ST/A	76				ACN=48	Danube Delta, Europe	S-119
Percina	*caprodes*		F, M	48	8M + 36SM + 4ST	92			(2.1 FIA)	ACN=48	USA (TX)	G-30, G-32, H-40
Percina	*caprodes*			48	1M + 47 ST/A	49				ACN=48	Canada (Ontario)	D-1
Percina	*caprodes*			46	1M + 2SM + 43 ST/A	49				ACN=48	Canada (Ontario)	D-1
Percina	*maculata*			48	5 M/SM + 43 ST/A	53				ACN=48	Canada (Ontario)	D-1
Percina	*nigrofasciata*			48	8M + 38SM + 2ST	94	96			ACN=48	USA (LA)	G-30
Percina	*sciera*		F, M	48	10M + 22SM + 16 ST/A	80				ACN=48	USA (TX)	G-30
Sander	*lucioperca*	*Stizostedion*	M	48	2M + 30SM + 10ST + 6A	80	90	2	(2.3 FCM)	ACN=48	Baltic Sea	G-46, R-11, V-86
Sander	*lucioperca*	*Lucioperca*		48	14M + 14SM + 14ST + 6A	76	90			ACN=48	Hungary	B-84

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Sander	*lucioperca*	*Lucioperca*	M	48							Sweden	N-40
Sander	*vitreum vitreum*	*Stizostedion*		48	48 ST/A	48			2.1 FIA	ACN=48	Canada (Ontario)	D-1, H-40
Sander	*volgense*	*Stizostedion*										
Zingel	*streber*		M	48	2M + 30SM + 10ST + 6A	80	90			ACN=48	Danube R., Europe	R-11
Zingel	*zingel*		F, M	48	6M + 20SM + 22 ST/A	74				ACN=48	Danube R., Europe	R-11
Zingel	*zingel*			48	4M + 20SM + 24 ST/A	72				ACN=48	Danube R., Europe	R-11
Zingel	*zingel*		F	48	4M + 16SM + 28 ST/A	68				$X_1X_1X_2X_2$, ACN=48	Czech (Morava R.)	K-122
			M	47	5M + 16SM + 26 ST/A	68				X_1X_2Y, ACN=48	Czech (Morava R.)	K-122
Plesiopidae												
Plesiops	*coeruleolineatus*			48	2M + 46 ST/A	50				ACN=48	Japan (Ogasawara, Okinawa)	A-66
Polycentridae												
Polycentrus	*schomburgkii*			46*							(W. Atlantic)	S-30
Polynemidae												
Eleutheronema	*tetradactylum*		M	48	48A	48	48			ACN=48	India (WB)	K-42
Pomacanthidae												
Centropyge	*aurantonotus*			48	4M + 14SM + 26ST + 4A	66	92	2		ACN=48	Brazil (ES, RJ)	A-9
Centropyge	*bicolor*		F, M	52	2M + 50 ST/A	54		2	1.4 FIA		W. Pacific	T-67, H-41
Centropyge	*bispinosa*		F	48	48 ST/A	48		2		ACN=48	W. Pacific	T-67
Centropyge	*ferrugata*		F	48	48A	48		2		ACN=48	W. Pacific	T-67
Centropyge	*ferrugata*	*ferrugatus*		48	48A	48		2		ACN=48	Philippines Sea	A-9
Centropyge	*heraldi*		M	52	8M + 22SM + 22 ST/A	82		2			W. Pacific	T-67
Centropyge	*loricula*			48	48A	48		2		ACN=48	W. Pacific	T-67
Centropyge	*nox*		F	52	12M + 18SM + 22 ST/A	82		2			W. Pacific	T-67
Centropyge	*tibicen*		F	52	52A	52	52	2			W. Pacific	T-67
Centropyge	*vrolickii*			48	48A	48	48			ACN=48	Japan (Yakushima Is.)	A-61
Holacanthus	*ciliaris*			48	48A	48	48	2		ACN=48	Brazil (CE, PE, BA, ES)	A-7
Holacanthus	*tricolor*			48	48A	48	48	2		ACN=48	Brazil (BA, ES, RJ)	A-7
Pomacanthus	*arcuatus*			48	2ST + 46A	48	50	2		ACN=48	Brazil (CE, AL, BA, RJ)	A-8
Pomacanthus	*paru*			48	2ST + 46A	48	50	2		ACN=48	Brazil (CE, RN, AL, RJ, SP)	A-8
Pomacanthus	*semicirculatus*			48	48A	48	48			ACN=48	Japan (Yakushima Is.)	A-61

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pomatomidae												
Pomatomus	*saltatrix*			48	48A	48			1.6 FIA, 1.9 BFA		Brazil	B-86, H-13, H-40
Priacanthidae												
Priacanthus	*arenatus*		F, M	52	4ST + 48A	52	56	2	2.2 BFA	ACN=48	Brazil (RJ)	G-12, M-121, H-13
Priacanthus	*arenatus*			50	50A	50					Brazil (RJ)	B-86
Sciaenidae												
Aplodinotus	*grunniens*			48	48A	48	48			ACN=48	USA (Mississippi R.)	L-23
Argyrosomus	*amoyensis*	*Nibea miichthioides*		48	48A	48	48			ACN=48	China	W-3
Bairdiella	*chrysoura*			48	48A	48	48		1.5 BFA	ACN=48	Gulf of Mexico	L-23, H-13
Boesemania	*microlepis*			48	48A	48	48			ACN=48	Thailand	D-28
Corvina	*nigra*			46	2M + 44A	48	48			ACN=48	Croatia	S-195
Cynoscion	*acoupa*			48	48A	48	48				Brazil (RJ)	B-86
Cynoscion	*arenarius*			48	2 M/SM + 46 ST/A	50				ACN=48	Gulf of Mexico	F-60
Cynoscion	*nebulosus*			48	2 M/SM + 46 ST/A	50				ACN=48	Gulf of Mexico	F-60
Johnius	*belangerii*			48							India	L-1
Johnius	*belangerii*	*belengeri*		48	48A	48	48			ACN=48	China (Shandong)	W-7
Johnius	*borneensis*	*vogleri*	F, M	48	48A	48	48			ACN=48	India (Orissa)	P-16
Johnius	*carutta*		M	48	48A	48	48			ACN=48	India (Orissa)	P-16
Johnius	*dorsalis*			48	48A	48	48			ACN=48	India	R-125
Johnius	*dussumieri*		M	48	48A	48	48			ACN=48	India (Assam)	K-46, C-108
Kathala	*axillaris*		F, M	48	48A	48	48			ACN=48	India (Orissa)	T-53
Larimichthys	*crocea*	*Pseudosciaena*	F, M	48	48A	48	48			ACN=48	China (Fujian)	Z-32
Larimichthys	*polyactis*	*Pseudosciaena*		48	48A	48	48			ACN=48	China	W-7
Leiostomus	*xanthurus*			48	48A	48	48			ACN=48	Gulf of Mexico	L-23
Menticirrhus	*americanus*			48	48A	48	48	2	1.6 FD	ACN=48	Brazil (RN)	G-51, A-124
Menticirrhus	*littoralis*	*litoralis*		48	48A	48	48	2		ACN=48	Brazil	R-123
Micropogonias	*furnieri*		F, M	48	48A	48	48	2	1.2 FD	ACN=48	Brazil (SP, RJ)	G-50, B-59
Micropogonias	*undulatus*			48	48A	48	48		1.6 BFA	ACN=48	Gulf of Mexico	L-23, H-13
Nibea	*albiflora*			48	48A	48	48			ACN=48	China (Shandong)	W-7, Y-21
Nibea	*mitsukurii*		F	48	48A	48	48	2	1.4* FCM	ACN=48	Japan (Hyogo)	O-46, O-48
Ophioscion	*punctatissimus*			48	48A	48	48	2		ACN=48	Brazil (RN)	A-124
Otolithes	*cuvieri*			48	48A	48	48			ACN=48	India	C-42

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Otolithoides	*pama*		M	48	48A	48	48			ACN=48	India (WB)	K-139
Pachyurus	*bonariensis*			48							Argentina	F-20
Paranibea	*semiluctuosa*	*Nibea*		48							India	L-1
Pareques	*acuminatus*			48	48A	48	48	2		ACN=48	Brazil (RN)	A-124
Plagioscion	*montei*			48	2M + 46A	50	50	2			Brazil	P-86
Plagioscion	*squamosissimus*		F, M	48	48A	48	48	2		ACN=48	Brazil (AM)	F-66, P-86
Plagioscion	*ternetzi*			48							Argentina	F-20
Plagioscion	sp.	Cytotype a		48	2M + 46A	50	50	2		ACN=48	Brazil (AM)	F-66
Plagioscion	sp.	Cytotype b		48	48A	48	48	2		ACN=48	Brazil (AM)	F-66
Pogonias	*cromis*			48	48A	48	48		2.0 BFA	ACN=48	Gulf of Mexico	L-23, H-13
Protonibea	*diacanthus*	*Nibea*		48	48A	48	48			ACN=48	China	W-13
Protonibea	*diacanthus*	*Nibea*		48	48A	48	48			ACN=48	India	C-42
Sciaena	*umbra*			48	48A	48	48			ACN=48	Black Sea	V-5
Sciaenops	*ocellatus*			48	48A	48	48			ACN=48	Gulf of Mexico	L-23
Umbrina	*coroides*			46	4SM + 42A	50	50				Brazil (RJ)	B-86
Serranidae												
Epinephelinae												
Alphestes	*afer*			48	48A	48	48	2		ACN=48	Brazil (RN, Bahia)	M-78
Chromileptes	*altivelis*			48	2ST + 46A	48	50	2		ACN=48	(Indo-West Pacific)	T-20
Epinephelus	*adscensionis*			48	48A	48	48	4		ACN=48	Brazil (RN, Bahia)	M-78
Epinephelus	*alexandrinus*			48	48 ST/A	48		2		ACN=48	Spain (Malaga)	M-39
Epinephelus	*alexandrinus*			48	48A	48	48	4		ACN=48	Spain	A-30
Epinephelus	*awoara*			48	48A	48	48			ACN=48	China	Z-23, A-11
Epinephelus	*caninus*			48	48A	48	48	2		ACN=48	Spain (Alboran Sea)	R-89
Epinephelus	*coioides*			48	2SM + 46A	50	50			ACN=48	China (Fujian)	D-13
Epinephelus	*diacanthus*			48	2SM + 46A	50	50			ACN=48	India (Portonovo)	N-13
Epinephelus	*fario*			48	14 M/SM + 34 ST/A	62				ACN=48	China	C-57
Epinephelus	*fasciatomaculosus*			48	48A	48	48	2		ACN=48	China	L-47
Epinephelus	*fasciatus*			48	48A	48	48	2		ACN=48	China	L-47
Epinephelus	*guaza*			48	48 ST/A	48		2		ACN=48	Spain (Malaga)	M-39
Epinephelus	*guaza*			48	48A	48	48			ACN=48	Brazil (RJ)	A-11, A-12
Epinephelus	*guttatus*			48	48A	48	48		2.1 FD, 2.4 BFA	ACN=48	(W. Atlantic)	M-132, H-13
Epinephelus	*malabaricus*		F	48	2SM + 46A	50	50	2		ACN=48	Thailand (Gulf of Siam)	U-39

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Epinephelus	*marginatus*			48	48A	48	48			ACN=48	Brazil (RJ)	G-12
Epinephelus	*merra*			48	6ST + 42A	48	54		2.1* FCM, 2.2 FIA	ACN=48	Japan	O-48, H-41
Epinephelus	*sexfasciatus*			48	2SM + 46A	50	50			ACN=48	China	C-56
Epinephelus	*tauvina*		F	48	2SM + 46A	50	50			ACN=48	India (Orissa)	P-16
Epinephelus	*ongus*	*Serranus tumilabris*	F	48	48A	48	48			ACN=48	India (Bombay)	R-63
Mycteroperca	*acutirostris*			48	48A	48	48			ACN=48	Brazil (RJ)	G-12
Mycteroperca	*rubra*			48	48A	48	48			ACN=48	Brazil (RJ)	A-11, A-12
Serraninae												
Centropristes	*ocyurus*			48	28M + 20SM	96	96			ACN=48	W. Atlantic	A-11
Diplectrum	*eumelum*			48	2M + 4SM + 42A	54	54			ACN=48	E. Pacific	A-11
Diplectrum	*formosum*			48	2SM + 46A	50	50	2-4		ACN=48	Brazil (RJ)	A-11, A-12
Diplectrum	*radiale*		F, M	48	48A	48	48	2		ACN=48	Brazil (RJ, SP)	A-11, P-41
Paracentropistis	*hepatus*		F, M	48	48A	48	48	2	1.1 FD	ACN=48	Spain (Malaga)	C-8, C-9, M-39
Serranus	*cabrilla*		F, M	48	48A	48	48	2	1.0 FD	ACN=48	Spain (Malaga)	C-8, C-9, M-39
Serranus	*cabrilla*			48	48A	48	48			ACN=48	Spain (Malaga)	C-11
Serranus	*cabrilla*		F, M	48	48A	48	48	2		ACN=48	Italy (Palermo)	V-68
Serranus	*flaviventris*			48	48A	48	48	2		ACN=48	Brazil (RJ, RN)	A-11, M-78
Serranus	*scriba*			48	48A	48	48	2		ACN=48	Spain (Malaga)	M-39
Serranus	*scriba*		F, M	48	48A	48	48	2		ACN=48	Italy (Palermo)	V-68
Serranus	*scriba*			48	48A	48	48			ACN=48	Croatia	S-86
Serranus	*scriba*			48	48A	48	48			ACN=48	USSR	V-72
Sillaginidae												
Sillago	*sihama*		M	48	48 ST/A	48				ACN=48	India (Andaman Is.)	R-45
Sparidae												
Acanthopagrus	*latus*			48	4SM + 6ST + 38A	52	58			ACN=48	Japan	M-106
Acanthopagrus	*latus*			48	4M + 2SM + 4ST + 38A	54	58			ACN=48	China	Z-23
Acanthopagrus	*schlegeli*		M	48	8 M/SM + 40A	56	56	2	1.2 FD	ACN=48	Korea	K-53
Acanthopagrus	*schlegeli*			48	6SM + 4ST + 38A	54	58			ACN=48	Japan	M-106
Acanthopagrus	*schlegeli*	*macrocephalus*		48	4M + 4SM + 2ST + 38A	56	58	2		ACN=48	China	Y-19
Archosargus	*probatocephalus*			48	1M + 4SM + 43 ST/A	53				ACN=48	Gulf of Mexico	L-6
Archosargus	*probatocephalus*		F, M	48	12 M/SM + 36 ST/A	60				ACN=48	USA (Atlantic)	F-69
Archosargus	*probatocephalus*			48	48A	48		2		ACN=48	Brazil	A-124

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Boops	*boops*		F, M	48		54			1.0 FD		Spain (Malaga)	C-9
Dentex	*dentex*			48	2M + 2SM + 44 ST/A	52		2-4		ACN=48	Italy	L-48
Dentex	*hypselosomus*	*tumifrons*		48	4ST + 44A	48	52			ACN=48	Japan	M-106
Diplodus	*annularis*		F, M	48	6 M/SM + 2ST + 40A	54	56			ACN=48	Italy (Tyrrhenian Sea)	C-36
Diplodus	*annularis*			48	2M + 4SM + 42 ST/A	54				ACN=48	Black Sea	V-5
Diplodus	*annularis*		F, M	47	5M + 2SM + 40A	54	54			ACN=48	Italy (Palermo)	V-68
Diplodus	*annularis*		F, M	48	4M + 3SM + 41A	55	55			ACN=48	Italy (Palermo)	V-68
Diplodus	*annularis*		F	48	4M + 2SM + 42A	54	54			ACN=48	Italy (Palermo)	V-68
Diplodus	*annularis*		M	48	4M + 4SM + 40A	56	56			ACN=48	Italy (Palermo)	V-68
Diplodus	*annularis*			48	6 M/SM + 42A	54	54	10		ACN=48	Italy (Palermo)	V-96
Diplodus	*annularis*			47	7 M/SM + 40A	54	54			ACN=48	Italy (Palermo)	V-96
Diplodus	*argenteus*			48	48A	48	48		1.6 FD, 1.9 BFA	ACN=48	Brazil (BA)	G-12, H-13
Diplodus	*bellottii*			46	2M + 6SM + 38 ST/A	54		4		ACN=48	Spain (Malaga)	A-45
Diplodus	*cervinus*			48		54					Spain	A-45
Diplodus	*puntazzo*			48	8 M/SM + 40A	56	56	12		ACN=48	Italy (Sicily)	V-96
Diplodus	*sargus*		F, M	48	6 M/SM + 2ST + 40A	54	56			ACN=48	Italy (Tyrrhenian Sea)	C-36
Diplodus	*sargus*			48	6 M/SM + 42A	54		14		ACN=48	Italy (Sicily)	V-96
Diplodus	*sargus*		F, M	48		52			1.2 FD		Spain (Malaga)	C-9
Diplodus	*vulgaris*			48	6 M/SM + 42 ST/A	54		8		ACN=48	Italy (Palermo)	V-96
Diplodus	*vulgaris*		F, M	48		52			1.1 FD		Spain (Malaga)	C-9
Evynnis	*tumifrons*	*Evinnis japonica*		48	2SM + 46A	50	50			ACN=48	Japan	M-106
Lagodon	*rhomboides*		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	USA (Atlantic)	F-69
Lithognathus	*mormyrus*		F, M	48		52			1.2 FD		Spain (Malaga)	C-9
Lithognathus	*mormyrus*		F, M	48	6M + 16ST + 26A	54	70			ACN=48	Italy (Tyrrhenian Sea)	C-36
Oblada	*melanura*		M	46	6 M/SM + 6ST + 34A	52	58			ACN=48	Italy (Tyrrhenian Sea)	C-36
Pagellus	*acarne*		F, M	48		52			1.3 FD		Spain (Malaga)	C-9
Pagellus	*acarne*		F, M	48	2M + 6ST + 40A	50	56			ACN=48	Italy (Tyrrhenian Sea)	C-36
Pagellus	*bogaraveo*			48	8M + 10SM + 8ST + 22A	66	74	2		ACN=48	Italy (Sicily)	V-61
Pagellus	*erythrinus*		F, M	48	48A	48	48			ACN=48	Italy (Tyrrhenian Sea)	C-36
Pagrus	*auratus*	*Sparus latus*		48	4M + 2SM + 4ST + 38A	54	58		1.3 FIA	ACN=48	China	L-57, H-40
Pagrus	*auriga*			48	48A	48	48	2		ACN=48	Italy (Palermo)	V-105
Pagrus	*caeruleostictus*	*coeruleostictus*		48	2SM + 46A	50	50	2		ACN=48	Italy (Palermo)	V-105
Pagrus	*major*	*Pagrosomus*		48	2ST + 46A	48	50	2		ACN=48	China	Y-19

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pagrus	*major*		F, M	48	48A	48	48	2	1.3 FD	ACN=48	Korea	K-53
Pagrus	*major*	*Chrysophrys*		48	2ST + 46A	48	50		1.8* FCM	ACN=48	Japan (Yamaguchi)	N-29, O-48
Pagrus	*pagrus*			48			50				Brazil (RJ)	G-12
Pagrus	*pagrus*			48	2SM + 46A	50	50	2		ACN=48	Italy (Palermo)	V-105
Rhabdosargus	*sarba*	*Sparus*		48	6SM + 6ST + 34A	54	60		1.5 FIA	ACN=48	Japan	M-106, H-40
Sarpa	*salpa*		F, M	48		58			1.1 FD		Spain (Malaga)	C-9
Sarpa	*salpa*		F, M	48	6M + 10ST + 32A	54	64			ACN=48	Italy (Tyrrhenian Sea)	C-36
Sparus	*aurata*			48		56					Spain	A-32
Sparus	*aurata*		F, M	48	8 M/SM + 10ST + 30A	56	66	2	1.9 FCM	ACN=48	Italy (Tyrrhenian Sea)	C-36, V-105, G-85
Terapontidae (= Teraponidae)												
Rhynchopelates	*oxyrhynchus*	*Rhyncopelates*	F	48	2SM + 46A	50	50	2	1.7* FCM	ACN=48	Japan (Hyogo)	O-48, O-46
Terapon	*jarbua*	*Therapon*	F, M	48	48A	48	48		1.3 FIA	ACN=48	India	S-116, R-45, H-41
Terapon	*puta*	*Therapon*	F, M	48	48A	48	48		1.6 FIA	ACN=48	India	S-116, H-41
Terapon	*theraps*			48	48A	48	48		1.4 FIA	ACN=48	India (WB)	K-46, G-85
Suborder Elassomatoidei												
Elassomatidae												
Elassoma	*zonatum*	Centrarchidae		48	2SM + 46 ST/A	50				ACN=48	USA (NC)	R-80

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Labroidei												
Cichlidae												
American Cichlidae												
Acarichthys	*heckelii*		M	48	6 M/SM + 42 ST/A	54				ACN=48	(Amazon R.)	T-41
Aequidens	*metae*		F, M	48	6 M/SM + 16ST + 26A	54	70			ACN=48	(Orinico R.)	T-41
Aequidens	*plagiozonatus*			48	48 ST/A	48		2			(Brazil)	M-149
Aequidens	*pulcher*			48			(82)				(Venezuela, Trinidad)	S-184
Amphilophus	*citrinellus*	*Cichlasoma citrinellum*	F, M	48	8 M/SM + 12ST + 28A	56	68			ACN=48	(C. America, Atlantic side)	T-41
Amphilophus	*citrinellus*	*Cichlasoma citrinella*		48	36 SM/ST + 12A		84			ACN=48	(C. America, Atlantic side)	N-30
Apistogramma	*agassizii*	*agassizi*	F, M	46	24 M/SM + 22 ST/A	70				ACN=46		T-41
Apistogramma	*agassizii*	*agassizi*		40			(78)				(S. America)	S-184
Apistogramma	*borellii*		M	38	22 M/SM + 2ST + 14A	60	62			ACN=46		T-41
Apistogramma	*borellii*			46			(90)				(S. America)	S-184
Apistogramma	*borellii*	*reitzigi*		46			(86)				(S. America)	S-184
Apistogramma	*cacatuoides*			46			(86)				(S. America)	S-184
Apistogramma	*ortmanni*		M	46	24 M/SM + 22 ST/A	70				ACN=48		T-41
Apistogramma	*ortmanni*			38			(64)				(S. America)	S-184
Apistogramma	*trifasciata*			46	16 M/SM + 30 ST/A	62					Argentina	F-20, R-107
Apistogramma	sp.			46			(86)				(S. America)	S-184
Archocentrus	*centrarchus*	*Cichlasoma*	F	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(C. America, Pacific side)	T-41
Archocentrus	*nigrofasciatus*	*Cichlasoma*	F, M	48	4 M/SM + 44 ST/A	52				ACN=48	Costa Rica	T-41
Archocentrus	*septemfasciatus*	*Cichlasoma*	F	48	6 M/SM + 14ST + 28A	54	68			ACN=48	Costa Rica (Atlantic side)	T-41
Archocentrus	*spilurus*	*Cichlasoma spilurum*		48	6 M/SM + 42 ST/A	54				ACN=48	Costa Rica	T-39
Archocentrus	*spilurus*	*Cichlasoma cutteri*		48			(68)				(S. America)	S-184
Astronotus	*ocellatus*		F, M	48	12 M/SM + 36 ST/A	60		2		ACN=48	Brazil (MS, AM)	F-9, F-10
Astronotus	*ocellatus*			48			(96)				(S. America)	S-184
Astronotus	*ocellatus*		F	48	6 M/SM + 42 ST/A	54			(2.1* FCM)		(S. America)	T-41, O-48
Astronotus	*ocellatus*		F, M	48	16 M/SM + 32 ST/A	64		2			Brazil (Tiete R., SP)	M-136
Australoheros	*facetus*	*Cichlasoma facetum*	F, M	48	10 M/SM + 38 ST/A	58		2		ACN=48	Brazil (SP)	F-9, F-10
Australoheros	*facetus*	*Cichlasoma facetum*	F, M	48	10SM + 38 ST/A	58		2		ACN=48	Brazil (PR)	V-87
Australoheros	*facetus*	*Cichlasoma facetum*	F, M	48	8SM + 40A	56	56			ACN=48	Uruguay	O-66
Bujurquina	*vittata*			44	22 M/SM + 8 ST/A + 14 MC	66				ACN=46	Argentina	F-20, R-107
Bujurquina	*vittata*	*Aequidens paraguayensis*	F, M	44	26 M/SM +18 ST/A	70				ACN=46	(Paraguay R.)	T-41
Caquetaia	*kraussii*	*Cichlasoma*	F, M	50	6 M/SM + 14ST + 30A	56	70				Colombia	T-41
Chaetobranchopsis	*australe*		F, M	48	48A	48	48	2		ACN=48	Brazil (MS)	F-9, F-10
Cichla	*monoculus*		F, M	48	48A	48	48	2		1-3 B, ACN=48	Brazil (Amazon R.)	F-14, B-85

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Cichla	*temensis*		F, M	48	48A	48	48	2		ACN=48	Brazil (Amazon R.)	T-41, B-85
Cichlasoma	*beani*		F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	Mexico (Sonora)	T-41
Cichlasoma	*bimaculatum*		M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(Brazil, Suriname)	T-41
Cichlasoma	*dimerus*			48	8 M/SM + 22ST + 18A	56	78			ACN=48	Argentina	F-20, R-107
Cichlasoma	*dovii*		F, M	48	8 M/SM + 40 ST/A	56				ACN=48	Costa Rica	T-41, S-6
Cichlasoma	*friedrichstalii*			48	6 M/SM + 42 ST/A	54				ACN=48	Costa Rica	S-6
Cichlasoma	*friedrichstalii*			47	6 M/SM + 41 ST/A	53				ACN=48	Costa Rica	S-6
Cichlasoma	*istlanum fusca*	*istlana fusca*	F, M	48	8SM + 40 ST/A	56				ACN=48	Mexico (Michoacán)	U-49
Cichlasoma	*istlanum istlanum*	*istlana istlana*	F	48	8SM + 40 ST/A	56				ACN=48	Mexico (Morelos)	U-49
Cichlasoma	*octofasciatum*		F, M	48	6 M/SM + 14ST + 28A	54	68		2.6 BFA	ACN=48	(Atlantic side of C. America)	T-41, H-13
Cichlasoma	*paranaense*		F, M	48	20SM + 12ST + 16A	68	80	2		ACN=48	Brazil (PR)	M-41
Cichlasoma	*portalegrensis*	*Aequidens*		48			(68)		2.4 BFA		(Brazil)	O-50, S-184, H-13
Cichlasoma	*salvini*		F, M	52	28 M/SM + 24 ST/A	80					Belize	T-41
Cichlasoma	*tetracanthum*			48	6SM + 28ST + 14A	54	82			ACN=48	Cuba	R-6
Cichlasoma	*trimaculatum*		F, M	48	6 M/SM + 14ST + 28A	54	68				(Mexico)	T-41
Cichlasoma	*trimaculatum*		F, M	48	8SM + 40 ST/A	56					Mexico (near Acapulco)	U-48
Cichlasoma	sp.		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	Mexico (Coahuila)	T-41
Cleithracara	*maronii*	*Aequidens maroni*		48			(82)				(Guyana, Suriname)	S-184
Crenicichla	*britskii*			48	8 M/SM + 40 ST/A	56		2		ACN=48	Paraná-Paraguai basin	B-82
Crenicichla	*cincta*			48	8 M/SM + 40 ST/A	56		2		ACN=48	Brazil (AM)	B-82
Crenicichla	*iguassuensis*		F, M	48	2M + 6SM +14ST + 26A	56	70	2		ACN=48	Brazil (PR)	M-159
Crenicichla	*iguassuensis*			48	6 M/SM + 42 ST/A	54		2			Brazil (PR)	B-82
Crenicichla	*inpa*			48	6 M/SM + 42 ST/A	54		2		ACN=48	Brazil (Amazon basin)	B-82
Crenicichla	cf. *johanna*			48	8 M/SM + 40 ST/A	56		2		ACN=48	Brazil (Amazon basin)	B-82
Crenicichla	*lacustris*		M	48	6 M/SM + 42 ST/A	54		2		ACN=48	Brazil (SP.)	F-9, F-10
Crenicichla	*lepidota*		F	48	6 M/SM + 8ST + 34A	54	62			ACN=48	(S. America)	T-41
Crenicichla	*lepidota*		M	48	6 M/SM + 42 ST/A	54		2		ACN=50	Brazil (MS)	F-9, F-10
Crenicichla	*lepidota*			48	6 M/SM + 42 ST/A	54				ACN=48	Argentina	F-20, R-107
Crenicichla	*lepidota*		F, M	48	2M + 4SM + 6ST + 36A	54	60	2		ACN=48	Brazil (PR)	M-41
Crenicichla	*lucius*		F	48							(Amazon R.)	T-41
Crenicichla	*lugubris*			48	8 M/SM + 40 ST/A	56		2		ACN=48	Brazil (Amazon basin)	B-82
Crenicichla	*niederleinii*		F, M	48	2M + 12SM + 4ST + 30A	62	66	4			Brazil (PR)	M-41
Crenicichla	*niederleinii*		M	48	2M + 8SM + 38 ST/A	58		2		ACN=48	Brazil (PR)	L-71
Crenicichla	*niederleinii*			48	6 M/SM + 42 ST/A	54		2		ACN=48	Argentina	F-20, R-107
Crenicichla	*notophthalmus*		F	48	6 M/SM + 8ST + 34A	54	62				(Amazon R.)	T-41
Crenicichla	*reticulata*			48	6 M/SM + 42 ST/A	54		2		1-3 B, ACN=48	Brazil (Amazon R.)	B-82, F-14

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Crenicichla	*saxatilis*	*sexatilis*	M	48	4M + 44A	52	52		2.2 BFA	ACN=48	S. America (Atlantic side)	O-66, H-13
Crenicichla	*semifasciata*			48	6 M/SM + 42 ST/A	54					Argentina	F-20
Crenicichla	*semifasciata*	*Batrachops semifasciatus*	F, M	48	6 M/SM + 42 ST/A	54		2		ACN=48	Brazil (MS)	F-9, F-10
Crenicichla	*strigata*		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	(Amazon R.)	T-41
Crenicichla	*vittata*		M	48	6 M/SM + 42 ST/A	54		2		ACN=48	Brazil (MS)	F-9, F-10
Crenicichla	sp.		M	48	2M + 6SM + 40 ST/A	56		2		ACN=48	Brazil (SC)	L-71
Dicrossus	*filamentosus*	*Crenicara filamentosa*	F	46	12 M/SM + 34 ST/A	58				ACN=46	Brazil, Venezuela	T-41
Dicrossus	*maculatus*	*Crenicara*		46			(86)				(Brazil)	S-184
Geophagus	*brasiliensis*		F, M	48	4 M/SM + 44 ST/A	52				ACN=48	(Brazil)	T-41
Geophagus	*brasiliensis*		F, M	48	2 M/SM + 46 ST/A	50		2		ACN=48	Brazil (SP)	F-9, F-10
Geophagus	*brasiliensis*		F, M	48	8SM + 18ST + 22A	56	74	2		ACN=48	Brazil (PR)	M-41
Geophagus	*brasiliensis*		F, M	48	6SM + 42 ST/A	54		2			Brazil (PR)	V-87
Geophagus	*brasiliensis*		F, M	48	4SM + 44 ST/A	52		2		ACN=48	Brazil (PR)	L-89
Geophagus	*surinamensis*		F, M	48	4 M/SM + 44 ST/A	52		2		ACN=48	Brazil (AM)	T-41, F-9, F-10
Gymnogeophagus	*balzanii*		F, M	48	2 M/SM + 46 ST/A	50		2		0-4 B, ACN=48	Brazil (MS)	F-9, F-10
Gymnogeophagus	*balzanii*			48	2 M/SM + 46 ST/A	50		2		ACN=48	Argentina	F-20, R-107
Gymnogeophagus	*gymnogenys*			48	4 M/SM + 44 ST/A	52		2			Brazil	P-87
Gymnogeophagus	*labiatus*			48	4 M/SM + 44 ST/A	52		2			Brazil	P-87
Gymnogeophagus	*lacustris*			48	4 M/SM + 44 ST/A	52					Brazil	P-87
Gymnogeophagus	*rhabdotus*			48	4 M/SM + 44 ST/A	52					Brazil	P-87
Gymnogeophagus	sp.			48	2 M/SM + 46 ST/A	50				ACN=48	Argentina	F-20, R-107
Herichthys	*cyanoguttatus*	*Cichlasoma cyanoguttatum*	F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	USA (TX), Mexico	T-41
Herichthys	*labridens*	*Cichlasoma*	F	48	6 M/SM + 14ST + 28A	54	68			ACN=48	Mexico (Atlantic side)	T-41
Heros	*severus*	*Cichlasoma severum*	F, M	48	4 M/SM + 44 ST/A	52				ACN=48	Brazil, Venezuela	T-41
Herotilapia	*multispinosa*		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	C. America	T-41
Hypselecara	*coryphaenoides*	*Cichlasoma*	F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(Amazones)	T-41
Krobia	*itanyi*	*Aequidens*		46			(64)				(Suriname)	S-184
Laetacara	*curviceps*	*Aequidens*		38			(76)				(Amazon R.)	S-184
Laetacara	cf. *dorsigera*			45	3M + 42A	48				0-2 B	Brazil (PR)	C-98
Mesonauta	*festivus*	*Cichlasoma festivum*	F, M	48	8 M/SM + 40 ST/A	56				ACN=48	(S. America)	T-41
Nannacara	*anomala*		F, M	44	18 M/SM + 26 ST/A	62					S. America	T-41
Neetroplus	*nematopus*		F, M	48	8 M/SM + 12ST + 28A	56	68			ACN=48	Costa Rica	T-41
Papiliochromis	*ramirezi*	*Microgeophagus*		48			(64)				(S. America)	S-184
Parachromis	*managuensis*	*Cichlasoma managuense*		48	8 M/SM + 40 ST/A	56				ACN=48	Costa Rica	S-6
Parachromis	*managuensis*	*Cichlasoma managuense*	F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(Costa Rica)	T-41
Pterophyllum	*scalare*		F, M	48	4 M/SM + 44 ST/A	52			(2.0 FCM, 2.4 BFA)	ACN=48	(S. America)	T-41, V-86, H-13

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pterophyllum	*scalare*		F, M	48	12 M/SM + 36 ST/A	60		2			Brazil (PA)	N-2
Satanoperca	*jurupari*			48	6SM + 42 ST/A	54				0-3 B, XY	S. America	M-41, O-86
Satanoperca	*jurupari*	*Geophagus*	F, M	48	4 M/SM + 44 ST/A	52			(2.4 BFA)	ACN=48	(S. America)	T-41, H-13
Satanoperca	*papaterra*		F, M	48	6SM + 6ST + 36A	54	60	2		ACN=48	Brazil (PR.)	M-41
Symphysodon	*aequifasciatus*	*aequifasciata*	F, M	60	58 M/SM + 2 ST/A	118			(2.5* FCM, 2.4 FD)		(Amazon R.)	T-41, O-4, O-48
Symphysodon	*aequifasciatus*	cytotype 1	F, M	60	48 M/SM + 8 ST/A + 4 MC			2		ACN=62	Brazil (Amazon)	M-146
Symphysodon	*aequifasciatus*	cytotype 2	M	60	50 M/SM + 6 ST/A + 4 MC			2		ACN=62	Brazil (Amazon)	M-146
Symphysodon	*discus*	cytotype 1	F, M	60	50 M/SM + 10 ST/A	110		2		ACN=62	Brazil (Amazon)	M-146
Symphysodon	*discus*	cytotype 2	M	60	54 M/SM + 6 ST/A	114		2		ACN=62	Brazil (Amazon)	M-146
Symphysodon	*haraldi*	*aequifasciata axelrodi*		60	26M + 26SM + 8 ST/A	112		2	2.5 FCM		(Amazon R.)	T-24
Symphysodon	*haraldi*		F, M	60	52 M/SM + 4 ST/A + 4 MC			2-5		ACN=62	Brazil (Amazon)	M-146
Thorichthys	*ellioti*	*Cichlasoma*	F, M	48	6 M/SM + 42 ST/A	54					Mexico (Veracruz)	U-48
Thorichthys	*meeki*	*Cichlasoma*	F, M	48	6 M/SM + 14ST + 28A	54	68		2.8 BFA	ACN=48	(S. America)	T-41, H-13
Uaru	*amphiacanthoides*		F, M	46	8 M/SM + 38 ST/A	54				ACN=48	(Amazon R.)	T-41
Asian Cichlidae												
Etroplus	*maculatus*		F, M	46	18 M/SM + 28 ST/A	64				ACN=48?	(Asia)	T-39
Etroplus	*maculatus*		F, M	46							India (Portonovo)	N-13
Etroplus	*suratensis*		F, M	48	48A	48	48			ACN=48	India (Orissa, WB)	R-57, K-46
Etroplus	*suratensis*		F, M	48							India (Portonovo)	N-13
African Cichlidae												
Anomalochromis	*thomasi*	*Pelmatochromis*		48			(58)				(Africa)	S-25
Astatotilapia	*burtoni*		F, M	40	16 M/SM + 24 ST/A	56			1.9 FCM	ACN=48	Africa (Lake Tanganyika)	T-39, T-42, G-85
Aulonocara	*baenschi*			44	6M + 8SM + 30A	58					Malawi	F-68
Aulonocara	*hueseri*			44	4M + 6SM + 34A	54					Malawi	F-68
Aulonocara	*korneliae*			44	4M + 8SM + 32A	56					Malawi	F-68
Aulonocara	*stuartgranti*			44	4M + 6SM + 34A	54					Malawi	F-68
Aulonocara	*stuartgranti*			44	6M + 6SM + 32A	56					Malawi	F-68
Aulonocara	sp.			44	6M + 6SM + 32A	56					Malawi	F-68
Chromidotilapia	*finleyi*			48			(68?)				(Africa)	S-184
Chromidotilapia	*batesii*	*Pelmatochromis* (southern form)		44			(80)				E. Cameroon	S-25
Chromidotilapia	*batesii*	*Pelmatochromis* (northern form)		42			(80)				E. Cameroon	S-25
Haplochromis	*flaviijosephi*		F	44	10 M/SM + 34 ST/A	54			2.2 FD	ACN=48	Sea of Galilee	K-98
Haplochromis	*obliquidens*		F, M	44	12 M/SM + 32 ST/A	56				0-2 B	(E. Africa)	P-95
Hemichromis	*bimaculatus*			44			(64)				(Africa)	S-184
Hemihaplochromis	*kirki*			44			(76)				(Africa)	S-184
Hemihaplochromis	*multicolor*			44			(78)				(Africa)	S-184

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Heterochromis	*multidens*	*Pelmatochromis taeniatus*		42			(74)				(Africa)	S-25
Julidochromis	*ornatus*			44			(58)				(Africa)	S-184
Labeotropheus	*fuelleborni*			44	12 M/SM + 32 ST/A	56					Africa (Lake Malawi)	K-120
Lamprologus	*congoensis*			44			(46)				(Africa)	S-184
Melanochromis	*auratus*		F	46	10 M/SM + 36 ST/A	56				ACN=48	(E. Africa)	T-42
Melanochromis	*auratus*	*Pseudotropheus*		46	10 M/SM + 36 ST/A	56					(E. Africa)	T-39
Metriaclima	*zebra*	*Pseudotropheus*		44	12 M/SM + 32 ST/A	56					Africa (Lake Malawi)	K-120
Neolamprologus	*savoryi*	*Lamprologus savory*		32?			(54?)				(Africa)	S-184
Oreochromis	*andersonii*	*Tilapia*	F, M	44	6SM + 38 ST/A	50				ACN=48	S. Africa	V-35
Oreochromis	*aureus*			44	14M/SM + 30ST	58	88		2.4 FD	ACN=48	Egypt	M-125
Oreochromis	*aureus*	*Sarotherodon*	F, M	44	10SM + 34ST	54	88		2.5 FD	ACN=48	Sea of Galilee	K-98
Oreochromis	*aureus*	*Sarotherodon*	F, M	44	8SM + 2ST + 34A	52	54			ACN=48	(Africa)	T-42
Oreochromis	*aureus*	*Tilapia*		44	44 ST/A	44					(Africa)	T-39
Oreochromis	*karongae*		F, M	38	4M + 22 SM/ST + 12A		64			ACN=48	Africa (Lake Malawi)	H-36
Oreochromis	*lepidurus*	*Tilapia*		44			(86)				(C. Africa)	S-184
Oreochromis	*leucostictus*			44					2.4 BFA		(E. Africa)	H-13
Oreochromis	*macrochir*			44	10SM + 34ST	54	88		1.7 FD	ACN=48	Botswana	M-125
Oreochromis	*macrochir*	*Tilapia*	F, M	44	6SM + 38 ST/A	50				ACN=48	Zaire	V-35
Oreochromis	*mortimeri*			44	18 M/SM + 26A	62	62			ACN=48	Zambezi	H-11
Oreochromis	*mossambicus*			44	6SM + 38ST	50	88		2.0 FD	ACN=48	(Africa)	M-125
Oreochromis	*mossambicus*	*Sarotherodon*	F, M	44	6SM + 38 ST/A	50				ACN=48	(Africa)	T-42
Oreochromis	*mossambicus*	*Tilapia*	M	44	6ST + 38A	44	50			ACN=48	(introduced, India)	P-49
Oreochromis	*mossambicus*	*Tilapia*		44	8SM + 34ST + 2A	52	86		(1.8* FD)		(introduced, China)	C-44, C-83
Oreochromis	*mossambicus*	*Tilapia*		44	12ST + 32A	44	56			ACN=48	(introduced, China)	L-53
Oreochromis	*mossambicus*	*Tilapia*	F, M	44	18ST + 26A	44	62			ACN=48	(introduced, Japan)	F-54
Oreochromis	*niloticus*			44	2M + 18SM + 24ST	64	88		1.9 FD	ACN=48	Egypt	M-125
Oreochromis	*niloticus*	*Tilapia*		44	8SM + 34ST + 2A	52	86		2.2* FD		(introduced, China)	C-44, C-83
Oreochromis	*niloticus*	*Sarotherodon*		44	2M + 16SM + 26 ST/A	62				ACN=48	(introduced, Japan)	A-76
Oreochromis	*spilurus*			44	6SM + 38ST	50	88		1.9 FD	ACN=48	Kenya	M-125
Oreochromis	*urolepis hornorum*			44	8SM + 2ST + 34A	52	54			ACN=48	(introduced, Mexico)	U-47
Pelvicachromis	*pulcher*	*Pelmatochromis*		44			(82)				(Africa)	S-25
Pelvicachromis	*subocellatus*	*Pelmatochromis*		40			(70)				(Africa)	S-25
Pelvicachromis	*taeniatus*	*Pelmatochromis klugei*		40			(70)		2.0 BFA		(Africa)	S-25, H-13
Sarotherodon	*galilaeus*		F, M	44	6SM + 38 ST/A	50		2	2.2 FD	ACN=48	Sea of Galilee	K-98
Sarotherodon	*galilaeus*	*Tilapia galilaea*	F, M	44	6SM + 38 ST/A	50				ACN=48	(Africa)	V-35
Sarotherodon	*galilaeus*	*Tilapia*		44	8SM + 34ST + 2A	52	86				(introduced, China)	C-44

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Sarotherodon	*galilaeus*			44	4SM + 40ST	48	88		1.7 FD	ACN=48	Kenya	M-125
Sarotherodon	*melanotheron*			44	4M + 30 SM/ST + 10A		78			ACN=48	Ivory Coast	H-11
Tilapia	*congica*		F, M	44	10 M/SM + 34 ST/A	54				ACN=48	Zaire	V-35
Tilapia	*guineensis*		F, M	44	8 M/SM + 36 ST/A	52				ACN=48	(Guinea)	V-35
Tilapia	*mariae*		F, M	40	4 M/SM + 36 ST/A	44				ACN=48	(Africa)	V-35
Tilapia	*mariae*		F, M	40	8 M/SM + 32 ST/A	48					(Africa)	T-42
Tilapia	*rendalli*		F, M	44	10SM + 8ST + 26A	54	62	4		ACN=48	Brazil (PR)	K-123, M-65
Tilapia	*sparrmanii*		F, M	42	8 M/SM + 34 ST/A	50				ACN=48	Zaire	V-35
Tilapia	*sparrmanii*		F, M	42	10 M/SM + 32 ST/A	52				ACN=48	(Africa)	T-42
Tilapia	*zillii*		F, M	44	10 M/SM + 34 ST/A	54			2.4 FD, (2.4 BFA)	ACN=48	Sea of Galilee	K-98, H-13
Tilapia	*zillii*			44	4M + 18SM + 22ST	66	88			ACN=48	Egypt	M-125
Tristramella	*sacra*		M	44	6 M/SM + 38 ST/A	50			2.6 FD	ACN=48	Sea of Galilee	K-98
Tristramella	*simonis*		F, M	44	6 M/SM + 38 ST/A	50			2.5 FD	ACN=48	Sea of Galilee	K-98
Thysochromis	*ansorgii*	*Pelmatochromis ansorgei*		46			(54)				(Africa)	S-25
Tylochromis	*lateralis*	*Pelmatochromis guentheri*		48			(50)				(Africa)	S-25
Embiotocidae												
Embiotoca	*jacksonii*			48*					2.0 BFA		USA (CA)	C-46, H-13
Micrometrus	*aurora*	*Amphigonopterus*		48*							USA (CA)	C-46
Neoditrema	*ransonneti*			48	6SM + 42 ST/A	54				ACN=48	Japan (Kanagawa)	A-77
Pomacentridae												
Amphiprioninae												
Amphiprion	*clarkii*			48	14M + 16SM + 18 ST/A	78			2.2* FCM, 2.1 FIA	ACN=48	Japan (Tanegashima Is.)	A-65, O-48, H-41
Amphiprion	*clarkii*			48	12M + 26SM + 10 ST/A	86				ACN=48	(W. Pacific)	T-70
Amphiprion	*frenatus*			48	14M + 22SM + 10ST + 2A	84	94			ACN=48	Japan (Okinawa)	A-66
Amphiprion	*frenatus*			48	12M + 26SM + 10 ST/A	86				ACN=48	(W. Pacific)	T-70
Amphiprion	*frenatus*			48	14M + 22SM + 8ST + 4A	84	92	2		ACN=48	Philippines	M-79
Amphiprion	*ocellaris*			48	14M + 22SM + 12 ST/A	84				ACN=48	Japan (Okinawa)	A-66
Chrominae												
Chromis	*chromis*		F, M	48	48A	48	48		2.6* FD	ACN=48	Spain (Malaga)	A-29
Chromis	*chrysura*			48	2M + 46 ST/A	50				ACN=48	(Japan)	O-49
Chromis	*flavicauda*		M	39	9M + 6SM + 24A	54	54	2		ACN=48	Brazil (ES)	M-143
Chromis	*insolata*			46	4M + 6SM + 36A	56	56	2		ACN=48	Brazil (ES)	M-143
Chromis	*insolata*			47	3M + 6SM + 38A	56	56	2		ACN=48	Brazil (ES)	M-143
Chromis	*multilineata*		F	48	48A	48	48	2		ACN=48	Brazil (BA)	M-143

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Chromis	*ternatensis*	*caeruleus*		48	48A	48	48			ACN=48	(Pacific)	T-23
Dascyllus	*aruanus*			32	16 M/SM + 16A	48	48	2	(2.1* FCM, 1.7 FIA)	ACN=48	S. Japan	K-15, O-48, H-41
Dascyllus	*aruanus*			31	17 M/SM + 14A	48	48			ACN=48	S. Japan	K-15
Dascyllus	*aruanus*			30	18 M/SM + 12A	48	48			ACN=48	S. Japan	O-36, K-15
Dascyllus	*aruanus*			29	19 M/SM + 10A	48	48			ACN=48	S. Japan	K-15
Dascyllus	*aruanus*			28	20 M/SM + 8A	48	48	2		ACN=48	S. Japan	O-36, K-15
Dascyllus	*melanurus*			48	48A	48	48	2		ACN=48	S. Japan	O-36, K-15
Dascyllus	*reticulatus*			36	12 M/SM + 24A	48	48	2	(1.7 FIA)	ACN=48	S. Japan	K-15, H-40
Dascyllus	*reticulatus*			35	13 M/SM + 22A	48	48			ACN=48	S. Japan	O-36, K-15
Dascyllus	*reticulatus*			34	14 M/SM + 20A	48	48			ACN=48	S. Japan	O-36, K-15
Dascyllus	*trimaculatus*			48	48A	48	48	2	1.8 FIA	ACN=48	S. Japan	O-36, K-15, H-40
Dascyllus	*trimaculatus*			47	1M + 46A	48	48			ACN=48	Japan (Tanegashima Is.)	A-65
Pomacentrinae												
Abudefduf	*notatus*			48	2M + 2ST + 44A	50	52			ACN=48	Japan (Tanegashima Is.)	A-65
Abudefduf	*saxatilis*		F	48	2M + 2SM + 44A	52	52	2	(2.0 BFA)		Brazil (RJ)	A-12, B-59, H-13
Abudefduf	*saxatilis*			48	2M + 2SM + 44A	52	52	2		ACN=48	Brazil (RN)	M-79
Abudefduf	*sexfasciatus*	*coelestinus*		48	2M + 46A	50	50	2	1.4 FIA		(W. Pacific)	T-7, H-40
Abudefduf	*sordidus*			48	2M + 2SM + 2ST + 42A	52	54		1.7 FIA	ACN=48	Japan (Tanegashima Is.)	A-65, H-40
Abudefduf	*vaigiensis*			48	2M + 2SM + 2ST + 42A	52	54			ACN=48	Japan (Chiba)	A-65
Abudefduf	*vaigiensis*			48	2M + 2SM + 44A	52	52	2		ACN=48	(W. Pacific)	T-7
Amblyglyphidodon	*curacao*			48	6M + 22SM + 20 ST/A	76		2	2.2* FCM, 1.8 FIA		(Indo-W. Pacific)	T-6, O-48, O-49, H-40
Cheiloprion	*labiatus*			48	26SM + 22 ST/A	74		2		ACN=48	Japan (Ryukyu)	T-7
Chrysiptera	*cyanea*			42	6M + 16SM + 2ST + 18A	64	66	2	3.4* FCM, 1.6, 2.1 FIA	ACN=48	(W. Pacific)	T-19, O-48, H-41
Chrysiptera	*cyanea*	*Glyphidodontops cyaneus*		48	48 ST/A	48					(Indo-W. Pacific)	O-49
Chrysiptera	*hemicyanea*			48	30SM + 10ST + 8A	78	88	2	2.7* FCM	ACN=48	(W. Pacific)	T-16, T-23, O-48
Chrysiptera	*hemicyanea*	*Glyphidodontops hemicyaneus*		48	32SM + 16 ST/A	80					(Indo-W. Pacific)	O-49
Chrysiptera	*leucopoma*			48	4M + 22SM + 6ST + 16A	74	80	2		ACN=48	(W. Pacific)	T-19
Chrysiptera	*rex*			36	12M + 10SM + 14 ST/A	58		2		ACN=48	(W. Pacific)	T-19
Chrysiptera	*rex*	*Glyphidodontops rex*		48	8M + 22SM + 18 ST/A	78					(Indo-W. Pacific)	O-49
Chrysiptera	*starcki*			48	2M + 10SM + 36A	60	60	2		ACN=48	(W. Pacific)	T-6, T-7
Dischistodus	*prosopotaenia*			48				2	1.5 FIA		(Indo-W. Pacific)	T-6, H-41
Microspathodon	*chrysurus*			48	6M + 10ST + 32A	54	64	2		ACN=48	Brazil (BA)	G-12, M-79
Neoglyphidodon	*melas*			48	8M + 26SM + 2ST + 12A	82	84				Japan (Wakayama)	T-84
Neoglyphidodon	*nigroris*	*Paraglyphidodon*		48	8M + 26SM + 2ST + 12A	82	84	2		ACN=48	(W. Pacific)	T-16
Neoglyphidodon	*oxyodon*	*Paraglyphidodon*		48	2M + 20SM + 12ST + 14A	70	82	2		ACN=48	(W. Pacific)	T-16
Plectroglyphidodon	*lacrymatus*			48				2			(Indo-W. Pacific)	T-6

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Plectroglyphidodon	*leucozonus*	*Abudefduf*		48	4ST + 44A	48	52			ACN=48	Japan (Yakushima Is.)	A-65
Pomacentrus	*chrysurus*	*rhodonotus*		48	8M + 22SM + 12ST + 6A	78	90	2	2.1 FIA	ACN=48	(W. Pacific)	T-16, H-40
Pomacentrus	*coelestis*			48	48A	48	48		(1.8 FIA)	ACN=48	Japan (Tanegashima Is.)	A-65, H-40
Pomacentrus	*coelestis*	*Abudefduf*		48	48A	48	48	2		ACN=48	(W. Pacific)	T-7, T-23
Pomacentrus	*moluccensis*			48	10M + 26SM + 10ST + 2A	84	94	2	1.5 FIA	ACN=48	(W. Pacific)	T-16, H-40
Pomacentrus	cf. *nagasakiensis*	*Paraglyphidodon melas*		48	2M + 46A	50	50	2		ACN=48	Japan (Wakayama)	T-7, T-84
Pomacentrus	*philippinus*			48	8M + 24SM + 10ST + 6A	80	90	2		ACN=48	Japan (Yaeyama)	T-16
Pomacentrus	*trilineatus*	*biocellatus*	M	50	8 M/SM + 42 ST/A	58					India (Andaman Is.)	R-45
Pomacentrus	sp.			48	10M + 26SM + 12 ST/A	84					(Pacific)	O-49
Stegastes	*fuscus*		F, M	48	20M + 22SM + 6A	90	90	2	1.5 FD	ACN=48	Brazil (RN)	G-12, G-85, M-145
Stegastes	*insularis*			48	14M + 24SM + 6ST + 4A	86	92	2		ACN=48	India (Kerala)	N-65
Stegastes	*leucostictus*		F, M	48	18M + 22SM + 8A	88	88	2		ACN=48	Brazil (BA)	G-12, M-145
Stegastes	*lividus*	*Eupomacentrus*		48	6M + 24SM + 18 ST/A	78					(Pacific)	O-49
Stegastes	*nigricans*	*Eupomacentrus*		48	2M + 2SM + 44 ST/A	52			1.5 FIA		(Indo-W. Pacific)	O-49, H-40
Stegastes	*pictus*		F, M	48	14M + 28SM + 2ST + 4A	90	92	2		ACN=48	Brazil (BA, CE)	G-12, M-145
Stegastes	*sanctipauli*			48			92				Brazil (SPR)	G-12
Stegastes	*variabilis*		F, M	48	18M + 22SM + 8A	88	88	2		ACN=48	Brazil (RN)	G-12, M-145
Labridae												
Bodianus	*axillaris*			48	8M + 30SM + 10 ST/A	86				ACN=48	S. Japan	O-31
Bodianus	*loxozonus*			48	8M + 26SM + 14 ST/A	82					S. Japan	O-31
Bodianus	*mesothorax*			48	8M + 18SM + 22 ST/A	74					S. Japan	O-31
Bodianus	*rufus*			48	48A	48	48				Brazil	B-86
Bodianus	*rufus*			48			80				Brazil (RN)	G-12
Cheilinus	*bimaculatus*			32	4M + 2SM + 26A	38	38			ACN=34	Japan (Wakayama)	O-27
Cheilinus	*fasciatus*			48	12SM + 36 ST/A	60					(Japan)	O-49
Cheilio	*inermis*			48	12M + 12SM + 24 ST/A	72			1.8* FCM		S. Japan	O-31, O-48
Cheilio	*inermis*			48	4M + 2SM + 42A	54	54			ACN=48	Japan (Yakushima Is.)	A-75
Choerodon	*azurio*			48	6M + 2SM + 40 ST/A	56				ACN=48	Japan (Wakayama)	A-75
Cirrhilabrus	*cyanopleura*			34	10M + 2SM + 22 ST/A	46					S. Japan	O-31
Cirrhilabrus	*temminckii*			34	12M + 22A	46	46			ACN=46	Japan (Wakayama)	O-27
Coris	*aygula*			48	6M + 6SM + 36 ST/A	60					(Japan)	O-49
Coris	*dorsomacula*	*multicolor*		48	6M + 8SM + 34 ST/A	62			1.4 FIA	ACN=48	Japan (Wakayama)	O-27, H-40
Coris	*gaimardi*			48	2M + 10SM + 36 ST/A	60					S. Japan	O-31
Coris	*julis*		F	48	10M + 38A	58	58			ACN=48	Elba, Europe	D-24
Coris	*julis*		M	48	11M + 37A	59	59			ACN=48	Elba, Europe	D-24

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Coris	*julis*		F, M	48	4M + 6SM + 38A	58	58		2.4 FD	ACN=48	Italy (Palermo)	V-58, G-85
Coris	*julis*		F, M	48		56			1.4 FD		Spain (Malaga)	C-9
Ctenolabrus	*rupestris*			48	4M + 22SM + 10ST + 12A	74	84			ACN=48	Spain (Mediterranean)	A-31
Epibulus	*insidiator*			48	4M + 8SM + 36 ST/A	60				ACN=48	S. Japan	O-31
Gomphosus	*varius*			48	48 ST/A	48			2.1* FCM		S. Japan	O-31, O-48
Halichoeres	*argus*	*binotopsis*		48	48 ST/A	48				ACN=48	Japan (Yakushima Is.)	A-75
Halichoeres	*hortulanus*	*centriquadrus*		48	48 ST/A	48					S. Japan	O-31
Halichoeres	*melanochir*			48	2M + 46 ST/A	50				ACN=48	Japan (Tanegashima Is.)	A-75
Halichoeres	*melanochir*			48	2SM + 46 ST/A	50				ACN=48	Japan	O-27, O-31
Halichoeres	*melanurus*	*kallochroma*		48	48 ST/A	48			1.7 FIA		S. Japan	O-31, H-40
Halichoeres	*poecilopterus*			48	4M + 2SM + 42 ST/A	54			1.8* FCM	ACN=48	S. Japan	O-31, O-48
Halichoeres	*poecilopterus*			48	4M + 44 ST/A	52				ACN=48	Japan (Chiba)	A-75
Halichoeres	*poecilopterus*		F, M	48	2M + 2SM + 44 ST/A	52				ACN=48	Korea (Cheju Is.)	P-67
Halichoeres	*poeyi*			48			58				Brazil (RN, BA, RJ)	G-12
Halichoeres	*prosopeion*			48	2SM + 46 ST/A	50				ACN=48	Japan (Wakayama)	O-27
Halichoeres	*radiatus*			48	48A	48	48				Brazil (SPR)	G-12
Halichoeres	*tenuispinnis*			48	2SM + 46 ST/A	50			1.5* FCM	ACN=48	Japan (Wakayama)	O-27, M-2
Halichoeres	*tenuispinnis*			48	2SM + 46 ST/A	50				ACN=48	Japan (Chiba)	A-75
Halichoeres	*tenuispinnis*		F, M	48	2M + 46 ST/A	50				ACN=48	Korea (Cheju Is.)	P-67
Halichoeres	*trimaculatus*			48	48 ST/A	48					S. Japan	O-31
Hemigymus	*fasciatus*			48	6M + 6SM + 36 ST/A	60					(Japan)	O-49
Hologymnosus	*annulatus*	*semidiscus*		48	2M + 2SM + 44 ST/A	52					S. Japan	O-31
Labroides	*dimidiatus*			48	48A	48	48		1.8* FCM	ACN=48	Japan (Wakayama)	O-27, O-48
Labrus	*bimaculatus*			48	48A	48	48			ACN=48	Italy (Palermo)	V-53
Labrus	*merula*			48	48A	48	48		2.9 FD	ACN=48	Italy (Palermo)	V-53, G-85
Labrus	*viridis*			48	48A	48	48			ACN=48	Italy (Palermo)	V-53
Novaculichthys	*taeniurus*	*Hemipteronotus*		48	4SM + 44 ST/A	52					(Japan)	O-49
Pseudolabrus	*eoethinus*	*japonicus*		48	2M + 2SM + 44 ST/A	52			2.1* FCM	ACN=48	Japan (Wakayama)	O-27, M-2
Pseudolabrus	*sieboldi*	*japonicus*		42	20M + 8SM + 14 ST/A	70			2.1* FCM	ACN=46	Japan (Kanagawa, Wakayama)	A-75, M-2
Pseudolabrus	*sieboldi*	*japonicus*	F, M	42	4M + 24SM + 14 ST/A	70		2		ACN=46	Korea (Cheju Is.)	P-67
Pteragogus	*aurigarius*	*flagellifera*		44	2M + 10SM + 32 ST/A	56			3.5* FCM	ACN=44	Japan (Izu Peninsula)	A-75, M-2
Pteragogus	*aurigarius*?	*flagellifera*	F, M	42	4M + 24SM + 14 ST/A	70		2		ACN=46	Korea (Cheju Is.)	P-67
Stethojulis	*bandanensis*			48	4M + 44 ST/A	52					S. Japan	O-31
Stethojulis	*interrupta*			48	2M + 46 ST/A	50				ACN=48	Japan (Wakayama)	O-27
Stethojulis	*interrupta*			48	2SM + 46 ST/A	50				ACN=48	Japan (Chiba, Kagoshima)	A-75
Stethojulis	*strigiventer*			48	2M + 46 ST/A	50					S. Japan	O-31

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Symphodus	*doderleini*		F, M	48	24M + 6SM + 10ST + 8A	78	88			ACN=48	Italy (Palermo)	C-29
Symphodus	*cinereus*	*griseus*		48	32 M/SM/ST + 16A		80		2.5 FD	ACN=48	USSR	V-8, G-85
Symphodus	*mediterraneus*			48	22M + 20SM + 6A	90	90			ACN=48	Italy (Palermo)	V-53
Symphodus	*mediterraneus*		F, M	46		52			1.1 FD		Spain (Malaga)	C-9
Symphodus	*melops*			46	2M + 42 SM/ST + 2A		90	2		ACN=48	Spain (Malaga)	L-67
Symphodus	*melops*	*Crenilabrus*		46	10M + 36ST	56	92			ACN=48	Italy (Roma)	C-31
Symphodus	*ocellatus*			48	10M + 20SM + 18A	78			2.2 FD	ACN=48	Italy (Palermo)	V-53, G-85
Symphodus	*ocellatus*			48	8M + 18SM + 8ST + 14A	74	82			ACN=48	Spain (Mediterranean)	A-31
Symphodus	*ocellatus*	*Crenilabrus*		48	36 M/SM/ST + 12A		84			ACN=48	USSR	V-8
Symphodus	*roissali*			38	32M + 4SM + 2A	74	74			ACN=48	Italy (Palermo)	V-53
Symphodus	*roissali*			38	36 M/SM + 2A	74	74	2		ACN=48	Spain (Malaga)	L-67
Symphodus	*roissali*	*Crenilabrus quinquemaculatus*		38	36 M/SM/ST + 2A		74			ACN=48	Black Sea	V-8
Symphodus	*roissali*		F, M	46		60			1.0 FD		Spain (Malaga)	C-9
Symphodus	*rostratus*	*scina*		48	40 M/SM/ST + 8A		88		2.0 FD	ACN=48	Black Sea	V-8, G-85
Symphodus	*tinca*	*Crenilabrus*		48	34 M/SM/ST + 14A		82		1.5 FCM	ACN=48	Black Sea	V-8, V-86
Symphodus	*tinca*			48	16M + 14SM + 4ST + 14A	78	82		2.2 FD	ACN=48	Italy (Palermo)	V-53, G-85
Thalassoma	*amblycephala*			48	48 ST/A	48				ACN=48	S. Japan	O-31
Thalassoma	*cupido*			48	48 ST/A	48			2.3* FCM	ACN=48	Japan	O-31, A-75, M-2
Thalassoma	*cupido*		F, M	48	48A	48	48	6		ACN=48	Japan (Wakayama)	U-42
Thalassoma	*lunare*			48	48A	48	48			ACN=48	Japan (Wakayama)	O-27
Thalassoma	*lutescens*			48	48A	48	48			ACN=48	Japan (Wakayama)	O-27
Thalassoma	*lutescens*			48	48 ST/A	48				ACN=48	Japan (Yakushima Is.)	A-75
Thalassoma	*pavo*			48	48A	48	48			ACN=48	Italy (Palermo)	V-53
Thalassoma	*pavo*			48		48			1.6 FD		Spain (Malaga)	C-9
Thalassoma	*quinquevittata*			48	48 ST/A	48					S. Japan	O-31
Xyrichthys	*dea*		F	44	44A	44	44	2		ACN=46	Japan (Wakayama, Tokushima)	U-43
Xyrichthys	*dea*	*Hemipteronotus*		44	44A	44	44				Japan (Wakayama)	O-27
Xyrichthys	*novacula*			48	8SM + 40A	56	56	2		ACN=48	Italy (Palermo)	V-53, V-60
Xyrichthys	*pavo*		F, M	44	44A	44	44	2	1.8* FCM	ACN=46	Japan (Wakayama, Tokushima)	U-43
Xyrichthys	*twistii*		F	22	18 M/SM + 4A	40	40	2	1.7* FCM		Japan (Wakayama)	U-43

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scaridae												
Calotomus	*japonicus*			48	8M + 10SM + 30 ST/A	66				ACN=48	Japan (Chiba)	A-75
Chlorurus	*sordidus*	*Scarus rhodoropterus*		48	10M + 8SM + 30 ST/A	66				ACN=48	Japan (Ogasawara)	A-75
Chlorurus	*sordidus*	*Scarus*		48					4.1* FCM		Japan	O-48
Scarus	*trispinosus*	*coelestinus*		48	6M + 10SM + 24ST + 8A	64	88	2			Brazil (RN)	S-178
Sparisoma	*axillare*		F, M	46	6M + 14SM + 4ST + 22A	66	70	2		ACN=48	Brazil (BA)	S-178
Suborder Zoarcoidei												
Bathymasteridae												
Ronquilus	*jordani*			26	22 M/SM + 4A	48	48			ACN=48	(Canada)	M-61
Zoarcidae												
Lycodichthys	*dearborni*		F, M	48	2M + 2SM + 44 ST/A	52		2	3.2 FD, 2.2 FIA	ACN=48	Ross Sea	M-89, H-41
Pachycara	*brachycephalum*		F, M	48	2M + 4SM + 42 ST/A	54		2	2.9 FD	ACN=48	Ross Sea	M-89
Pachycara	*brachycephalum*		M	72	3M + 6SM + 63A	81	81	3		3X	Ross Sea	M-89
Zoarces	*elongatus*			48	30M + 14SM + 4A	92	92			ACN=48	China (Liaoning)	M-36
Zoarces	*viviparus*		F, M	48	2M + 6SM + 18ST + 22A	56	74	2		ACN=48	Baltic Sea, White Sea	K-80
Stichaeidae												
Alectrias	*benjamini*			48	18M + 18SM + 12A	84	84			ACN=48	China (Liaoning)	M-34
Chirolophis	*japonicus*	*Azuma emmnion*		56	6M + 10SM + 40A	72	72				China (Liaoning)	M-36
Dictyosoma	*burgeri*			48	12M + 18SM + 6ST + 12A	78	84			ACN=48	Japan (Kanagawa)	A-59
Dictyosoma	*burgeri*		M	46	14M + 18SM + 8ST + 6A	78	86			ACN=48	Japan (Yamaguchi)	N-34
Ernogrammus	*hexagrammus*			48	48A	48	48			ACN=48	China (Liaoning)	M-31
Lumpenus	*fabricii*			48	2M + 14SM + 32 ST/A	64					Russia, White Sea	L-87, L-88
Lumpenus	*fabricii*			47	2M + 15SM + 30 ST/A	64					Russia, White Sea	L-87, L-88
Zoarchias	*microstomus*			28	24M + 4A	52	52			ACN=46?	China (Liaoning)	M-36
Pholidae												
Pholis	*nebulosa*	*Enedrias*		26	26M	52	52			ACN=48?	China (Liaoning)	M-33
Pholis	*picta*	*pictus*	M	46							Japan (Hokkaido)	M-14

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Notothenioidei												
Artedidraconidae												
Artedidraco	*mirus*			46	2M + 2SM + 42A	50	50			ACN=46	South Georgia Is.	P-57
Artedidraco	*orianae*		F, M	46	2M + 6SM + 38A	54	54	2		ACN=48	Weddell Sea	O-70
Artedidraco	*shackletoni*		F, M	46	2M + 6SM + 38A	54	54	2		ACN=48	Weddell Sea	O-70
Hitiodraco	*velifer*		F, M	46	6SM + 40 ST/A	52		2			Ross Sea	C-21
Pogonophryne	*barsukovi*		F, M	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
Pogonophryne	*dolichobranchiata*			46	4M + 2SM + 2ST + 38A	52	54			ACN=48	South Orkney Is.	P-57
Pogonophryne	*marmorata*		M	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
Pogonophryne	*mentella*		F, M	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
Pogonophryne	*scotti*		F	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
Pogonophryne	*scotti*		M	46	6SM + 40A	52	52	2	4.1 FD	ACN=48	Ross Sea	M-89
Bathydraconidae												
Bathydraco	*marri*		F	38	4SM + 34A	42	42			XX, ACN=40	Weddell Sea	O-70
Bathydraco	*marri*		M	39	3SM + 36A	42	42			XY_1Y_2, ACN=40	Weddell Sea	O-70
Cygnodraco	*mawsoni*		F	44-46	44-46 ST/A	44-46					Weddell Sea	O-70
Cygnodraco	*mawsoni*		F	48	2M + 4SM + 42 ST/A	54		2	2.8 FD	ACN=48	Ross Sea	M-89, C-20
Gerlachea	*australis*		F	48	2M + 2-4 SM + 42-44 A	52-54	52-54			ACN=48	Weddell Sea	O-70
Parachaenichthys	*georgianus*			48								O-70
Prionodraco	*evansii*			20								O-70
Psilodraco	*breviceps*			48	48A	48	48					O-70
Racovitzia	*glacialis*		F	36	4M + 32A	40	40				Weddell Sea	O-70
Bovichthyidae (= Bovichtidae)												
Bovichtus	*angustifrons*			48	48A	48	48			ACN=48	Tasmania	M-123
Bovichtus	*diacanthus*		F, M	48	48A	48	48			ACN=48	Tristan da Cunha	M-123
Bovichtus	*variegatus*		F, M	48	48A	48	48			ACN=48	New Zealand	M-123
Cottoperca	*gobio*			48-50	48-50 A	48-50	48-50				Chile	P-55
Cottoperca	*gobio*		F	48	48A	48	48	2		ACN=48	Magellan Strait	P-58

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Channichthyidae												
Chaenocephalus	*aceratus*		M	48	4M + 44A	52	52				South Sandwich Is.	M-88
Chaenodraco	*wilsoni*		F	48	4M + 6SM + 38A	58	58			$X_1X_1X_2X_2$, ACN=48	Antarctica	O-68, O-70
Chaenodraco	*wilsoni*		M	47	5M + 6SM + 36A	58	58			X_1X_2Y, ACN=48	Weddell Sea	O-70, M-88
Champsocephalus	*gunnari*			48						ACN=48	Antarctica	D-4
Channichthys	*rhinoceratus*		F, M	48	2M + 4SM + 40A + 2A-sat.	54	54			ACN=48	Antarctica	D-4
Chionobathyscus	*dewitti*		M	47	5SM + 4-6 SM + 38-36 A	56-58	56-58			X_1X_2Y, ACN=48	Weddell Sea	O-70, M-88
Chionodraco	*hamatus*		F	48	2M + 4SM + 42A	54	54	3		$X_1X_1X_2X_2$, ACN=48	Weddell Sea	O-70
Chionodraco	*hamatus*		F	48	2M + 4SM + 42A	54	54		3.7 FD	$X_1X_1X_2X_2$, ACN=48	Ross Sea	M-88
Chionodraco	*hamatus*		M	47	2M + 4SM + 41A	53	53	2		X_1X_2Y, ACN=48	Ross Sea	M-88
Chionodraco	*myersi*		F	48	2M + 6SM + 40A	56	56			$X_1X_1X_2X_2$, ACN=48	Weddell Sea	O-70
Chionodraco	*myersi*		M	47	2M + 6SM + 39A	55	47			X_1X_2Y, ACN=48	Weddell Sea	O-70, M-88
Chionodraco	*rastrospinosus*		M	48	4M + 44A	52	52				South Orkney Is.	M-88
Cryodraco	*atkinsoni*	*antarcticus*	M	48	2M + 4SM + 42A	54	54			ACN=48	Weddell Sea	O-70
Cryodraco	*atkinsoni*	*antarcticus*	M	48	2M + 4SM + 42A	54	54	2	3.9 FD	ACN=48	Ross Sea	M-89
Neopagetopsis	*ionah*		F, M	48	2M + 8SM + 38A	58	58	2		ACN=48	Weddell Sea	O-70
Pagetopsis	*macropterus*		M	47	3M + 12SM + 32A	62	62			ACN=48	Weddell Sea	O-70
Pagetopsis	*macropterus*		F	48	2M + 12SM + 34A	62	62	2	4.4 FD	$X_1X_1X_2X_2$, ACN=48	Ross Sea	M-88
Pagetopsis	*macropterus*		M	47	3M + 12SM + 32A	62	62			X_1X_2Y, ACN=48	Ross Sea	M-88
Pagetopsis	*maculatus*		F	48	2M + 6SM + 40A	56	56				Weddell Sea	O-70
Pseudochaenichthys	*georgianus*			48	4M + 8SM + 36A	60	60				South Georgia	M-88
Eleginopidae												
Eleginops	*maclovinus*		F, M	48	4M + 2SM + 42A	54	54			ACN=48	S. America (subantarctic)	M-124
Harpagiferidae												
Harpagifer	*antarcticus*			48	2M + 4ST + 42A	50	54			ACN=48	South Orkney Is.	P-56
Harpagifer	sp.			48	4M + 2SM + 8ST + 34A	54	62			ACN=48	Macquarie Is.	P-56

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Nototheniidae												
Dissostichus	*eleginoides*			48	2M + 46A	50	50			ACN=48	Antarctica	D-4
Dissostichus	*eleginoides*		F, M	48	2M + 2SM + 44A	52	52	2			Southern Ocean	G-83
Dissostichus	*mawsoni*		F, M	48	2M + 4SM + 42A	54	54	4			Southern Ocean	G-83
Dissostichus	*mawsoni*		F	48	2M + 2SM + 44A	52	52		(2.1 FIA)	ACN=48	Weddell Sea	O-70, H-41
Gobionotothen	*acuta*	*Notothenia*	F	46	6M + 8SM + 32A	60	60			4B	Antarctica (Heard Is.)	O-67
Gobionotothen	*gibberifrons*	*Notothenia*	F, M	46	4M + 2SM + 40A	52	52			ACN=48	Antarctica (Admiralty Bay)	P-26, P-27
Lepidonotothen	*kempi*	*Notothenia*	F, M	48	4M + 44A	52	52				Antarctica (Prydz Bay)	O-67
Lepidonotothen	*squamifrons*	*Notothenia*	F, M	48	4M + 44A	52	52				Antarctica	O-67
Lindbergichthys	*mizops*	*Notothenia*	F, M	48	4M + 44A	52	52				Antarctica	O-67
Notothenia	*angustata*		F, M	26	24 M/SM + 2A	50	50	2		ACN=48	New Zealand	P-36
Notothenia	*coriiceps neglecta*			22	20M + 2SM	44	44			ACN=44	Duville Is.	P-52
Notothenia	*coriiceps neglecta*		F	22	18M + 2SM + 2ST	42	44			ACN=44	Antarctica (Admiralty Bay)	P-27
Notothenia	*coriiceps*		M	22	18M + 4SM	44	44	2		ACN=44	Ross Sea	M-126
Notothenia	*cyanobrancha*		M	48	4M + 44A	52	52			ACN=48	Antarctica	D-4
Notothenia	*rossi marmorata*			24	24M	48	48			ACN=46	South Georgia	P-52
Notothenia	*rossii rossii*		F, M	24	24M	48	48			ACN=46	Antarctica	D-4
Pagothenia	*borchgrevinki*		F	46	4M + 2SM + 40A	52	52	2		$X_1X_1X_2X_2$, ACN=48	Antarctica	M-126
Pagothenia	*borchgrevinki*		M	45	5M + 2SM + 38A	52	52	2		X_1X_2Y, ACN=48	Antarctica	M-126
Paranotothenia	*magellanica*			26	24M + 2A	50	50			ACN=48	Antarctica	D-4
Paranotothenia	*microlepidota*	*Notothenia*		26	22M + 2SM + 2A	50	50			ACN=48	Cambell Is.	P-51
Patagonotothen	*longipes*		F, M	48	2M + 46A	50	50			ACN=48	Magellanic Region	P-51
Patagonotothen	*ramsayi*			46	4M + 42 ST/A	50					Magellanic Region	P-51
Pleuragramma	*antarcticum*		F, M	48	8M + 12SM + 28A	68	68			ACN=48	Weddell Sea	O-70
Pseudotrematomus	*bernacchii*	*Trematomus*		48	2M + 46 ST/A	50					Antarctica (Bransfield Strait)	P-26
Pseudotrematomus	*bernacchii*	*Trematomus*		48	2M + 2SM + 44A	52	52		(2.4 FIA)	ACN=48	Weddell Sea	O-70, H-41
Pseudotrematomus	*bernacchii*	*Trematomus*	F, M	48	2M + 2SM + 44A	52	52	2	3.6 FD	ACN=48	Ross Sea	M-89
Pseudotrematomus	*bernacchii*	*Pagothenia*	F, M	48	2M + 2SM + 44A	52	52	2		ACN=48	Ross Sea	M-126
Pseudotrematomus	*eulepidotus*	*Trematomus*	F, M	24	20M + 4SM	48	48	2		ACN=46	Weddell Sea	O-70
Pseudotrematomus	*eulepidotus*	*Trematomus*	F, M	24	22M + 2SM	48	48	2		ACN=46	Ross Sea	M-126
Pseudotrematomus	*eulepidotus*	*Trematomus*	F, M	24	8M + 14SM + 2A	46	46			ACN=46	Antarctica (Prydz Bay)	O-67, O-70
Pseudotrematomus	*hansoni*	*Trematomus*		48	2M + 4SM + 42 ST/A	54					Antarctica (Bransfield Strait)	P-26
Pseudotrematomus	*hansoni*	*Trematomus*		48	2M + 4SM + 42A	54	54				Weddell Sea	O-70
Pseudotrematomus	*hansoni*	*Pagothenia*	F	46	4M + 2SM + 40A	52	52	2		$X_1X_1X_2X_2$, ACN=48	Ross Sea	M-126

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pseudotrematomus	*hansoni*	*Pagothenia*	M	45	5M + 2SM + 38A	52	52	2		X_1X_2Y, ACN=48	Ross Sea	M-126
Pseudotrematomus	*lepidorhinus*	*Trematomus*	F, M	48	4M + 44A	52	52				Weddell Sea	O-67, O-70
Pseudotrematomus	*pennellii*	*Trematomus*	M	28	9M + 2SM + 17A	39	39			4B	Weddell Sea	O-70
Pseudotrematomus	*pennellii*	*Trematomus*	F, M	32	12M + 2SM + 18A	46	46	2		ACN=44	Ross Sea	M-126
Pseudotrematomus	*scotti*	*Trematomus*	F	50	4M + 2-4 SM + 42-44 A	56-58	56-58			ACN=50	Weddell Sea	O-70
Trematomus	*loenbergii*		F, M	28	18M + 6SM + 4A	52	52	2		ACN=48	Ross Sea	M-126
Trematomus	*loenbergii*		F	30	16M + 6SM + 8A	52	52	2			Ross Sea	M-126
Trematomus	*newnesi*		F	46	4M + 2SM + 40A	52	52	2		$X_1X_1X_2X_2$, ACN=48	Ross Sea	M-126
Trematomus	*newnesi*		M	45	5M + 2SM + 38A	52	52	2		X_1X_2Y, ACN=48	Ross Sea	M-126
Trematomus	*newnesi*			69						3X	Ross Sea	M-89
Trematomus	*nicolai*		F	58	2M + 6SM + 18ST + 32A	66	84	2		$X_1X_1X_2X_2$, ACN=58	Ross Sea	M-126
Trematomus	*nicolai*		M	57	3M + 6SM + 18ST + 30A	66	84	2		X_1X_2Y, ACN=58	Ross Sea	M-126
Pseudaphritidae												
Pseudaphritis	*urvillii*	Bovichtidae	F	48	4M + 44A	52	52	6		ACN=48	Tasmania	P-58
Suborder Trachinoidei												
Ammodytidae												
Gymnammodytes	*cicerelus*	*cicerellus*	F, M	46	22 M/SM + 24 ST/A	68				ACN=46	Italy (Palermo)	V-57
Pinguipedidae (= Parapercidae)												
Parapercis	*kamoharai*			48	48A	48	48			ACN=48	Japan (Wakayama)	A-80
Parapercis	*pulchella*			42	8M + 34A	50	50	2		ACN=44	Japan (Shizuoka, Yamaguchi)	M-109
Parapercis	*sexfasciata*			26	22M + 2ST + 2A	48	50	2		ACN=48	Japan (Shizuoka, Yamaguchi)	M-109
Parapercis	*sexfasciata*		F	26	22M + 2ST + 2A	48	50			XX, ACN=48	Japan (Hyogo)	O-40
Parapercis	*sexfasciata*		M	26	22M + 2ST + 2A	48	50			XY, ACN=48	Japan (Hyogo)	O-40
Parapercis	*sexfasciata*		F, M	26	22M + 2ST + 2A	48	50		1.9* FCM		Korea (Busan)	P-70
Trachinidae												
Echiichthys	*vipera*		F, M	48	48A	48	48	2		ACN=48	Italy (Ancona)	C-22
Trachinus	*draco*			48	48A	48	48				USSR	V-72
Trachinus	*draco*		F, M	48	48A	48	48			ACN=48	Italy (Palermo)	V-57

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Trichodontidae												
Arctoscopus	*japonicus*		F, M	48	2SM + 46A	50	50	2	1.5 FCM	XY/XX?	Japan	T-66
Uranoscopidae												
Uranoscopus	*scaber*			26	20M + 2SM + 4 ST/A	48					Croatia	S-86
Uranoscopus	*scaber*			30	18M + 12 ST/A	48		2		ACN=48	Italy (Ancona)	C-22
Uranoscopus	*scaber*			28	20M + 8 ST/A	48				ACN=48	Italy (Ancona)	C-22
Uranoscopus	*scaber*			27	21M + 6 ST/A	48				ACN=48	Italy (Ancona)	C-22
Uranoscopus	*scaber*			32	18 M/SM + 14A	50	50				USSR	V-72
Uranoscopus	*scaber*	A-type		30	22M + 4SM + 4A	56	56	2		ACN=48	Italy (Palermo)	V-104
Uranoscopus	*scaber*			31	23M + 4SM + 4A	58	58				Italy (Palermo)	V-104
Uranoscopus	*scaber*	B-type		29	23M + 2SM + 4A	54	54			ACN=48	Italy (Palermo)	V-104
Uranoscopus	*scaber*	C-type		28	24M + 4A	52	52	2		ACN=48	Italy (Palermo)	V-104
Suborder Blennioidei												
Blenniidae												
Aidablennius	*sphynx*		F, M	48	48 ST/A	48		2		ACN=48	Italy (Ancona)	C-19
Aidablennius	*sphynx*	*Blennius sphinx*		48	48A	48	48			ACN=48	Italy	C-33
Aidablennius	*sphynx*	*Blennius sphinx*	F, M	48	4M + 4SM + 40 ST/A	56			1.2 FD	ACN=48	Spain (Malaga)	C-9, C-10
Atrosalarias	*fuscus holomelas*	*fuscus*		48	48A	48	48			ACN=48	Japan (Ishigakijima)	A-55
Blennius	*ocellaris*		F, M	48	2SM + 2ST + 44A	50	52		1.7 FD	ACN=48	Spain (Malaga)	C-9, C-10
Blennius	*ocellaris*			48	2M + 2ST + 44A	50	52			ACN=48	Italy (Palermo)	V-51
Coryphoblennius	*galerita*	*Blennius*	F, M	48	2M + 2SM + 44 ST/A	52		2			Spain (Mediterranean)	G-18
Istiblennius	*enosimae*			48	2SM + 46A	50	50			ACN=48	Japan (Chiba, Kanagawa)	A-55
Istiblennius	*lineatus*		F	48	48 ST/A	48				ACN=48	Japan (Ishigakijima)	A-59
Lipophrys	*adriaticus*	*Lypophris*	F, M	48	48 ST/A	48		2		ACN=48	Italy (Ancona)	C-19
Lipophrys	*canevae*	*Blennius*		48*	8ST + 40A	48	56			ACN=48	Italy	C-33
Lipophrys	*pholis*	*Blennius*	F, M	46	6M + 2SM + 8ST + 30A	54	62	2	1.6 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
Omobranchus	*elegans*		F, M	42	10M + 2SM + 6ST + 24A	54	60			ACN=48	Japan (Kanagawa)	A-59
Omobranchus	*punctatus*			44	4M + 40A	48	48			ACN=48	Japan (Wakayama)	A-80
Parablennius	*gattorugine*		F	48	48 ST/A	48		2		ACN=48	Italy (Ancona)	C-19
Parablennius	*gattorugine*	*Blennius*	F, M	48	2M + 2SM + 44A	52	52	2	1.2 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
Parablennius	*gattorugine*	*Blennius*	F, M	48	2M + 2SM + 44A	52	52			ACN=48	Italy (Palermo)	V-51
Parablennius	*incognitus*	*Blennius*		48	48A	48	48			ACN=48	Italy	C-33

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Parablennius	*incognitus*	*Blennius ponticus incognitus*	F, M	48	4ST + 44A	48	52	2	1.6 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
Parablennius	*pilicornis*		F, M	48	8ST + 40A	48	56				Italy (Palermo)	C-28
Parablennius	*pilicornis*			48	48A	48	48				Brazil (RJ)	B-86
Parablennius	*ponticus*		F, M	48	48 ST/A	48		2		ACN=48	Italy (Ancona)	C-19
Parablennius	*sanguinolentus*	*Blennius*	F, M	48	8ST + 40A	48	56			ACN=48	Italy (Tyrrhenian Sea)	C-31, C-33
Parablennius	*sanguinolentus*	*Blennius*	F, M	48	6ST + 42A	48	54	2	1.8 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
Parablennius	*sanguinolentus*	*Blennius*	F, M	48	22ST + 26A	48	70			ACN=48	Black Sea	A-95
Parablennius	*sanguinolentus*	*Blennius*	M	47	1M + 22ST + 24A	48	70			ACN=48	Black Sea	A-95
Parablennius	*tentacularis*	*Blennius*	F	48	48 ST/A	48				XX, ACN=48	Italy (Palermo)	C-24
Parablennius	*tentacularis*	*Blennius*	M	48	1ST + 47 ST/A	48				XY, ACN=48	Italy (Palermo)	C-24
Parablennius	*tentacularis*	*Blennius*	M	47	1SM + 46 ST/A	48				neo Y, ACN=48	Italy (Palermo)	C-24
Parablennius	*tentacularis*		F	48	48 ST/A	48		2		XX, ACN=48	Italy (Ancona)	C-19
Parablennius	*tentacularis*		M	48	1ST + 47 ST/A	48		2		XY, ACN=48	Italy (Ancona)	C-19
Parablennius	*tentacularis*		M	47	1SM + 46 ST/A	48		2		neo Y, ACN=48	Italy (Ancona)	C-19
Parablennius	*tentacularis*	*Blennius*	F	48	48A	48	48			ACN=48	Black Sea	A-95
Parablennius	*tentacularis*	*Blennius*	M	47	1 large A + 46 ST/A	47				ACN=48	Black Sea	A-95
Parablennius	*tentacularis*	*Blennius*	M	47	1 large SM + 46 ST/A	48				ACN=48	Black Sea	A-95
Parablennius	*tentacularis*	*Blennius*		48	48 ST/A	48				ACN=48	USSR	V-72
Parablennius	*yatabei*	*Blennius*	F, M	48	6SM + 12ST + 30A	54	66			ACN=48	Japan (Kanagawa)	A-59
Paralipophrys	*trigloides*	*Blennius*		48	2M + 6SM + 18ST + 22A	56	74			ACN=48	Italy	C-33
Paralipophrys	*trigloides*	*Blennius*	F, M	46	4M + 4SM + 10ST + 28A	54	64	2	2.4 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
Paralipophrys	*trigloides*	*Blennius*	F, M	48	2M + 6SM + 40 ST/A	56				ACN=48	Italy (Palermo)	V-51
Petroscirtes	*breviceps*	*Dasson trossulus*	F	40	8M + 32 ST/A	48			1.6* FCM	ACN=44	Japan (Chiba)	A-59, O-48
Salaria	*fluviatilis*	*Blennius*	M	48							Italy (Roma)	C-31, C-33
Salaria	*pavo*	*Blennius*	M	48	8ST + 40A	48	56			ACN=48	Italy (Tyrrhenian Sea)	C-31, C-33
Salaria	*pavo*	*Blennius*	F, M	48	4SM + 12ST + 32A	52	64	2	2.1 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
Salarias	*fasciatus*			48	48A	48	48		1.7 FIA	ACN=48	Japan (Okinawa)	A-55, H-40
Salarias	*luctuosus*			48	48 ST/A	48				ACN=48	Japan (Okinawa)	A-59
Scartella	*cristata*	*Blennius cristatus*	F, M	48	2ST + 46A	48	50			ACN=48	Italy (Palermo)	V-51
Scartella	*cristata*		F, M	48	2SM + 46 ST/A	50		2			Brazil (RJ)	B-65
Clinidae												
Clinitrachus	*argentatus*	*Clinethrachus*	F, M	48	48 ST/A	48				ACN=48	Italy (Palermo)	V-51

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Labrisomidae												
Labrisomus	*nuchipinnis*			48			50				Brazil (RN, RJ)	G-12
Suborder Gobiesocoidei												
Gobiesocidae												
Conidens	*laticephalus*			42	12M + 10SM + 20 ST/A	64					Japan (Chiba)	A-68
Diademichthys	*lineatus*			47	3M + 11SM + 33 ST/A	61				sex chrom.?, ACN=48	Japan (Okinawa)	A-68
Lepadichthys	*frenatus*			48	8 M/SM + 40 ST/A	56				ACN=48	Japan (Yakushima)	A-68
Lepadogaster	*candolii*	*candollei*	F, M	46	12M + 18SM + 16ST	76	92	2		XX/XY, ACN=46	Spain (Malaga)	T-36
Lepadogaster	*lepadogaster*		M	46	13M + 17SM + 16 ST/A	76		2		ACN=46	Black Sea	A-89
Suborder Callionymoidei												
Callionymidae												
Eleutherochir	*mirabilis*	*Draculo*		36	36A	36	36			ACN=36	Japan (Hokkaido)	S-16
Repomucenus	*beniteguri*	*Callionymus*	F	38	38ST	38	76			$X_1X_1X_2X_2$, ACN=38	Japan (Yamaguchi, Shizuoka)	M-105
Repomucenus	*beniteguri*	*Callionymus*	M	37	1M + 36ST	38	74	2		X_1X_2Y, ACN=38	Japan (Yamaguchi, Shizuoka)	M-105
Repomucenus	*huguenini*	*Callionymus doryssus*	M	32	2M + 30A	34	34	2		ACN=34	Japan (Yamaguchi, Shizuoka)	M-110
Repomucenus	*ornatipinnis*	*Callionymus*	F	38	38ST	38	76			$X_1X_1X_2X_2$, ACN=38	Japan (Yamaguchi)	M-105
Repomucenus	*ornatipinnis*	*Callionymus*	M	37	1M + 36ST	38	74	2		X_1X_2Y, ACN=38	Japan (Yamaguchi)	M-105
Repomucenus	*richardsonii*	*Callionymus punctatus*	F, M	38	38A	38	38	2		ACN=38	Japan (Yamaguchi, Shizuoka)	M-110
Repomucenus	*richardsonii*	*Callionymus punctatus*	M	38	36 SM/ST + 2A		74		1.6* FCM	ACN=38	Japan (Hyogo)	O-46, O-48

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Gobioidei												
Odontobutidae												
Micropercops	*swinhonis*	*Hypseleotris*		44	44A	44	44				China (Wuhan)	D-18
Odontobutis	*obscura*		F, M	44	44 ST/A	44			(2.4* FCM)	ACN=44	Japan (Oita, Kagoshima)	A-60, O-48
Odontobutis	*obscura*			44	44A	44	44			ACN=44	Japan (Yamaguchi)	N-31
Odontobutis	*obscura*			44	44A	44	44				Korea	L-15
Odontobutis	*obscura*			44	44A	44	44				China (Hubei)	D-18
Odontobutis	*obscura*		F, M	44	4SM + 40A	48	48		(2.8* FD)	ACN=44	China (Wuhan)	G-67, Y-15, C-83
Odontobutis	*platycephalus*		F, M	44	44 ST/A	44				ACN=44	Korea (Kwanchon)	L-79, L-14
Perccottus	*glehni*		F, M	44	44 ST/A	44			2.2 FCM	ACN=44	Russia (Moscow)	K-104, V-86
Perccottus	*glehni*			44	1SM + 43 ST/A	45				ACN=44	Russia (Moscow)	K-104
Eleotridae												
Butinae												
Bostrychus	*sinensis*	*Bostrichthys*		48	4 M/SM + 44 ST/A	52				ACN=48	Japan (Okinawa)	A-60
Bostrychus	*sinensis*	*Bostrichthys*		48	4SM + 2ST + 42A	52	52			ACN=48	China (Zhejiang)	F-8
Ophiocara	*porocephala*			48	48 ST/A	48				ACN=48	Thailand	A-73
Oxyeleotris	*lineolatus*			46	2SM + 8ST + 36A	48	56				(Australia)	C-90
Oxyeleotris	*marmorata*			46	2M + 2SM + 42 ST/A	50			(2.5 FIA)	ACN=46	Thailand (Khon Kaen)	A-73, H-40
Oxyeleotris	*marmorata*			46	2M + 2SM + 42A	50	50				Thailand	D-19
Oxyeleotris	*marmorata*			46	2M + 2ST + 42A	48	50				China (Guangdong)	Z-30
Oxyeleotris	*urophthalmoides*			46	6M + 6SM + 8ST + 26A	58	66				Thailand	D-28
Eleotrinae												
Dormitator	*latifrons*			46	12M + 22SM + 10ST + 2A	80	90			ACN=46	Mexico (Pacific coast)	U-45, U-46
Dormitator	*maculatus*		F, M	46	12M + 22SM + 10ST + 2A	80	90			ACN=46	Mexico (Veracruz)	U-46, M-18
Dormitator	*maculatus*		F, M	46	40 M/SM + 6 ST/A	86		2		ACN=46	Brazil (RN)	M-80
Dormitator	*maculatus*		F	46	14M + 28SM + 2ST + 2A	88	90	2		XX, ACN=46	Brazil (SP)	O-76
Dormitator	*maculatus*		M	46	13M + 28SM + 3ST + 2A	87	90	2		XY, ACN=46	Brazil (SP)	O-76
Eleotris	*acanthopoma*		M	46	46 ST/A	46				ACN=46	Japan (Okinawa)	A-57
Eleotris	*oxycephala*		F, M	46	46A	46	46			ACN=46	China (Guangdong)	G-67, Y-15
Eleotris	*picta*			52	52A	52	52				Mexico	U-82
Eleotris	*pisonis*			46	2M + 44A	48					Mexico	M-80
Eleotris	*pisonis*		F, M	46	46A	46	46	2		ACN=46	Brazil (RN)	M-80
Gobiomorus	*dormitor*		F, M	48	2M + 4SM + 42A	54	54			ACN=48	Mexico (Veracruz)	M-18
Hypseleotris	*cyprinoides*			48	48A	48	48			ACN=48	Japan	S-122
Mogurnda	*mogurnda*		F, M	46	6SM + 40 ST/A	52				ACN=46	Australia	A-60

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ptereleotridae												
Parioglossus	*raoi*		F, M	46	46A	46	46			ACN=46	Fiji	W-22
Gobiidae												
Gobiinae												
Acentrogobius	*pflaumi*			50	48 M/SM/ST + 2A		98			ACN=50	Japan (Shimonoseki)	N-31
Acentrogobius	*pflaumi*		F, M	50	36 M/SM + 14 ST/A	86				ACN=50	Korea (Kunsan)	L-14
Amblygobius	*phalaena*	*albimaculatus*		44	2M + 42 ST/A	46			2.0 FIA	ACN=44	Japan (Okinawa)	A-60, H-40
Aphia	*minuta*		F, M	44	44A	44	44			ACN=44	Italy (Ortona)	C-18
Aphia	*minuta*		M	43	1ST + 42A	43	44			ACN=44	Italy (Ortona)	C-18
Aphia	*minuta*		F, M	42	1M + 1ST + 40A	43	44			ACN=44	Italy (Ortona)	C-18
Aphia	*minuta*		M	42	2M + 40A	44	44			ACN=44	Italy (Ortona)	C-18
Aphia	*minuta*		F, M	41	2M + 1ST + 38A	43	44			ACN=44	Italy (Ortona)	C-18
Bathygobius	*fuscus*			48	48A	48	48			ACN=48	Japan (Chiba, Kanagawa)	A-52, A-62
Bathygobius	*fuscus*?			44	44A	44	44				Thailand	D-19
Bathygobius	*soporator*			46			48				Brazil (RN)	G-12
Benthophilus	*leobergius*	*stellatus leobergius*		44	2SM + 2ST + 40A	46	48				Russia (Volga R.)	G-63
Benthophilus	*stellatus*	*stellatus stellatus*		44	2ST + 42A	44	46			ACN=46	Russia (Volga R.)	G-63
Benthophilus	*leobergius*	*stellatus stellatus*		44	1SM + 2ST + 41A	45	47				Russia (Volga R.)	G-63
Caspiosoma	*caspium*			48	4SM + 30ST + 14A	52	82				Russia (Don R.)	G-63
Favonigobius	*gymnauchen*		F, M	48	48 M/SM	96	96			ACN=50	Korea (Kunsan)	L-14
Glossogobius	*giuris*		F, M	46	46A	46	46			ACN=46	India (Orissa)	R-57, M-24
Glossogobius	*olivaceus*	*fasciapunctatus*		46	16SM + 6ST + 24A	62	68			ACN=46	China (Zhejiang)	F-8
Gobiodon	*citrinus*		F	44	2M + 42 ST/A	46			2.1 FIA	ACN=46	Japan (Okinawa)	A-57, H-41
Gobiodon	*citrinus*		M	43	1M + 42 ST/A	44				ACN=44	Japan (Okinawa)	A-57
Gobiodon	*quinquestrigatus*			44	44 ST/A	44			2.2 FIA	ACN=44	Japan (Okinawa)	A-73, H-40
Gobiodon	*rivulatus rivulatus*			44	44 ST/A	44				ACN=44	Australia (Heron Is.)	A-73
Gobiopsis	*macrostoma*	*Gobiophis*		46	10M + 4SM + 32A	60	60				India (WB)	K-46
Gobiosoma	*macrodon*		F, M	38	38A	38	38				Venezuela	A-13
Gobiosoma	*zebrellus*	*zebrella*	F, M	38	38A	38	38				Venezuela	A-13
Gobiosoma	*zebrellus*	*zebrella*	F	37	1M + 36A	38	38				Venezuela	A-13
Gobius	*bucchichi*		M	40	4M + 2SM + 34A	46	46		0.9 FD		Spain (Málaga)	T-32, C-9
Gobius	*bucchichi*		F, M	44	2SM + 42A	46	46			ACN=44	Spain (Málaga)	T-31
Gobius	*cobitis*		F, M	46	46A	46	46		1.3 FD	ACN=46	Spain (Málaga)	T-32, C-9
Gobius	*cobitis*			46	46A	46	46			ACN=46	Italy (Tyrrhenian Sea)	C-31

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Gobius	*cobitis*			46	46A	46	46			ACN=46	Black Sea	G-63
Gobius	*couchi*		M	46	2SM + 44A	48	48				Europe	M-116
Gobius	*cruentatus*		F, M	46	2ST + 44A	46	48			ACN=46	Spain (Málaga)	T-31
Gobius	*fallax*		M	38	8 M/SM + 30A	46	46			ACN=46	Spain (Málaga)	T-37
Gobius	*fallax*		M	39	7 M/SM + 32A	46	46			ACN=46	Spain (Málaga)	T-37
Gobius	*fallax*		F, M	40	6 M/SM + 34A	46	46	1-4	0.9 FD	ACN=46	Spain (Málaga)	T-30, T-32, T-37
Gobius	*fallax*			40	7 M/SM + 33A	47	47			ACN=46	Spain (Málaga)	T-37
Gobius	*fallax*		F, M	41	5 M/SM + 36A	46	46			ACN=46	Spain (Málaga)	T-37
Gobius	*fallax*		F, M	42	4 M/SM + 38A	46	46			ACN=46	Spain (Málaga)	T-37
Gobius	*fallax*		M	43	3 M/SM + 40A	46	46			ACN=46	Spain (Málaga)	T-37
Gobius	*niger*			46							UK	M-116
Gobius	*niger*		M	50	1M + 12SM + 37A	63	63		2.0 FD	XY, ACN=46	Spain (Málaga)	T-32, C-9
Gobius	*niger*		F	48	4M + 4SM + 10ST + 30A	56	66	2		ACN=50	Norway	K-131
Gobius	*niger*		F	50	4M + 4SM + 10ST + 32A	58	68			ACN=52	Norway	K-131
Gobius	*niger*		F	51	3M + 4SM + 10ST + 34A	58	68				Norway	K-131
Gobius	*niger jozo*			48	2M + 6SM + 8ST + 32A	56	64				Italy (Rome)	C-31
Gobius	*niger jozo*		M	50*							Italy (Venice)	C-76
Gobius	*niger jozo*	A-type	F, M	52	8 M/SM + 10ST + 28A + 6MC	60	70			ACN=46	Italy (Palermo)	V-59
Gobius	*niger jozo*	B-type	F, M	51	9 M/SM + 10ST + 26A + 6MC	60	70			ACN=46	Italy (Palermo)	V-59
Gobius	*niger jozo*	C-type	F, M	50	10 M/SM + 10ST + 30A	60	70			ACN=46	Italy (Palermo)	V-59
Gobius	*niger jozo*	D-type	M	49	11 M/SM + 10ST + 28A	60	70			ACN=46	Italy (Palermo)	V-59
Gobius	*niger jozo*			52	4SM + 48 ST/A	56					Black Sea	V-22
Gobius	*niger jozo*			52	1M + 4SM + 47 ST/A	57					Black Sea	V-22
Gobius	*ophiocephalus*			45	1M + 44A	46	46			ACN=46	Black Sea	V-72
Gobius	*ophiocephalus*			46	46A	46	46			ACN=46	Black Sea	V-72
Gobius	*paganellus*			45	1M + 44 ST/A	46		4			Spain (Mediterranean)	G-76
Gobius	*paganellus*			45	3M + 42 ST/A	48		4			Spain (Mediterranean)	G-76
Gobius	*paganellus*		F, M	45	2 M/SM + 43 ST/A	47		4		ACN=46	Mediterranean	G-76, V-49
Gobius	*paganellus*		M	46	46 ST/A	46				ACN=46	Spain (Málaga)	T-33
Gobius	*paganellus*		F	46	1 M/SM + 45 ST/A	47				ACN=46	Italy (Palermo)	V-49
Gobius	*paganellus*		F, M	46	2 M/SM + 44 ST/A	48				ACN=48	Mediterranean	V-49, T-33
Gobius	*paganellus*		F	46	2M + 44A	48	48		0.8 FD	XX, ACN=46	Spain (Málaga)	T-32, A-44, C-9
Gobius	*paganellus*		M	46	1M + 45A	47	47			XY, ACN=46	Spain (Málaga)	T-32
Gobius	*paganellus*		F, M	47	1 M/SM + 46 ST/A	48				ACN=47	Italy (Palermo)	V-49
Gobius	*paganellus*		F, M	47	1 M/SM + 46 ST/A	48				ACN=48	Mediterranean	V-49, T-33
Gobius	*paganellus*		M	47	47 ST/A	47				ACN=47	Spain (Málaga)	T-33

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Gobius	*paganellus*		F	48	48A	48	48			ACN=48	Italy (Palermo)	V-49
Gobius	*paganellus*		F, M	48	48 ST/A	48				ACN=48	Mediterranean	V-49, T-33
Gobius	*paganellus*		F	48	1SM + 47A	49	49			ACN=48	Italy (Palermo)	V-49
Gobius	*paganellus*		M	48	1M/SM + 47A	49	49				Spain (Málaga)	T-33
Gobiusculus	*flavescens*		F, M	46	6 M/SM + 40A	52	52	2		ACN=46	Norway	K-131
Mesogobius	*batrachocephalus*			30	16 M/SM + 14A	46	46			ACN=46	Black Sea	G-64
Mesogobius	*batrachocephalus*	*Gobius*		30	16M + 14A	46	46				Black Sea	I-18
Neogobius	*cephalargoides*			46	46A	46	46				Black Sea	E-9
Neogobius	*constructor*	*platygobius construtor*		42	4 M/SM + 38A	46	46			ACN=46	Georgia (Tbilisi Reservoir)	V-18, V-23, V-103
Neogobius	*constructor*	*platygobius construtor*		44	2M + 42A	46	46			ACN=46	Black Sea basin	V-18, V-23, V-103
Neogobius	*constructor*	*platygobius construtor*		44	2M + 2SM + 40A	48	48			ACN=46	Black Sea basin	V-18, V-23, V-103
Neogobius	*cyrius*	*platygobius construtor*		37	9 M/SM + 2ST + 26A	46	48			ACN=46	Georgia (Kura R.)	V-18, V-23, V-103
Neogobius	*cyrius*	*platygobius construtor*		38	8 M/SM + 30A	46	46			ACN=46	Georgia (Tbilisi Reservoir)	V-18, V-23, V-103
Neogobius	*cyrius*	*platygobius construtor*		40	6 M/SM + 34A	46	46			ACN=46	Georgia (Kura R.)	V-18, V-23, V-103
Neogobius	*cyrius*	*platygobius construtor*		41	5 M/SM + 1ST + 35A	46	47			ACN=46	Georgia (Kura R.)	V-23, V-103
Neogobius	*eurycephalus*		F, M	32	12M + 2SM + 18A	46	46	2		ACN=46	Danube Delta system	E-9
Neogobius	*eurycephalus*		F, M	31	13M + 2SM + 16A	46	46	2		ACN=46	Danube Delta system	E-9
Neogobius	*eurycephalus*		M	30	14M + 2SM + 14A	46	46	2		ACN=46	Danube Delta system	E-9
Neogobius	*fluviatilis fluviatilis*			46	46A	46	46			ACN=46	Russia (Don R.)	G-63
Neogobius	*fluviatilis pallasi*			46	46A	46	46			ACN=46	Russia (Don R.)	G-63
Neogobius	*gorlap*		F, M	46	46 ST/A	46					Caspian basin	V-21
Neogobius	*gymnotrachelus*			46	46A	46	46			ACN=46	Black Sea basin	G-64
Neogobius	*gymnotrachelus*			46	2 SM/ST + 44A		48			ACN=46	Black Sea basin	G-64
Neogobius	*gymnotrachelus*			46	1M + 1SM + 44A	48	48			ACN=46	Black Sea basin	G-64
Neogobius	*kessleri*		F	30	14M + 2SM + 14 ST/A	46					Black Sea basin	V-21
Neogobius	*kessleri*		M	29	15M + 2SM + 12 ST/A	46					Black Sea basin	V-21
Neogobius	*kessleri kessleri*			30	14M + 2SM + 14A	46	46			ACN=46	Black Sea basin	G-64
Neogobius	*kessleri kessleri*			29	17 M/SM + 12A	46	46			ACN=45	Black Sea basin	G-64
Neogobius	*melanostomus*	*Gobius*		46	46A	46	46		(2.5 FIA)		Black Sea basin	I-18, H-41
Neogobius	*melanostomus affinis*			46	46A	46	46				Black Sea basin	V-72
Neogobius	*melanostomus*	*cephalarges*		46	46A	46	46			ACN=46	Azov Sea basin	V-23
Neogobius	*rhodioni*	*platyrostris*		46	46A	46	46			ACN=46	Black Sea basin	V-23, V-103
Padogobius	*bonelli*	*martensii*	F	46	3M + 2SM + 3ST + 38A	51	54			ACN=47	Italy (Liguria)	C-31
Pomatoschistus	*lozanoi*		F, M	37	3M + 12SM + 10ST + 12A	52	62				Dutch North Sea	W-21
Pomatoschistus	*microps*		F, M	46	30SM + 16ST	76	92			ACN=46	UK (Devon)	W-23

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Pomatoschistus	*microps*		F, M	46	4M + 16SM + 20ST + 6A	66	86			ACN=46	Germany (Baltic Sea)	K-74
Pomatoschistus	*minutus*		F, M	46	4M + 16SM + 16ST + 10A	66	82			ACN=46	Germany (Baltic Sea)	K-74
Pomatoschistus	*minutus*		F, M	46	18SM + 18ST + 10A	64	82	2		ACN=46	Norway	K-131
Pomatoschistus	*minutus*		F, M	46	6SM + 24ST + 16A	52	76			ACN=46	UK (Plymouth)	W-21
Pomatoschistus	*norvegicus*		F, M	32	10M + 10SM + 8ST + 4A	52	60				UK (Plymouth)	W-21
Pomatoschistus	*pictus*		F, M	46	22 M/SM + 12ST + 12A	68	80	2		ACN=46	Norway	K-131
Proterorhinus	*marmoratus*		F, M	46	46A	46	46			XX/XY	Slovakia	R-8
Proterorhinus	*marmoratus*			46	46A	46	46				Russia (Don R.)	G-63, V-72
Valenciennea	*muralis*	*Eleotris*		46	46A	46	46			ACN=46	India (WB)	K-139
Valenciennea	*strigata*	*Eleotriodes strigatus*		44	2M + 42 ST/A	46				ACN=44	Japan (Okinawa)	A-57
Yongeichthys	*criniger*	*Ctenogobius*	F, M	50	34 M/SM + 6ST + 10A	84	90			ACN=50	Japan (Okinawa)	A-57
Zosterisessor	*ophiocephalus*		F, M	46	2M + 44 ST/A	48		2		ACN=46	Italy (Ancona)	C-15
Zosterisessor	*ophiocephalus*	*Gobius*		46	46A	46	46				Black Sea	V-72
Gobionellinae												
Acanthogobius	*elongata*?	sp.	F, M	42	8 M/SM + 34 ST/A	50				ACN=46	Korea (Kunsan)	L-14
Acanthogobius	*flavimanus*		M	44	36ST + 8A	44	80			ACN=44	Japan (Kanagawa)	A-52, A-62
Acanthogobius	*flavimanus*			44	10ST + 34A	44	54			ACN=44	Japan (Yamaguchi)	N-31
Acanthogobius	*flavimanus*		F, M	44	44A	44	44				Korea (Dadaepo)	L-14
Acanthogobius	*flavimanus*			44	44A	44	44			ACN=44	China (Shandong)	W-7
Acanthogobius	*hasta*		F, M	44	6 M/SM + 38 ST/A	50				ACN=44	Korea (Kunsan)	L-14
Acanthogobius	*hasta*		F, M	44	2M + 42 ST/A	46				ACN=44	Korea (Gyehwato)	L-79
Acanthogobius	*hasta*	*Synechogobius*		44	2M + 42 ST/A	46				ACN=44	Japan (Ariake Sea)	A-62
Acanthogobius	*hasta*	*Synechogobius*		44	2M + 42 ST/A	46				ACN=44	China	Y-21
Acanthogobius	*lactipes*		F, M	40	40A	40	40			ACN=46	Korea (Pi-in)	L-14
Acanthogobius	*lactipes*	*Aboma*	F, M	40	40 ST/A	40		2		ACN=44	Japan (Lake Kasumigaura)	A-52, A-57
Awaous	*flavus*	*strigatus*		46						X_1X_2Y	(Brazil)	O-86
Awaous	*grammepomus*		F, M	46	46A	46	46			ACN=46	India (WB)	K-42
Awaous	*tajasica*			46	46A	46	46				Brazil	S-196
Brachygobius	*nunus*			48							(S. Asia)	P-44
Chaenogobius	*annularis*	*Chasmichthys dolichognathus*		44	44 ST/A	44				ACN=44	Japan (Kanagawa)	A-52, A-62
Chaenogobius	*annularis*	*Chasmichthys dolichognathus*	F, M	44	44A	44	44			ACN=44	Korea (Kunsan)	L-79, L-14
Chaenogobius	*gulosus*	*Chasmichthys*		44	44 ST/A	44				ACN=44	Japan (Chiba, Kanagawa)	A-62
Chaenogobius	*gulosus*	*Chasmichthys*		44	16ST + 28A	44	60			ACN=44	Japan (Yamaguchi)	N-31
Chaenogobius	*gulosus*	*Chasmichthys*	F, M	44	8 M/SM + 36 ST/A	52				ACN=44	Korea (Woolsan)	L-14
Ctenogobius	*shufeldti*	*Gobionellus*	F	48	48A	48	48			$X_1X_1X_2X_2$, ACN=48	USA (LA)	P-24

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ctenogobius	*shufeldti*	*Gobionellus*	M	47	1M + 46A	48	48			X_1X_2Y, ACN=48	USA (LA)	P-24
Gillichthys	*mirabilis*		F, M	44	12ST + 32A	44	56			ACN=44	USA (CA)	C-53
Gillichthys	*seta*		F	44	6M + 14ST + 24A	50	64			ACN=44	Gulf of California	C-53
Gobionellus	*microdon*			56	4M + 6SM + 46 ST/A	66					Mexico	U-82
Gymnogobius	*breunigii*	*Chaenogobius*		44	36 M/SM/ST + 8A		80			ACN=44	Japan (Yamaguchi)	N-31
Gymnogobius	*breunigii*	*Chaenogobius*	F, M	42	22 M/SM + 20 ST/A	64				ACN=42	Korea (Samchuk)	L-14
Gymnogobius	*heptacanthus*	*Chaenogobius*	M	44	44 ST/A	44					Korea (Dolsanto)	L-79
Gymnogobius	*isaza*	*Chaenogobius*		44	12SM + 32ST	56	88			ACN=44	Japan (Lake Biwa)	A-62
Gymnogobius	*castaneus*	*Rhodoniichthys laevis*	F, M	42	14 M/SM + 28ST	56	84				Japan (Tokyo)	A-60
Gymnogobius	*castaneus*	*Chaenogobius urotaenia*		42	14SM + 28ST	56	84			ACN=42	Japan (Hokkaido)	Y-5
Gymnogobius	*mororanus*	*Chaenogobius*	F, M	42	12 M/SM + 30 ST/A	54				ACN=42	Korea (Kunsan)	L-14
Gymnogobius	*urotaenia*	*Chaenogobius annularis*		44	36 M/SM + 8ST	80	88		(2.4* FCM)	ACN=44	Japan (Kanto district)	A-60, O-48
Gymnogobius	*urotaenia*	*Chaenogobius annularis*		44	18SM + 26ST	62	88			ACN=44	Japan (Lake Biwa)	A-62
Gymnogobius	*urotaenia*	*Chaenogobius annularis*		44	38 SM/ST + 6A		82			ACN=44	Japan (Yamaguchi)	N-31
Gymnogobius	*urotaenia*	*Chaenogobius annularis*	F, M	44	40 M/SM + 4 ST/A	84				ACN=44	Korea (Kum R.)	L-14
Gymnogobius	*urotaenia*	*Chaenogobius annularis*		44	20M + 22SM + 2A	86	86			ACN=44	China (Liaoning)	M-35
Luciogobius	*grandis*			44						ACN=44	Japan (Izu Peninsula)	A-123
Luciogobius	*guttatus*		F	44	12ST + 32A	44	56			ACN=44	Japan (Izu Peninsula)	M-102
Luciogobius	*guttatus*			44							Japan (Kanagawa)	A-52
Luciogobius	*guttatus*			44	14M + 14SM + 16A	72	72			ACN=44	China (Liaoning)	M-32
Mugilogobius	*abei*		F, M	46	46 ST/A	46				ACN=46	Korea (Kunsan)	L-14
Mugilogobius	*abei*			46		46					Japan (Okayama)	A-52
Pterogobius	*elapoides*			44	14SM + 30ST	58	88			ACN=44	Japan (Chiba, Kanagawa)	A-52, A-62
Pterogobius	*zonoleucus*			44	14SM + 30 ST/A	58				ACN=44	Japan (Kanagawa)	A-62
Quietula	*guaymasiae*		F, M	42	6M + 4SM + 32A	52	52			ACN=42	Gulf of California	C-77
Quietula	*y-cauda*		F	42	42A	42	42			ACN=42	Gulf of California	C-77
Rhinogobius	sp. CB	*brunneus*, Shimayoshinobori		44	44 ST/A	44				ACN=44	Japan (Chiba)	A-62
Rhinogobius	sp. LD	*brunneus*, Ooyoshinobori	F, M	44	44 ST/A	44				ACN=44	Japan (Itoh)	A-62
Rhinogobius	sp. DA	*brunneus*, Kuroyoshinobori	F, M	44	44 ST/A	44				ACN=44	Japan (Tokyo)	A-62
Rhinogobius	*brunneus*		F, M	44	44A	44	44			ACN=44	W. Japan	N-1, N-31
Rhinogobius	*brunneus*		F, M	44	44A	44	44			ACN=44	Korea (Pongdong)	L-14
Rhinogobius	*flumineus*	*Tukugobius*	F, M	44	44A	44	44		3.0* FCM	ACN=44	W. Japan	N-1, O-48
Rhinogobius	*flumineus*			44	44 ST/A	44				ACN=44	Japan	A-52
Rhinogobius	*giurinus*			44	44A	44	44			ACN=44	Japan (Yamaguchi)	N-31

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Rhinogobius	*giurinus*	*Ctenogobius*		44	44A	44	44			ACN=44	China (Guangdong)	G-67, Y-15
Rhinogobius	*giurinus*			44	44 ST/A	44				ACN=44	China (Kunming)	L-38
Rhinogobius	*giurinus*?	*Ctenogobius*		44	8M + 12SM + 24A	64		2-4		ACN=44	China (Anhui)	Z-38
Rhinogobius	*shennongensis*	*Ctenogobius*		44	44A	44	44				China (Wuhan)	D-18
Stigmatogobius	*sadanundio*	*Gobius*		48					2.8 BFA			H-13
Stigmatogobius	*sadanundio*			46	2SM + 44A	48	48				India (WB)	K-46
Tridentiger	*brevispinis*	*obscurus brevispinis*	F, M	44	10 M/SM + 34ST	54	88			ACN=44	Japan (Lake Kasumigaura)	A-52, A-60
Tridentiger	*nudicervicus*			44		62					Korea	L-80
Tridentiger	*obscurus*		F, M	44	12 M/SM + 32 ST/A	56				ACN=44	Korea (Samchuk)	L-14
Tridentiger	*obscurus*	*obscurus obscurus*		44	10 M/SM + 34ST	54	88			ACN=44	Japan (Chiba)	A-60
Tridentiger	*obscurus*	*obscurus obscurus*		44	26 M/SM/ST + 18A		70			ACN=44	Japan (Yamaguchi)	N-31
Tridentiger	*trigonocephalus*		F, M	44	16 M/SM + 28 ST/A	60		2		ACN=44	Japan (Kanagawa)	A-52, A-60
Tridentiger	*trigonocephalus*			44	28 M/SM/ST + 16A		72			ACN=44	Japan (Yamaguchi)	N-31
Tridentiger	*trigonocephalus*		F, M	44	20 M/SM + 24 ST/A	64				ACN=44	Korea (Gyeyato)	L-79
Tridentiger	*trigonocephalus*			44	20M + 12SM + 12A	76	76			ACN=44	China (Liaoning)	M-32
Tridentiger	*trigonocephalus*			44	10M + 28SM + 2ST + 4A	82	84			ACN=44	China (Zhejiang)	F-8
Tridentiger	sp.		F, M	44	18 M/SM + 26 ST/A	62				ACN=44	Korea (Kunsan)	L-14
Sicydiinae												
Sicyopterus	*japonicus*			44	10 M + 10SM + 24 ST/A	64				ACN=46	Japan (Chiba)	A-73
Oxudercinae												
Periophthalmini												
Periophthalmodon	*schlosseri*			46	46A	46	46		1.9 FIA	ACN=46	Malaysia	M-52, H-40
Periophthalmus	*chrysospilos*			56							Malaysia	M-52
Periophthalmus	*modestus*	*cantonensis*		46	18M + 12SM + 16 ST/A	76				ACN=46	Japan (Tokyo Bay)	A-52, A-62
Periophthalmus	*modestus*			46	32 M/SM + 14 ST/A	78				ACN=46	Japan	M-52
Periophthalmus	*modestus*	*cantonensis*		46	34 M/SM/ST + 12A		80			ACN=46	Japan (Ariake Sea)	N-31
Periophthalmus	*modestus*	*cantonensis*	F, M	46	16 M/SM + 30A	62	62			ACN=46	Korea (Kohwato)	L-79
Apocryptei												
Apocryptes	*bato*		M	46	24M + 10SM + 12A	80	80			ACN=46	India (WB)	N-15
Apocryptodon	*madurensis*			48							India	V-33
Apocryptodon	*punctatus*			42	24 M/SM + 18 ST/A	66				ACN=44	Japan (Ariake Sea)	M-52
Parapocryptes	*serperaster*	*Apocryptes*		46	8M + 16SM + 4ST + 18A	70	74			ACN=46	India (WB)	K-139
Pseudapocryptes	*borneensis*			48							India	V-33
Pseudapocryptes	*lanceolatus*	*Apocryptes*	F	38	14M + 22SM + 2ST	74	76			ACN=46	India (WB)	N-15

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Boleophthalmi												
Boleophthalmus	*boddarti*			46	46A	46	46			ACN=46	Malaysia	M-52
Boleophthalmus	*boddarti*	*boddaerti*	F, M	46	46A	46	46			ACN=46	India	S-177
Boleophthalmus	*boddarti*	*Gobius striatus*		46							India	V-33
Boleophthalmus	*dussumieri*	*dentatus*	F, M	46	14M + 18SM + 14A	78	78			ACN=46	India (WB)	K-39
Boleophthalmus	*dussumieri*			46							India	V-33, K-102
Boleophthalmus	*dussumieri*			46	4M + 8ST + 34A	50	58			ACN=46	Malaysia	M-52
Boleophthalmus	*pectinirostris*			46	46 ST/A	46				ACN=46	Japan (Ariake Sea)	A-62
Boleophthalmus	*pectinirostris*			46	46A	46	46			ACN=46	Japan (Ariake Sea)	N-31, M-52
Boleophthalmus	*pectinirostris*			46	2ST + 44A	46	48			ACN=46	China (Zhejiang)	F-8
Scartelaos	*cantoris*	*Boleophthalmus glaucus*	F, M	46	12M + 20SM + 2ST + 12A	78	80			ACN=46	India (WB)	M-24
Scartelaos	*histophorus*			48	8 M/SM + 40 ST/A	56					Malaysia	M-52
Amblyopinae												
Odontamblyopus	*rubicundus*			46	4M + 16SM + 26 ST/A	66				ACN=46	Japan (Ariake Sea)	A-62
Odontamblyopus	*rubicundus?*	*rubicundus*		38	20M + 18SM	76	76				China	M-36
Odontamblyopus	*rubicundus*		F, M	46	4M + 24SM + 8ST + 10A	74	82			ACN=46	India (WB)	K-42
Odontamblyopus	*rubicundus*	*Gobioides*	M	46	2M + 26SM + 10ST + 8A	74	84			ACN=46	India (WB)	M-24
Trypauchen	*vagina*		M	46	12M + 6SM + 10ST + 18A	64	74			ACN=46	India (WB)	K-29
Suborder Kurtoidei												
Kurtidae												
Kurtus	*gulliveri*		F, M	44	2SM + 4A + 38 non-identified					ACN=46	Australia (N. Territory)	E-10
Suborder Acanthroidei												
Acanthuridae												
Acanthurus	*bahianus*			36	16 non-A + 20A		52				Brazil (RN, BA)	G-12
Acanthurus	*chirurgus*			34	16 non-A + 18A		50		1.4 FD		Brazil (RN)	G-12, G-85, M-133
Acanthurus	*coeruleus*			48	4 non-A + 44A		52				Brazil (RN, BA)	G-12
Acanthurus	*triostegus*			48	48A	48	48		1.6* FCM	ACN=48	Japan (Yakushima)	A-65, O-48
Ctenochaetus	*striatus*			48	48A	48	48		1.7* FCM		Japan	O-48
Prionurus	*scalprum*	*microlepidotus*		48	48A	48	48			ACN=48	Japan (Chiba)	A-65
Ephippidae												
Platax	*teira*	*orbicularis*		48	48A	48	48			ACN=48	Japan (Yakushima)	A-66

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scatophagidae												
Scatophagus	*argus*		F	48	2SM + 46A	50	50		(1.5 BFA)	ACN=48	India (Orissa)	C-61, H-13
Scatophagus	*argus*			48							India (Portonovo)	N-13
Scatophagus	*argus*		M	48	1M + 47A	49	49			XY, ACN=48	India	K-26
Scatophagus	*argus*		F	48	48A	48	48			XX, ACN=48	India	K-26
Scatophagus	*argus*			48	48A	48	48	2		ACN=48	(W. Pacific)	S-130
Scatophagus	*argus*			48	48A	48	48				China	Z-39
Selenotoca	*multifasciata*		M, F	48	48A	48	48		1.4 FIA	ACN=48	(W. Pacific)	S-130, H-41
Siganidae												
Siganus	*fuscescens*			48	2ST + 46A	48	50		1.2 FIA	ACN=48	Japan (Shimane)	K-68, H-41
Siganus	*javus*		F	48	48A	48	48			ACN=48	India (Orissa)	C-61
Siganus	*spinus*			42	6M + 36A	48	48		1.1* FCM, 1.2 FIA		Japan	O-48, H-40
Suborder Scombroidei												
Sphyraenidae												
Sphyraena	*tome*			48	48A	48	48				Brazil (RJ)	B-86
Scombridae												
Auxis	*rochei*			48		50			1.9 FD	ACN=48	Japan	I-9
Auxis	*thazard*			48	48A	48	48		1.8 FD, 1.7 FIA	ACN=48	Japan (Sanriku)	I-9, H-40
Katsuwonus	*pelamis*		M	48	48A	48	48		(1.6 FIA, 2.0 BFA)	ACN=48	Japan (Sanriku)	I-9, H-13, H-40
Katsuwonus	*pelamis*			48	48A	48	48			ACN=48	N. Pacific	R-38, S-95, S-96
Scomber	*australasicus*	*tapaeinocephalus*		48	2ST + 46A	48	50		1.7 FIA	ACN=48	Japan (Iwate)	I-1, H-40
Scomber	*japonicus*		F, M	48	2ST + 46A	48	50	2		ACN=48	Japan	M-99, K-50
Thunnus	*alalunga*			48	2M + 2SM + 2ST + 42A	52	54		1.8 FIA	ACN=48	N. Pacific	R-38, S-96, H-41
Thunnus	*albacares*			48	2M + 2SM + 2ST + 42A	52	54		1.8 FIA	ACN=48	N. Pacific	R-38, S-96, H-40
Thunnus	*orientalis*		M	48	4M + 6SM + 4ST + 34A	58	62			ACN=48	India (WB)	K-136
Thunnus	*thynnus*		F	48	2M + 2ST + 44A	50	52		1.7 FD, (1.6 FIA)		Japan (Sanriku)	I-1, I-9, H-40
Thunnus	*thynnus*		F	48	2M + 4ST + 42A	50	54		1.7 FD	ACN=48	Japan (Sanriku)	I-9

Table 6.40 Order PERCIFORMES. Part 5 Anabantoidei, Channoidei, and Caproidei

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Anabantoidei												
Anabantidae												
Anabantinae												
Anabas	*cobojius*	*oligolepis*		46						ACN=46	India (Andhra Pradesh)	D-25
Anabas	*testudineus*			48							India (Andhra Pradesh)	D-25
Anabas	*testudineus*			46	2M + 6SM + 6ST + 32A	54	60	2		ACN=46	India (Manipur)	K-138
Anabas	*testudineus*		F, M	46	2SM + 2ST + 42A	48	50	2		ACN=46	India	K-44
Anabas	*testudineus*			46	2SM + 44 ST/A	48		2		ACN=46	India (Delhi)	R-68
Anabas	*testudineus*		F, M	46	4ST + 42A	46	50			ACN=46	India (WB)	M-22
Anabas	*testudineus*		F	46	4 M/SM + 42A	50	50			ACN=46	(Asia)	A-3
Anabas	*testudineus*			46							(Bangladesh, Dhaka)	T-68
Ctenopominae												
Ctenopoma	*acutirostre*			48	48A	48	48			ACN=48	(Africa)	K-110
Ctenopoma	*muriei*			48	48A	48	48			ACN=48	W. Ethiopia	K-110
Ctenopoma	*ocellatum*			48	48 ST/A	48				ACN=48	(Africa)	K-110
Ctenopoma	*petherici*			48	48A	48	48			ACN=48	W. Ethiopia	K-110
Ctenopoma	sp.			48	48A	48	48			ACN=48	(Africa)	K-110
Microctenopoma	*ansorgii*	*ansorgei*		46	2M + 44A	48	48				(Africa)	K-110
Microctenopoma	*congicum*			46	2M + 44A	48	48			ACN=48	(Africa)	K-110
Microctenopoma	*pekkolai*			48	2M + 2SM + 44 ST/A	52					W. Ethiopia	K-110
Helostomatidae												
Helostoma	*temminkii*	*temmincki*	F, M	48	48A	48	48		1.8 BFA	ACN=48	(S. E. Asia)	A-3, H-13
Osphronemidae (= Belontiidae)												
Luciocephalinae												
Ctenops	*nobilis*		F, M	44	8M + 8SM + 28A	60	60			ACN=44	India	R-77, R-78
Luciocephalus	*pulcher*			20	20A	20	20				Thailand	D-28
Sphaerichthys	*osphromenoides*		F, M	16	14 M/SM + 2A	30	30			ACN=42	(Asia)	C-89
Sphaerichthys	*osphromenoides*			16	10M + 4SM + 2A	30	30				(India)	K-134
Trichogaster	*chuna*	*Colisa*	F, M	46	10M + 8SM + 28A	64	64		(1.3 FCM)	ACN=46	(India)	R-77, V-86
Trichogaster	*chuna*	*Colisa sota*		46	20M + 8SM + 6ST + 12A	74	80				India	L-1
Trichogaster	*chuna*	*Colisa chuna* var. *sota*		46	28M + 12SM + 6A	86	86				India (Assam)	K-46, C-108
Trichogaster	*fasciatus*	*Colisa fasciatus*		48	16M + 16SM + 6ST + 10A	80	86	2		ACN=48	India (Manipur)	K-138
Trichogaster	*fasciatus*		F	48	15M + 12 SM/ST + 21A		75			ZW, ACN=48	India (Haryana)	R-47
Trichogaster	*fasciatus*		M	48	14M + 12 SM/ST + 22A		74			ZZ, ACN=48	India (Haryana)	R-47

Table 6.40 Order PERCIFORMES. Part 5 Anabantoidei, Channoidei, and Caproidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Trichogaster	*fasciatus*	*Colisa fasciata*	F	48	17M + 16SM + 15A	81	81			ZW, ACN=48	India (Haryana)	R-54, R-77, R-78, S-57
Trichogaster	*fasciatus*	*Colisa fasciata*	M	48	16M + 16SM + 16A	80	80			ZZ, ACN=48	India (Haryana)	R-54, R-77, R-78, S-57
Trichogaster	*fasciatus*	*Colisa fasciata*	F	48	15M + 16SM + 4ST + 13A	79	83	6		ZW, ACN=48	India (Manipur)	S-175
Trichogaster	*fasciatus*	*Colisa fasciata*	M	48	16M + 16SM + 4ST + 12A	80	84			ZZ, ACN=48	India (Manipur)	S-175
Trichogaster	*fasciatus*		F, M	48	8M + 20SM + 12ST + 8A	76	88				India (WB)	M-26
Trichogaster	*fasciatus*		F, M	46	18M + 12SM + 16A	76	76			ACN=46	India (Orissa)	T-50
Trichogaster	*labiosus*	*Colisa*		48	22M + 12SM + 4ST + 12A	82	86				India	L-1
Trichogaster	*labiosus*		M	48	12M + 6SM + 12ST + 18A	66	78				India (WB)	M-26
Trichogaster	*labiosus*	*Colisa*	F, M	48	22M + 16SM + 10A	86	86			ACN=48	(India)	R-77
Trichogaster	*lalius*	*Colisa*	F	45	14M + 12 SM/ST + 19A		71			ZO	India (Haryana)	R-50
Trichogaster	*lalius*	*Colisa*	M	46	14M + 12 SM/ST + 20A		72			ZZ	India (Haryana)	R-50
Trichogaster	*lalius*	*Colisa*	F	46	14M + 6SM + 26A	66	66			XX, ACN=46	India (Haryana)	R-77, R-78
Trichogaster	*lalius*	*Colisa*	M	45	14 M + 6SM + 25A	65	65			XO	India (Haryana)	R-77, R-78
Trichogaster	*lalius*	*larius*	F, M	46	14M + 10SM + 12ST + 10A	70	82			ACN=46	India (WB)	K-34
Trichogaster	*lalius*	*Colisa lalia*		46	24 M/SM + 22 ST/A	70			(1.2 FCM, 1.2 BFA)	ACN=46	(Asia)	A-3, V-101, H-39
Trichopodus	*cantoris*	*Trichogaster pectoralis*		46	46A	46	46				(SE Asia)	K-114
Trichopodus	*leeri*	*Trichogaster*	F, M	46	46A	46	46		(1.4 FCM)	ACN=46	(India)	R-77, V-86
Trichopodus	*leeri*	*Trichogaster*	M	46	46A	46	46				(Asia)	A-3
Trichopodus	*microlepis*	*Trichogaster*		46	46A	46	46					K-134
Trichopodus	*microlepis*	*Trichogaster*		48	48A	48	48		1.8* FCM		(Asia)	O-48
Trichopodus	*sumatranus*	*Trichogaster*		48		48					(Asia)	C-89
Trichopodus	*trichopterus*	*Trichogaster*	M	46	46A	46	46		(1.2 FCM)	ACN=46	(Asia)	A-3, V-86
Trichopodus	*t. sumatranus*	*Colisa*	F, M	46	46A	46	46			ACN=46	(India)	R-77
Trichopodus	*t. trichopterus*	*Colisa*	F, M	46	46A	46	46			ACN=46	(India)	R-77
Macropodusinae												
Betta	*splendens*			42					1.3 FIA, 1.3 BFA		(Thailand)	H-13, H-41
Macropodus	*chinensis*			48	6M + 2SM + 40A	56	56				Korea	L-15
Macropodus	*chinensis*			46	4M + 4SM + 38A	54	54		2.8* FD		China (Wuhan)	D-18, C-83
Macropodus	*ocellatus*		F, M	46	8M + 8SM + 14ST + 16A	62	76			ACN=48	(Asia)	K-97
Macropodus	*opercularis*		F, M	46	8M + 8SM + 16ST + 14A	62	78		(1.1 FCM)		(Asia)	K-97, V-101
Macropodus	*opercularis*		F, M	46	4M + 10SM + 12ST + 20A	60	72		(1.2 BFA)	ACN=46	China (Guilin)	Y-15, H-13
Macropodus	*opercularis*			46	12 M/SM + 34 ST/A	58				ACN=46	(Asia)	A-3
Macropodus	*spechti*	*concolor*	F, M	46	10M + 2SM + 22ST + 12A	58	80			ACN=46	(Asia)	K-97
Osphronemus	*goramy*			48	2SM + 46A	50	50			ACN=48	(S. E. Asia)	K-97
Parosphromenus	*sumatranus*	*Colisa*		46	46A	46	46			ACN=46	(India)	R-77

Table 6.40 Order PERCIFORMES. Part 5 Anabantoidei, Channoidei, and Caproidei (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Channoidei												
Channidae												
Channa	*argus*		F, M	48	4SM + 44 ST/A	52			1.7* FD	ACN=48	China (Wuhan)	L-31, Y-15, C-83
Channa	*argus*			48	2M + 4SM + 42ST	54	96	4		ACN=48	China (Shashi)	Z-21
Channa	*argus*	*Ophiocephalus*		48	20ST + 28A	48	68				China (Hubei)	L-53
Channa	*argus*	*Ophiocephalus*	F, M	48	4SM + 22ST + 22A	52	74			ACN=48	China (Beijing)	Z-31
Channa	*asiatica*		F, M	44	4M + 8SM + 32 ST/A	56			1.8* FD	ACN=46	China (Shaoguan)	L-31, Y-15, C-83
Channa	*asiatica*		F, M	46	2M + 8SM + 36 ST/A	56				ACN=46	China (Guangzhou)	L-31
Channa	*asiatica*			44	2M + 8SM + 28ST + 6A	54	82	4			China (Shashi)	Z-21
Channa	*barca*			38	6M + 6SM + 4ST + 22A	50	54			ACN=42	India (Assam, Meghalaya)	D-9
Channa	*gachua*		F, M	78	12M + 12SM + 54A	102	102				India (WB)	M-21
Channa	*gachua*		F, M	78	10M + 16SM + 52 ST/A	104			2.0 FD		India	B-2
Channa	*maculata*		F, M	42	4M + 2SM + 36 ST/A	48				ACN=46	China (Guangdong)	L-31, Y-15
Channa	*maculata*	*Ophiocephalus*	F, M	42							China	C-85
Channa	*marulius*			44	4M + 40A	48	48			ACN=44	India (Simlipal Hills)	K-41
Channa	*orientalis*?	*orientalis*		42	2M + 2SM + 38A	46	46			ACN=44	India (Assam)	K-41
Channa	*orientalis*			76	2M + 6SM + 68A	84	84				India (Assam, Meghalaya)	D-9
Channa	*orientalis*			78	34M + 2SM + 42 ST/A	114				ACN=78	Bangladesh (Dhaka)	R-102
Channa	*punctata*	*punctatus*	F, M	32	20M + 12SM	64	64	2			India (Haryana, U.P.)	R-70, R-73, S-2
Channa	*punctata*	*punctatus*	F, M	32	24M + 8SM	64	64		1.3 FD	ACN=42	India	B-2
Channa	*punctata*	*punctatus*	F, M	32	18M + 12SM + 2ST	62	64				India (WB)	M-21
Channa	*punctata*	*punctatus*	F, M	32	10M + 18SM + 4A	60	60				India (Haryana)	R-46, R-53
Channa	*punctata*	*punctatus*	F, M	32	16M + 14SM + 2A	62	62				India (Haryana)	R-75
Channa	*punctata*	var. A		34	16M + 14SM + 4A	64	64			ACN=42	India (Assam, Meghalaya)	D-9
Channa	*punctata*	var. B		32	16M + 16SM	64	64			ACN=42	India (Assam, Meghalaya)	D-9
Channa	*punctata*			32	24M + 2SM + 2ST + 4A	58	60				Bangladesh (Dhaka)	R-102
Channa	*stewartii*			66	12M + 6SM + 6ST + 42A	84	90				India (Assam, Meghalaya)	D-9
Channa	*stewartii*		M	104	2M + 102A	106	106				India (Nagaland)	R-65
Channa	*striata*	*striatus*	F, M	40	8M + 2SM + 2ST + 28A	50	52		1.5 FD	ACN=46	India	B-2
Channa	*striata*	*striatus*		40	8M + 6ST + 26A	48	54			ACN=46	India (Assam, Meghalaya)	D-9
Channa	*striata*	*striatus*	F, M	40	8M + 2SM + 30A	50	50				India (WB)	M-21
Parachanna	*obscura*	*Ophiocephalus obscurus*		42					2.0 BFA		(Africa)	H-13
Suborder Caproidei												
Caproidae												
Capros	*aper*			46	2M + 2SM + 8ST + 34A	50	58	2		ACN=48	France (Gulf of Lion)	V-67
Capros	*aper*			44	4M + 2SM + 8ST + 30A	50	58	2		ACN=48	France (Gulf of Lion)	V-67
Capros	*aper*			42	6M + 2SM + 8ST + 26A	50	58	2		ACN=48	France (Gulf of Lion)	V-67

Table 6.41 Order PLEURONECTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Pleuronectoidei												
Scophthalmidae												
Psetta	*maeotica*	*Rhombus maeoticus*		40	20M + 20 SM/A					ACN=44	Black Sea	I-19
Psetta	*maeotica*	*Rhombus maeoticus*		48						ACN=48	Black Sea	I-19
Psetta	*maeotica*	*Rhombus maeoticus*		44							Black Sea	V-72
Psetta	*maxima*	*Scophthalmus maximus*	F, M	44	4M + 12ST + 28A	48	60	2	(1.7 FIA)	ACN=44	Spain	B-53, P-63, H-41
Scophthalmus	*rhombus*			44	4M + 2SM + 38 ST/A	50		2		ACN=44	Spain	P-63
Paralichthyidae												
Citharichthys	*spilopterus*		F, M	28	14M + 6SM + 2ST + 6A	48	50			ACN=46	USA (LA)	L-17
Citharichthys	*spilopterus*		F, M	26	18 M/SM + 8 ST/A	44				ACN=38	Brazil (SP)	A-120
Etropus	*crossotus*		F, M	38	38 M/SM/ST		76		(2.0 BFA)	ACN=44	USA (LA)	L-17, H-13
Etropus	*crossotus*		F, M	38	26 M/SM + 12 ST/A	64				ACN=44	Brazil (SP)	A-120
Hippoglossina	*macrops*			48	48A	48	48			ACN=48	Chile (Coquimbo bay)	W-36
Paralichthys	*adpersus*			46	2M + 44 ST/A	48				ACN=48	Chile (Coquimbo bay)	W-36
Paralichthys	*dentatus*			48	48A	48	48				(W.N. Atlantic)	X-3
Paralichthys	*lethostigma*		M	48	20ST + 28A	48	68			ACN=48	USA (LA)	L-17
Paralichthys	*microps*			46	2M + 44 ST/A	48				ACN=48	Chile (Coquimbo bay)	W-36
Paralichthys	*olivaceus*			48	48A	48	48	2	(1.4* FCM)	ACN=48	Japan	K-48, O-48
Paralichthys	*olivaceus*		F	46	46A	46	46	2		ACN=46	Japan (Yamaguchi)	S-5
Paralichthys	*olivaceus*			48	48A	48	48				China	Y-20, X-3, Z-37
Paralichthys	*orbignyanus*			46	2M + 44 ST/A	48				ACN=46	Brazil (SC)	A-120
Paralichthys	*patagonicus*		F, M	46	46A	46	46			ACN=46	Brazil (SP)	A-120
Pseudorhombus	*arsius*		M	46	46 ST/A	46			1.0 FIA	ACN=46	India (Orissa)	P-17, H-40
Pseudorhombus	*cinnamoneus*			48	48A	48	48				China	Y-20
Pseudorhombus	*triocellatus*		F	48	48A	48	48			ACN=48	India (Orissa)	P-17
Xystreurys	*liolepis*		M	48	48A	48	48		1.6 FD, 1.5 BFA	ACN=48	(E. Pacific)	O-4, H-13
Pleuronectidae												
Cleisthenes	*herzensteini*	*pinetorum herzensteini*		44	4 SM/ST + 40A		48			ACN=48	Japan (Hokkaido)	F-53
Glyptocephalus	*stelleri*		M	46							Japan (Hokkaido)	Y-1
Hippoglossus	*hippoglossus*			48	48 ST/A	48			1.5 FIA		UK	B-71, H-41
Kareius	*bicoloratus*			48	48A	48	48	2	(1.3* FCM)	ACN=48	Japan (Hokkaido)	F-53, S-142, O-48
Kareius	*bicoloratus*		F	48	48A	48	48			ACN=48	China (Yellow Sea)	Z-15, Z-37, Y-20
Limanda	*ferruginea*	*Pleuronectes*		48	48A	48	48		1.5 FIA		East coast of Canada	A-120, H-41

Table 6.41 Order PLEURONECTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Limanda	*limanda*		F, M	46	46 ST/A	46				ACN=46	Europe (Irish Sea)	D-10
Limanda	*limanda*			46		46					Russia (White Sea)	L-88
Liopsetta	*glacialis*			48	48A	48	48				Russia (White Sea)	L-87, L-88
Microstomus	*achne*			48	48A	48	48			ACN=48	Japan (Hokkaido)	F-53
Microstomus	*achne*			48	48A	48	48				China	Y-20
Platichthys	*flesus*	*Pleuronectes*		48	48A	48	48				Russia (White Sea)	L-87
Platichthys	*flesus*			48	48A	48	48				Germany (Baltic Sea)	K-132
Platichthys	*flesus*			48	48A	48	48	2		ACN=48	Spain	P-63
Platichthys	*stellatus*			48	48A	48	48	2		ACN=48	Japan (Hokkaido)	F-53, S-142
Pleuronectes	*herzensteini*	*Limanda*	F, M	48	48A	48	48				Japan (Hokkaido)	F-53
Pleuronectes	*obscurus*			48	48A	48	48		1.2 FCM	ACN=48	Korea (Busan)	K-125
Pleuronectes	*platessa*			48	48A	48	48				(UK)	B-6
Pleuronectes	*platessa*			48	48A	48	48			ACN=48	UK	F-4
Pleuronectes	*platessa*			47	1M + 47A	48	48			ACN=48	UK	F-4
Pleuronectes	*punctatissimus*	*Limanda*	M	48	48A	48	48				Japan (Hokkaido)	F-53
Pleuronectes	*putnami*	*Liopsetta*		48							WN Atlantic	B-71
Pleuronectes	*schrenki*	*Limanda*		48	48A	48	48				Japan (Hokkaido)	F-53
Pleuronectes	*schrenki*			48	48A	48	48	2		ACN=48	Japan (Hokkaido)	S-142
Pleuronectes	*yokohamae*	*Limanda*		48	48A	48	48		1.3* FCM		Japan (Hokkaido)	F-53, O-48
Pleuronectes	*yokohamae*	*Pseudopleuronectes*		48	48A	48	48				China (Shandong)	Y-20
Pleuronectes	*yokohamae*			48	48A	48	48			ACN=48	Korea (Busan)	P-70
Pleuronichthys	*cornutus*			48	14M + 34A	62	62		1.1* FCM		Japan	O-48
Pleuronichthys	*cornutus*			48	12M + 2SM + 34A	62	62				China (Shandong)	Y-20
Pleuronichthys	*verticalis*		M	48	48A	48	48		1.3 FD	ACN=48	(E. Pacific)	O-4
Pseudopleuronectes	*americanus*			48					1.5 FD, 1.4 BFA		WN Atlantic	B-71, H-13
Verasper	*moseri*		F, M	46	2 SM/ST + 44A		48			ACN=46	Japan (Hokkaido)	F-53
Bothidae												
Bothus	*ocellatus*		F	32	18 M/SM + 14 ST/A	50				ACN=48	Brazil (SP)	A-120
Bothus	*podas*		F	38	12M + 2SM + 24ST	52		2		XX	Italy (Palermo)	V-100
Bothus	*podas*		M	38	12M + 2SM + 24ST	52		2		XY	Italy (Palermo)	V-100
Psettina	*tosana*			44	4M + 2SM + 6ST + 32A	50	56		1.1* FCM		Japan	O-48

Table 6.41 Order PLEURONECTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Achiridae												
Achirus	*declivis*		F, M	34	18 M/SM + 16 ST/A	52		2			Brazil (PA)	A-121
Achirus	*lineatus*		M	40	6M + 2SM + 16ST + 16A	48	64			ACN=46	USA (LA)	L-17
Achirus	*lineatus*		F, M	40	26 M/SM + 14 ST/A	66		2		ACN=46	Brazil (SP)	A-121
Catathyridium	*jenynsi*			40	10M + 30A	50	50				Argentina	F-20
Catathyridium	*jenynsi*		F, M	40	10 M/SM + 30 ST/A	50		2		ACN=48	Brazil (PR)	A-121
Gymnachirus	*nudus*		F, M	36	14 M/SM + 22 ST/A	50		2			Brazil (SP)	A-121
Hypoclinemus	*mentalis*		F, M	38	16 M/SM + 22 ST/A	54		2		ACN=48	Brazil (Acre)	A-121
Trinectes	*maculatus*		F, M	40	6M + 2SM + 2ST + 30A	48	50		1.3 BFA	ACN=46	USA (LA)	L-17, H-13
Trinectes	*paulistanus*		F	42	10 M/SM + 32 ST/A	52		2			Brazil (SP)	A-121
Trinectes	sp.		F, M	38	16 M/SM + 22 ST/A	54		2		ACN=48	Brazil (PA)	A-121
Soleidae												
Heteromycteris	*oculus*		F, M	48	4M + 2ST + 42A	52	54			ACN=48	India (Orissa)	P-17
Microchirus	*ocellatus*			42	14 M/SM + 28 ST/A	56					Italy (Palermo)	A-120
Pegusa	*lascaris*	*Solea lascaris nasuta*		42	2M + 6SM + 34 ST/A	50				ACN=46?	Black Sea	V-5
Pegusa	*lascaris*	*Solea*		42	8M + 8-10 SM + 26-24 A	58-60		2			Spain	P-63
Solea	*lutea*			30	14 M/SM + 16 ST/A	44					Croatia	S-86
Solea	*senegalensis*			42	6M + 4SM + 8ST + 24A	52	60			ACN=44	Spain	V-29
Solea	*solea*			42								B-6
Solea	*solea*			42	8M + 8-10 SM + 26-24 A	58-60		2			Spain	P-63
Solea	*solea*		F, M	42	8M + 10 SM/ST + 24A		60	2	1.5 FCM	ACN=46	Italy (Gulf of Venice)	L-83
Zebrias	*zebra*			46	46A	46	46				E. China Sea	F-53
Cynoglossidae												
Cynoglossus	*interruptus*		F	34	34A	34	34				Japan (Yamaguchi)	S-5
Cynoglossus	*puncticeps*		F	39	1M + 38A	40	40			ACN=40	India (Orissa)	P-17
Cynoglossus	*semilaevis*		F	42	42A	42	42			ZW	China (Shandong)	Z-35
Cynoglossus	*semilaevis*		M	42	42A	42	42			ZZ, ACN=42	China (Shandong)	Z-35
Paraplagusia	*bilineata*		F, M	38	4M + 2ST + 32A	42	44		1.2 FIA	ACN=42	India (Orissa)	P-17, H-40
Paraplagusia	*japonica*		F	38	6M + 2ST + 30A	44	46		1.5* FCM	ACN=42	Japan (Yamaguchi)	S-5, O-48
Symphurus	*plagusia*		F	46	18M + 6SM + 2ST + 20A	70	72			XX, ACN=46	USA (LA)	L-17
Symphurus	*plagusia*		M	45	17M + 6SM + 2ST + 20A	68	70			XO	USA (LA)	L-17
Symphurus	*tessellates*		F, M	46	16 M/SM + 30 ST/A	62				ACN=46	Brazil (SP)	A-120

Table 6.42 Order LOPHIIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Antennariidae												
Antennarius	*nummifer*			48	16 M/SM + 32 ST/A	64				ACN=48	Japan (Chiba)	A-69
Histrio	*histrio*			46	46 ST/A	46				ACN=46	Japan (Kanagawa)	A-69
Lophiidae												
Lophius	*piscatorius*		F, M	46	14 M/SM + 32 ST/A	60		2		ACN=46	Italy (Palermo)	V-57, V-65

Table 6.43 Order TETRAODONTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Balistoidei												
Triacanthidae												
Triacanthus	*biaculeatus*			48	2M + 4ST + 42A	50	54				Japan	I-21
Triacanthus	*biaculeatus*	*brevirostris*	M	48	1M + 47A	49	49			ACN=48	India (Orissa)	C-62
Triacanthus	*biaculeatus*	*Tricanthus brevirostris*	F, M	48	48A	48	48			ACN=48	India (Orissa)	R-57
Pseudotriacanthus	*strigilifer*	*Triacanthus*	M	48	48A	48	48				India (Goa)	R-45
Balistidae												
Balistapus	*undulatus*		F	42	42A	42	42	2	1.5* FCM, 1.3 FIA	ACN=46	Japan (Okinawa)	T-9, O-48, H-41
Balistes	*capriscus*	*carolinensis*	F, M	44	44A	44	44	2	(1.1 FD)	ACN=46	Italy (Palermo)	V-57, V-65, M-133
Balistes	*capriscus*	*carolinensis*	F, M	44	44A	44	44	2		ACN=46	Spain (Malaga)	T-38
Balistes	*vetula*			44	44A	44	44	2		ACN=46	Brazil (Bahia)	S-110
Balistoides	*conspicillus*		F	44	44A	44	44	2		ACN=46	Japan (Okinawa)	T-9
Balistoides	*viridescens*			44	2M + 2SM + 40 ST/A	48		2	1.4* FCM	ACN=46	(Indo-West Pacific)	T-10, O-48
Melichthys	*niger*			40	40A	40	40	2	1.4 FCM	ACN=42	Brazil (Saint Pauls Rocks)	S-110, B-75
Melichthys	*vidua*		M	40	40 ST/A	40		2		ACN=42	(Indo-West Pacific)	K-71
Odonus	*niger*			42	42 ST/A	42		2		ACN=44	(Indo-West Pacific)	K-71
Pseudobalistes	*flavimarginatus*			44	2M + 42 ST/A	46				ACN=46	Japan (Yaku and Tanega Is)	A-64
Rhinecanthus	*aculeatus*			44	44A	44	44	2	1.3 FIA	ACN=46	Japan (Okinawa)	A-64, K-71, T-9, H-40
Rhinecanthus	*echarpe*			44	44 ST/A	44		2		ACN=46	(Indo-West Pacific)	K-71, T-9
Rhinecanthus	*verrucosus*			44	44A	44	44	2		ACN=46	Japan (Tanegashima)	A-64, K-71, T-9
Sufflamen	*chrysopterus*	*Hemibalistes*		46	46A	46	46		1.2 FIA	ACN=46	Japan (Yakushima)	A-64, H-40
Sufflamen	*fraenatus*		F	46	46A	46	46	2	1.3 FIA	ACN=46	Japan (Okinawa)	T-9, H-41

Table 6.43 Order TETRAODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Monacanthidae												
Cantherhines	*macrocerus*			40	40A	40	40				Brazil (RJ)	B-86
Cantherhines	*pardalis*	*Amanses sandwichiensis*		40	40 ST/A	40				ACN=40	Japan (Tanegashima)	A-64
Meuschenia	*scaber*	*Parika*	F, M	40	40A	40	40	2		ACN=40	New Zealand	M-112
Oxymonacanthus	*longirostris*			36	36A	36	36			ACN=36	Japan (Okinawa)	A-64
Paramonacanthus	*japonicus*	*Stephanolepis*	F	34	34A	34	34			ACN=36	Japan (W. Izu Peninsula)	M-98
Paramonacanthus	*japonicus*	*oblongus*	M	34	34A	34	34				Japan (W. Izu Peninsula)	M-98
Rudarius	*ercodes*			36	36A	36	36			ACN=36	Japan (Izu Peninsula)	A-64
Stephanolepis	*cirrhifer*			34	34A	34	34		(1.2* FCM)	ACN=34	Japan (W. Izu Peninsula)	M-98, O-48
Stephanolepis	*cirrhifer*		F	34	34A	34	34			$X_1X_1X_2X_2$, ACN=34	Japan (Izu Peninsula)	M-100
Stephanolepis	*cirrhifer*		M	33	1M + 32A	34	34			X_1X_2Y, ACN=34	Japan (Izu Peninsula)	M-100
Stephanolepis	*cirrhifer*			33	1M + 32A	34	34				China (Shandong)	W-6
Stephanolepis	*hispidus*		F	34	34A	34	34	2	1.2 FCM, 1.4 BFA	$X_1X_1X_2X_2$, ACN=34	Brazil (Bahia, RJ)	S-181, B-75, H-13
Stephanolepis	*hispidus*		M	33	1M + 32A	34	34	2		X_1X_2Y, ACN=34	Brazil (Bahia, RJ)	S-181
Thamnaconus	*modestus*	*Navodon*		40	40 ST/A	40			1.1* FCM	ACN=40	Japan (W. Izu Peninsula)	M-98, O-48
Thamnaconus	*septentrionalis*	*Navodon*	F, M	40	40A	40	40			ACN=40	China (Yellow Sea)	Z-15, W-6, Y-21
Ostraciidae												
Lactoria	*cornuta*			48	2M + 2SM + 44ST	52	96				Japan	I-23, O-72
Lactoria	*diaphana*			48	4M + 44A	52	52				Japan	I-23
Lactoria	*diaphana*			36	10M + 2SM + 24 ST/A	48				ACN=44	Japan (Wakayama)	A-79
Lactoria	*fornasini*			34	12M + 6SM + 16 ST/A	52					Japan	I-23
Ostracion	*cubicus*	*tuberculatus*		50	4SM + 46 ST/A	54				ACN=48	Japan (Ishigaki and Yaku Is)	A-64
Ostracion	*immaculatus*			50	4SM + 46 ST/A	54				ACN=48	Japan (Wakayama)	A-79
Suborder Tetraodontoidei												
Tetraodontidae												
Arothron	*hispidus*			42					0.8* FCM, 1.0 FIA		India (Portonovo)	N-13, O-48, G-85
Arothron	*immaculatus*		F, M	42	12M + 14SM + 16 ST/A	68				ACN=42	India (Orissa)	C-62
Arothron	*manilensis*	*Tetraodon immaculatus*		42	14M + 16SM + 12ST	72	84		1.0 FIA	ACN=42	Japan (Okinawa)	A-64, G-85, H-41
Arothron	*meleagris*			38					0.8* FCM		Japan	O-48
Arothron	*nigropunctatus*	*Tetraodon*		38	14M + 20SM + 4ST	72	76			ACN=40	Japan (Okinawa)	A-64
Arothron	*reticularis*		M	42	12M + 14SM + 16 ST/A	68				ACN=44	India (Orissa)	C-62
Canthigaster	*coronata*			28	6M + 2SM + 20 ST/A	36					Japan (Wakayama)	A-79
Canthigaster	*rivulata*			34	4M + 6SM + 10ST + 14A	44	54		0.7* FCM	ACN=34	Japan (Chiba)	A-64, M-2

Table 6.43 Order TETRAODONTIFORMES (continued)

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Chelonodon	*patoca*			40	14M + 16SM + 10 ST/A	70				ACN=42	Japan (Okinawa)	A-64
Lagocephalus	*inermis*	*Tetraodon*		44	2M + 42A	46					India	L-1
Lagocephalus	*laevigatus*			46							Brazil	S-110
Lagocephalus	*lunaris*	*Gastrophysus*	M	44	10M + 14SM + 20 ST/A	68			0.9 FIA		India (Orissa)	C-62, G-85, H-41
Sphoeroides	*greeleyi*		F, M	46	24 M/SM + 22 ST/A	70		2		ACN=46	Brazil (RJ)	B-56
Sphoeroides	*spengleri*		F, M	46	18 M/SM + 28 ST/A	64				ACN=46	Brazil (RJ)	B-56
Sphoeroides	*spengleri*		F, M	46	20 M/SM + 26 ST/A	66				0-2 B, ACN=46	Brazil (SP)	A-126
Sphoeroides	*testudineus*			46	18M + 4SM + 6ST + 18A	68	74	2		ACN=46	Brazil (RN)	S-110
Sphoeroides	*tyleri*		F, M	46	14 M/SM + 32 ST/A	60				ACN=46	Brazil (RJ)	B-57
Takifugu	*chrysops*	*Sphoeroides*		44	6M + 14SM + 24 ST/A	64				ACN=46	Japan (Izu Peninsula)	A-64
Takifugu	*niphobles*	*Fugu*		44	20 M/SM + 24 ST/A	64			(0.8* FCM)	ACN=46	Japan (Kanagawa)	A-54, O-48
Takifugu	*niphobles*		F	44	4M + 16SM + 24 ST/A	64				ACN=46	Japan (Oomura Bay)	M-134
Takifugu	*pardalis*	*Fugu*		44							Japan (Wakayama, Shizuoka)	A-79
Takifugu	*pardalis*			44	6M + 16SM + 22 ST/A	66				ACN=46	Japan (Oomura Bay)	M-134
Takifugu	*poecilonotus*		F	44	12M + 10SM + 22 ST/A	66				ACN=46	Japan (Tachibana Bay)	M-134
Takifugu	*poecilonotus*	*Fugu*		44							Japan (Wakayama)	A-79
Takifugu	*pseudommus*			44	12M + 8SM + 24A	64	64				China (Yellow Sea)	Z-37
Takifugu	*rubripes*			44	10M + 12SM + 22 ST/A	66				ACN=46	Japan	M-134
Takifugu	*rubripes*	*Fugu*		44	20 M/SM + 24 ST/A	64					China	Y-20, G-85
Takifugu	*rubripes*	*Fugu*		44	12M + 6SM + 26A	62					China (Shandong)	W-6
Takifugu	*vermicularis*	*radiatus*	F	44	8M + 14SM + 22 ST/A	66					Japan (Tachibana Bay)	M-134
Takifugu	*xanthopterus*		M	44	8M + 14SM + 22 ST/A	66				ACN=46	Japan (Tachibana Bay)	M-134
Tetraodon	*cutcutia*		F, M	42	16M + 12SM + 4ST + 10A	70	74		0.8 FCM	ACN=44	India (WB)	K-42, V-86
Tetraodon	*fluviatilis*			42	8M + 14SM + 2ST + 18A	64	66		(0.8 FCM, 0.8 BFA)	ACN=42	India (WB)	B-3, B-75, H-13
Tetraodon	*fluviatilis*		F, M	42	2M + 4SM + 2ST + 34A	48	50	4	(0.8* FCM)		(S. Asia)	M-19, O-48
Tetraodon	*leopardus*	*Arothron*	F, M	40	14M + 14SM + 12 ST/A	68				ACN=42	India (Orissa)	C-62
Tetraodon	*nigroviridis*			42	20 M/SM + 22ST	62	84		0.7 FCM, 1.0 FIA		(S. Asia)	F-24, J-21, H-41
Tetraodon	*palembangensis*			42*					1.0 BFA		(SE Asia)	H-13
Diodontidae												
Chilomycterus	*antennatus*			52	6M + 46 ST/A	58		2			Brazil (RJ)	S-110
Chilomycterus	*spinosus*		F, M	52	16 M/SM + 36 ST/A	68					Brazil (RJ)	B-57
Diodon	*holocanthus*			46	20 M/SM + 26 ST/A	66			1.6 FCM		Brazil	S-110, B-75
Diodon	*liturosus*	*bleekeri*		46	6M + 6SM + 34 ST/A	58			1.7* FCM	ACN=46	Japan (Okinawa)	A-64, O-48
Molidae												
Mola	*mola*		M	46	46A	46	46	2	(1.7, 1.9 FCM)	ACN=46	Japan (Chiba)	N-7, B-75

Table 7 Class SARCOPTERYGII (OSTEICHTHYES)

Table 7.1 Order COELACANTHIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Latimeriidae												
Latimeria	*chalumnae*			48	10M + 4ST + 18A + 16 MC	58	62		7.2 FD		Comoro	B-41, C-95

Table 7.2 Order CERATODONTIFORMES

A		B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species		Reported in karyotype paper	Sex	2n	Karyotype	NF_1	NF_2	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Ceratodontoidei												
Ceratodontidae												
Neoceratodus	*forsteri*	*Epiceratodus*		32-38					(149.7* FD)		Australia	W-25, P-72
Neoceratodus	*forsteri*			54	6M + 2SM + 26 ST/A + 20 MC	62			105.5 FCM, 109.2 FIA		Australia (Sydney)	R-101, G-85
Suborder Lepidosirenoidei												
Lepidosirenidae												
Lepidosiren	*paradoxa*		F	38	38 M/SM	76	76		(161.1 FCM, 225.6* FD)		(S. America)	O-4, V-101, P-72
Lepidosiren	*paradoxa*			38	38 M/SM/ST		76				Brazil (Manaus)	O-50
Lepidosiren	*paradoxa*			38							Argentina	F-20
Protopteridae												
Protopterus	*aethiopicus congicus*			34					80.2, 265.7* FD		Zaire	V-38, P-72
Protopterus	*annectens*			34	14M + 10SM + 4ST + 6A	58	62				(Africa)	S-128
Protopterus	*annectens*		F, M	34	16M + 6 SM + 12A	56	56	2	125.2 FCM		Nigeria	M-115
Protopterus	*annectens annectens*			34	16M + 6SM + 12A	56	56		80.9 FD		Senegal	V-38
Protopterus	*dolloi*?	*dolloi*							130.8 FCM		(Africa)	V-101
Protopterus	*dolloi*			68	36 M/SM + 32 ST/A	104			163.2 FD	4X	Zaire	V-38

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Y– 9 Yamazaki, F., Onozato, H. and Arai, K. (1981) The chopping method for obtaining permanent chromosome preparation from embryos of teleost fishes. Bull. Japan. Soc. Sci. Fish., 47: 963.

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Journal List

Acad. Nat. Lincei, ser. 8 = Atti della Accademia Nazionale dei Lincei, Serie Ottava (Roma)
Acta Amazonica
Acta Biol. Colombiana = Acta Biologica Colombiana (Bogotá)
Acta Biol. Debrecina = Acta Biologica Debrecina (Debrecen, Hungary)
Acta Biol. Exp. Sinica = Acta Biologiae Experimentalis Sinica
Acta Biol. Iugoslavica = Acta Biologica Iugoslavica
Acta Cient. Venezolana = Acta Cientifica Venezolana
Acta Genet. Sinica = Acta Genetica Sinica
Acta Hydrobiol. = Acta Hydrobiologica
Acta Hydrobiol. Sinica = Acta Hydrobiologica Sinica
Acta Sci. Nat. Brno = Acta Scientiarm Naturalium Academiae Scientiarum Bohemoslovacae Brno, Nova series
Acta Zool. = Acta Zoologica (Stockholm)
Acta Zool. Fennica = Acta Zoologica Fennica (Helsinki)
Acta Zool. Sinica = Acta Zoologica Sinica
Acta Zootax. Sinica = Acta Zootaxonomica Sinica
Advanced Aquarists Mag. = Advanced Aquarists Magazine
Afr. Zool. = African Zoology
AKA-KN = American Killifish Association-Killie Notes
Amer. Natur. = The American Naturalist
Amer. Zool. = American Zoologist
An. Acad. Brasil. Cienc. = Anais da Academia Brasileira de Ciencia (Rio de Janeiro)
An. Inst. Cienc. Mar Limnol. Univ. Nal. Autón. México = Anales del Instituto do Ciencias del Mar y Limnologia, Universidad Nacional Autónoma de México
Anim. Sci. = Animal Science (Sofia)
Animals and Nature = The Nature and Animals (Tokyo)
Ann. Acad. Reg. Sci. Upsalien. = Annales Academiæ Regiæ Scientiarum Upsaliensis
Ann. Mus. Royal Afr. Centrale = Annales. Musee Royal de l'Afrique Centrale
Ann. Nat. Acad. Sci. India = Annals of the National Academy of Sciences India
Ann. New York Acad. Sci. = Annals of the New York Academy of Sciences
Ann. Rep. Biol. Res., Jeonbug Natn. Univ. = Annual Report of Biological Research, Jeonbug National University (Korea)
Ann. Rep. Biwako Bunkakan = Annual Report of the Biwako Bunkakan (Japan)
Antarctic Sci. = Antarctic Science
Aquaculture
Aquacult. Res. = Aquaculture Research
Aquaria
Aquarien Terrarien = Aquarien und Terrarien

Aquarium
Aquarium-J. = The Aquarium Journal
Arch. FischWiss. = Archiv für Fischereiwissenschaft
Arch. Zootec. = Archivos de Zootecnia
Arquivos Mus. Bocage = Arquivos do Museu Bocage
Asian Fisheries Science (Manila)
Atti Soc. Ital. Sci. nat. Museo civ. Stor. nat. Milano = Atti della Società Italiano di Scienze Naturali e del Museo Civico di Storia Naturale di Milano
Aust. J. Mar. Freshw. Res. = Australian Journal of Marine and Freshwater Research

Basic Sci. Rev., Jeonbug Natn. Univ. = Basic Science Review, Jeonbug National University (Korea)
Bilješke notes, Inst. Oceanograf. Ribarstyo, Yugoslavija = Bilješke Notes. Instituto za Oceanografiju i Ribarstyo, Jugoslavija
Biochem. Syst. Ecol. = Biochemical Systematics and Ecology
Biol. Bratislava = Biologia, Bratislava
Biol. Bull. = Biological Bulletin
Biol. J. Linn. Soc. = Biological Journal of the Linnean Society
Biol. Morya = Biologiya Morya
Biol. Rev. = Biological Review of the Cambridge Philosophical Society
Biol. Zentralbl. = Biologisches Zentralblatt
BKA-Killi News = British Killifish Association-Killi News
BMC Evol. Biol. = BMC Evolutionary Biology
BMC Genetics
Bol. Inst. Espanol Oceanogr. = Boletin del Instituto Español de Oceanografia
Bol. Inst. Oceanogr. Univ. Oriente = Boletin del Instituto Oceanografico, Universidad de Oriente, Venezuela
Bol. Inst. Pesca = Boletim do Instituto de Pesca
Boll. Zool. = Bollettino di Zoologia
Bolm Inst. Oceanogr. S Paulo = Boletim do Instituto Oceanografica. São Paulo
Brazil. Archiv. Biol. Technol. = Brazilian Archives of Biology and Technology
Brazil. J. Biol. = Brazilian Journal of Biology
Brazil. J. Genet. = Brazilian Journal of Genetics
Bull. Aichi Univ. Educ. (Nat. Sci.) = Bulletin of Aichi University of Education (Natural History) (Japan)
Bull. Biogeogr. Soc. Japan = Bulletin of the Biogeographical Society of Japan
Bull. Dept. Educ. Utsunomiya Univ. = Bulletin of the Department of Education, Utsunomiya University (Japan)
Bull. Fac. Educ. Yamaguchi Univ. = Bulletin of the Faculty of Education, Yamaguchi University (Japan)
Bull. Fac. Fish. Hokkaido Univ. = Bulletin of the Faculty of Fisheries, Hokkaido University (Japan)
Bull. Fr. Pêche Piscic. = Bulletin Français de la Pêche et de la Pisciculture
Bull. Hiroshima Women's Univ. = Bulletin of the Hiroshima Women's University (Japan)
Bull. Inst. Basic. Sci., Inha Univ. = Bulletin of the Institute for Basic Science, Inha University (Korea)
Bull. Inst. Zool. Academia Sinica, Monograph = Bulletin of the Institute of Zoology, Academia Sinica, Monograph
Bull. Japan. Soc. Sci. Fish. = Bulletin of the Japanese Society of Scientific Fisheries
Bull. Korean Fish. Soc. = Bulletin of the Korean Fisheries Society
Bull. Mar. Sci. = Bulletin of Marine Science
Bull. Natl. Res. Inst. Aquaculture = Bulletin of National Research Institute of Aquaculture (Japan)
Bull. Natn. Sci. Mus. Tokyo = Bulletin of the National Science Museum, Tokyo

Bull. Natn. Sci. Mus. Tokyo, (A) = Bulletin of the National Science Museum, Tokyo. Series A (Zoology)
Bull. Sci. Yougoslavie, Sec. A = Bulletin Scientifique, Yougoslavie. Section A
Bull. Soc. Hist. Nat. Toulouse = Bulletin de la Société d'Histoire Naturelle de Toulouse

Calif. Fish Game = California Fish and Game
Can. J. Fish. Aquat. Sci. = Canadian Journal of Fisheries and Aquatic Sciences
Can. J. Genet. Cytol. = Canadian Journal of Genetics and Cytology
Can. J. Zool. = Canadian Journal of Zoology
Caribbean J. Sci. = Caribbean Journal of Science
Caryologia
Chinese J. Zool. = Chinese Journal of Zoology
Chrom. Inform. Serv. = Chromosome Information Service
Chrom. Res. = Chromosome Research
Chrom. Sci. = Chromosome Science
Chromatin
Chromosoma
Cien. Cultura = Ciência e Cultura
College Rev. College Liberal Arts Sci., Seoul Natn. Univ. = College Review of College of Liberal Arts and Sciences, Seoul National University (Korea)
Comp. Biochem. Physiol. = Comparative Biochemistry and Physiology
Contri. Sci. Nat. Hist. Mus. Los Angeles County = Contribution in Science. Los Angeles County Museum of Natural History
Copeia
Curr. Biol. = Current Biology
Curr. Opinion Genet. Develop. = Current Opinion in Genetics and Development
Curr. Sci. = Current Sciences (India)
Cybium
Cybium, 3rd ser.
Cytobios
Cytogenet. Cell Genet. = Cytogenetics and Cell Genetics
Cytogenet. Genome Res. = Cytogenetic and Genome Research
Cytogenetics
Cytologia
Cytometry

Dokl. Akad. Sci. USSR = Doklady Akademii Nauk SSSR
Doklady Acad. Sci. Ukrain. SSR, Ser. B = Doklady Academii Nauk Ukrainskoy SSR, Ser. B
Dokl. Biol. Sci. = Doklady Biological Sciences
Doñana, Acta Vertebrata = Doñana - Acta Vertebrata

Environ. Biol. Fishes = Environmental Biology of Fishes
Environ. Ecol. = Environment and Ecology
Evolution
Exp. Cell Res. = Experimental Cell Research
Experientia

Fish Genet. Breed. Sci. = Fish Genetics and Breeding Science
Fish. Bull. = Fishery Bulletin
Fish. Sci. = Fisheries Science (Tokyo)
Fish. Sci. (China) = Fisheries Science (China)

Folia Biol. (Krakow) = Folia Biologica (Kraków)
Folia Zool. = Folia Zoologica (Brno)
Freshwater Fish. = Freshwater Fisheries (China)
Fujian Fish. = Fujian Fisheries (China)

Gayana
Gene
Genen Phaenen
Genet. Mol. Biol. = Genetics and Molecular Biology (Brazil)
Genet. Mol. Res. = Genetics and Molecular Research (Brazil)
Genet. Res. Camb. = Genetical Research, Cambridge
Genet. Sel. Evol. = Genetics Selection Evolution
Genetica
Genetics
Genetika = Russian Journal of Genetics
Genetika, Acta Biol. Iugoslavica = Acta Biologica Iugoslavica, serija F, Genetika (Beograd)
Genome
Genome Res. = Genome Research
Geobios
God. Biol. Inst. Univ. Saraevu = Godišnjaka Biološkog Instituta Univerziteta u Sarajevu

Hereditas
Hereditas (Beijing)
Heredity
Hydrobiol. J. = Hydrobiological Journal (Gidrobiologichesky Zhurnal)
Hydrobiologia

Ichthyol. Explor. Freshwaters = Ichthyological Exploration of Freshwaters
Ichthyol. Res. = Ichthyological Research (Japan)
Ichthyologia = Acta Biologica Iugoslavica, Serija E, Ichthyologia
Iden = Iden (Tokyo)
In Vitro
Ind. Biologist = Indian Biologist
Ind. J. Anim. Sci. = Indian Journal of Animal Sciences
Ind. J. Exp. Biol. = Indian Journal of Experimental Biology
Ind. J. Zool. = Indian Journal of Zoology
Ind. Vet. J. = Indian Veterinary Journal (Madras)
Interciencia (Caracas)
Intl. J. Acad. Ichthyol. = International Journal of Academy of Ichthyology (U.P., India)
Issled. Fauny Morei = Issledovaniia Fauny Morei
Ital. J. Zool. = The Italian Journal of Zoology

J. Annamalai Univ. Sci. = Journal of the Annamalai University. Part B, Science (India)
J. Aquaculture = Journal of Aquaculture (Korea)
J. Beijing Normal Univ. (Nat. Sci.) = Journal of Beijing Normal University (Natural Science)
J. Cytol. Genet. = The Journal of Cytology and Genetics (India)
J. Dalian Fish. Univ. = Journal of Dalian Fisheries University (China)
J. Dalian Fish. College = Journal of Dalian Fisheries College (China)
J. Exp. Mar. Biol. Ecol = Journal of Experimental Marine Biology and Ecology.
J. Exp. Zool. = The Journal of Experimental Zoology

J. Fac. Sci. Hokkaido Univ., Ser. Zool. = Journal of the Faculty of Science, Hokkaido University, Ser. 6, Zoology (Japan)
J. Fish Biol. = Journal of Fish Biology
J. Fish. China = Journal of Fisheries of China
J. Fish. Res. Board Can. = Journal of the Fisheries Research Board of Canada
J. Fish. Sci. China = Journal of Fishery Sciences of China
J. Fish. Sci. Technol. = Journal of Fisheries Science and Technology (Korea)
J. FischeriesSciences.com = Journal of FischeriesSciences.com
J. General Biol. = Journal of General Biology
J. General Physiol. = The Journal of General Physiology
J. Genet. = Journal of Genetics
J. Heredity = The Journal of Heredity
J. Ichthyol. = Journal of Ichthyology
J. Inland Fish. Soc. India = Journal of the Inland Fisheries Society of India
J. Liaoning Normal Univ. (Nat. Sci.) = Journal of Liaoning Normal University (Natural Science) (China)
J. Mar. Biol. Ass. India = Journal of the Marine Biological Association of India
J. Mar. Biol. Ass. U.K. = Journal of Marine Biological Association of the United Kingdom
J. Morphol. = Journal of Morphology
J. Ocean Univ. Qingdao = Journal of Ocean University of Qingdao (China)
J. Shanghai Fish. Univ. = Journal of Shanghai Fisheries University (China)
J. Shimonoseki Univ. Fish. = Journal of Shimonoseki University of Fisheries (Japan)
J. Structural Functional Genomics = Journal of Structural and Functional Genomics
J. Wuhan Univ. (Nat. Sci.) = Journal of Wuhan University (Natural Science Edition) (China)
J. Xiamen Univ. (Nat. Sci.) = Journal of Xiamen University (Natural Science) (China)
J. Yunnan Univ. = Journal of Yunnan University (China)
J. Zhanjiang Fish. Coll. = Journal of Zhanjiang Fisheries College (China)
J. Zhejiang College Fish. = Journal of Zhejiang College of Fisheries (China)
J. Zool. Lond. = Journal of Zoology, London
J. Zool. Syst. Evol. Res. = Journal of Zoological Systematics and Evolutionary Research
Japan Women's Univ. J. = Journal of Japan Women's University
Japan. J. Genetics = Japanese Journal of Genetics
Japan. J. Ichthyol. = Japanese Journal of Ichthyology

Korean J. Genet. = Korean Journal of Genetics
Korean J. Ichthyol. = The Korean Journal of Ichthyology
Korean J. Limnol. = Korean Journal of Limnology
Korean J. Zool. = Korean Journal of Zoology

La Kromosomo
La Kromosomo, II = La Kromosomo, Series II
Lat. Am. J. Aquat. Res. = Latin American Journal of Aquatic Research
Life Sci. Adv. = Life Science Advances (India)

Mar. Biol. = Marine Biology
Mar. Freshwater Res. = Marine and Freshwater Research
Mar. Sci. Monthly = Marine Sciences, Monthly (Tokyo)
Mar. Sci. Bull. = Marine Science Bulletin (China)
Marine Sciences (Beijing)
Matsya (India)
Medaka = The Fish Biology Journal Medaka (Japan)

Mem. Hyogo Univ. Agricul. = Memoirs of the Hyogo University of Agriculture (Japan)
Mitt. Hamburg. Zool. Mus. Inst. = Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut
Mol. Phylogenet. Evol. = Molecular Phylogenetics and Evolution

Nat. Acad. Sci. India, Ann. Num. = National Academy of Sciences India, Ann. Num.
Nat. Acad. Sci. Letters = National Academy Science Letters (Allahabad, India)
Nat. Hist. Mus. Stadt Bern, Jahrbuch = Naturhistorisches Museum der Stadt Bern, Jahrbuch
Naturalia = Naturalia, São Paulo
Naturaliste can. = Le Naturaliste Canadien
Nature
Neotrop. Ichthyol. = Neotropical Ichthyology
Notulae Naturae = Notulae Naturae of the Academy of Natural Sciences of Philadelphia
Nucleus = The Nucleus

Occ. Pap. Calif. Acad. Sci. = Occasional Papers of the California Academy of Sciences
Occ. Pap. Mus. Zool. Univ. Michigan = Occasional Papers of the Museum of Zoology, University of Michigan
Oceanol. Limnol. Sinica = Oceanologia et Limnologia Sinica
Oikos

Pakistan J. Zool. = Pakistan Journal of Zoology
Perspect. Cytol. Genet. = Perspectives in Cytology and Genetics (New Delhi)
Phil. Trans. R. Soc. London, (B) = Philosophical Transactions of the Royal Society of London, Ser. B
Physiol. Ecol. Japan = Physiology and Ecology Japan
Polar Biol. = Polar Biology
Postilla
Proc. Ind. Acad. Sci., Sec. B = Proceedings of the Indian Academy of Sciences, Section B
Proc. Japan Acad. = Proceedings of the Japan Academy
Proc. Japan Acad., Ser. B = Proceedings of the Japan Academy. Ser. B, Physical and Biological Sciences
Proc. Japan. Soc. Syst. Zool. = Proceedings of the Japanese Society of Systematic Zoology
Proc. Louisiana Acad. Sci. = Proceedings of the Louisiana Academy of Sciences
Proc. Nat. Acad. Sci. India = Proceedings of the National Academy of Sciences, India
Proc. R. Soc. Lond., B = Proceedings of the Royal Society of London. Series B, Biological Sciences
Proc. Soc. Exper. Biol. Med. = Proceedings of the Society for Experimental Biology and Medicine
Proc. Zool. Inst. Leningrad = Proceedings of the Zoological Institute, Leningrad
Proc. Zool. Soc. Calcutta = Proceedings of the Zoological Society, Calcutta
Progress Modern Biol. = Progress of Modern Biology (Uspekhi Sovremennoi Biologii)
Progressive Fish-Culturist = The Progressive Fish-Culturist (Washington, D.C.)

Radovi Anubih
Rapp. Comm. Int. Mer. Médit. = Rapport du Commission International de la Mer Méditerranee
Rep. Mishima Res. Inst. Sci. Liv., Nihon Univ. = Report of the Mishima Research Institute of Sciences for Living, Nihon University (Japan)
Res. Bull. (N.S.) Panjab Univ. = Research Bulletin (N.S.) of the Panjab University (India)
Res. Rev. BioSciences (India) = Research and Reviews in BioSciences (India)
Rev. Biol. Trop. = Revista de Biologia Tropical (San José)

Rev. Biol. Uruguay = Revista de Biologia del Uruguay
Rev. Fish Biol. Fish. = Reviews in Fish Biology and Fisheries
Rev. fr. Aquariol. = Revue Française D'aquariologie
Rev. Hydrobiol. Trop. = Revista Hydrobiologia Tropical
Russian J. Genet. = Russian Journal of Genetics
Russian J. Mar. Biol. = Russian Journal of Marine Biology

Saber, Univ. Oriente, Venezuela = Saber, Universidad de Oriente, Venezuela
Sci. Culture = Science and Culture (Calcutta)
Sci. Rep. Res. Inst. Evol. Biol. = Science Report of the Research Institute of Evolutionary Biology (Tokyo)
Sci. Mar. = Scientia Marina
Science
Sinozool. = Sinozoologia
Southwest. Nat. = The Southwestern Naturalist
Stain Technol. = Stain Technology
Swedish. J. Agric. Res. = Swedish Journal of Agricultural Research

Tansuigyo (Osaka)
Texas J. Sci. = The Texas Journal of Science
Texas Rep. Biol. Med. = Texas Reports on Biology and Medicine
TFH = Tropical Fish Hobbyist
Theor. Appl. Genet. = Theoretical and Applied Genetics
Trans. Amer. Fish. Soc. = Transactions of the American Fisheries Society
Trans. Chinese Ichthyol. Soc. = Transactions of the Chinese Ichthyological Society
Travaux Mus. Natl. Hist. Nat. "Grigore Antipa" = Travaux du Museum National d'Histoire Naturelle "Grigore Antipa"
Trends Genet. = Trends in Genetics
Tropic Oceanology (Beijing)
Trudy Zool. Inst. = Trudy Zoologicheskogo Instituta
Tsitol. Genet. = Tsitologiya i Genetika
Tsitologiya
Turk. J. Biol. = Turkish Journal of Biology
Turk. J. Zool. = Turkish Journal of Zoology

Veterinar. Arhiv = Veterinarski Arhiv
Vidensk. Medd. Dansk naturh. Foren. = Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening
Vie Milieu = Vie et Milieu
Vopr. Ichthyol. = Voprosy Ikhtiologii

Z. Binnenfisch. = Zeitschrift für die Binnenfischerei
Z. Fisch. = Zeitschrift für Fischerei
Z. Fischkunde = Zeitschrift für Fischkunde
Z. Zool. Syst. Evol.-Forsch. = Zeitschrift für Zoologische Systematik und Evolutionsforschung
Zool. Abhand. Staat. Mus. Tier. Dresden = Zoologische Abhandlungen Staatliches Museum für Tierkunde in Dresden
Zool. Anz. = Zoologischer Anzeiger
Zool. Mag. Japan = Zoological Magazine, Japan
Zool. Orientalis = Zoologica Orientalis
Zool. Res. = Zoological Research (Kunming, China)
Zool. Sci. = Zoological Science (Japan)
Zool. Zhurnal = Zoologicheskii Zhurnal

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