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Chromosome numbers of fishes. I

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The published chromosome numbers for 208 temperate and tropical freshwater fishes have been compiled in alphabetical order within the families. This facilitates the work for ichthyologists interested in the karyotype(s) of a particular species, genus or family as well as giving an overall account of the basic chromosome numbers and karyological trends in fishes.

I. INTRODUCTION

During the past few years interest in the karyotypes of fishes has greatly increased. Thus the compilation of an annual list of the published chromosome numbers of fishes is considered of value to ichthyologists interested in taxonomy and evolution. This publication is intended as the first of a series of lists of chromosome numbers of fishes to be published annually. It is intended in later publications to extend the information compiled in these lists to numbers of metacentric, acrocentric and telocentric chromosomes for each karyotype where these are available. The present publication covers most of the chromosome numbers published for temperate and tropical freshwater fishes. The second publication will cover chromosome numbers for saltwater and cold freshwater fishes, which are not included here, and chromosome numbers published after the publication of this list.

The task of collecting all known chromosome numbers of fishes is an arduous one, as many numbers are published in local scientific journals and journals for fish hobbyists. In order to make the list as complete as possible we should greatly appreciate the collaboration of ichthyologists working on karyotypes of fishes. This could be done simply by sending a reprint of their paper to us.

II. CHROMOSOME NUMBERS OF TEMPERATE AND TROPICAL FRESHWATER FISHES

	n	2n	Reference number
ANABANTIDAE:			
Betta splendens Regan	21	42	2, 30, 19
Ctenopoma ansorgei (Boulenger)	24	?	19
Macropodus opercularis (L.)	21	?	30, 19
Trichogaster trichopterus (Pallas)	24?	?	19

	n	2n	Reference number
ATHERINIDAE:			
Melanotaenia maccullochi Ogilby	24	?	19
CENTRARCHIDAE:			
Acantharchus pomotis (Baird)	?	48	22
Ambloplites rupestris (Rafinesque)	24	48	22
Centrarchus macropterus (Lacépède)	24	48	22
Chaenobryttus gulosus (Cuvier & Valenciennes)	24	48	22
Elassoma evergladei Jordan	24	?	19
Elassoma zonatum Jordan	?	48	22
Enneacanthus gloriosus (Holbrook)	24	48	22
Enneacanthus obesus (Girard)	24	48	22
Enneacanthus chaetodon (Baird)	24	48	22
Lepomis auritus (L.)	24	48	22
Lepomis cyanellus Rafinesque	23	46	22
Lepomis cyanellus Rafinesque	24	48	22
Lepomis gibbosus (L.)	24	48	22
Lepomis humilis (Girard)	23	46	22
Lepomis macrochirus Rafinesque	24	48	22
Lepomis marginatus (Holbrook)	?	48	22
Lepomis megalotis (Rafinesque)	24	48	22
Lepomis microlophus (Günther)	24	48	22
Micropterus dolomieui Lacépède	23	46	22
Micropterus salmoides (Lacépède)	23	46	22
Pomoxis annularis Rafinesque	24	48	22
Pomoxis nigromaculatus (LeSueur)	24	48	22
CENTROPOMIDAE:			
Chanda ragna (Hamilton-Buchanan)	22	?	19
CHARACIDAE:			
Alestes longipinnis (Günther)	24	?	19
Anoptichthys jordani Hubbs & Innes	24	?	19
Astyanax mexicanus (Filippi)	24	?	19
Chalceus macrolepidotus Cuvier	?	54	15
Cheirodon axelrodi Schultz	24	?	19
Cheirodon axelrodi Schultz	?	52	27
Gymnocorymbus ternetzi (Boulenger)	24	?	19
Hasemania marginata Meinken	24	?	19
Hemigrammus erythrozonus Durbin	?	48	13
Hemigrammus ocellifer (Steindachner)	24	48?	19
Hemigrammus pulcher Ladiges	24	?	19
Hemigrammus aff. *schmardae* (Steindachner)	?	52	27
Hyphessobrycon flammeus Myers	24	?	19
Hyphessobrycon gracilis (Reinhardt)	24	48	19
Hyphessobrycon griemi Hoedeman	24	?	19
Hyphessobrycon haraldschultzi Travassos	24	?	19

	n	2n	Reference number
Hyphessobrycon pulchripinnis E. Ahl	24	?	19
Hyphessobrycon serpae (*callistus*) Durbin	24	48?	19
Hyphessobrycon stictus Durbin	?	52	27
Megalamphodus megalopterus Eigenmann	24	?	19
Micralestes interruptus Boulenger	24	?	19
Moenkhausia pittieri Eigenmann	24	?	19
Moenkhausia sanctae-filomenae (Steindachner)	24	?	19
Paracheirodon innesi (Myers)	?	36	13
Paracheirodon innesi (Myers)	?	32	27
Pristella riddlei (S. E. Meek)	24	?	19
Serrasalmus hollandi Eigenmann	?	64	15
CICHLIDAE:			
Apistogramma pertense (Hasemann)	24	?	19
Apistogramma ramirezi Myers & Harry	24	?	19
Cichlasoma severum (Heckel)	24	?	19
Haplochromis multicolor (Hilgendorf)	22	?	19
Hemichromis bimaculatus Gill	22	?	19
Lamprologus leleupi Poll	24	?	19
Nannacara anomala Regan	24	?	19
Pelmatochromis kribensis Boulenger	24	?	19
Pterophyllum eimekei Ahl	24	?	19
Symphysodon aequifasciata Pellegrin	?	60	17
Tilapia grahami Boulenger	24	48?	19
COBITIDAE:			
Acanthophthalmus kuhli (Cuvier & Valenciennes)	?	50	15
Botia macracanthus (Bleeker)	?	98	15
Misgurnus fossilis (L.)	24	?	19
COTTIDAE:			
Cottus gobio L.	24	?	19
Cottus pollux Günther	24	48	16
Gobio abei (Smitt)	23	46	16
CYPRINIDAE:			
Abramis brama (L.)	26	?	19
Abramis brama (L.)	?	52	10
Barbus conchonius (Hamilton-Buchanan)	24	?	19
Barbus fasciatus Bleeker	?	52	18
Barbus oligolepis (Bleeker)	24	?	19
Barbus semifasciolatus ("*schuberti*")	24	?	19
Barbus semifasciolatus Günther	26	52	16
Barbus tetrazona (Bleeker)	24	?	19
Barbus tetrazona (Bleeker)	?	50	18
Barbus titteya (Deraniyagala)	24	?	19
Barbus viviparus Weber	24	?	19

	n	2n	Reference number
Brachydanio albolineatus (Blyth)	24	?	19
Brachydanio frankei Meinken	24	?	19
Brachydanio rerio (Hamilton-Buchanan)	24	?	19
Brachydanio rerio (Hamilton-Buchanan)	?	50	4
Carassius auratus (L.)	?	104	18
Ctenopharyngodon idellus (Valenciennes)	24	48	16
Cyprinus carpio L.	?	104	18
Gobio gobio (L.)	24	?	19
Hemigrammocypris rasborella Fowler	24	48	16
Labeo chrysophekadion (Bleeker)	?	50	15
Notemigonus crysoleucas (Mitchill)	?	50	11
Notropis lutrensis (Baird & Girard)	?	50	11
Rasbora heteromorpha Duncker	24	?	19
Rasbora trilineata Steindachner	24	?	19
Rhodeus ocellatus (Kner)	22	44	16
Scardinius erythrophthalmus (L.)	?	52	10, 19
Typhlogarra widdowsoni Trewavas	24	?	19
CYPRINODONTIDAE:			
Aphanius cypris (Heckel)	24	48	8
Aphanius dispar (Rüppel)	24	?	8
Aphanius fasciatus (Valenciennes)	24	?	8
Aphanius iberus (Cuvier & Valenciennes)	24	?	8
Aphanius sophiae (Heckel)	24	?	8
Aphyoplatys duboisi (Poll)	24	48	23, 24
Aphyosemion ahli Myers	18	?	24
Aphyosemion arnoldi (Boulenger)	20	?	19
Aphyosemion arnoldi (Boulenger)	19	38	24
Aphyosemion australe (Rachow)	15	30	23, 24
Aphyosemion bivittatum hollyi Myers	20	?	19
Aphyosemion bivittatum (Loennberg) (SW. Nigeria)	20	40	23, 24
Aphyosemion bivittatum (Cameroons)	19	38	24
Aphyosemion bivittatum (E. Cameroons)	17	34	24
Aphyosemion bivittatum (Rio Muni)	13	26	24
Aphyosemion bualanum (Ahl) (E. Cameroons)	20	40	24
Aphyosemion bualanum (W. Cameroons)	19	38	24
Aphyosemion calliurum ahli Myers	20	40	19
Aphyosemion calliurum (Boulenger) (SW. Nigeria)	16	32	23, 24
Aphyosemion cameronense (Boulenger) (Rio Muni)	17	34	24
Aphyosemion celiae Scheel	10	20	29
Aphyosemion christyi (Boulenger)	9	18	24
Aphyosemion christyi (Boulenger)	15	30	24
Aphysemion cinnamomeum Clausen	20	40	24
Aphyosemion exiguum (Boulenger)	18	36	24

	n	2n	Reference number
Aphyosemion filamentosum (Meinken)	18	36	24, 23
Aphyosemion franzwerneri Scheel	11	22	29
Aphyosemion gardneri (Boulenger) (Cameroons)	20	40	24
Aphyosemion gardneri (Nigeria)	18	36	24
Aphyosemion gulare (Boulenger)	16	32	23, 24
Aphyosemion labarrei Poll	14	28	24
Aphyosemion louessense (Pellegrin)	10	20	23, 24
Aphyosemion lujae (Boulenger)	20	40	24
Aphyosemion ndianum Scheel	20	40	24
Aphyosemion obscurum (Ahl)	17	34	24
Aphyosemion santa-isabellae Scheel	20	40	25
Aphyosemion sjoestedti (Loenberg)	20	?	19
Aphyosemion sjoestedti (Loenberg)	20	40	24
Aphyosemion walkeri (Boulenger)	18	36	24
Aplocheilichthys flavipinnis Meinken	24	?	19
Aplocheilichthys katangae (Boulenger)	24	?	19
Aplocheilichthys spilauchena (Dumeril)	24	?	19
Aplocheilus blockii (Arnold)	24	48	23, 24
Aplocheilus dayi (Steindachner)	24	48	23, 24
Aplocheilus lineatus (Cuvier & Valenciennes)	25	50	23, 24
Aplocheilus panchax (Hamilton-Buchanan)	18	36	23, 24
Austrofundulus dolichopterus Weitzman Wourms	22	44	26
Cynolebias bellotti Steindachner	24	?	19
Cynolebias nigripinnis Regan	24	?	19, 28
Cynolebias whitei Myers	24	?	19
Cynolebias whitei Myers	23	?	28
Cynopoecilus ladigesi (Myers)	24	?	19
Cynopoecilus melanotaenia (Regan)	24	?	19
Cynopoecilus melanotaenia (Regan)	22	?	28
Cyprinodon macularius Baird & Girard	24	?	19
Epiplatys annulatus (Boulenger)	25	50	23, 24
Epiplatys barmoiensis Scheel	17	?	24
Epiplatys bifasciatus (Steindachner)	20	40	23, 24
Epiplatys chaperi (Sauvage)	24	?	19
Epiplatys chaperi (Sauvage)	25	50	23, 24
Epiplatys dageti Poll	25	50	23, 24
Epiplatys esekanus Scheel	21	42	24
Epiplatys fasciolatus (Günther)	19	38	23, 24
Epiplatys grahami (Boulenger)	23	46	24
Epiplatys sangmelinensis (Ahl)	24	?	24
Epiplatys sexfasciatus Gill	24	48	19, 23, 24
Epiplatys spilargyreius (Dumeril)	17	34	23, 24
Fundulus diaphanus (LeSueur)	?	48	3
Fundulus heteroclitus (L.)	24	?	19
Fundulus heteroclitus (L.)	?	48	3
Fundulus majalis (Walbaum)	?	48	3

	n	2n	Reference number
Fundulus parvipinnis Girard	?	48	3
Jordanella floridae Goode & Bean	24	?	19
Kosswigichthys asquamatus Sözer	24	?	8
Notobranchius guentheri (Pfeffer)	19	?	19, 23, 24
Nothobranchius mayeri E. Ahl	19	?	19
Nothobranchius orthonotus (Peters)	18	?	24
Nothobranchius palmquisti (Loennberg)	19	?	19
Nothobranchius palmquisti (Loennberg)	18	?	24
Nothobranchius rachovii Ahl	8	16	19
Nothobranchius rachovii Ahl	9	18	23, 24
Orestias agassii (Valenciennes)	24	?	12
Orestias luteus (Valenciennes)	24	?	12
Oryzias latipes (Schlegel)	24	?	7, 9
Pachypanchax playfairi (Günther)	24	48	19, 23, 24
Procatopus nigromarginatus Clausen	24	?	28
Procatopus nototaenia Boulenger	24	?	19, 28
Procatopus roseipinnis Clausen	24	?	28
Procatopus similis Ahl	24	?	28
Pterolebias longipinnis Garman	10	?	19
Pterolebias peruensis Myers	?	20?	19
Pterolebias peruensis Myers	27	?	28
Rivulus cylindraceus Poey	24	?	19
Rivulus santensis (W. Köhler)	24	48	31
Roloffia bertholdi (Roloff)	21	42	23, 24
Roloffia geryi (Lambert)	20	40	24
Roloffia guineensis (Daget)	19	38	23, 24
Roloffia occidentalis (Clausen)	23	46	24
Roloffia roloffi (Roloff)	21	42	23, 24
GASTEROSTEIDAE:			
Gasterosteus aculeatus L.	21	?	19
Pungitius pungitius (L.)	21	?	14, 19
Pungitius tymensis (Nikolsky)	21	?	14
GOBIIDAE:			
Brachygobius nunus (Hamilton-Buchanan)	24	?	19
Boleophthalmus pectinirostris (L.)	23	46	16
Peiophthalmus cantonensis (Osbeck)	23	46	16
HEMIRHAMPHIDAE:			
Dermogenys pusillus von Hasselt	24	?	19
ICTALURIDAE:			
Ictalurus punctatus (Rafinesque)	?	56	15
LEPIDOSIRENIDAE:			
Lepidosiren paradoxa Fitzinger	?	38	17

	n	2n	Reference number
LORICARIIDAE:			
Hypostomus plecostomus (L.)	?	54	15
Loricaria parva Boulenger	24	?	19
MONODACTYLIDAE:			
Monodactylus argenteus (L.)	24	?	19
NANDIDAE:			
Badis badis (Hamilton-Buchanan)	24	?	19
POECILIIDAE:			
Belonesox belizanus Kner	24	?	19
Heterandia formosa Agassiz	24	?	19
Phallichthys amates (Miller)	24	?	19
Phallichthys pitteri (Meek)	23	46	31
Phalloceros caudomaculatus (Hensel)	23	46	31
Poecilia caudofasciata (Regan)	23	46	31
Poecilia formosa (Girard)	?	46	20
Poecilia latipinna (LeSueur)	24	?	19
Poecilia melanogaster (Günther)	24	?	19
Poecilia reticulata (Peters)	23	46	32, 19
Poecilia sphenops Cuvier & Valenciennes	23	46	31
Poecilia sphenops Cuvier & Valenciennes	24	?	19
Poecilia velifera (Regan)	23	46	31, 19
Poecilia vittata Guichchot	23	46	31
Xiphophorus couchianus (Girard)	24	?	6, 21
Xiphophorus helleri Heckel	24	48	6, 31, 17, 5
Xiphophorus maculatus (Günther)	24	48	6, 21, 31, 5, 1
Xiphophorus montezumae Jordan & Snyder	24	48	6, 13
Xiphophorus variatus (Meek)	25	?	6, 31
Xiphophorus xiphidium Hubbs & Gordon	24	?	6, 13

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