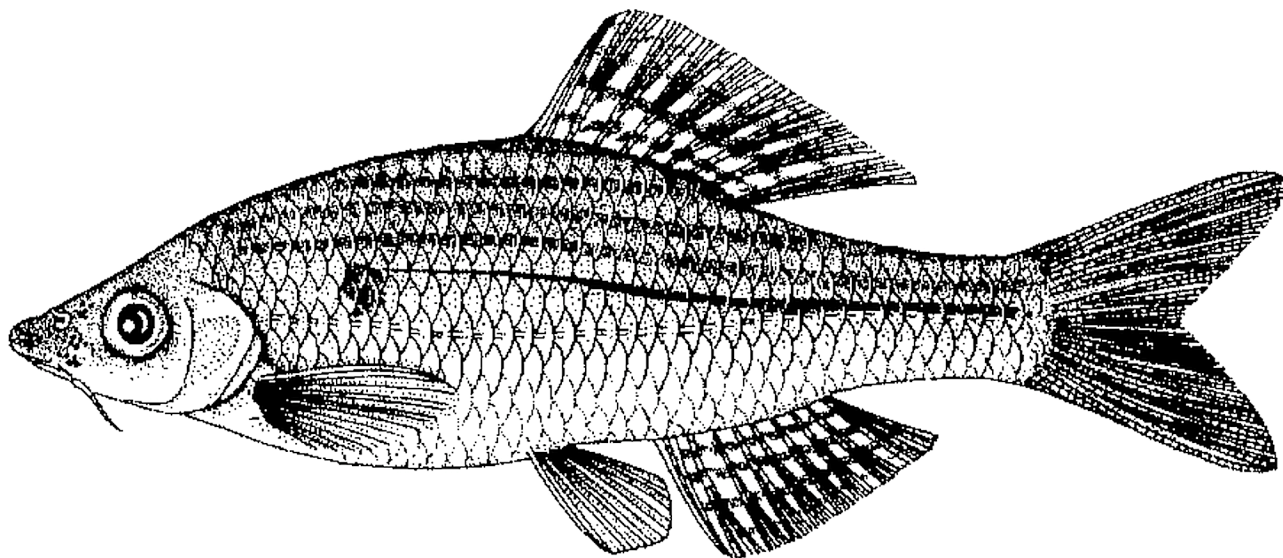


Order CYPRINIFORMES

Bitterlings

Family ACHEILOGNATHIDAE

Bleeker 1863



Acheilognathus majusculus, holotype, male, 96.4 mm SL. Illustration by Youn Choi. From: Kim, I.-S. and H. Yang. 1998. *Acheilognathus majusculus*, a new bitterling (Pisces, Cyprinidae) from Korea, with revised key to species of the genus *Acheilognathus* of Korea. Korean Journal of Biological Sciences 2 (1): 27–31.

Acheilognathus

Bleeker 1859

ἄ, Greek privative, i.e., without; *cheilos* (Gr. χεῖλος), lip, *gnáthos* (Gr. γνάθος), jaw, referring to lower jaw of *A. melanogaster* without (or with only a lateral) labial fold

***Acheilognathus amurensis* (Holčik 1962) -ensis**, Latin suffix denoting place: Amur River system (Russia and China), where it is endemic

***Acheilognathus asmussii* (Dybowski 1872)** patronym not identified, possibly in honor of German entomologist Eduard Assmus (1838–1882) [if correct, Dybowski misspelled the name]

***Acheilognathus barbatus* Günther 1873** diminutive of *barbatus* (L.), bearded, i.e., with a small beard, referring to its “pair of very short barbels”

***Acheilognathus barbatus* Nichols 1926** Latin for bearded, referring to well-developed terminal barbel (compared with the barbelless *A. gracilis*, described in the same paper)

***Acheilognathus binidentatus* Li 2001** *bini* (L.), two by two; *dentatus* (L.), toothed, but Li says name means “two spines,” referring to two unbranched rays (not spines) on pelvic fin

***Acheilognathus brevicaudatus* Chen & Li 1987** *brevis* (L.), short; *caudatus* (L.), tailed, referring to its shorter caudal peduncle compared with *A. elongatus*

***Acheilognathus changtingensis* Yang, Zhu, Xiong & Liu 2011 -ensis**, Latin suffix denoting place: Changting County, Fujian Province, China, where type locality (Hanjiang River) is situated

***Acheilognathus chankaensis* (Dybowski 1872) -ensis**, Latin suffix denoting place: Lake Khanka, southeastern Russia, type locality

***Acheilognathus coreanus* Steindachner 1892 -anus** (L.), belonging to: Coreā (alternate spelling of Korea), referring to Seoul, South Korea, type

locality

***Acheilognathus cyanostigma* Jordan & Fowler 1903** *cyano-*, from *kýanos* (Gr. κύανος), dark blue; *stigma* (Gr. στίγμα), mark or spot, referring to its blue-black lateral stripe

***Acheilognathus deignani* (Smith 1945)** in honor of Herbert Girton Deignan (1906–1968), Associate Curator of Birds, U.S. National Museum, who collected holotype

***Acheilognathus elongatoides* Kottelat 2001 -oides**, Neo-Latin from *eídos* (Gr. εἶδος), form or shape: replacement name for *A. elongatus* Mai 1978 (preoccupied by *A. elongatus*), probably referring to its long, compressed body, longer than the morphologically similar *Pararhodeus* (=Rhodeus) *fangi*

***Acheilognathus elongatus* (Regan 1908)** Latin or prolonged, referring to its more elongate body compared with *A. atranalis* (=Acanthorhodeus *chankaensis*)

***Acheilognathus fasciodorsalis* Nguyen 2001** *fascia* (L.), band; *dorsalis* (L.), of the back, referring to three black stripes on dorsal fin

***Acheilognathus gracilis* Nichols 1926** Latin or thin or slender, probably referring to its body shape compared with *A. barbatus* (described in the same paper), which has an elevated nape

***Acheilognathus hypselonotus* (Bleeker 1871)** *hypsēlós* (Gr. ὑψηλός), high; *notus*, from *nótos* (Gr. νότος), back, referring to convex body shape (common to many congeners)

***Acheilognathus imberbis* Günther 1868** Latin for beardless, referring to its lack of barbels

***Acheilognathus imfasciodorsalis* Nguyen 2001** *im-*, from *in* (L.), not; *fascia* (L.), band; *dorsalis* (L.), of the back, lacking three black stripes on dorsal fin as seen on *A. fasciodorsalis*

***Acheilognathus kyphus* (Mai 1978)** apparent Latinization of Ky Phu,

name of stream in Bac Thai Province, Vietnam, presumed type locality or close to it

***Acheilognathus lanchiensis* (Herre & Lin 1936)** *-ensis*, Latin suffix denoting place: Lanchie, upper Tsien Tang River, Chekiang Province, China, type locality

***Acheilognathus longibarbat* (Mai 1978)** *longus* (L.), long; *barbatus* (L.), bearded, referring to its long maxillary barbel, equal to or longer than eye diameter

***Acheilognathus longipinnis* Regan 1905** *longus* (L.), long; *pinnis*, scientific Neo-Latin adjective of *pinna* (L.), fin, referring to its long pectoral fin, nearly as long as head, extending to root of ventral

***Acheilognathus macromandibularis* Doi, Arai & Liu 1999** *macro-*, from *makrós* (Gr. μακρός), long or large; *mandibularis*, of or pertaining to a jaw, referring to its large mouth, reaching posteriorly to a vertical line through anterior margin of orbit

***Acheilognathus macropterus* (Bleeker 1871)** *macro-*, from *makrós* (Gr. μακρός), long or large; *pterus*, from *pterón* (Gr. πτερόν) or *ptéryx* (πτέρυξ), fin, probably referring to its long and high dorsal fin, the base of which is ~3 times longer than base of tail

***Acheilognathus majusculus* Kim & Yang 1998** Latin for somewhat greater, referring to larger body size compared with other bitterlings

***Acheilognathus melanogaster* Bleeker 1860** *mélanos* (Gr. μέλανος), genitive of *mélas* (μέλας), black; *gastér* (Gr. γαστήρ), belly or stomach, referring to its black abdomen

***Acheilognathus mengyangensis* Chen, Gong & Guo 2021** *-ensis*, Latin suffix denoting place: Mengyang River, Mengyang town, Pengzhou City, Sichuan Province, China, type locality

***Acheilognathus meridianus* (Wu 1939)** *-anus* (L.), belonging to: *meridies* (L.), the south, referring to its distribution in southern China

***Acheilognathus microphysa* Yang, Chu & Chen 1990** *micro-*, from *mikrós* (Gr. μικρός), small; *phýsa* (Gr. φύσα), bladder, referring to greatly reduced posterior chamber of air bladder

***Acheilognathus nanchongensis* Deng 1996** *-ensis*, Latin suffix denoting place: Nanchong, Sichuan Province, China, where type locality (Xi-Chong River) is situated [treated as a synonym of *A. omeiensis* by some workers]

***Acheilognathus nguyenvanhaoui* Nguyen, Tram & Ta 2013** in honor of ichthyologist Nguyễn Văn Hào, Hanoi University of Education

***Acheilognathus omeiensis* (Shih & Tchang 1934)** *-ensis*, Latin suffix denoting place: Omei, Sichuan Province, China, type locality

***Acheilognathus polylepis* (Wu 1964)** *polý* (Gr. πολύ), many; *lepís* (Gr. λείπις), scale, having more lateral line scales than *A. barbatus* and *A. tonkinensis*

***Acheilognathus polyspinus* (Holcík 1972)** *polý* (Gr. πολύ), many; *spinus* (L.), spine, referring to large number of rays in dorsal and anal fins

***Acheilognathus rhombeus* (Temminck & Schlegel 1846)** scientific Neo-Latin from *rhómbos* (Gr. ῥόμβος), rhombus, presumably referring to rhomboid shape of body

***Acheilognathus striatus* Yang, Xiong, Tang & Liu 2010** Latin for grooved or furrowed (i.e., striped), referring to broad longitudinal stripe on body

***Acheilognathus tabira* Jordan & Thompson 1914** vernacular for this species at Lake Biwa, Japan

***Acheilognathus tabira erythropterus* Arai, Fujikawa & Nagata 2007** red-finned, from *erythrós* (Gr. ἐρυθρός), and *pterus*, from *pterón* (Gr. πτερόν) or *ptéryx* (πτέρυξ), fin, referring to anal fin edged with red in nuptial males

***Acheilognathus tabira jordani* Arai, Fujikawa & Nagata 2007** in honor of American ichthyologist David Starr Jordan (1851–1931), who contributed greatly to Japanese ichthyology, including the original description of *A. tabira*

***Acheilognathus tabira nakamurae* Arai, Fujikawa & Nagata 2007** in honor of Morizumi Nakamura (1914–1998), National Science Museum (Tokyo), for contributions to the systematics of Japanese bitterlings [although named after a man, “ae” is an acceptable way to form a genitive from a masculine noun that ends in “a”]

***Acheilognathus tabira tohokuensis* Arai, Fujikawa & Nagata 2007** *-ensis*, Latin suffix denoting place: Tohoku area of Japan, where it occurs

***Acheilognathus tonkinensis* (Vaillant 1892)** *-ensis*, Latin suffix denoting place: Tonkin, northern region of Vietnam, where type locality (Nam-kia River, affluent to River Noire) is situated

***Acheilognathus typus* (Bleeker 1863)** proposed as the type species of *Pseudoperilampus*, now a junior synonym of *Acheilognathus*

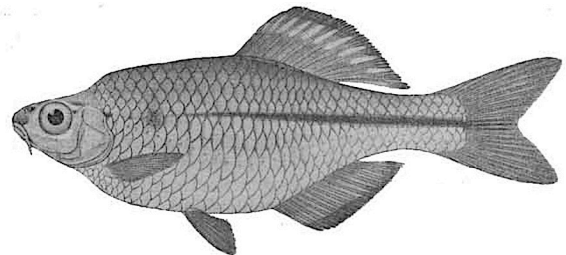
***Acheilognathus yamatsutae* Mori 1928** in honor of Mr. K. Yamatsuta, a teacher at the Mukden Higher Girls School, who “obtained ... a fine type specimen” [although named after a man, “ae” is an acceptable way to form a genitive from a masculine noun that ends in “a”]

Paratanakia

Chang, Chen & Mayden 2014

para- (Gr. παρά), near, referring to morphological similarity of *P. himantegus* to *Tanakia*

***Paratanakia chii* (Miao 1934)** in honor of Chen-Ju Ch’i, Director of Bureau of Education of Honan (now Henan) Province, China, for his “kind support” of the author’s study of Kiangsu fishes



Paratanakia chii. From: Miao, C.-P. 1934. Notes on the fresh-water fishes of the southern part of Kiangsu I. Chinkiang. Contributions from the Biological Laboratory of the Science Society of China. (Zoological Series) 10 (3): 111–244.

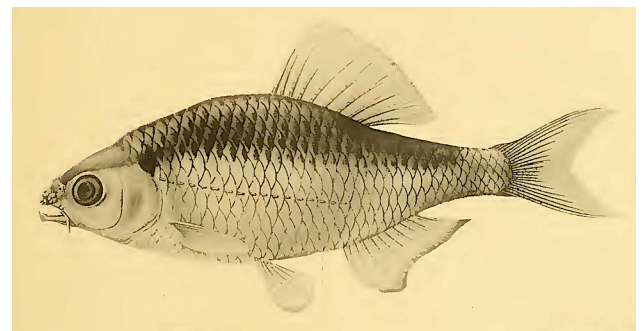
***Paratanakia himantegus* (Günther 1868)** *himántos* (Gr. ἱμάντος), genitive of *himás* (ἱμάς), leather strap or thong; *egus*, possibly an artificial Neo-Latin term derived from *hégéomai* (Gr. ἡγέομαι), to lead, i.e., handling or leading with a strap or leash, allusion not explained, possibly referring to long ovipositor of breeding females

Pseudorhodeus

Chang, Chen & Mayden 2014

pseudo-, from *pseúdēs* (Gr. ψεύδης), false, referring to similarity to (e.g., incomplete lateral line) but not close relationship with *Rhodeus*

***Pseudorhodeus tanago* (Tanaka 1909)** Japanese vernacular for bitterling, translating as “fishes on palm”



First-published image of *Pseudorhodeus tanago* (as *Rhodeus miobuta*, a junior synonym). From: Tanaka, S. 1911. Figures and descriptions of the fishes of Japan, including Riukiu Islands, Bonin Islands, Formosa, Kurile Islands, Korea and southern Sakhalin. 1: 1–18, Pls. 1–5.

Rhodeus

Agassiz 1832

from *rhodon* (Gr. ῥόδον), rose, referring to rosy color of breeding male *R. amarus*

Rhodeus albomarginatus Li & Arai 2014 *albus* (L.), white; *marginatus* (L.), bordered or margined, referring to diagnostic white margin on anal fin of adult male

Rhodeus amarus (Bloch 1782) Latin for bitter, referring to the taste of its roe (hence the common name, originally in German, bitterling)

Rhodeus amurensis (Vronsky 1967) *-ensis*, Latin suffix denoting place: lower Amur River drainage, Russia, type locality

Rhodeus atremius (Jordan & Thompson 1914) ἄ, Greek privative, i.e., without; *tremius*, from *tréma* (Gr. τρήμα), hole or aperture, referring to “completely absent” lateral line

Rhodeus caspius Esmaeili, Sayyadzadeh, Japoshvili, Eagderi, Abbasi & Mousavi-Sabet 2020 Latin for Caspian, referring to Caspian Sea basin, Iran, type locality

Rhodeus colchicus Bogutskaya & Komlev 2001 *-icus* (L.), belonging to: Colchis, ancient name for the eastern coast of the Black Sea in Georgia, type locality

Rhodeus cyanorostris Li, Liao & Arai 2020 *cyano-*, from *kýanos* (Gr. κύανος), dark blue; *rostris*, Neo-Latin scientific adjective of *rostrum* (L.), snout, referring to distinctive blue snout of nuptial males



Rhodeus cyanorostris, nuptial male. From: Li, F., T.-Y. Liao and R. Arai. 2020. Two new species of *Rhodeus* (Teleostei: Cyprinidae: Acheilognathinae) from the River Yangtze, China. *Journal of Vertebrate Biology* 69 (1): [1–17].

Rhodeus fangi (Miao 1934) in honor of ichthyologist Fang Ping-Wen (1903–1944), Metropolitan Museum of Natural History and Biological Laboratory of the Science Society of China, Nanjing, China

Rhodeus flaviventris Li, Arai & Liao 2020 *flavus* (L.), yellow; *ventris*, genitive of *venter* (L.), belly, referring to diagnostic yellow belly of adult males

Rhodeus haradai Arai, Suzuki & Shen 1990 in honor of I. Harada (possibly Japanese limnologist Isokiti Harada), who reported this species as *R. spinalis* in his *Freshwater Fishes of Hainan Island* (1943)

Rhodeus hondae (Jordan & Metz 1913) in honor of K. Honda, director, Agricultural Station at Suigen (in present-day South Korea but then controlled by Japan), “who obtained for us a fine collection from the pond at this station” [although named after a man, “*ae*” is, per Latin grammar, an acceptable way to form a genitive from masculine nouns that end in “a”]

Rhodeus laoensis Kottelat, Doi & Musikasinthorn 1998 *-ensis*, Latin suffix denoting place: Laos, where it is endemic

Rhodeus lighti (Wu 1931) in honor of American zoologist Sol Felty Light (1886–1947), University of California (Berkeley), for “constant help and encouragement” in Wu’s zoological studies during their three-year association at University of Amoy (now Xiamen University)

Rhodeus mantschuricus Mori 1934 *-icus* (L.), belonging to: Manchuria, referring to distribution in northeast Asia (Amur River basin of Russia and China)

Rhodeus meridionalis Karaman 1924 Latin for southern, allusion not explained, perhaps referring to Lake Dojran, type locality, in southern Macedonia at border with Greece

Rhodeus monguonensis (Li 1989) *-ensis*, Latin suffix denoting place: Inner Mongolia Autonomous Region, where it occurs

Rhodeus nigrodorsalis Li, Liao & Arai 2020 *nigro-*, from *niger* (L.), dark or black; *dorsalis* (L.), of the back, referring to diagnostic black dorsal-fin membrane in adult males

Rhodeus notatus Nichols 1929 Latin for marked, probably referring to dark markings on caudal peduncle, middle caudal rays, behind upper angle of gill cleft, snout, and upper part of gill cover

Rhodeus ocellatus (Kner 1866) Latin for having little eyes (ocelli), referring to black spot behind shoulder

Rhodeus ocellatus kurumeus Jordan & Thompson 1914 *-eus* (L.), adjectival suffix: Kurume, Kiusiu, Japan, type locality

Rhodeus pseudosericeus Arai, Jeon & Ueda 2001 *pseudo-*, from *pséudēs* (Gr. ψεύδης), false, i.e., although this species may resemble *R. sericeus*, such an appearance is false

Rhodeus rheinardti (Tirant 1883) patronym not identified, probably in honor of Pierre-Paul Rheinart (1840–1902, note spelling), a French official and administrator in Hué, Vietnam (type locality), who sent zoological specimens to Paris

Rhodeus sciosemus (Jordan & Thompson 1914) *scio*, from *skiá* (Gr. σκιά), shade or shadow; *semus*, from *sēma* (Gr. σῆμα), token, seal or mark, probably referring to large black spot on dorsal fin (absent on *R. atremius*, described in the same paper)

Rhodeus sericeus (Pallas 1776) Latin for silken or silky, allusion not explained, perhaps referring to soft, lustrous color of breeding males

Rhodeus shitaiensis Li & Arai 2011 *-ensis*, Latin suffix denoting place: Shitai County, Anhui Province, China, type locality

Rhodeus sinensis Günther 1868 *-ensis*, Latin suffix denoting place: Sinica (China), where it is endemic to the Yangtze River basin

Rhodeus smithii (Regan 1908) in honor of British traveler, sportsman and naturalist Richard Gordon Smith (1858–1918), who collected specimens in Japan for the British Museum (Natural History), including holotype of this one

Rhodeus spinalis Oshima 1926 Latin for of or belonging to the spine (but used here to mean spiny), referring to its osseous dorsal- and anal-fin spines

Rhodeus suigensis (Mori 1935) *-ensis*, Latin suffix denoting place: Suigen, South Korea, type locality

Rhodeus uyekii (Mori 1935) in honor of Japanese botanist Homiki Uyeki (1882–1976), Suigen Agricultural College (type locality is in Suigen, South Korea, which, in 1935, was ruled by Japan)

Sinorhodeus

Li, Liao & Arai 2017

Sino-, prefix for Sinica (China), where it is endemic to the Yangtze River drainage of Sichuan Province; *Rhodeus*, referring to morphological similarity to that genus



Sinorhodeus macrolepis, nuptial male. From: Li, F., T.-Y. Liao, R. Arai and L.-J. Zhao. 2017. *Sinorhodeus microlepis*, a new genus and species of bitterling from China (Teleostei: Cyprinidae: Acheilognathinae). *Zootaxa* 4353 (1): 69–88.

***Sinorhodeus microlepis* Li, Liao & Arai 2017** *micro-*, from *mikrós* (Gr. μικρός), small; *lepis* (Gr. λεπίς), scale, referring to smaller and therefore more numerous scales compared with any species in *Rhodeus*

Tanakia

Jordan & Thompson 1914

-ia (L. suffix), belonging to: Shigeo Tanaka (1878–1974), “accomplished” ichthyologist of the Imperial University of Tokyo, who described *T. shimazui* in 1908 and *Pseudorhodeus tanago* in 1909

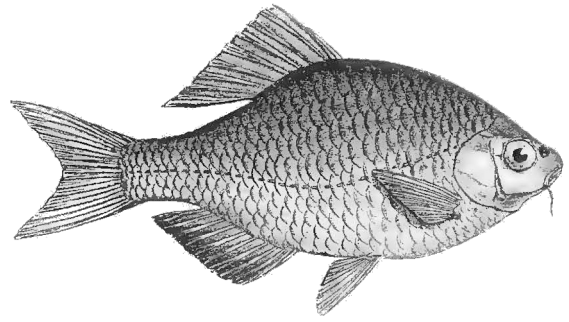
***Tanakia koreensis* (Kim & Kim 1990)** *-ensis*, Latin suffix denoting place: South Korea, where it is endemic

***Tanakia lanceolata* (Temminck & Schlegel 1846)** Latin for lance-like, presumably referring to its more lanceolate (leaf-like) shape compared with other Japanese bitterlings

***Tanakia latimarginata* Kim, Jeon & Suk 2014** *latus* (L.), wide or broad; *marginata* (L.), bordered or margined, referring to broad black border on anal fin of mature males

***Tanakia limbata* (Temminck & Schlegel 1846)** Latin for edged or bordered, presumably referring to blackish edges on dorsal and anal fins

***Tanakia shimazui* (Tanaka 1908)** in honor of “Mr. Shimazu” (forename not given), a naturalist in Kyoto, Japan, who collected holotype



Tanakia limbata. From: Temminck, C. J. and H. Schlegel. 1846. Pisces. In: Siebold, P. F. de (ed.). Fauna Japonica. Lugduni Batavorum [Leiden] (A. Arnz et soc.). Parts 10–14: 173–269.

***Tanakia signifer* (Berg 1907)** *signum* (L.), mark; *-fer*, from *fero* (L.), to have or bear, probably referring to broad whitish band on dorsal-fin margin

***Tanakia somjinensis* (Kim & Kim 1991)** *-ensis*, Latin suffix denoting place: Somjin River, South Korea, type locality