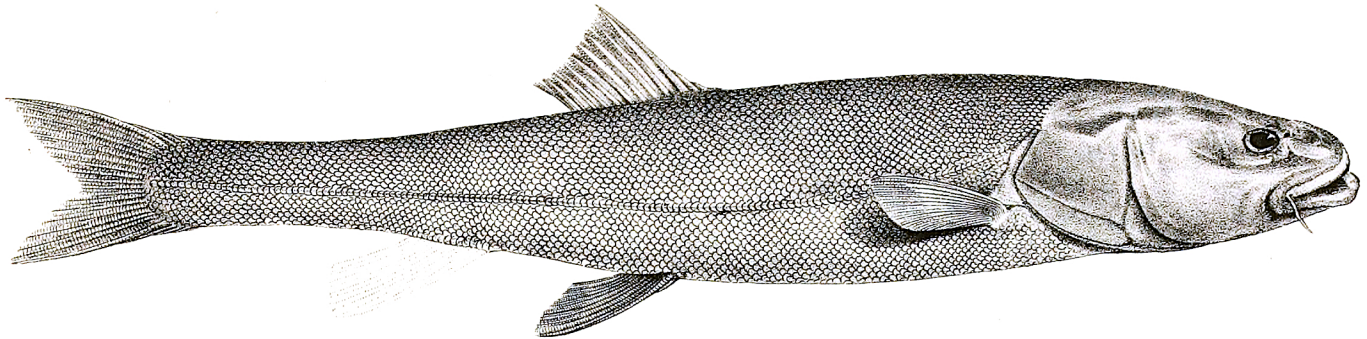


Order CYPRINIFORMES

Snow Barbels

Family **CYPRINIDAE**

Subfamily **SCHIZOTHORACINAE** McClelland 1842



First-published image of *Aspiorhynchus laticeps*. Illustration by C. Achilles. From: Day, F. 1878. Scientific results of the second Yarkand mission. Ichthyology. Calcutta: Office of the Superintendent of Government Printing. 1–25 pp. + 5 pls.

Aspiorhynchus

Kessler 1879

Aspio, referring to the leuciscid genus *Aspius*, which also has a wedge-shaped head; *rhynchus*, from *rhýnchos* (Gr. ῥύγχος), snout, referring to wide and flat snout of *A. przewalskii* (=laticeps)

***Aspiorhynchus laticeps* (Day 1877)** *latus* (L.), wide or broad; *-ceps* (Neo-Latin), headed, referring to the broad upper surface of its head, its width nearly twice its height

Percocypris

Chu 1935

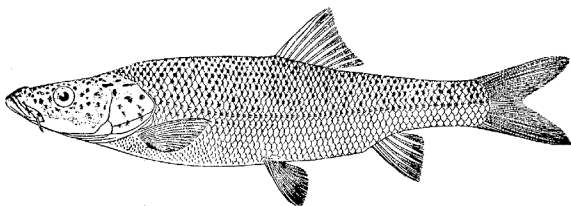
perco, from *pérkē* (Gr. πέρκη), perch, referring to head of *P. pingi*, which “strongly resembles that of a perch”; *cypris*, a common suffix for small cyprinoid genera, derived from *Cyprinus* (Common Carp)¹

***Percocypris pingi* (Tchang 1930)** patronym not identified but probably in honor of zoologist Chih Ping (1886–1965), Director, Biological Laboratory of Nanking (now Nanjing)

***Percocypris regani* (Tchang 1935)** in honor of English ichthyologist Charles Tate Regan (1878–1943), Natural History Museum (London), who studied the fishes of Yunnan, China

***Percocypris retrodorsalis* Cui & Chu 1990** *retro-* (L.), back; *dorsalis* (Neo-Latin), of the back, referring to dorsal-fin origin behind pectoral-fin origin

***Percocypris tchangi* (Pellegrin & Chevey 1936)** in honor of Chinese ichthyologist Tchunlin (or Tchung-Lin) Tchang (1897–1963), who described the first two species of the genus



Percocypris regani. From: Tchang, T.-L. 1935. Two new species of *Barbus* from Yunnan. Bulletin of the Fan Memorial Institute of Biology, Peiping (Zoology Series) 6 (2) (art. 3): 60–64.

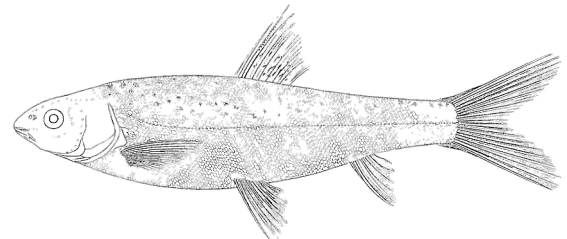
¹ Some authors believe *Cyprinus* (from the Greek κυπρίνος, *kyprínos*) is derived from Kypris, also known as Venus (or Aphrodite), the goddess of love, referring to the Common Carp's fecundity. Another explanation is that *kyprínos* is derived from *kypros* (κύπρος), a Greek word for henna, referring to the carp's bronze coloration. See: Guasparri, A. 2022. The Roman classification and nomenclature of aquatic animals: an annotated checklist (with a focus on ethnobiology). *Anthropozoologica* 57 (2): 19–100.

Schizopyge²

Heckel 1847

schizō (Gr. σχίζω), split or cleave; *pygē* (Gr. πυγή), rump, referring to membranous fold in front of anal fin, slightly separating scales on both sides of vent

***Schizopyge curvifrons* (Heckel 1838)** *curvus* (L.), bent; *frons* (L.), face, brow or forehead, referring to its rounded or convex forehead [placed in *Schizothorax* by some workers]



Schizopyge curvifrons. From: Heckel, J. J. 1838. Fische aus Caschmir gesammelt und herausgegeben von Carl Freiherrn von Hügel, beschrieben von J. J. Heckel. Wien. 1–86, Pls. 1–12.

Schizothorax²

Heckel 1838

schizō (Gr. σχίζω), split or cleave; *thōrax* (Gr. θώραξ), breast or chest, referring to membranous fold in front of anal fin of *S. esocinus*, *S. huegelii* and *S. niger*, slightly separating scales on both sides of vent

Subgenus **Schizothorax**

***Schizothorax argentatus* Kessler 1874** Latin for plated with silver, referring to silvery-white color in young (dark olive in larger specimens, black in others)

***Schizothorax beipanensis* Yang, Chen & Yang 2009** *-ensis*, Latin suffix denoting place: Beipan Jiang, Xuanwei County, Yunnan Province, China, type locality

***Schizothorax biddulphi* Günther 1876** in honor of Capt. John Biddulph (1840–1921), soldier, author and naturalist, who presented specimens (skins) to the British Museum (Natural History)

***Schizothorax chivae* Arunkumar & Alphonsa Moyon 2016** of the Chiva

² The species-level taxonomies of *Schizopyge* and *Schizothorax* are confused and unresolved, with species placed in either genus depending on the reference. Classification used here follows Eschmeyer's Catalog of Fishes in recognizing only one species in *Schizopyge* and all others in *Schizothorax*.

River, Manipur, India, type locality

***Schizothorax chongi* (Fang 1936)** in honor of ornithologist L. T. Chong, Academia Sinica, who helped Fang collect specimens, including holotype of this one

***Schizothorax curvilabiatu*s (Wu & Tsao 1992)** *curvus* (L.), bent or curved; *labiatu*s (L.), lipped, presumably referring to its lower lip, arched as in *S. integrilabiatu*s, but with a split (i.e., bend) in the middle

***Schizothorax cryptolepis* Fu & Ye 1984** *crypto-*, from *kryptós* (Gr. κρυπτός), cryptic or hidden; *lepis* (Gr. λεπίς), scale, referring to minute scales on side, embedded under skin

***Schizothorax dainellii* Vinciguerra 1916** in honor of Italian of geographer-geologist Giotto Dainelli (1878–1968), who “lovingly cared” (translation) for the preservation of central Asian fishes collected by and/or under the auspices of Filippo De Filippi (1814–1867), including holotype of this one [placed in *Schizopyge* by some workers]

***Schizothorax davidi* (Sauvage 1880)** in honor of Armand David (1826–1900), Lazarist missionary Catholic priest and biologist, who collected many specimens in China, including holotype of this one

***Schizothorax dolichonema* Herzenstein 1889** *dolichós* (Gr. δολιχός), long; *néma* (Gr. νῆμα), thread, allusion not explained, perhaps referring to its rostral barbels, which more or less reach the eye, and maxillary barbels, which reach the preoperculum [placed in *Schizopyge* by some workers]

***Schizothorax dulongensis* Huang 1985** *-ensis*, Latin suffix denoting place: Dulong River basin, Yunnan Province, China, where it appears to be endemic

***Schizothorax elongatus* Huang 1985** Latin for prolonged, referring to its longer body length-to-depth ratio compared with *S. molesworthi* and *S. dulongensis*

***Schizothorax edenianus* McClelland 1842** *-anus* (L.), belonging to: Eden, “named in honor of a Nobleman to whom Science is indebted for the opportunities afforded Mr. [William] Griffith [who collected holotype] of extending his Botanical Researches from the Straits of Malacca into Central Asia,” possibly George Eden (1784–1849), 1st Earl of Auckland, who served as Governor-General of India from 1836–1842 [originally spelled *edeniana*; emended to agree with masculine gender of genus]

***Schizothorax esocinus* Heckel 1838** scientific Neo-Latin for pike-like, referring to the shape of its head, similar to that of pikes (*Esox*, Esocidae)

***Schizothorax eurystomus* Kessler 1872** wide-mouthed, from *eurýs* (Gr. εὐρύς), wide or broad, and *stóma* (Gr. στόμα), mouth; Kessler twice mentioned that the inferior mouth is wide but provided no quantitative or comparative data³

***Schizothorax fedtschenkoi* Kessler 1872** in honor of Russian naturalist and explorer Alexei Pavlovich Fedtschenko (1844–1873), who collected holotype [treated as a junior synonym of *S. intermedius* by some workers]

***Schizothorax gongshanensis* Tsao 1964** *-ensis*, Latin suffix denoting place: Gongshan County, Yunnan Province, China, type locality [placed in *Schizopyge* by some workers]

***Schizothorax grahami* (Regan 1904)** in honor of British missionary John Graham (d. 1947), who collected many fishes in Yunnan, China, including holotype of this one

***Schizothorax griseus* Pellegrin 1931** Medieval Latin for gray, referring to brownish-gray coloration on back and grayish or yellowish sides and belly

***Schizothorax gulinensis* Ding, Dai & Huang 2022** *-ensis*, Latin suffix denoting place: Gulin County, Sichuan Province, China, where type locality



Schizothorax gulinensis. Ding, R.-H., Y.-X. Dai and Y.-Y. Huang. 2022. A new species of the genus *Schizothorax* from Sichuan, China (Cypriniformes: Cyprinidae). *Sichuan Journal of Zoology* 41 (3): 300–303.

(a tributary of the Baisha River) is situated

***Schizothorax heteri* Yang, Zhen, Chen & Yang 2013** derived from *héteros* (Gr. ἕτερος), another (i.e., other) or disparate, presumably alluding to its vernacular in Yunna, China, “singular schizothorax” (translation), although what is “singular” about it is not explained nor apparent

***Schizothorax heterochilus* Ye & Fu 1986** *héteros* (Gr. ἕτερος), special or different; *chilus*, from *cheílos* (Gr. χεῖλος), lip, referring to its thick lower lip, divided into three lobes (compared with two lobes on *S. lissolabiatu*s), with an evident middle lobe (compared with covered middle lobe of *S. davidi*)

***Schizothorax heterophysallidos* Yang, Chen & Yang 2009** *héteros* (Gr. ἕτερος), special or different; *physallidos* (Gr. φυσαλλίδος), genitive of *physallis* (φυσαλλίς), bladder, referring to air bladder (with an elongated posterior chamber, unique amongst members of the *S. griseus* complex)

***Schizothorax huegelii* Heckel 1838** in honor of Karl (also known as Charles) von Hügel (1795–1870), Austrian army officer, diplomat, botanist and explorer, who collected holotype

***Schizothorax integrilabiatu*s (Wu et al. 1992)** *integer* (L.), whole or entire; *labiatu*s (L.), lipped, allusion not explained, presumably referring to fullness of lower lip, compared to split lower lip of *S. curvilabiatu*s [note: authorship given as “Wu et al.” with no explanation of who the other authors might be]

***Schizothorax intermedius* McClelland & Griffith 1842** Latin for intermediate, allusion not explained, presumably intermediate in form among five nominal *Schizothorax* species discussed by McClelland, but comparison of characters does not support this interpretation [see essay, next page]

***Schizothorax intermedius talassi* Turdakov 1955** of Talas River, Kazakhstan and Kyrgyzstan, where it is endemic

***Schizothorax kozlovi* Nikolskii 1903** in honor of explorer Pyotr K. Kozlov (1863–1935), Imperial Russian Geographical Society, whose 1899–1901 expedition to Mongolia and Tibet yielded a rich natural history collection, including holotype of this species

***Schizothorax kumaonensis* Menon 1971** *-ensis*, Latin suffix denoting place: Kumaon Himalayas, India, only known area of occurrence

***Schizothorax labrosus* Wang, Zhuang & Gao 1981** Latin for large-lipped, probably referring to its “fleshy” lips

***Schizothorax lantsangensis* Tsao 1964** *-ensis*, Latin suffix denoting place: Lantsang River, Yunnan Province, China, type locality

***Schizothorax lepidothorax* Yang 1991** *lepis* (Gr. λεπίς), scale; *thórax* (Gr. θώραξ), breast or chest, referring to minute scales on thorax and abdomen

***Schizothorax leukus* Yang, Zhen, Chen & Yang 2013** *leukós* (Gr. λευκός), white, apparently alluding to its vernacular in Yunnan China, “white body schizothorax” (translation); since body color is described as dark brown, name may refer to silvery-white abdomen (characteristic of genus) instead

***Schizothorax lissolabiatu*s (Tsao 1964)** *lissós* (Gr. λισσός), smooth; *labiatu*s (L.), lipped, referring to its smooth lower lip, compared with rough or bumpy lower lip of congeners [placed in *Schizopyge* by some workers]

³ Artem Prokofiev, A. N. Severtsov’s Institute of Ecology and Evolution, Russian Academy of Sciences, pers. comm.

The overlooked “Griff.” of *Schizothorax intermedius*

Schizothorax is a genus of Central and Eastern Asian minnows sometimes called “snowtrout” because of their trout-like bodies and occurrence in cold, higher-elevation streams (an apparent example of evolutionary convergence). British medical doctor John McClelland (1805–1883) penned the original description of *Schizothorax intermedius* in 1842. He had been sent to India to explore for coal and study the efficacy of growing tea in that part of the world. An avid naturalist, he also served as editor of the *Calcutta Journal of Natural History*, in which the original description of the fish was published.



William Griffith in 1843. From: *Makers of British Botany* (1913).

Historically, McClelland has been cited as the sole author of *S. intermedius*. But while researching this name, I noticed that McClelland had a collaborator. While the description itself appears on page 579 of the journal, McClelland provided a list of “Newly discovered species” on page 573. Here McClelland indicated the authorship of *S. intermedius* as “McClell. et Griff.” — “Griff.” being fellow British physician William Griffith (1810–1845).

Griffith did all the field work reported on in McClelland’s article. A botanist at heart, Griffith added fishes to his collecting chores while exploring Afghanistan and Iran, where *S. intermedius* occurs. He also composed detailed field notes and drew illustrations of the fishes in their life colors. He forwarded everything — notes, illustrations and specimens — to McClelland, who, as editor of the journal, prepared the material for publication, and, apparently, coined the new names. McClelland repeatedly credited Griffith for his contributions. In fact, the paper’s title reads: “On the fresh-water fishes collected by William Griffith, Esq., F. L. S. Madras Medical Service, during his travels under the orders of the Supreme Government of India, from 1835 to 1842.”

McClelland appears to have left India around 1847. His biography gets hazy after that. He died in 1883. Griffith died of a parasitic liver disease, presumably contracted in the field, just three years after McClelland published his notes. Griffith was quite sick for the final year or two of his life, but continued to work to the point of exhaustion and collapse. “No government ever had a more devoted or zealous servant,” McClelland wrote in an obituary of his colleague, “and I impute much of the evil consequences of his health, to his attempting more than the means at his disposal enabled him to accomplish with justice to himself.”

McClelland named a different species of snowtrout after Griffith — *Oreinus griffithii* — but it is now considered a junior synonym of *Schizothorax plagiostomus* Heckel 1838.

Since McClelland is listed as the author of the article in which the name appeared, many ichthyologists have overlooked the fact that McClelland shared credit with Griffith as the author of the name. In 2015, I alerted the editors of Eschmeyer’s Catalog of Fishes that “McClelland 1842” should be changed to “McClelland & Griffith 1842.” They agreed. (Authorship of the genus-level name *Racoma* McClelland & Griffith 1842, proposed in the same publication, has not been an issue.)

After 173 years, William Griffith had finally gotten the credit his colleague believed he deserved.

***Schizothorax longibarbus* (Fang 1936)** *longus* (L.), long; *barbus* (L.), beard, referring to its long barbels, longer than those of *S. grahami*

***Schizothorax macrophthalmus* Terashima 1984** big-eyed, from *makrós* (Gr. μακρός), long or large, and *ophthalmós* (Gr. ὀφθαλμός), eye, referring to its large eye diameter, 5.8% of standard length

***Schizothorax macropogon* Regan 1905** *macro-*, from *makrós* (Gr. μακρός), long or large; *pógōn* (Gr. πώγων), beard, referring to its long barbels, half as long as head or more

***Schizothorax malacathus* Huang 1985** *malaco-*, from *malakós* (Gr. μαλακός), soft; *acanthus* (L.), from *ákantha* (Gr. ἄκανθα), thorn, referring to its “weak, smooth” dorsal-fin spine [*malacathus* is a misspelling of *malacanthus* but must be retained]

***Schizothorax meridionalis* Tsao 1964** Latin for southern, proposed as a southern subspecies of *S. molesworthi*

***Schizothorax microcephalus* Day 1877** small-headed, from *mikrós* (Gr. μικρός), small, and *kephalé* (Gr. κεφαλή), head, referring to its smaller head compared with several congeners, 5–5½ times in total length

***Schizothorax microstomus* Hwang 1982** small-mouthed, from *mikrós* (Gr. μικρός), small, and *stóma* (Gr. στόμα), mouth, referring to its smaller mouth compared with *S. labrosus* and *S. ninglangensis*

***Schizothorax molesworthi* (Chaudhuri 1913)** in honor of Capt. Alec Lindsay Mortimer Molesworth (1904–1937), of the 8th Gurkha Rifles (British Army regiment in Nepal), a naturalist and collector who presumably collected and/or presented holotype

***Schizothorax myzostomus* Tsao 1964** sucker-mouthed, from *mýzō* (Gr. μύζω), to suck, and *stóma* (Gr. στόμα), mouth, referring to its sucker-shaped lower lip

***Schizothorax nasus* Heckel 1838** Latin for nose, referring to its snout

projecting beyond axis of body

***Schizothorax nepalensis* Terashima 1984** *-ensis*, Latin suffix denoting place: Nepal, where it is endemic to Lake Rara

***Schizothorax niger* Heckel 1838** Latin for black or dark, referring to its dark-black color in spirits and/or dark spots on body [placed in *Schizopyge* by some workers]

***Schizothorax ninglangensis* Wang, Zhang & Zhuang 1981** *-ensis*, Latin suffix denoting place: Ninglang County, Yunnan Province, China, where type locality (Lake Lugu) is situated

***Schizothorax nudiventris* Yang, Chen & Yang 2009** *nudus* (L.), bare or naked; *ventris*, genitive of *venter* (L.), belly or abdomen, referring to scaleless thorax and abdomen anterior to pelvic-fin origin

***Schizothorax nukiangensis* (Tsao 1964)** *-ensis*, Latin suffix denoting place: upper and lower reaches of Nukiang (also spelled Nujiang) River, Yunnan Province, China, type locality [placed in *Schizopyge* by some workers]

***Schizothorax oconnori* Lloyd 1908** patronym not identified, probably in honor of Capt. William Frederick Travers O'Connor (1870–1953), soldier, interpreter, commercial attaché, writer, and part of the 1904 British expedition to (and *de facto* invasion of) Tibet, during which holotype was collected

***Schizothorax oligolepis* Huang 1985** *oligos* (ὀλίγος), few or scanty; *lepis* (Gr. λεπίς), scale, referring to fewer lateral lines scales (89-93) compared to *S. molesworthi* (94–99)

***Schizothorax paoshanensis* Tsao 1964** *-ensis*, Latin suffix denoting place: Paoshan (also spelled Baoshan) County, Yunnan Province, type locality [treated as a subspecies of *S. yunnanensis* by some workers]

***Schizothorax parvus* Tsao 1964** Latin for little, referring to its small size (70–185 mm TL) compared with most congeners

***Schizothorax pelzami* Kessler 1870** in honor of Emmanuel Danilovich (or Evgeniy Dmitrievich) Pelzam (1837–ca.1886), an assistant at Kazan University Museum, Russia, who collected holotype

***Schizothorax plagiostomus* Heckel 1838** oblique-mouthed, from *plágios* (Gr. πλάγιος), sideways or oblique, and *stóma* (Gr. στόμα), mouth, referring to its transverse mouth

***Schizothorax prenanti* (Tchang 1930)** patronym not identified, possibly in honor of French embryologist Auguste Prenant (1861–1927) or his son, parasitologist Marcel Prenant (1893–1983)

***Schizothorax progastus* (McClelland 1839)** *pro-* (L.), before, forward or in front of; *gastēr* (Gr. γαστήρ), belly or stomach, allusion not explained, perhaps referring in some way to how “abdomen is abruptly enlarged beneath the pectorals” and/or how “stomach is of considerable size”

***Schizothorax pseudoaksaiensis* Herzenstein 1889** *pseudo-*, from *pseudēs* (Gr. ψεύδης), false, although this species resembles (and was previously reported as) *S. aksaiensis* (= *intermedius*), such an appearance is false

***Schizothorax pseudoaksaiensis issykkuli* Berg 1907** of Lake Issyk-Kul, Kyrgyzstan, type locality

***Schizothorax pseudoaksaiensis tschuensis* Pivnev 1985** *-ensis*, Latin suffix denoting place: Chu River, Kyrgyzstan, type locality [species name misspelled *pseudaksaiensis* by Pivnev, missing the “o”]

***Schizothorax punctulatus* Zhang, Zhao & Niu 2019** Latin for dotted, referring to blue-gray or blackish dots all over the sides

***Schizothorax raraensis* Terashima 1984** *-ensis*, Latin suffix denoting place: Lake Rara, northwestern Nepal, where it is endemic

***Schizothorax richardsonii* (Gray 1832)** patronym not identified, probably in honor of Scottish surgeon-naturalist John Richardson (1787–1865), whom Gray had elsewhere called the leading authority on fishes in Britain

***Schizothorax rotundimaxillaris* Wu & Wu 1992** *rotundus* (L.), round or circular; *maxillaris* (L.), of or belonging to the jaw, referring to its curved lower jaw

***Schizothorax saltans* Turdakov 1955** Latin for jumping or leaping but in this case possibly a misspelling of *salsus* (L.), salted, salty or salt, referring to high end-of-summer salinity of Ashchi-Kul Lake, Kyrgyzstan, where it occurred³ [extinct; last recorded in 1953]

***Schizothorax sinensis* Herzenstein 1889** *-ensis*, Latin suffix denoting place: Sinica (China), where it is endemic

***Schizothorax skarduensis* Mirza & Awan 1978** *-ensis*, Latin suffix denoting place: Skardu, Baltistan District, Pakistan, type locality

***Schizothorax taliensis* Regan 1907** *-ensis*, Latin suffix denoting place: Tali Fu Lake, China, type locality

***Schizothorax waltoni* Regan 1905** in honor of Capt. Herbert James Walton (1869–1938), surgeon and naturalist, who collected holotype during a 1904 British expedition to (and *de facto* invasion of) Tibet

***Schizothorax wangchiachii* (Fang 1936)** in honor of Wang Chia-chi (1897–1976), director, National Research Institute of Biology, Academia Sinica, for allowing Fang to “stay a rather longer period in the European museums and institutes for carrying on his ichthyological work”

***Schizothorax yunnanensis* Norman 1923** *-ensis*, Latin suffix denoting place: Yunnan Province, China, where type locality (Tengyueh [now Tengchong], Irrawaddy drainage) is situated

***Schizothorax yunnanensis weiningensis* Chen 1998** *-ensis*, Latin suffix denoting place: Weining County, Guizhou Province, China, where type locality (Caohai Lake) is situated

***Schizothorax zarudnyi* (Nikolskii 1897)** in honor of Nikolai Zarudny (1859–1919), Ukrainian-Russian explorer and ornithologist, who collected holotype³

Subgenus *Racoma*⁴ McClelland & Griffith 1842

Latinization of *Rakoma*, presumably a word of Indian origin, meaning “torn garment,” allusion not explained, perhaps referring to labial fold on protractile lower jaw, as described for *Racoma brevis* (an indeterminate species, possibly *S. intermedius* or *Schizopyge curvifrons*): “lips covered with a thick fleshy membrane, which forms a loose appendage to the lower jaw”

***Schizothorax labiatus* (McClelland 1842)** Latin for lipped, probably referring to the “enlargement of the lips”

***Schizothorax ramzani* (Javed, Azizullah & Pervaiz 2012)** in honor of the “very eminent” Pakistani ichthyologist Muhammad Ramzan Mirza (b. 1936)

UNAVAILABLE NAME

The following species was described in electronic-only publications without evidence of ZooBank registration, required per ICZN 8.5.3. The name is therefore unavailable (but may still appear in subsequent publications and websites). Its omission above is not an oversight.

***Schizothorax sikusirumensis* Jha 2020** *-ensis*, Latin suffix denoting place: Sikusirum River, Siang River basin, Arunachal Pradesh, India, type locality

⁴ *Racoma* is variously recognized as a full genus, a subgenus of *Schizothorax*, or a junior synonym, depending on the reference. It is provisionally retained here as a subgenus pending further review.