Order PETROMYZONTIFORMES

Northern Lampreys

Family **PETROMYZONTIDAE**

Bonaparte 1831

Sea Lamprey from Basel Switzerland, as illustrated in Gesner, C. 1604. Historiæ animalium. Liber IV. Qui est de piscium & aquatilium animantium natura. Cambieri, Francofurti. 1052 + 38 pp.
This image selected as lectotype of *Petromyzon marinus* by Kottelat, M. 1997. European freshwater fishes. Biologia (Bratislava) v. 52 (suppl. 5): 1–271.

Subfamily PETROMYZONTINAE

Bonaparte 1831

Ichthyomyzon

Girard 1858

ichthýos (Gr. ἰχθύος), genitive of *ichthýs* (ἰχθύς), fish; *myzon*, from *mýzō* (Gr. μύζω), to suck (borrowed from *Petromyzon*), i.e., a sucking fish, referring to their suctorial behavior

***Ichthyomyzon bdellium* (Jordan 1885)** Latinized from *bdélla* (Gr. βδέλλα), leech, referring to its leech-like suctorial and/or parasitic feeding behavior (as adults)

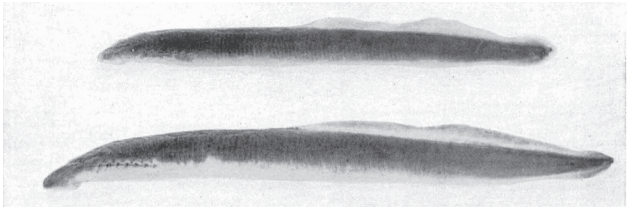
***Ichthyomyzon castaneus* Girard 1858** Latin for chestnut-brown, referring to its "uniform chesnut [*sic*] tint"

***Ichthyomyzon fossor* Reighard & Cummins 1916** Latin for digger, referring to how ammocoetes burrow into silt and sand

***Ichthyomyzon gagei* Hubbs & Trautman 1937** in honor of American histologist and embryologist Simon Henry Gage (1851–1944), Cornell University (Ithaca, New York, USA), "one of the foremost students of the lampreys," who brought this "interesting and distinct species" to the authors' attention

***Ichthyomyzon greeleyi* Hubbs & Trautman 1937** in honor of fisheries scientist John R. Greeley (1904–1964), who collected holotype and granted the authors permission to describe it

***Ichthyomyzon unicuspis* Hubbs & Trautman 1937** *unus* (L.), one; *cuspis* (L.), point, referring to single (unicuspid) cusps of circumoral teeth of adults (compared with bicuspid circumoral teeth of congeners)



Top: *Ichthyomyzon gagei*, an adult male paratype, 108 mm long. Bottom: *Ichthyomyzon greeleyi*, an adult male paratype, 131 mm long. From: Hubbs, C. L. and M. B. Trautman. 1937. A revision of the lamprey genus *Ichthyomyzon*. Miscellaneous Publications, Museum of Zoology, University of Michigan No. 35: 1–109, Pls. 1–2.

Petromyzon

Linnaeus 1758

petro-, from *pétra* (Gr. πέτρα) rock or stone; *myzon*, from *mýzō* (Gr. μύζω), to suck, referring to their suctorial behavior (adults attach to rocks during nest building and mating)

***Petromyzon marinus* Linnaeus 1758** Latin for "of the sea," referring to its marine habitat (as a non-breeding adult) [see box, next page]

Subfamily LAMPETRINAE

Fowler 1958

Caspiomyzon

Berg 1906

Caspio, from the Caspian Sea basin, where *C. wagneri* is endemic; *myzon*, from *mýzō* (Gr. μύζω) to suck (borrowed from *Petromyzon*), referring to their suctorial behavior [placed in Petromyzontinae by some workers]

***Caspiomyzon graecus* (Renaud & Economidis 2010)** from *graikós* (Gr. γραικός), Greek, "an adjective formed from the noun Graeci, a tribe of Hellenes living since Prehistoric times in the area" where this lamprey occurs [placed in *Eudontomyzon* by some workers]

Caspiomyzon graecus, holotype, immature male, 136.5 mm TL. From: Renaud, C. B. and P. S. Economidis. 2010. *Eudontomyzon graecus*, a new nonparasitic lamprey species from Greece (Petromyzontiformes: Petromyzontidae). Zootaxa 2477: 37–48.

***Caspiomyzon hellenicus* (Vladykov, Renaud, Kott & Economidis 1982)** Latinized form of *hellenikós* (Gr. ἑλληνικός), adjective meaning Greek, referring to the only country where it occurs [placed in *Eudontomyzon* by some workers]

***Caspiomyzon wagneri* (Kessler 1870)** in honor of Nicolai Petrivitsch Wagner (1829–1907), Kessler's colleague at the Zoological Institute in St. Petersburg, Russia; Kessler described this lamprey from a specimen in Wagner's collection

Entosphenus

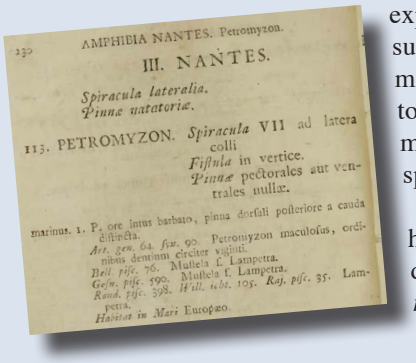
Gill 1862

entós (Gr. ἐντός) within or inside; *sphenus*, Latinized from *sphēnós* (σφηνός), genitive of *sphēn* (σφήν), wedge, referring to wedge-shaped tooth within mouth (on tongue) of *E. tridentatus*

***Entosphenus folletti* Vladykov & Kott 1976** in honor of Wilbur ("Bill") I. Follett (1901–1992), Curator of Fishes, California Academy of Sciences, "friend, a collaborator in the studies of holarctic lampreys, and a distinguished scholar of the fishes of California" [authors incorrectly gave Follett's name as "William"]

Petromyzon marinus: the first named "fish"

Although classified as an amphibian at the time, the first fish (or fish-like vertebrate) mentioned in the 10th edition of Linnaeus' *Systema Naturae* — the starting point of zoological nomenclature — is the Sea Lamprey *Petromyzon marinus*. The generic name derives from *pétra* (πέτρα) stone, and *mýzō* (μύζω) to suck. Although Linnaeus did not explain the meaning of the name, it almost certainly refers to the lamprey's "stone-sucking" behavior when it enters fresh water in the spring to spawn. Mating pairs move stones with their suctorial mouths to build their redds, and attach themselves to stones in order to complete the spawning act. The trivial name *marinus*, of course, means "of the sea" and refers to its marine habitat (as a non-breeding adult, at least), specifically in "Mari Europæo," or European seas.


330 AMPHIBIA NANTES. Petromyzon.

III. NANTES.

Spiracula lateralia.
Pinnæ natatoriæ.

113. PETROMYZON. *Spiracula* VII ad latera colli
Fistula in vertice.
Pinnæ pectorales aut ventrales nullæ.

marinus. 1. P. ore intus barbato, pinna dorsali posteriore a cauda distincta.
Art. gen. 64. syn. 90. Petromyzon maculosus, ordinibus dentium circiter viginti.
Bell. pisc. 76. Mustela L. Lampetra.
Gesn. pisc. 590. Mustela L. Lampetra.
Rond. pisc. 398. Will. tabt. 105. Raj. pisc. 35. Lampetra.
Habitat in Mari Europæo.

Linnaeus did not coin the *Petromyzon* epithet. As with many of the names in his *Systema Naturae*, he simply utilized a name that was already in use, in this case dating back to at least Artedi's *Genera Piscium* (1738). However, the trivial epithet *marinus* appears to have originated with Linnaeus.

Lateral (A) and ventral (B) views of *Entosphenus lethophagus*, nuptial male, 154 mm TL. From: Hubbs, C. L. 1971. *Lampetra* (*Entosphenus*) *lethophaga*, new species, the nonparasitic derivative of the Pacific lamprey. Transactions of the San Diego Society of Natural History 16 (6): 125–163.

***Entosphenus lethophagus* (Hubbs 1971)** *léthē* (Gr. λήθη), forgetfulness; *phagus*, from *phageín* (Gr. φαγεῖν), to eat, i.e., not eating (an adjective), referring to non-parasitic adults, which do not eat before they spawn and die

***Entosphenus macrostoma* (Beamish 1982)** *macro-*, from *makrós* (Gr. μακρός), long or large; *stóma* (Gr. στόμα), mouth, referring to large oral disc compared with *E. tridentatus* [often declined as an adjective, *macrostomus* (large-mouthed), but Beamish said name means "large opening," suggesting he proposed it as an indeclinable noun]

***Entosphenus minimus* (Bond & Kan 1973)** Latin for least, referring to small size, at 12.9 cm, the smallest known parasitic lamprey

***Entosphenus similis* Vladykov & Kott 1979** Latin for like or resembling, referring to similarity to *E. tridentatus*

***Entosphenus tridentatus* (Richardson 1836)** *tri-* (L.), three; *dentatus* (L.), toothed, referring to "three conspicuous and contiguous teeth" on supraoral tooth plate [name coined by surgeon-naturalist Meredith Gairdner (1809–1837), who is sometimes credited as the author]

Eudontomyzon

Regan 1911

eú-, a Greek (εὖ) intensive (well or very); *odontos*, Latinized and grammatically adjusted from the Greek nominative ὀδούς (*odoús*), tooth, referring to numerous radially arranged teeth of *E. danfordi*; *myzon* (Gr. μύζω), to suck (borrowed from *Petromyzon*), referring to their suctorial behavior

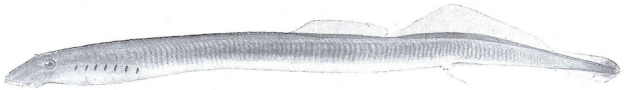
***Eudontomyzon danfordi* Regan 1911** in honor of Charles George Danford (1843–1928), Scottish artist, sportsman and ornithologist, who collected holotype

***Eudontomyzon mariae* (Berg 1931)** in honor of Berg's second wife Maria (née Ivanova), "who examined many thousands of river lampreys from the mouth of the Neva and other streams, falling into the Finnish Gulf"

***Eudontomyzon morii* (Berg 1931)** in honor of zoologist Tamezo Mori (1884–1962), Hyogo Agricultural College (Japan), who provided holotype [placed in *Lethenteron* by some workers]

***Eudontomyzon stankokaramani* Karaman 1974** in honor of Karaman's father, biologist Stanko L. Karaman (1889–1959), founder, Macedonian Museum of Natural History, "the greatest explorer of freshwater fish fauna in Yugoslavia"

***Eudontomyzon vladykovi* Oliva & Zanandrea 1959** patronym not identified but clearly in honor of Ukrainian-born Canadian lamprey biologist Vadim D. Vladykov (1898–1986)



Eudontomyzon mariae, syntype, male. From: Berg, L. S. 1931. A review of the lampreys of the Northern Hemisphere. Trudy Biologiceskoi Assodiamii Akademii Nauk S.S.S.R., Ezhegodnik, Zoologicheskogo Muzeya 32: 87–116, Pls. 1–8.

Lampetra

Bonnaterre 1788

lambo or *lambere* (L.), I lick or to lick; *pétra* (Gr. πέτρα), rock or stone, referring to their suctorial behavior (adults attach to rocks during nest building and mating)

Subgenus ***Lampetra***

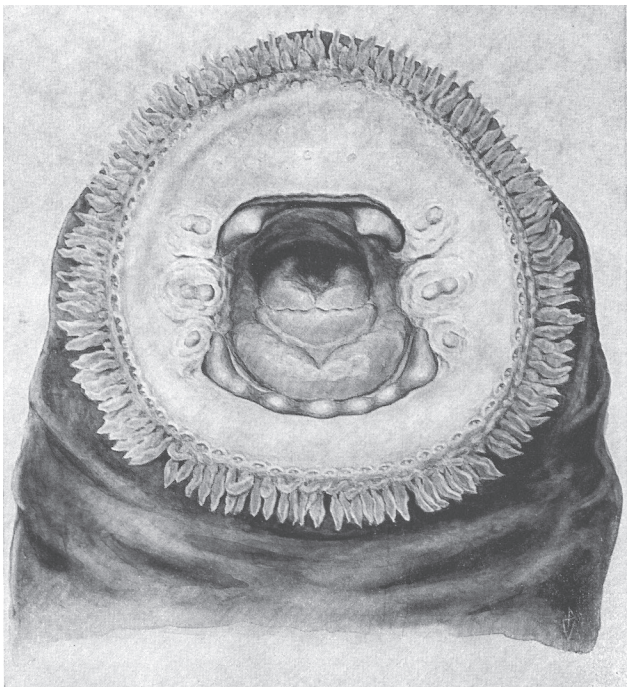
***Lampetra alavariensis* Mateus, Alves, Quintella & Almeida 2013** *-ensis*, Latin suffix denoting place: Alavarium, Latin for Aveiro, Portuguese district where it occurs

***Lampetra auremensis* Mateus, Alves, Quintella & Almeida 2013** *-ensis*, Latin suffix denoting place: Aurem, 12th-century name for what is now Ourém, Portuguese region where it occurs

***Lampetra ayresii* (Günther 1870)** in honor of physician-ichthyologist William O. Ayres (1817–1887), founding member of the California Academy of Sciences, who described this species in 1855 but used a preoccupied name (*Petromyzon plumbeus*)

***Lampetra fluviatilis* (Linnaeus 1758)** Latin for "of a river," referring to its upstream river spawning migration

***Lampetra hubbsi* (Vladykov & Kott 1976)** in honor of American ichthy-



Oral disc of *Lampetra richardsoni*, holotype, pre-spawning male, 154 mm TL. From: Vladykov, V. D. and W. I. Follett. 1965. *Lampetra richardsoni*, a new nonparasitic species of lamprey (Petromyzonidae) from Western North America. Journal of the Fisheries Research Board of Canada 22 (1): 139–158, Pls. 1–9.

ologist Carl L. Hubbs (1894–1979), "distinguished friend and a keen student of lamprey taxonomy" [placed in *Entosphenus* by some workers]

***Lampetra lanceolata* Kux & Steiner 1972** Latin for lance-like, probably referring to how end of body tapers to a lance- or lancet-like point

***Lampetra lusitanica* Mateus, Alves, Quintella & Almeida 2013** *-ica* (L.), belonging to: Lusitania, ancient name of Portugal, where it is endemic

***Lampetra pacifica* Vladykov 1973** *-ica* (L.), belonging to: Pacific Coast streams of California and Oregon, USA, where it occurs

***Lampetra planeri* (Bloch 1784)** in honor of Johann Jacob Planer (1743–1789), German physician, botanist and mycologist, who supplied holotype

***Lampetra richardsoni* Vladykov & Follett 1965** in honor of Scottish surgeon-naturalist John Richardson (1787–1865), "author of several important works on fishes from North America" [treated as a junior synonym of *L. ayresii* by some workers]

***Lampetra soljani* Tutman, Freyhof, Dulčić, Glamuzina & Geiger 2017** in honor of Tonko Šoljan (1907–1980), for his contribution to the knowledge and development of ichthyology in Croatia and Bosnia and Herzegovina

***Lampetra zanandreai* Vladykov 1955** in honor of Giuseppe Zanandrea (1907–1965), Istituto di Anatomia Comparata della Università di Bologna, "who made several interesting biometrical and biological studies of lampreys from northern Italy"

Subgenus ***Okkelbergia***
Creaser & Hubbs 1922
-ia (L. suffix), belonging to: Peter Okkelberg (1880–1960), University of Michigan, for his "careful studies on the history of the germ cells in lampreys" [treated as a full genus by some workers]

***Lampetra aepyptera* (Abbott 1860)** high-finned, from *aipýs* (Gr. αἰπύς), high and steep, and *ptera*, from *pterón* (Gr. πτερόν) or *ptéryx* (πτέρυξ), fin, referring to enlarged dorsal fins of nuptial males

Lethenteron
Creaser & Hubbs 1922
etymology not explained, perhaps *lethalis* (L.), lethal, or *lḗthē* (Gr. λήθη), forgetfulness; *énteron* (Gr. ἔντερον), intestine, presumably referring to "degenerate and non-functional" intestine of adult *L. appendix*

***Lethenteron alaskense* Vladykov & Kott 1978** *-ense*, Latin suffix denoting place: Alaska (USA), where type locality (West Creek, a tributary of Brooks Lake) is situated

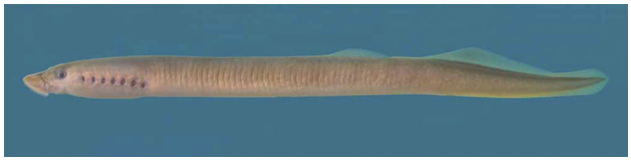
***Lethenteron appendix* (DeKay 1842)** Latin for appendage, referring to "thread-like appendix" (genital papilla) on anterior portion of nuptial males (DeKay believed this papilla was appended to the anal fin)

***Lethenteron camtschaticum* (Tilesius 1811)** *-icum* (L.), belonging to: the Kamchatka, Russia, type locality

***Lethenteron kessleri* (Anikin 1905)** patronym not identified but probably in honor of German-Russian zoologist Karl Fedorovich Kessler (1815–1881), who described *Caspiomyzon wagneri* in 1870

***Lethenteron mitsukurii* (Hatta 1901)** in honor of zoologist Kakichi Mitsukuri (1857–1909), Imperial University of Tokyo, who provided "free access" to specimens

***Lethenteron ninae* Naseka, Tuniyev & Renaud 2009** in honor of ichthyologist Nina G. Bogutskaya (b. 1958), Russian Academy of Sciences, for her contribution to the knowledge of Eurasian freshwater fishes [placed in *Lampetra* and by some workers]



Lethenteron ninae, paratype, 162.5 mm TL. From: Naseka, A. M., S. B. Tuniyev and C. B. Renaud. 2009. *Lethenteron ninae*, a new nonparasitic lamprey species from the north-eastern Black Sea basin (Petromyzontiformes: Petromyzontidae). Zootaxa 2198: 16–26.

***Lethenteron reissneri* (Dybowski 1869)** patronym not identified, possibly in honor of Baltic German anatomist Ernst Reissner (1824–1878)

Tetrapleurodon
Creaser & Hubbs 1922
tetrá (Gr. τετρά), four; *pleurá* (Gr. πλευρά) side; *odon*, Latinized and grammatically adjusted from the Greek nominative ὀδούς (*odoús*), tooth, referring to four enlarged teeth on each side of mouth of *T. spadiceus*

***Tetrapleurodon geminis* Álvarez 1966** Latin for twin, the non-parasitic "twin" of the parasitic *T. spadiceus* [date often given as 1964]

***Tetrapleurodon spadiceus* (Bean 1887)** Latin for light- or nut-brown, referring to its color

Tetrapleurodon spadiceus. Illustration by H. L. Todd from one of eight specimens in type series. From: Bean, T. H. 1887. Descriptions of five new species of fishes sent by Prof. A. Dugès from the Province of Guanajuato, Mexico. Proceedings of the United States National Museum 10 (637): 370–375.