Order RAJIFORMES
Softnose Skates or Longtail Skates

Family ARHYNCHOBATIDAE
Fowler 1934

**Arctoraja**

Ishiyama 1958

- **Arctoraja parmiìfera** (Bean 1881) parma (L.), from parme (Gr.), small shield; fero (L.), to have or bear, allusion not explained, probably referring to median row of large spines on back and tail
- **Arctoraja sexoculata** (Miswa, Orlov, Orlova, Gordeev & Ishihara 2020) sex (L.), six; oculata (L.), eyed or having eyes, referring to six white blotches (ocelli) on dorsal disc
- **Arctoraja simoterus** (Ishiyama 1967) simus (L.), flat- or pug-nosed; terus, possibly from teres (L.), rubbed off, rounded or smooth, presumably referring to its snout "broad and remarkably blunt at the tip"

**Arctoraja smirnovi** (Soldatov & Pavlenko 1915) in honor of “M.r. Smirnov,” Inspector of Fishes, who collected fishes from the Sea of Okhotsk

**Arhynchobatis**

Waite 1909

- **Arhynchobatis asperrimus** Waite 1909 Latin for very rough, referring to skin on dorsal surface “everywhere covered with closely set spines”

**Atlantoraja**

Menni 1972

- **Atlantoraja castelnaui** (Miranda Ribeiro 1907) in honor of Francis de Laporte de Castelnau (1810–1880), French naturalist who studied the fishes of Brazil
- **Atlantoraja cyclophora** (Regan 1903) cyclo-, from kyklos (Gr.), circle; phora, from phoreus (Gr.), bearer or carrier, referring to ocellus formed by two concentric black circles on each pectoral fin
- **Atlantoraja platana** (Günther 1880) -ana (L.), belonging to: mouth of the Rio de la Plata (between Uruguay and Argentina), type locality

**Bathyraja**

Ishiyama 1958

- **Bathyraja** (Arctoraja) sexoculata sp. nov., a new softnose skate (Rajiformes: Arhynchobatidae) from Smushir Island, Kuril Islands (western North Pacific), with special reference to geographic variations in Bathyraja (Arctoraja) smirnovi. Zootaxa 4861: 515–543.

Bathyraja abyssiola (Gilbert 1896) abyss(us) (L.), the deep sea; -cola (L.), dweller or inhabitant, referring to deepwater habitat (holotype collected at 2904 m)

Bathyraja aguja (Kendall & Radcliffe 1912) named for Point Aguja, Peru, type locality

Bathyraja albolescens (Norman 1937) alb(is) (L.), white; maculatus (L.), spotted, referring to dorsal surface scattered with small, rounded white spots

Bathyraja aleutica (Gilbert 1896) -ica (L.), belonging to: Aleutians Islands (specifically, Sannik Island), Alaska (USA), type locality


Bathyraja arctowskii (Dollo 1904) in honor of Polish scientist and Antarctic Expedition, during which holotype (an egg case) was collected

Bathyraja bergi Dolganov 1983 in honor of the “great” ichthyologist (Gr.), appearance, replacement name for Raja brachyura Günther 1880 (preoccupied by Raja brachyura Günther 1876 (L.), the deep sea; -cola (L.), dweller or inhabitant, referring to deepwater habitat (holotype collected at 2904 m)

Bathyraja brachyurops (Fowler 1910) -opsis (Gr.), appearance, replacement name for Raja brachyura Günther 1880 (preoccupied by Raja brachyura Günther 1876 (L.), the deep sea; -cola (L.), dweller or inhabitant, referring to deepwater habitat (holotype collected at 2904 m)

Bathyraja cOUSEauae Díaz de Astarloa & Mabragaña 2004 in honor of ichthyologist Maria Berta Cousseau (Departamento de Ciencias Marinas, Universidad Nacional de Mar del Plata, Argentina), for her contribution to the marine fishes of Argentina

Bathyraja diplotaenia (Ishiyama 1952) dipl(o) (L.), di-; taenia (Gr.), band or ribbon, referring to how ven-tral fin is divided into “double ribbons” (i.e., deeply notched between anterior and posterior lobes)

Bathyraja eatonii (Günther 1876) in honor of English explorer and naturalist Rev. Alfred Edmund Eaton (1845–1929), who collected holotype

Bathyraja fedorovi Dolganov 1983 in honor of the “well-known” (translation) Soviet ichthyologist Vladimir Vladimirovich Fedorov (1939–2011), who collected holotype

Bathyraja grisecauda (Norman 1937) gris(eus) (Medieval Latin), gray; cauda (L.), tail, referring to grayish-brown color of entire or lower surface of tail

Bathyraja hesperafrica(na) Stehmann 1995 -ana (L.), belonging to: hes-perius (L.), western, referring to its West African distribution on the Eastern Central Atlantic slope

Bathyraja interrupta (Gill & Townsend 1897) Latin for broken apart, referring to row of acutely curved, smooth spines along middle of back, extending from interhumeral region to dorsal, but are “interrupted” along posterior half of disc, where spines are “absent or obsolete”

Bathyraja irrasa Hureau & Ozouf-Costaz 1980 Latin for unshaven, referring to its rough, wrinkled appearance

Bathyraja ishiharai Stehmann 2005 in honor of Hajime Ishihara (b. 1950), Stehmann’s “skatology” colleague and friend for more than 25 years, who devoted his life’s research to chondrichthyan fishes, producing important revisions of North Pacific Bathyraja

Bathyraja isotrachys (Günther 1877) -is-, from isos (Gr.), equal; -trachys (Gr.), rough, presumably referring to body and tail both covered with “minute asperities, each with a stellate base"

Bathyraja leucemelanos Iglésias & Lévy-Hartmann 2012 leuk(os) (Gr.), white; melanos (Gr.), black, referring to the color of its dorsal and ventral surfaces, respectively

Bathyraja lindbergi Ishiyama & Ishihara 1977 in honor of the late Stehmann’s “skatology” colleague and friend for more than 25 years, who devoted his life’s research to chondrichthyan fishes, producing important revisions of North Pacific Bathyraja

Bathyraja longicauda (de Buen 1959) longus (L.), long; cauda (L.), tail, referring to its long caudal region, 52.9% of total length in holotype

Bathyraja maccioni Springer 1971 in honor of American zoologist John C. M.Cain (b. 1939, note Latinization of “Mc” to “Mac”), who collected holotype from aboard the M/V Hero

Bathyraja macloviana (Norman 1937) -ana (L.), belonging to: Macclou, Latinization of “M c” to “M ac”), who collected holotype from aboard the M/V Hero

Bathyraja irrasa Hureau & Ozouf-Costaz 1980 Latin for unshaven, referring to its rough, wrinkled appearance

Bathyraja magna Iglésias & Lévy-Hartmann 2012 leuk(os) (Gr.), white; melanos (Gr.), black, referring to the color of its dorsal and ventral surfaces, respectively

Bathyraja magellanica (Philippi 1841) -ica (L.), belonging to: Straits of Magellan, type locality

Bathyraja mariposa Stevenson, Orr, Hoff & McEachran 2004 Spanish for butterfly, referring to large yellow patches on pectoral fins, which on some specimens approximates the shape of butterfly wings, and on all specimens resemble elaborate shading patterns often seen on butterfly wings

Bathyraja matsubarae (Ishiyama 1952) in honor of ichthyologist Kiyomatsu Matsubara (1907–1968), Imperial Fisheries Institute (Tokyo), for his “great work” on western North Pacific zoogeography

Bathyraja microtrachys (Osburn & Nichols 1916) micro-, from mikros (Gr.), small; -trachys (Gr.), rough, “Upper parts everywhere roughened with fine stellate prickles, these smallest and sparsest on the bases of
Brochiraja

Bathyraja smithii (Müller & Henle 1841) in honor of Andrew Smith -ogist, who collected holotype

Bathyraja spinicauda (Jensen 1914) spinia (L.), thorn; cauda (L), tail, referring to erect and “slightly bent backwards” spines along middle of tail

Bathyraja spinosisima (Beebe & Tee-Van 1941) Latin for very spiny, referring to dorsal and ventral surfaces “covered thickly and evenly with small, recurved spines” and tail “covered everywhere with small spines, even over the surface of the dorsal fins”

Bathyraja taranetzi (Dolganov 1983) in honor of Anatoly Yakovlevich Taranetz (1910–1941), “eminent expert” (translation) on fishes of the far-eastern seas of the U.S.S.R. [placed in Rhinoraja by some workers]

Bathyraja trachouros (Ishiyama 1958) trachys (Gr.), rough; ouros (Gr), tail, probably referring to 20 “enlarged thorns” along middle of tail

Bathyraja trachura (Gilbert 1892) trachys (Gr.), rough; ura (Latinized Gr), tailed, referring to strong spines on middle of tail

Bathyraja tunae Stehmann 2005 in honor of María Cristina Oddone Franco, nicknamed “Tuna,” the “most enthusiastic elasmobranch student.” Stehmann has ever met; “The author wishes her luck in her further career, and that all her dreams may come true.”

Bathyraja tiznovskii Dolganov 1983 in honor of oceanographer Vladimir Diodorovich Tzinovsky (b. 1946, also spelled Tzinovsky), P. P. Shirshov Institute of Oceanology (Moscow), who collected holotype

Bathyraja violacea (Suvorov 1935) Latin for violet-colored, referring to lilac-violet hues and dark violet vermiculations on dorsal surface

**Rajiformes** · **ARHYNCHOBATIDAE** · 3

Brochiraja

Last & M. McEachran 2006 brochus (L.), projecting, referring to projecting thorns on anterior snout; raja, from raia, Latin for ray or skate

Brochiraja aenigma Last & M. McEachran 2006 Latin for enigma, referring to its unresolved taxonomic status (generic placement is provisional since post-juvenile holotype lacks bifurcated thorn on mid-distal rostral cartilage, a diagnostic feature of the genus)

Brochiraja albilabiata Last & M. McEachran 2006 albus (L.), white; labia-tus (L.), lip, referring to distinctive, white-edged mouth, strongly contrasted against a very dark, beard-like patch beneath the mouth

Brochiraja asperula (Garrick & Paul 1974) diminutive of asper (L), rough, referring to “meagre development of prickles on the disc”

Brochiraja heuresa Last & Séret 2012 Latinized from the Greek heures (that is which, discovered), based on the ancient Greek Heureka (“I have found it”) or, in modern English, “Eureka,” referring to its being discovered among a collection of skates the authors initially
thought represented a different species, *B. aenigma*.

*Brochiraja leviveneta* Last & McEachran 1992 *levis* (L.), smooth, referring to “mostly smooth” dorsal surface of disc; *veneta* (L.), sea-colored or blue, referring to color of dorsal disc.

*Brochiraja microspinifera* Last & McEachran 1992 *micro*, from *mikros* (Gr.), small, being a dwarfed version of its larger New Zealand sibling species, *B. spinifera*.

*Brochiraja spinifera* Grick Paul 1992 *spina* (L.), thorn; *fera* (L.), to carry or bear, referring to numerous spines on tail.

*Brochiraja vittacauda* Last & Set 1992 *vitta* (L.), ribbon; *cauda* (L.), tail, referring to unusually broad, ribbon-like lateral skin folds that terminate near tip of tail.

**Insentiraja**

*Varesly & Last* 1992  *in* (L.), without; *sentis* (L.), thorn, referring to absence of thorns on tail and middorsal regions of disc; *raja*, from *raia*, Latin for ray or skate.

*Insentiraja laipella* Varesly & Last 1992 *laxus* (L.), loose; *pellis* (L.), skin, referring to flabby integument of ventral surface.

*Insentiraja subtillispinosa* Stehmann 1992  *subtilis* (L.), very fine; *spinus* (L.), thorny or spiuiose, referring to its “extraordinarily fine, velvet-like spinulation” or dermal denticles.

**Irolita**

*Wiley* 1898  *etymology not explained, possibly named for Irolita, a fairy tale princess whose beauty was worthy of the world’s admiration.*

*Irolita waitii* (Culloch 1898) *patronym not identified but clearly in honor of British-Australian zoologist and museum director Edgar R. Waite (1866–1928), who works on fishes are frequently cited by*.

*Irolita westraliensis* Last & McEachran 1992 *ensis*, Latin suffix denoting place: Western Australia, only known area of occurrence.

**Notoraja**

*Ishiyama* 1992  *etymology not explained, perhaps notos* (Gr.), south, proposed as a southern subspecies of *Breviraja*, referring to occurrence of *N. tobitukai* in “southernmost regions within the seas inhabited by the northern members” of the genus; *raja*, from *raia*, Latin for ray or skate.

*Notoraja alisae* Set & Last 1992  *alisae* in honor of the of research vessel Alis (named for a local wind) of the Institut de Recherche pour le Développement (IRD) in Nouméa, which conducted many exploratory cruises in New Caledonia, and from which holotype was collected.

*Notoraja azurea* McEachran & Last 2008 *Latinization of the French azure (blue), referring to striking, metallic-blue dorsal coloration.*

*Notoraja fijiensis* Séret & Last 2012  *ensis*, Latin suffix denoting place: Fiji Islands, type locality.

*Notoraja hesperindica* Weigmann, Séret & Stehmann 2021  *hesperius* (L.), western; *indicus* (L.), of India, the only member of the genus known from the western Indian Ocean.

*Notoraja hirticauda* Last & McEachran 2006  *hirtus* (L.), hairy, rough or bristly; *cauda* (L.), tail, referring to dense covering of fine denticles on both surfaces of tail.

*Notoraja insutata* Séret & Last 2012 Latin for unusual or strange, referring to its “strange” appearance, i.e., head and disc morphology resembling some species of Sinobatis, Bathyraja and Insentiraja.

*Notoraja lira* McEachran & Last 2008  *Latin for earth or ridge thrown up by a plow, referring to type locality, the Broken Ridge (southeast Indian Ocean), an elevated plateau thrust upward at the juncture of two continental plates.*
Notoraja longiventralis Séret & Last 2012 longus (L.), long; ventralis (L.), of the belly, referring to very long anterior lobe of pelvic fin

Notoraja martinezi Concha, Ebert & Long 2016 in honor of Ecuadorian biologist Jimmy Martínez, World Wildlife Fund, who collected and “kindly provided” holotype

Notoraja ochroderma McEachran & Last 1994 ochros (Gr.), pale yellow; derma (Gr.), skin or hide, referring to pale-yellow body color

Notoraja sapphira Séret & Last 2009 from sappheiros (Gr.), sapphire, referring to intense blue dorsal coloration, resembling that of a dark sapphire (gemstone)

Notoraja sereti White, Last & Mana 2017 in honor of Bernard Séret (b. 1949), “the ‘highly respected’ French ichthyologist, ‘who has contributed greatly to the taxonomy of sharks and rays, and in particular to our knowledge of skates of the genus Notoraja.”

Notoraja sticta McEachran & Last 2008 from stiktos (Gr.), spotted or dappled, referring to strong blotched dorsal coloration

Notoraja tobitukai (Hiyama 1940) in honor of T. Tobituka (no other information available), who directed the trawling fishery survey during which holotype was collected

Notoraja yurii Dolganov 2020 in honor of ichthyologist Yuri Nikolayevich Shcherbachev, P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences

Pavoraja
Whitley 1959
pavus (L.), peacock; probably referring to its ornate coloration with small eyespots; raja, from rai, Latin for ray or skate

Pavoraja alleni McEachran & Fechhelm 1982 in honor of American-born Australian ichthyologist Gerald R. Allen (b. 1942), Western Australia Museum (Perth), who furnished the authors with specimens

Pavoraja arenaria Last, Mallick & Yearsley 2008 Latin for sandy, referring to its pale dorsal disc coloration

Pavoraja mosaica Last, Mallick & Yearsley 2008 derived from mosaicus (L.), an inlay of various colors and geometric patterns, referring to its “striking” dorsal coloration

Pavoraja nitida (Günther 1880) Latin for bright, shining or elegant, allusion not explained, perhaps referring to its color pattern: light and dark brown with dark brown blotches “ornamented” by small, round yellowish ocelli

Pavoraja pseudonitida Last, Mallick & Yearsley 2008 pseudos-, from pseudos (Gr.), false, although this species may superficially resemble P. nitida, such an appearance is false

Pavoraja umbrosa Last, Mallick & Yearsley 2008 Latin for shady, referring to uniform grayish coloration of dorsal surface of disc

Psammobatis
Günther 1870
psammus (Gr.), sand, referring to Sandy Point, Magellan Strait, Argentina, type locality of P. rudis; batis, Greek for a flat fish, usually applied to a skate or ray

Psammobatis bergi Marini 1932 in honor of Friedrich Wilhelm Karl Berg (1843–1902), also known as Frederico Guillermo (“Carlos”) Berg, born in Latvia, foremost (“el primor”) ichthyologist specializing in the freshwater and marine fishes of Argentina (type locality)

Psammobatis extenta (Garman 1913) Latin for extended, presumably referring to its long tail, “extended behind the dorsals,” longer and slenderer than tail of Raja (=leucoraja) erinacea

Psammobatis lentiginosa McEachran 1983 Latin for full of freckles, referring to small spots scattered over dorsal surface of disc and tail

Psammobatis normani McEachran 1983 in honor of English ichthyologist J. R. (John Roxborough) Norman (1898–1944), British Museum (Natural History), who first reported this ray (as P. scobina) in 1857

Psammobatis rudis Günther 1870 Latin for rough, referring to minute spinous tubercles, placed close together, covering all upper parts

Psammobatis scobina (Philippi 1857) Latin for rasp, probably referring to rasp-like quality of small sharp spines on dorsal surface
**Pseudoraja**

*Pseudoraja fischeri* Bigelow & Schroeder 1954
- pseudo-, from pseudes (Gr.), false; the authors believed the lack of a dorsal fin and well-developed caudal fin were sufficiently distinct to forbid placement of *P. fischeri* in Rajidae

**Rhinoraja**

*Rhinoraja kujiensis* Ishiyama 1952
- rhino[s] (Gr.), nose, referring to "peculiar" rostral cartilage that projects forward with slender rod-like bar at tip of snout; *raja*, from *raia*, Latin for ray or skate

*Rhinoraja longicauda* Ishiyama 1952
- longus (L.), long; *cauda* (L.), tail, referring to pre-dorsal tail length, which is always longer than the disc

*Rhinoraja odai* Ishiyama 1958
- in honor of Mikiji Oda (no other information available), who discovered this species at a Miya fish market, off Izu Peninsula, Shizuoka Prefecture, Aichi Province, Japan

**Rioraja**

*Rioraja agassizii* (Müller & Henle 1841)
- patronym not identified but clearly in honor of Swiss-born American zoologist-geologist Louis Agassiz
Agassiz (1807–1873), whose five-volume work on fish fossils (1833–1843), including sharks, is cited many times by Müller & Henle

**Sympterygia**

Müller & Henle 1837

Sym-, from syn (Gr.), together or joined; pteryx (Gr.), wing or fin, referring to how pectoral fins of *S. bonapartii* meet at tip of snout

**Sympterygia acuta** Garman 1877 Latin for sharp or pointed, referring to acute and greatly produced snout

**Sympterygia bonapartii** Müller & Henle 1841 patronym not identified but clearly in honor of French biologist Charles Lucien Bonaparte

**Sympterygia brevicaudata** (Cope 1877) brevis (L.), short; caudata (L.), tailed, “only one-fifth longer than the claspers”

**Sympterygia lima** (Poeppig 1835) Latin for file, allusion not explained, perhaps referring to ~10 thorny spines in a single row on short, firm and triangular tail, which can be said to resemble a file (hence the common name Filetail Fanskate)