

Four New Deep-Sea Whelks From the North American Pacific Coast (Neogastropoda: Buccinidae)

Roger N. Clark

Research Associate, Malacology Department,
Natural History Museum of Los Angeles County, and
Santa Barbara Museum of Natural History
insignis69@gmail.com

ABSTRACT Four new species of buccinoid gastropods from the continental shelf and slope are described. *Neptunea flatteryensis* Clark, n. sp. and *Latisipho ritteri* Clark, n. sp. from depths of 134-165 m off the Cape Flattery area of Washington State, *Buccinum cascadiense* Clark, n. sp. found at bathyal depths of 788-1203 m, off of the coasts of Washington and Oregon, and *Golikovia fitchi* Clark, n. sp. found at bathyal depths of 722-1240 m off of California.

KEY WORDS Mollusks, Bathyal, *Neptunea*, *Golikovia*, *Latisipho*, *Buccinum*, Buccinidae.

INTRODUCTION

The neogastropod fauna of the continental shelf and slope off the Pacific coast of North America has been poorly studied. One new species was recently described from the region (Clark, 2019). The present report describes four new species taken during trawling operations (from 1990-2004). *Neptunea flatteryensis* Clark, n. sp. and *Latisipho ritteri* Clark, n. sp., were taken by commercial trawlers working out of Astoria, Oregon from 1990-2000, and obtained by Mr. William J. Ritter of Astoria, Oregon. *Golikovia fitchi* Clark, n. sp. and *Buccinum cascadiense* Clark, n. sp., were collected by the author during NOAA/NMFS surveys carried out from 1997-2004. The collections of the Natural History Museum of Los Angeles County, and the Santa Barbara Museum of Natural History were also examined, as well as the unpublished notes of the late Dr. James H. McLean.

ABBREVIATIONS

LACM Natural History Museum of Los Angeles County

SBMNH Santa Barbara Museum of Natural History
NOAA National Oceanic and Atmospheric Administration
NMFS National Marine Fisheries Service (Alaska Fisheries Science Center).
OD Original designation
RNC Reference collection of the author
SD Subsequent designation

SYSTEMATICS

Buccinidae Rafinesque, 1815
Subfamily. Buccininae Rafinesque, 1815
Genus. *Buccinum* Linnaeus, 1758
Type species. *Buccinum undatum* Linnaeus, 1758. (SD)

Buccinum cascadiense Clark, n. sp.
(Figures 1-2)

Description. Shell of moderate size, profile ovoid, inflated, height to 62.5 mm (RNC 4372), Holotype 45.9 x 26.3 mm; apex eroded, whorls rounded, suture moderately impressed; axial sculpture lacking; spiral sculpture of incised

striae; final lip not thickened nor inflated. Color white, periostracum thin, pale yellow-green to light brown. Operculum of moderate size, not filling aperture, nucleus subcentral.

Type locality. West of Yaquina Head Light (44° 35.9' N, 124° 56.4' W), 800 m. R/V *Yaquina* (sta. OTB 256), 15 July 1968.

Type material. Holotype LACM 3787 (ex LACM 68-216.7), and 10 Paratypes: 8, LACM 3788; 2, SBMNH 184002 (ex -LACM 68-216.7).

Additional material. 62, LACM 68-216.7, Topotypes; 3, LACM 152874, SW of Cape Foul weather, Lincoln Co., Oregon (44°36' N, 125°10' W), 1220 m; 4, LACM 90-347, W of Stone lagoon, Humboldt Co., California (41°16.0' N, 124°43.0' W), 1140 m; 2, RNC 3895, 42.9-54.4 mm, W of La Push, Clallam Co., Washington (47°35.7' N, 125°30.4' W), 1203 m (NMFS 21-1996-15-22); 3, RNC 4372, 42.3-62.5 mm, NW of Winchester Bay, Douglas Co., Oregon (43°58.3' N, 125°00.9' W), 828 m (NMFS 21-1999-13-131); 4, RNC 4373, 41.8-48.8 mm, WSW of Newport, Lincoln Co., Oregon (44°23.1' N, 125°02.5' W), 788 m (NMFS 21-1999-13-137); 3, RNC 3943, 42.9-56.3 mm, W of Florence, Lane Co. Oregon (43°45.4' N, 125°01.5' W), 865 m (NMFS 21-1996-15-171).

Distribution. Off the U.S. Pacific Northwest, from off La Push, Clallam Co., Washington (47°35' N) to off Stone lagoon, Humboldt Co., California (41°16' N).

Habitat. Bathyal depths, 788-1203 m, on green mud.

Etymology. Named for the Cascadia Biogeographical region.

Remarks. Similar to *Buccinum viridum* (Dall, 1890) (Figures 3-4), but lacks the shoulder carination of that species. The two species are seldom found together. *Buccinum cascadiense* is also somewhat larger than *B. viridum*, reaching a height of 62 mm, as opposed to around 52 mm for *B. viridum*. *Buccinum viridum* was placed in the subgenus *Viridibuccinum* Golikov & Sirenko, 1988.

Subfamily: Neptuneinae Stimpson, 1865

Genus: *Latisipho* Dall, 1916.

Type species: *Chrysodomus hypolisus* Dall, 1891: (OD)

Latisipho ritteri Clark, n. sp.
(Figures 5-6)

Description. Shell of moderate size, height to 5 cm (Holotype 40.0 mm x 15.0 mm) robust, profile slender, fusiform, aperture much less than half the length of shell, apex eroded; final whorl diameter decreasing, producing slightly convex general outline; whorls rounded, suture impressed, spiral cords low, broad, separated by sharp incisions, cords more broadly spaced at base of shell; aperture slanted; color white, periostracum dark brown. Radula: rachidian tooth with three, subequal denticles, lateral teeth L-shaped, distal portion forming a single large denticle, proximal portion bearing 2-3 small denticles.

Type locality. WSW of Cape Flattery, Clallam Co., Washington (48° 25' N, 125° 12' W), trawled, 146-165 m. 14 October, 1993. Ex – William J. Ritter.

Type material. Holotype, LACM 3780. 5 Paratypes: 2 LACM 3781; 1, SBMNH 184003; 1, RNC, 4129; 1, William Ritter collection.

Additional material. 1, USNM 678543, “Tahwit Head”, Washington; William Ritter

Collection: 2, topotypes; 2 off Destruction Island, Jefferson Co., Washington, 155-173 m; 2 S of Gray's submarine canyon, W of Gray's Harbor Co., Washington; 2, Juan de Fuca Strait, Clallam Co., Washington, 109 m.

Distribution. Known so far only from the vicinity of Cape Flattery, Clallam Co., Washington.

Habitat. Sublittoral depths, 146-173 m, on muddy substrates.

Etymology. It is my honor to name this species for the late Mr. William J. Ritter, of Astoria, Oregon, who acquired the type and reference material, in recognition of his many years of collection and study of Pacific Northwest mollusks.

Remarks. Dall (1921: 95) extended the range of the Japanese species *Colus adonis* Dall, 1919 [= *Kanamaura adonis* (now placed in the family Colubrariidae Dall, 1904)] to the eastern Pacific [Straits of Fuca to San Diego], based on specimens of this species, but it is quite different. *Latisipho ritteri* differs in (1) more slender shell, (2) shorter, broader canal, (3) more numerous and coarser spiral cords, (4) shorter aperture, which lacks the posterior constriction.

Genus: *Neptunea* Röding, 1798

Type species. *Murex antiquus* Linnaeus, 1758, (by SD of Cossmann, 1901: 99)

Neptunea flatteryensis Clark, n. sp.
(Figure 7)

Description. Shell large, to 137 x 89.1 mm (holotype), apex missing; shell pyriform, moderately broad; suture impressed; aperture a little more than one half of shell height; axial sculpture absent; spiral sculpture of one strongly

projecting carination low on early whorls, uppermost cord forming shoulder angulation in early whorls, whorls becoming fully rounded in mature stage; mature sculpture with additional narrow, broadly separated primary cords, interspaces with numerous fine secondary cords; final lip flaring. Color cream-white, with cream to pale yellow aperture; periostracum apparently lacking.

Type locality. West of Cape Flattery, Clallam Co., Washington (approx. 48°25' N); trawled, 155 m; 12 July, 1992. Ex – William J. Ritter.

Type material. Holotype, LACM 3790.

Additional material. 2, RNC 4544, topotypes; 2, LACM 150561, "Washington State" ex—Kanakoff collection; 1, LACM 54715, off La Push, Clallam Co., Washington, 270 m.

Distribution. Known so far only from off the vicinity of Cape Flattery, Clallam Co., Washington.

Habitat. Found on muddy substrates, at depths of 137-270 m.

Etymology. Named for the type locality, Cape Flattery, Clallam Co., Washington; a Latin feminine singular adjective in the nominative case.

Remarks. This species differs from the more northern *N. pribiloffensis* (Dall, 1919) (Figure 8) in not having a persistent, angulate shoulder cord in the final whorls, and also in having fainter, less numerous primary cords. *Neptunea flatteryensis* also resembles *N. humboldtiana* A. G. Smith, 1971 (Figure 9) which occurs in the same region, but differs in (1) the much thicker shell 2.8-3.1 mm compared to 1.5-1.8 mm, (2) less inflated whorls, and (3) more prominent spiral sculpture, which is very faint in *H.*

humboldtiana. It also lacks the broadly flaring lip, and the badly eroded apices always present in *N. humboldtiana*.

Genus: *Golikovia* Habe & Sato, 1973

Type species. (OD): *Neptunea fukuuae* Kira, 1959. Japan.

Golikovia fitchi Clark, n. sp.
(Figures 10-11)

Description. Shell of moderate size (height to 84 mm), Holotype 55.4 x 33.7 mm, broadly fusiform, protoconch eroded; sub-oval, aperture greater the half of shell height; profile rounded, except for subsutural concavity, suture moderately impressed; axial sculpture absent, accept growth lines; spiral sculpture lacking, canal short, broad, twisted; color pale grayish brown to white, periostracum lacking.

Type locality. West of San Miguel Island, California Channel Ids., California (34°06 N, 120°42 W), 722 m (*leg.* J. S. Muroaka, date unknown).

Type Material. Holotype LACM 3670 (ex LACM 151762), 55.4 mm. Paratypes: 1, LACM 3671 (ex LACM 34782) 14.5 km S of San Clemente Island, California (approx. 32°40 N, 118°25 W), 74.4 mm; 1, SBMNH 184004, SW of Eureka, Humboldt Co., California (40°30.5 N, 124°26.7 W), trawled, 1142 m, 49.4 mm; 1, RNC 4409, SW of Eureka, Humboldt Co., California (40°30.5 N, 124°26.7 W), trawled 1142 m, 54.6 mm.

Additional material. 1, RNC 4410, W of Point Reyes, Marin Co., California (38°10.6 N, 123°36.7 W), trawled, 1202 m, 83.9 mm.

Distribution. SW of Eureka, Humboldt Co., California (40°30 N) to S of San Clemente

Island, California Channel Ids., California (approx. 32°40 N).

Habitat. Found on muddy substrates, at depths of 722-1240 m.

Etymology. Named for Mr. John E. Fitch, who obtained the first specimen, and donated it to the Natural History Museum of Los Angeles County.

Remarks. The genus *Golikovia* is characterized by numerous fine spiral cords in the early whorls, and the usually absent sculpture [the lone exception *G. phoenicea* (Dall, 1907), which has low, broad, weak spiral cords]. This species is referred to *Golikovia* on account of its lack of sculpture, since the early whorls are eroded away.

DISCUSSION

The taxonomy of Buccinidae has been revised recently with the molecular study of the Buccinoidea Rafinesque, 1815 (Kantor, *et. al.* 2021), which demonstrated that that the genus *Colus* Röding, 1798 is not in the family Buccinidae Rafinesque, 1815, but in its own family, Colidae Gray, 1857, unfortunately many groups previously considered to be subgenera or synonyms of *Colus* are now of uncertain taxonomic position, pending further study. This includes the genus *Latisipho* Dall, 1916, which presently includes many species in the northeastern Pacific. For the present I have tentatively placed it in the subfamily Neptuneinae.

This manuscript was originally intended to be included in the James H. McLean Memorial Volume (Zoosymposia 13, 2019), edited by Daniel L. Geiger (SBMNH), Lindsey T. Groves and Jann E. Vendetti (both LACM), but was unfortunately delayed, and missed the deadline.

Much of this manuscript is based upon the unpublished notes and images of Dr. James H. McLean (LACM).

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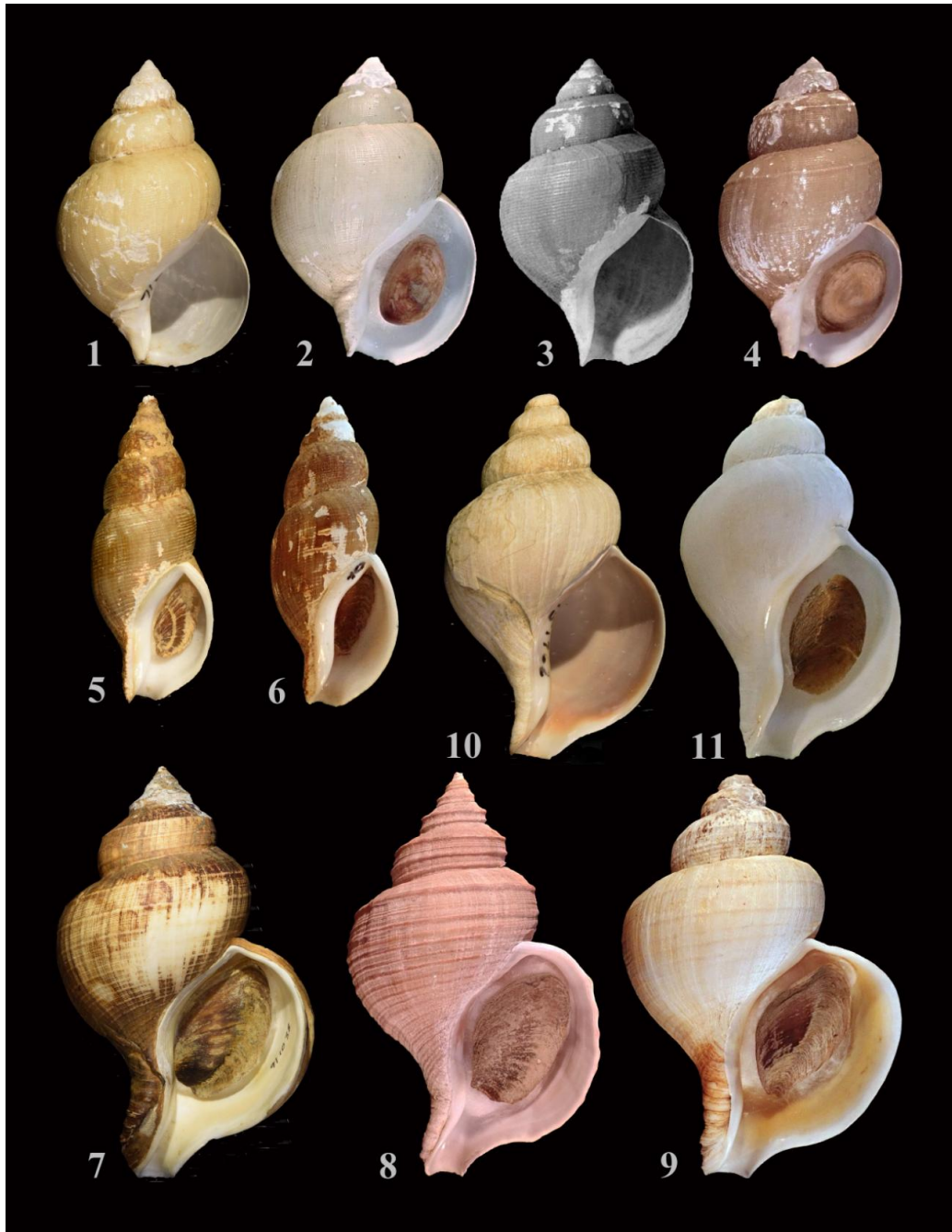


Figure 1= *Buccinum cascadiense* Clark, n. sp., Holotype, LACM 3787. 45.9 mm; **Figure 2**= *B. cascadiense* n. sp. off La Push, Clallam Co., Washington, 1203 m. 42.9 mm; **Figure 3**= *Buccinum viridum* (Dall, 1889), Lectotype, USNM 96557, off Santa Barbara Island, California, 757 m (image by JM McLean). 46 mm; **Figure 4**= *B. viridum*, RNC 4479, off Cape Blanco, Curry Co., Oregon, 1127 m. 45.9 mm; **Figure 5**= *Latisipho ritteri* Clark, n. sp., Holotype, LACM 3780, off Cape Flattery, Clallam Co., Washington, 146-165 m. 40.0 mm; **Figure 6**= *Latisipho ritteri* Clark, n. sp., Paratype 4, RNC 4129, type locality. 44.3 mm; **Figure 7**= *Neptunea flatteryensis* Clark, n. sp., Holotype, LACM 3790, off Cape Flattery, Clallam Co., Washington, 155 m. 137mm; **Figure 8**= *Neptunea pribiloffensis* (Dall, 1919), RNC 4531, near Pribilof Islands, Bering Sea, Alaska, 99 m. 129.8 mm; **Figure 9**= *Neptunea humboldtiana* A. G. Smith, 1971, RNC 4545, off Newport, Lincoln Co., Oregon, 270 m. 114.6 mm; **Figure 10**= *Golikovia fitchi* Clark, n. sp., Holotype, LACM 3670, off San Miguel Island, California, 772 m. 55.4 mm; **Figure 11**= *G. fitchi* Clark, n. sp., RNC 4409, off Eureka, Humboldt Co., California, 1142 m. 49.4 mm.