

**Re-examination of the *Neptunea lyrata* (Gmelin, 1791) species complex in the northeastern Pacific (Salish Sea to the Gulf of Alaska), with description of two new species**

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**ABSTRACT** The *Neptunea lyrata* (Gmelin, 1791) species complex in the Northeastern Pacific Ocean is examined, seven species are recognized, including three new species *Neptunea willetti* spec. nov., *Neptunea cincticula* spec. nov., and *Neptunea grovesi* spec. nov. herein described. The misunderstood *Neptunea middendorffi* (W. Cooper, 1859) is recognized and defined, and a neotype is designated.

**KEY WORDS** Buccinidae, *Neptunea*, *N. lyrata*, *N. willetti*, *N. cincticula*, *N. grovesi*, *N. middendorffi*, Whelk, new species, North Pacific.

## INTRODUCTION

The ribbed whelks of the genus *Neptunea* Röding, 1798, are a problematic group, with a myriad of forms, in the northeastern Pacific Ocean, four of these species have been named, *Neptunea lyrata* (Gmelin, 1791), eastern Bering Sea and Gulf of Alaska, *Neptunea ventricosa* (Gmelin, 1791), Arctic Ocean and Bering Sea and western Gulf of Alaska, *Neptunea middendorffii* (W. Cooper, 1859), from the Salish Sea and vicinity, and *Neptunea stilesi* A.G. Smith, 1968, distributed from Oregon to British Columbia. Several other similar species are known from the adjacent Bering Sea (Fraussen & Terryn, 2007), and Aleutian Islands (McLean & Clark, 2023). The identification of these species has been confusing, and the names of some are mostly forgotten in the literature. Material is usually identified as forms of *N. lyrata*. This complex is herein defined and six species are recognized, including three new species, *Neptunea willetti* spec. nov., *Neptunea cincticula* spec. nov., and *Neptunea grovesi* spec. nov. herein described. Species are differentiated by the profile of the shell and the number and nature of the spiral cords.

The members of the *N. lyrata* group are found from the low intertidal zone, to a depth of about 300 meters, mostly on muddy or sandy bottoms, often mixed with rocks. Egg capsules are of two types, oval, attached at one end deposited in a single layer, or triangular, deposited in towers, in alternating three capsule layers, giving a roughly hexagonal cross section.

### Abbreviations:

ADFG	Alaska Department of Fish and Game
ICZN	International Commission on Zoological Nomenclature
LACM	Natural History Museum of Los Angeles County
NMFS	National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle, Washington
RNC	Roger N. Clark, research collection
SBMNH	Santa Barbara Museum of Natural History
USNM	United States National Museum of Natural History

**SYSTEMATICS**

Phylum	Mollusca Cuvier, 1795
Class	Gastropoda Cuvier, 1795
Superorder	Latrogastropoda Riedel, 2000
Order	Neogastropoda Wenz, 1938
Superfamily	Buccinoidea Rafinesque, 1815
Family	Buccinidae Rafinesque, 1815
Subfamily	Neptuneinae Stimpson, 1865 (as Neptuneiinae)

(Classification from Ponder & Lindberg 2020, modified from Kantor, *et. al.*, 2021)

Genus *Neptunea* Röding, 1798

Type species: *Murex antiquus* Linnaeus, 1758, (by SD of Sandberger, 1861:216). However Adams & Adams 1858 also note *antiqua* as the type species on page 79.

**Diagnosis.** Shells moderate to large, sturdy, pyriform to fusiform; periostracum thin or absent; with short to moderately long, nearly straight or twisted siphonal canal. Sculpture chiefly spiral cords, axial sculpture (if present) of folds, or flaring lamellar extensions in some species. Operculum large, nearly filling aperture, nucleus terminal. The genus (*sensu lato.*) is reviewed by Fraussen & Terry (2007).

*Neptunea lyrata* (Gmelin, 1791)  
(Figures 1-6)

*Buccin(um) liratum* Martyn, 1784: fig. 43 (rejected by ICZN)

*Murex lyratus* Gmelin, 1791:3531.

*Murex glomulus cereus* Chemnitz, 1788:281-282, pl. 169, fig. 1634 (non binomial)

*Fusus succinctus* Menke, 1829:53

*Cymatium (Linatella) pacificum* Dall, 1909:57, pl. 6, fig. 10

*Neptunea lyrata* Fraussen & Terry, 2007 (in part):44-46, text fig. 21, plt. 7 fig 2, 141, 144 & 154.

**Description.** Shell medium to large (to 185 mm, but rarely exceeding 130 mm), pyriform, relatively broad, moderately high spired;

periostracum lacking; whorls angulated at the shoulder, suture strongly impressed; protoconch about 1.5 whorls; teleconch 4 to 5 whorls; early whorl with 2 spiral cords, penultimate whorl with 2-4 cords; lower portion of body whorl with 5-8 additional cords; usually with 1-5 much finer intercalary lirae between primary cords. Axial sculpture lacking. Aperture large, about half of shell height, flared in some specimens; canal, short, relatively straight. Color dark to light brown or cream, cords darker on lighter colored specimens, solid white specimens rare.

**Holotype.** National Museum of Wales, NMW 1981.118.00243.

**Type Locality.** “Southeastern Alaska” vicinity of Chichagof & Baranof Ids., Sitka Borough, Alaska (by SD of Fraussen & Terry, 2007:45).

**Distribution.** SE Bering Sea (Bristol Bay & Pribilof Is.), along the Aleutian Islands, west to Adak Island, and south and east to southeastern Alaska, and northern British Columbia. Common in the inside waters of southeastern Alaska, but rare or absent from the outside.

**Habitat.** Intertidal to about 130 m, on sand, mud and rocks.

**Remarks.** This species is somewhat variable, even within local populations, and sometimes occurs with other members of the complex. The two early spiral cords, shoulder angulation and lack of axial sculpture separate *N. lyrata* from its congeners. The egg cases of *N. lyrata* are deposited in towers. Shimek, 2010, described observations of *Neptunea pribiloffensis* (Dall, 1919) and what he took to be *Neptunea lyrata*, depositing eggs, however he described the eggs of *N. lyrata* as flat artichoke-like, single layered bunches. It is not certain which “*lyrata*”-like species he was observing, but his observations were made near Homer, Alaska, so it may have been *N. willetti*, or *N. cincticula*. He illustrated a specimen of *N. middendorffii*, from near San Juan Island.

*Neptunea middendorffii* (W. Cooper, 1859)  
(Figures 7-10)

*Chrysodomus middendorffi* W. Cooper, 1859: 370.

*Chrysodomus liratus* Martyn, 1784 (in part), Oldroyd, 1927:237, pl. 20, figs. 2 & 4.

*Neptunea lirata, non* Gmelin, Rice, 1972: 54, fig. 116.

*Neptunea lyrata* (in part) Baxter, 1987: 71; Lamb & Hanby, 2005: 237, fig. MC238

*Neptunea lyrata non* Gmelin (in part) (Washington form) Fraussen & Terry, 2007: 47, pl. 8 figs. 1-3.

**Description.** Shell of medium size (to 115 mm, SBMNH 138579); broadly fusiform, moderately tall spired, whorls rounded, suture impressed; periostracum apparently lacking. Protoconch of 1.5 whorls, early whorl with 3-4 low cords; 5 teleconch whorls; teleconch whorls with 4-5 low spiral cords, above the suture, and seven additional cords on body whorl; interspaces smooth; axial sculpture lacking; aperture less than half of shell height, not flaring, canal short, broad; fasciole present. Color white to tan with low, (usually) darker spiral cords.

**Holotype.** Lost (J H McLean, *pers. notes*). Neotype, herein designated (LACM 3868). 83.3 mm.

**Type Locality.** Straits of Juan de Fuca (Cooper, 1859:370); Neotype from off Whidbey Island, Salish Sea, San Juan County, Washington, 77 m (eastern end of the Straits of Juan de Fuca).

**Distribution.** Washington and British Columbia, endemic to the Salish Sea and SW Vancouver Island (N to Barclay Sound, 48°57' N). Common in the San Juan Islands, San Juan County, Washington.

**Habitat.** Lives on a variety of substrates, but most often sand or gravel at depths of 13-250 m.

*Neptunea ventricosa* (Gmelin, 1791)  
(Figures 11-14)

*Buccinum ventricosum* Gmelin, 1791:3498.

*Neptunea ventricosa* (Gmelin, 1791). Fraussen & Terry, 2007:102-106, pls. 74-77.

**Description.** Medium size shells (to 130 mm), low to tall spired, broad, whorls inflated; protoconch with 1.25 whorls; first teleconch whorl with 1 cord; 5 teleconch whorls; sculpture

variable, smooth or with 1-2 (or more) broad, weak spiral cords, axial nodes, low weak axil folds, prominent varices, or a combination of these. Aperture broad, less than half of shell height; canal short, twisted. Color tan, brown or purplish, rarely white, sometimes with darker or lighter cords.

**Holotype.** Unknown, but apparently referenced by Gmelin as figure 47 of Martyn, 1784. This is fully discussed in Fraussen & Terry, 2007.

**Type Locality.** Unknown, Fraussen & Terry, 2007 suggest from historical evidence to possibly be what is now the (upper) Alexander Archipelago (Chichagof & Baranof Islands), or Unalaska Island in the Aleutian Islands. The type was collected in the summer of 1778, on the third voyage of Captain George Vancouver (Fraussen & Terry 2007) designated the type locality as "SE Alaska", however this must be considered incorrect, since the species is absent from the eastern Gulf of Alaska, but common at Unalaska. For this reason, I suggest Unalaska Bay, Unalaska Island, Aleutian Islands, Alaska as the type locality (Vancouver reportedly spent some time at this local on the before mentioned expedition).

**Habitat.** Shallow subtidal, 10-130 m. Rarely intertidal, on mud and sand, rarely rocky bottoms. Common to abundant throughout its range.

**Remarks.** Only provisionally included in this complex because some of the many forms of this species (Particularly those in the western Gulf of Alaska) resemble the members of this group.

**Distribution.** Arctic Ocean, East Siberian, Chukchi, Beaufort, Bering, and Okhotsk Seas. South to northern Kurile Islands, and Aleutian Islands, and Western Gulf of Alaska, to the vicinity of Kodiak Island (approx. 152° W).

*Neptunea stilesi* A. G. Smith, 1968  
(Figures 15-17)

*Neptunea stilesi* A.G. Smith, 1968:117-119, pl. 14, figs. 1-6; Fraussen & Terry, 2007:137, pl. 130.

**Description.** Shell of moderate size (to about 100 mm), pyriform, relatively low spired, broad,

suture moderately impressed. Protoconch projecting, 1.5-2.0 whorls; teleconch with 5 whorls, with two faint, narrow cords (sometimes obsolete) above suture, and 8 additional cords on body whorl, interspaces broad, smooth. Aperture large, about 3/4 of shell height; canal short. Color white to pale tan, rarely purple-brown, cords darker.

**Holotype.** CASIZ 021168.

**Type Locality.** "Vancouver Island" here defined as La Perouse Bank, West of Ucluelet Point, Alberni-Clayoquot District, Vancouver Island, British Columbia, Canada (approx., 48°56 N, 125°34 W).

**Distribution.** Milbank Sound, Kitimat-Stikine District, central British Columbia (52°19 N, 128°33 W), to off Newport, Lincoln County, Oregon (44°45 N, 124°44 W),

**Habitat.** Lives at depths of 100-340 m, on soft substrates.

**Remark.** A variety from Milbank Sound, Kitimat-Stikine District, British Columbia, Canada has a deeply impressed suture, and strongly projecting spiral cords, thus its inclusion in this group.

*Neptunea willetti* Clark, spec. nov.  
(Figures 18-22)

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*Chrysodomus liratus* Martyn, 1784 (in part), Oldroyd, 1927:237.

*Neptunea lirata non* Gmelin, Barr & Barr, 1983: 109, fig. 85.

*Neptunea lyrata non* Gmelin (in part) (eastern Pacific form) Fraussen & Terry, 2007: 46, pl. 7 figs. 1 & 3.

**Description.** Shell relatively large (Holotype 139.1 mm) whorls rounded, suture impressed; periostracum very thin or absent; protoconch with 2 projecting whorls; 5 teleconch whorls, first teleconch whorl with 3 projecting cords, later whorls with 4-5 projecting cords, 7 additional cords on lower portion of body whorl, and 2-3 cords on canal; interspaces with fine striae

between cords on final whorl; axial sculpture lacking; aperture large, about half or less of shell height, mature lip flared, canal relatively short, broad. Color: white or pale tan with yellow-brown cords.

**Radula:** Rachidian tooth with 4 cusps in a curved row, the two inner cusps slightly longer than the outer ones; Lateral teeth with 3 widely spaced cusps, distal cusp much larger than central and proximal cusp, and curved; central and proximal cusps straight, central cusp about half the length of outer cusp. The radula of *N. lyrata* differs in having four subequal cusps on the rachidian tooth, and three cusps on the lateral teeth, of which the central and inner cusps are broader and closer together than those. of *N. lyrata*.

**Type.** LACM 3875; Paratypes 1-3, LACM 3876 (112.7, 125.6 & 144.1 mm) (type locality); Paratype 4, SBMNH 235880 (100.7 mm), type locality; Paratype 5, RNC 4866 (type locality) (121.8 mm) Paratype 6, RNC 4763 (S of Avatanak Id., Aleutian Is., Aleutians East Borough, Alaska, 120.4 mm) (NMFS 143-2015-1-80).

**Other Material Examined.** LACM 1963-151.4; 3, SBMNH 235883, 235884, Petersburg, Wrangell Borough, Mitkof Island, SE Alaska, intertidal, 96.3-119.1 mm; 3, RNC 5097, Petersburg, Wrangell Borough, Mitkof Island, SE Alaska, intertidal, 118.2-119.3 mm. 4, RNC 4830, Auke Bay, Juneau Borough, SE Alaska, 1-25 m, 78.9-130.6 mm; 1, RNC 4826, S of Avatanak Island, Aleutian Islands, Aleutian Islands borough, Alaska, 90 m, 119.5 mm, (NMFS 143-2015-1-80); 1, RNC 4825, W of Semidi Islands, Kodiak Island Borough, 171 m, 143.7 mm (NMFS 143-1015-1-89).

**Type Locality.** Off Wrangell Island, Wrangell Borough SE Alaska (56°23.1 N, 132°05.1 W), 91 m.

**Etymology.** Named for George Willett (1879-1945) former Ornithologist at the Natural History Museum of Los Angeles County, who collected the type specimens. Name suggested by the late Dr. James H. McLean.

**Distribution.** Avatanak Id., Aleutian Is. Aleutians East Borough, Alaska (53°54.7 N, 165°23.5 W) (RNC 4826) South to Barkley Sound, Vancouver Island British Columbia, Canada (48°52 N, 125°20 W) (SBMNH 138579). Although typically a subtidal species, it has been found intertidally at Auke Bay, Petersburg and Wrangell, in SE Alaska, but is more common below 18 m.

**Habitat.** Low intertidal to 250 m, on soft and rocky bottoms, often buried in substrate intertidally. Uncommon.

**Remarks.** *Neptunea willetti* is similar to *N. lyrata*, but differs in A) having 3 cords on the first teleconch whorl as opposed to 2 in *N. lyrata*, B) shoulder not angulated, and C) the general coloration. They also differ in their egg capsules and method of deposition. The egg capsules of *N. willetti* (fig. 26) are oval, in shape, about 22 x 14 mm, attached at one end, and deposited in single layer clusters. By contrast, the egg capsules of *N. lyrata* (fig. 6) are roughly triangular in shape, with an inflated center, and are deposited in alternating multi layered hexagonal towers as much as 20 cm in height. Each layer is composed of 3 capsules.

*Neptunea cincticula* Clark, spec. nov.  
(Figures 23-25)

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**Description.** Shell of medium size (to 116 mm), whorls rounded, suture moderately impressed; periostracum lacking; Protoconch of about 2 whorls, teleconch with 4-5 whorls; 2-4 rather narrow, weak primary spiral cords above suture (shoulder cord not forming angulation), 5-8 additional cords on body whorl; interspaces relatively wide, with 1-2 much weaker cords or several fine lirae (often obsolete); Aperture large, about half or more of shell height, not flared; canal short, relatively narrow; fasciole prominent. Color grayish tan to light brown, with darker spiral cords.

**Type Material.** Holotype, LACM 3872; Paratype 1, LACM3873, Cohen Id., Kachemak

Bay, Kenai Peninsula Borough, Alaska, 96.5 mm; Paratype 2, LACM 3874, Taku Inlet, Juneau Borough, Alaska, 116.0 mm; Paratype 3, USNM 223041, "British Columbia, Canada"; Paratype 4, RNC, 5153, SW of SW of Baranof Id., Sitka Borough, Gulf of Alaska, 200 m, 112.2 mm.

**Type Locality.** NW of Graham Island, Haida Gwaii (Queen Charlotte Islands), North Coast District, British Columbia, Canada (approx. 54°17 N, 133°21 W), 400 m.

**Habitat.** Found on muddy/sand bottoms, mixed with rocks, the intertidal in Kachemak Bay, to 400 m at the type locality. A rare species, known from only a few specimens.

**Etymology:** From the Latin noun *cincticulus*, meaning girdle or belt. In reference to the primary spiral cord. Like *N. willetti*, this name too was suggested by the late James H. McLean.

**Remarks.** This species resembles some of the forms of *N. lyrata*, but differs in A) single cord on first teleconch whorl, B) lack of shoulder angulation, and C) weaker, narrower spiral cords. This species has been found in association with *N. lyrata* and *N. willetti*, but is quite rare.

**Distribution.** W of Semidi Islands, Kodiak Island Borough, Alaska (157°12 W) (RNC 5097), north to Cohen Id., Kachemak Bay, Kenai Peninsula, Kenai Peninsula Borough, Alaska (59°38 N, 151°18 W) (LACM 3872), and south to near Graham Island, Haida Gwaii (Queen Charlotte Islands), North Coast District, British Columbia, Canada (approx. 54°17 N, 133°21 W) (type locality).

*Neptunea grovesi* Clark, spec. nov.  
(Figures 26-28)

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**Description.** Shell of medium size (to 123.7 mm, Holotype), pyriform, spire tall; suture impressed, whorls rounded; canal short, nearly straight. Protoconch with about 1.5 whorls, teleconch with 5 whorls; first teleconch whorl with 2 spiral cords, later whorls with 2-3 cords; entire surface overridden with numerous fine micro-striae, 1-2 on cords, up to 12 or more on

interstitial surfaces. Axial sculpture absent. Aperture about half or less of shell height, lip often flared in mature individuals. Color light brown to creamy-tan.

**Type Material.** Holotype, LACM 2061,123.7 mm; Paratype 1, SBMNH 235882, SW of Semidi Islands, Kodiak Island Borough, Alaska (55°31.6 N, 157°34.6 W), 96 m, 104.6 mm; Paratype 2, RNC 5097 (Type locality), 105.2 mm.

**Other Material Examined.** 1, RNC 5097 (Type locality), 66.1 mm; 1, RNC 4763, N of Chirikof Island, Kodiak Island Borough, Alaska (56°22.1 N, 155°34.4 W), 67 m.

**Habitat.** Taken at depths of 61-96 m, on muddy sand bottoms.

**Etymology.** The name honors Lindsay Groves, Collections manager in Malacology at the Natural history Museum of Los Angeles County, for his insight, and many years of assistance on this and many other papers.

**Remarks.** Resembles *Neptunea ventricosa* (Gmelin, 1791), but differs in: 1), nearly straight siphonal canal; and 2), overriding spiral microsculpture.

**Distribution.** So far known only from the western Gulf of Alaska, in the vicinity of Chirikof Island and the Semidi Islands, Kodiak Island Borough, Alaska (Approx. long. 155°-157° W).

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## LITERATURE CITED

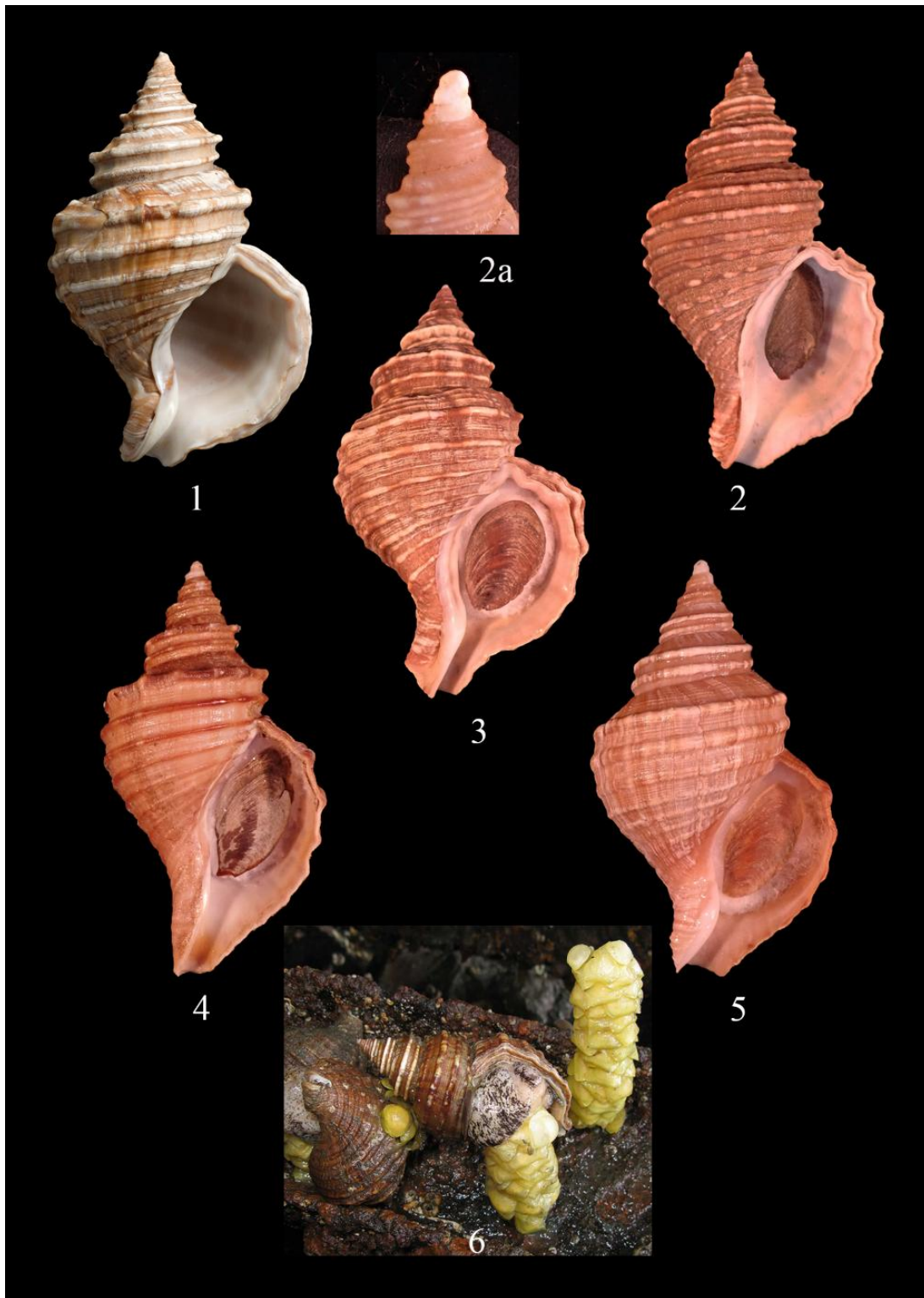
- Adams, H. & A. Adams. 1858.** The genera of the recent Mollusca; according to their organization. Volume 1: xl +1-484. John van Voorst, London.
- Barr, L. & N. Barr, 1983.** Under Alaskan Seas. Alaska Northwest Publishing Company, Anchorage, Alaska. 208 pp.
- Baxter, R. 1987.** Mollusks of Alaska. Shells and Sea Life Publishing, Bayside, California. 163 pp.
- Chemnitz, J.H. 1788.** Neues systematisches Conchylien-Cabinet. 10:4-376, Atlas 2 with 213 plates. Nürnberg, Germany.
- Cooper, W. 1859.** Report upon the Mollusca [sic] collected on the survey. *In:* Reports of explorations and surveys, to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean. Made under the direction of the Secretary of War, in 1853- 55, according to acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. Volume 12, Book 2, Zoological Report, 6:369-386.
- Cuvier, G. 1795.** Second mémoire sur l'organisation et les rapports des animaux à sang blanc, dans lequel on traite de la structure des Mollusques et de leur division en orders, lu à Société d'histoire naturelle de Paris, le 11 Prairial, and III. *Magazin Encyclopédique, ou Journal des Sciences, des Lettres et des Arts* 2: 433-449.
- Dall, W.H. 1909.** Contributions to the Tertiary paleontology of the Pacific coast. 1. The Miocene of Astoria and Coos Bay, Oregon. U.S. Geological Survey Professional Paper 59:1-278, figs. 1-14, pls. 1-23.
- Dall, W.H. 1919.** On some Tertiary fossils from the Pribilof Islands. *Journal of the Washington Academy of Science* 9(1):1-3.
- Fraussen, K. & Y. Terry, 2007.** The family Buccinidae, genus *Neptunea*. A Conchological Iconography. Conchbooks, Harxheim, 166 pp., 74 text figs. + numerous unnumbered figs., 154 pls.
- Gmelin, J.F. 1791.** *Caroli a Linné. Systema Naturae. Vermes.* 1(6):3021-4120. Lipsiae.

- Fraussen, K. & Y. Terryn, 2007.** The family Buccinidae, genus *Neptunea*. In: Poppe, G.T. & Groh, K. (Eds.), *A Conchological Iconography*. Conchbooks, Harxheim, 166 pp., with text figs., 152 col. Pls.
- Kantor, Y. I., A.E. Fedosov, A.R. Kosyan, N. Puillandre, P. A. Sorokin, Y. Kano, R. Clark, & P. Bouchet, 2021.** Molecular phylogeny and revised classification of the Buccinoidea (Neogastropoda). *Zoological Journal of the Linnean Society*, 2021, 194(3)789-857. Figs. 1-26.
- Lamb, A., & B.P. Hanby, 2005.** *Marine Life of the Pacific Northwest*. Harbour Publishing, Madeira, British Columbia, Canada. 398 pp.
- Linnaeus, C. 1758.** *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*, 1. Editio decima, reformata. Holmiae (Laurentii Salvii): 824 pp. [facsimile reprint, British Museum (Natural History), 1956].
- Martyn, T. 1874-1786.** *The universal conchologist: Exhibiting the figure of every known shell accurately drawn and painted after nature*. Volumes 1-2, figs. 1-80, volumes 3-4, figs. 81-160. London.
- McLean, J. H. & R. N. Clark, 2023.** Seven new genera and thirty-four new species of buccinoid gastropods (Neogastropoda: Buccinidae) from the Aleutian Islands, Alaska. *Zootaxa* 5351(2):151-201.
- Menke, C.T. 1829.** *Verzeichniss der Ansehnlichen Conchylien-Sammlung des Freiherrn von den Malsburg*. Pymont, Heinrich Gelpte. vi + 123 p.
- Oldroyd, I.S. 1927.** *The Marine Shells of the West Coast of North America*, Vol. II, part 1, Stanford University Press, Palo Alto, California. 297 pp., 29 pls.
- Ponder, W.F. & D.R. Lindberg, 2020.** Appendix: Higher classification of the extant classes of Mollusca. Pp. 543–723, in: *Biology and evolution of the Mollusca*. Volume 2. CRC Press, Boca Raton, Florida, numerous unnumbered figs.
- Rafinesque, C.S. 1815.** *Analyse de la Nature, ou Tableau de l'Univers et des Corps Organises*. Palerme, p. 136–149 [reprinted in pp. 12–21 in Binney, W.G. and Tryon, G.W., Jr., 1864. *The complete writings of Constantine Smaltz Rafinesque on recent and fossil conchology*, New York, 96 pp, 3 pls., and reprinted in 1984 by American Malacological Union, Philadelphia, Pennsylvania].
- Riedel, F. 2000.** Ursprung und Evolution der “höheren” Caenogastropoda. *Berliner Geowissenschaftliche Abhandlungen, series E*, 32:1–240, figs. 1-152, pls. 1-21.
- Rice, T., 1971,** *Marine shells of the Pacific Northwest*. Ellison Industries, Edmonds, Washington. 102 pp.
- Sandberger, C.L.F. 1863 [1858-1863].** *Die conchylien des Mainzer Tertiärbeckens*. C.W. Kreidel, Wiesbaden, Germany. 1:1-40, pl. 1-5 (1858), 2:41-72, pl. 6-10 (1858), 3:73-112, pl. 11-15 (1859), 4:113-152, pl. 16-20 (1860), 5-6:153-232, pl. 21-30, 7:233-270, pl. 31-35, 8:283-458 (1863)
- Shimek, R.L., 2010.** *Corncobs and Flat Artichokes. The Dredgings*, 50 (1):4-7, figs. A-H.
- Smith, A.G. 1968.** A new *Neptunea* from the Pacific Northwest. *The Veliger* 11(2):117-120, pl. 14.
- Stimpson, W. 1865.** On certain genera and families of zoophagous gasteropods. *American Journal of Conchology* 1(1):55-64.
- Wenz, W. 1938-1944.** *Gastropoda*. Part 1: Allgemeiner teil und prosobranchia In: Schindewolf, O.H. (ed.), *Handbuch der Paläozoologie* 6:XII +1-948, figs. 1-2764 (volume 1), 949-1639, figs. 2765-4191 (volume 2). Gebrüder Borntraeger, Berlin. [reprinted 1960-1961].

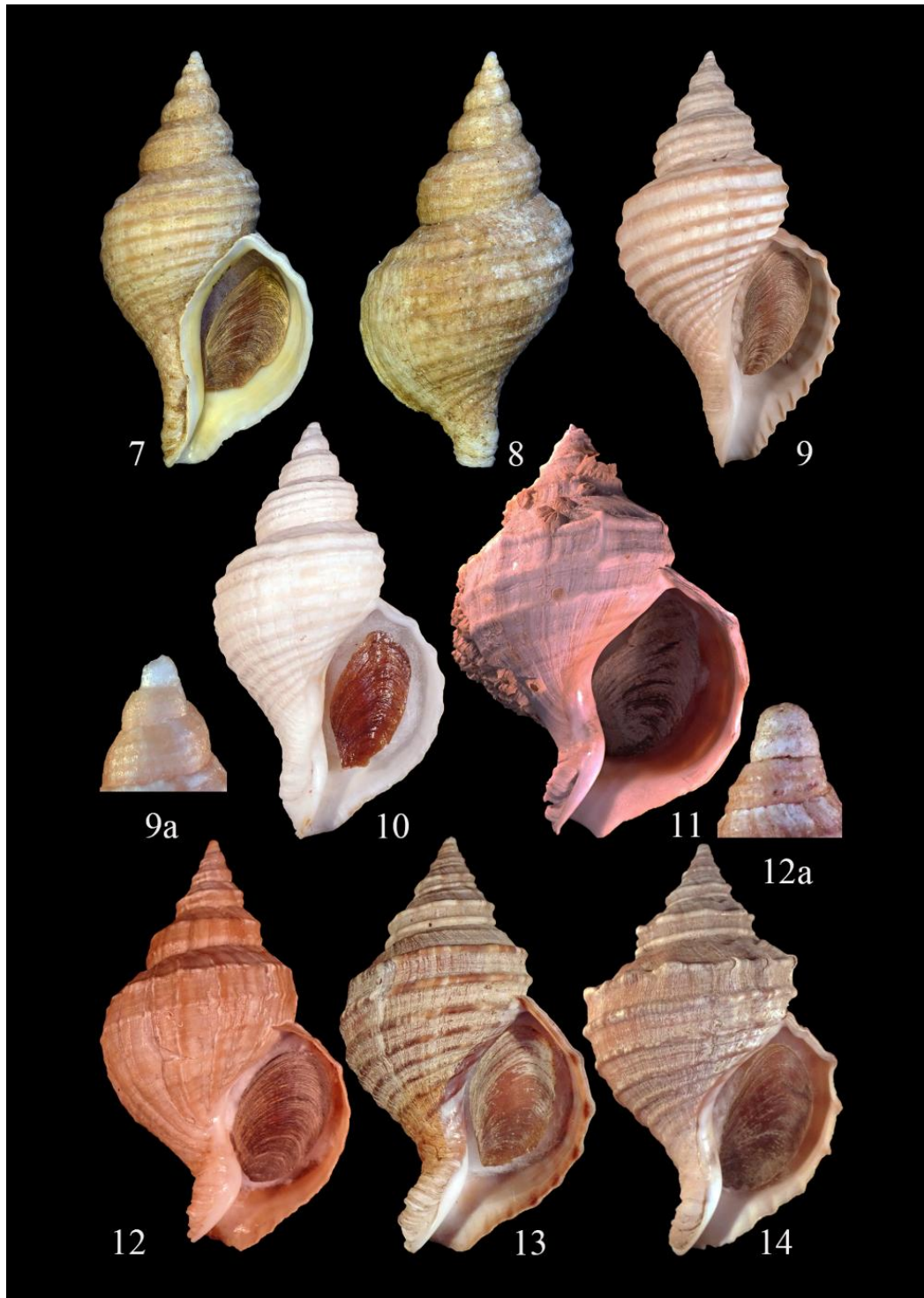
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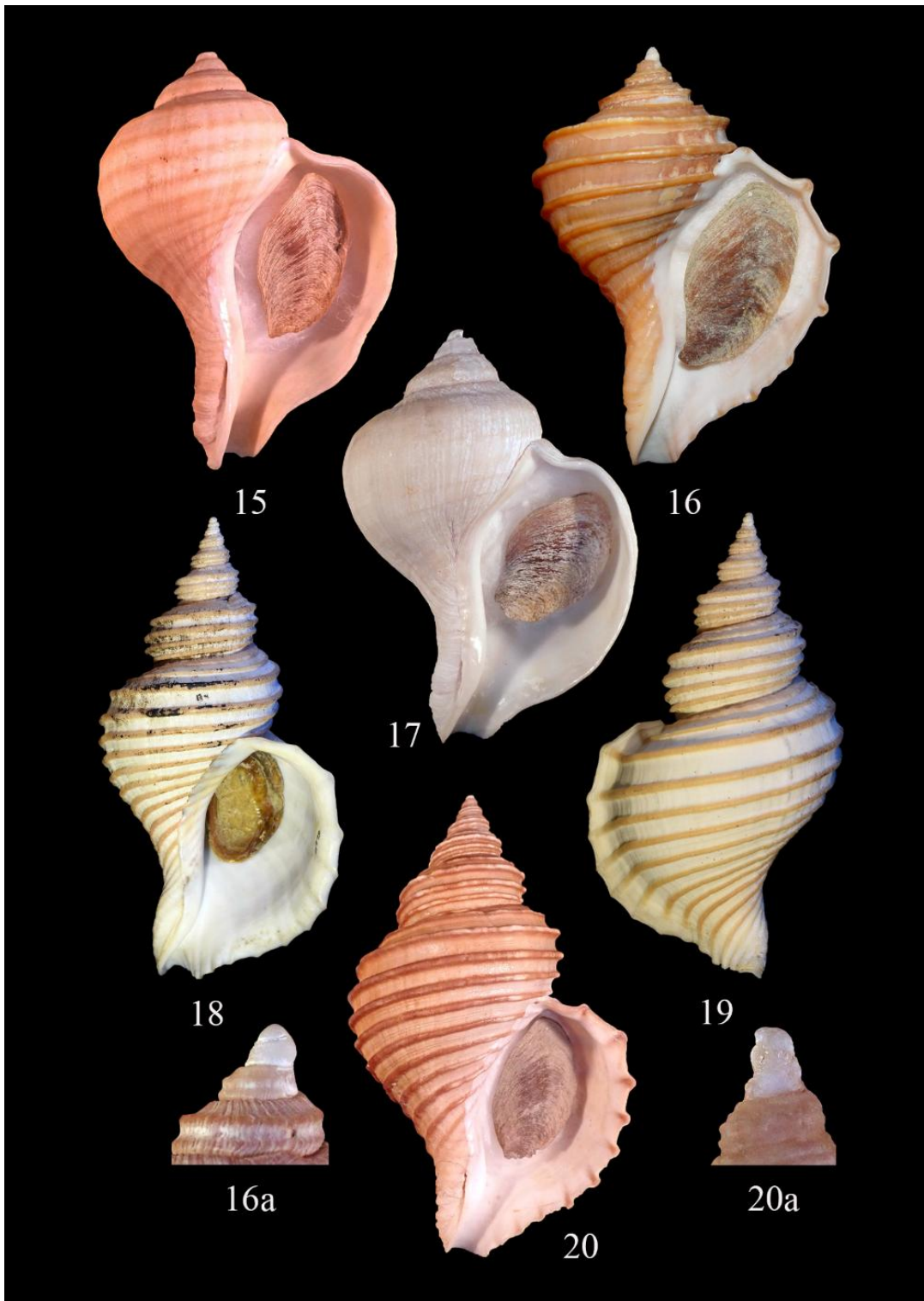
**Clark, R.N. 2025.** Re-examination of the *Neptunea lyrata* (Gmelin, 1791) species complex in the northeastern Pacific (Salish Sea to the Gulf of Alaska), with description of two new species. *The Festivus* 57(3):184-195.  
[http://doi:10.54173/F573184](https://doi.org/10.54173/F573184)



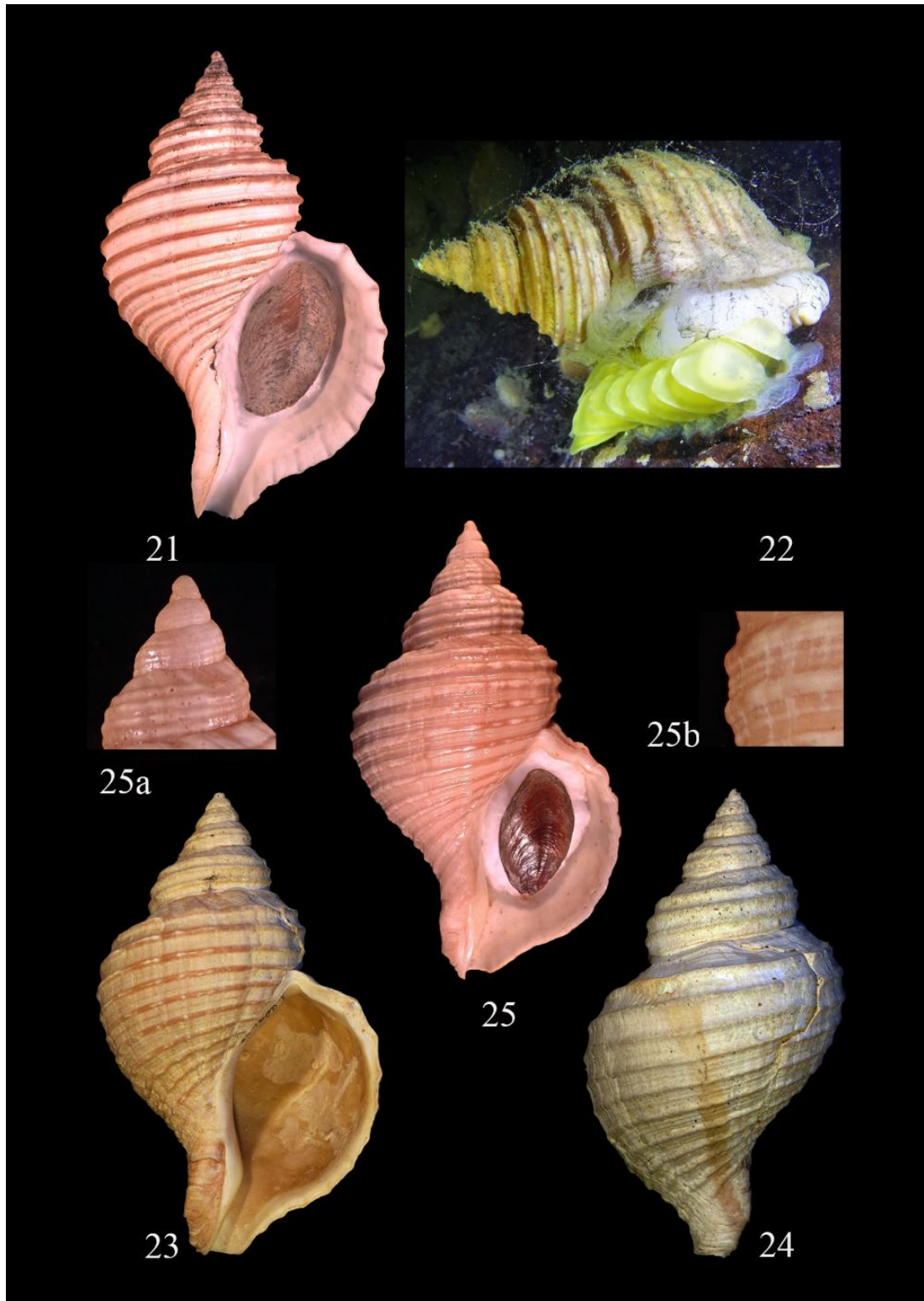
**Plate 1.** Figures 1-6, *Neptunea lyrata*. **1**= Holotype (NHW.Z. 1981.118.00243), 124.2 mm; **2-3**= (RNC 3585), Petersburg, Mitkof Id., Alaska, 109.0 mm Fig. 2a close-up of apex; **4**= (RNC, 4793), Unalaska Id., Alaska, 93.5 mm; **5**= (RNC 4791), Adak Id., Alaska, 87.4 mm; **6**= living animals with egg towers, Petersburg, Mitkof Id., Alaska (2017).



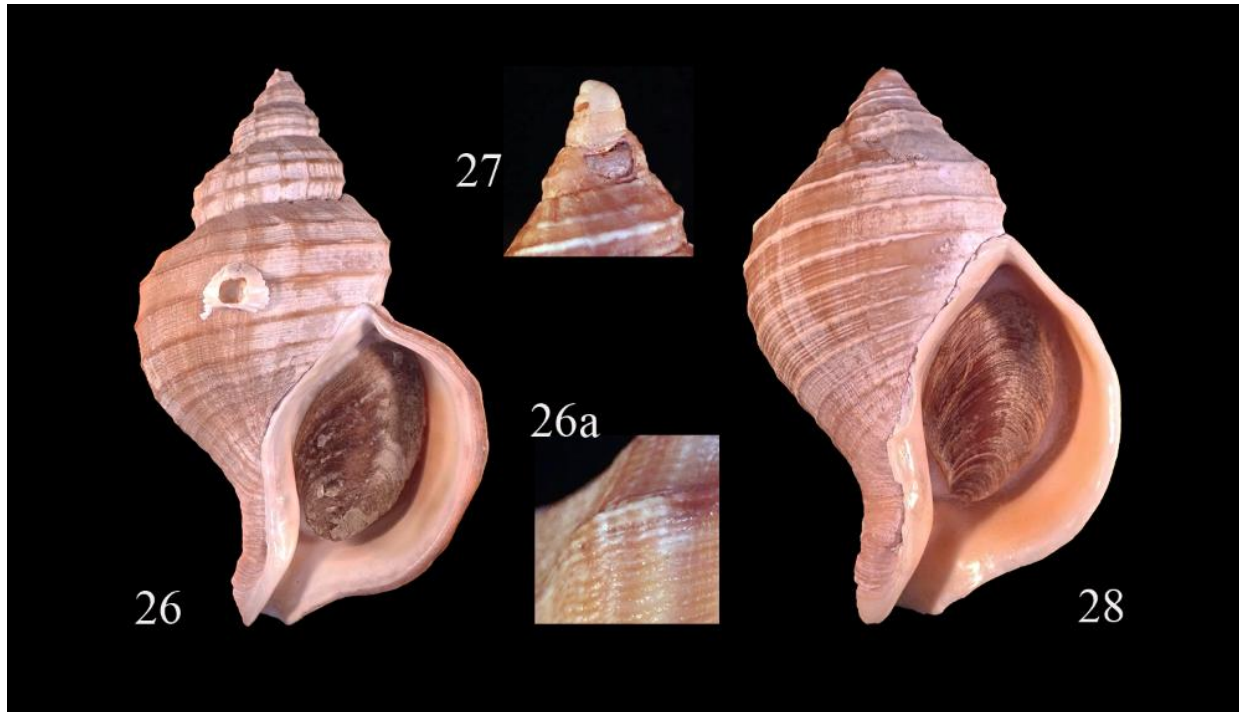
**Plate 2.** Figures 7-10, *Neptunea middendorffii*. 7-8= Neotype, (LACM 3868) 83.3 mm; 9= RNC 4789, San Juan Id., Washington, 12; m, 102.2 mm; 9a= close-up of apex; 10= (RNC 4823), Bare Id., Washington, 24 m, 96.1 mm; Figures 11-14= *Neptunea ventricosa*. 11= (RNC 5157), E of Kodiak Id., Gulf of Alaska, 114 m, 104.3 mm; 12= (RNC 4864), Chirikof Id., Gulf of Alaska, 39 m; 12a= close-up of apex; 93.6 mm; 13= (RNC 4861), Great Sitkin Id., Aleutian Is., 115 m, 89.0 mm; 14= (RNC 4169), Adak Id., Aleutian Is., 122 m, 101.7 mm.



**Plate 3.** Figures 15-17, *Neptunea stilesi*. **15**= (RNC 4829), La Perouse Bank, British Columbia, 85.9 mm; **16**= (RNC 4828), Milbanke Sound, British Columbia, 110-165 m, 89.8 mm; **16a**= close-up of apex; **17**= (RNC 4110), La Perouse Bank, British Columbia, 176 m, 77.8 mm; Figures 18-20, *Neptunea willetti*. **18-19**= Holotype, (LACM 3875); **20**= Paratype, (RNC 4826), S of Avatanak Id., 90 m, 120.4 mm; **20a**= close-up of apex.



**Plate 4**, Figures 21-22, *Neptunea willetti*. **21**= Paratype (RNC 4866), type locality, 121.4 mm; **22**= Live in situ, laying egg capsules, Auke Bay, Alaska, 24 m (image: Annette G. E. Smith); Figures 23-25, *Neptunea cincticula*. **23-24**= Holotype, (LACM 3872) **25**= (RNC), SW of Baranof Id., Alaska, 300 m, 112.2 mm; Fig. 25a, close-up of apex.; Fig. 25a, close-up of apex.



**Plate 5.** Figures 26-28= *Neptunea grovesi* spec. nov. **26**= Holotype, (LACM 2061), **27**= Paratype 1, (SBMNH 235882); **28**= Paratype, (RNC, 5097), both from the type locality.

### Stamps, Stamps and More Stamps

One of our members recently took over the prestigious job of mailing *The Festivus* to our members. He also happens to be a Philatelist, someone who collects stamps. Having a storehouse of unused United States stamps with no particular value over face (*i.e.*, meaning the amount indicated on the stamp), he recommended using these stamps as postage for mailing the Club's journal. A prototype envelope with a myriad of stamps was prepared for the July meeting of the Board of Directors. The Board was fascinated by the variety of stamps on the envelope and unanimously approved using these older stamps for postage.



The stamps selected from David Waller's collection range from 1934 to the present and because of their lower denominations will often require 30 or so stamps per envelope. Can you imagine taking the time to affix thirty or more stamps to over 150 envelopes every quarter? David has assured the San Diego Shell Club that he has enough postage, mostly in denomination range of 1¢ to \$1 to continue to provide these Philatelic wonders for the next couple of years. It is hard to imagine someone having that many unused stamps, but that's a collector for you!