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Notes on two Alaskan Volutopsiinae (Gastropoda: Buccinidae) with corrected type localities

Roger N. Clark
Santa Barbara Museum of Natural History, Research Associate, 2559 Puesta Del Sol, Santa Barbara, California 93105; Mailing address: 3808 Pinehurst Drive, Eagle Mountain, Utah 84005: insignis69@gmail.com

ABSTRACT *Pyrulofusus harpa* (Mörch, 1857) and *Volutopsius castaneus* (Mörch, 1857) were described from Sitka, Alaska, however no specimens of either species have been found at Sitka, nor indeed anywhere in the eastern Gulf of Alaska. It seems more likely that the types of both species came from Kodiak, where both species are frequently found. The type localities for both species are herein corrected.

KEY WORDS Alaska, Taxonomy, Volutopsius, Pyrulofusus, Buccinidae, Sitka

INTRODUCTION

During the years of Russian colonization of Alaska, from 1774 to 1867, numerous natural history specimens were collected and sent to Europe for identification and description. Among these were many species of mollusks. Two of these, species of "Buccinids" were delivered into the hands of Swedish malacologist Dr. Otto Andreas Lawson Mörch, who described a new subgenus *Volutopsius*, for the North Atlantic *Strombus norwegicus* Gmelin, 1791, and his two new species from Alaska; *Fusus* (*Volutopsius*) *castaneus* Mörch, 1857 and *Fusus* (*Volutopsius*) *harpa* Mörch, 1857. Later, in 1869, Dr. Mörch described the genus *Pyrulofusus* for the sinistral *Fusus* (*Volutopsius*) *harpa,* and the very similar Arctic species *Fusus deformis* Reeve, 1847.

Although the identities of Mörch's species are well established, the location of Mörch's types were not. An inquiry to the Museum of Natural History in Copenhagen, Denmark (MNHD), the published repository of the type specimens (Oldroyd, 1927), resulted in an extensive search that failed to locate the types or any material from the type locality (Dr. Tom Schiotte, personal communication, 31 May, 2018). Only two lots (three specimens) of *Volutopsius castaneus* and no *Pyrulofusus harpa* were found. One specimen has a label that reads "Frühere Russisch-Amerikanische Besitzungen"(former Russian-American Possession), the label for the other two specimens reads "Insel Kadjak, Pawlowscher Hafen" [Kodiak Island, (Saint) Paul Harbor], these were received from the museum at Saint Petersburg, Russia in 1897.

An inquiry was also sent to the Zoological Museum at Hamburg, Germany, where the Romberg collection, from which the types came, was said to be housed (Oldroyd, 1927), and after much searching, the types of both species were located (Dr. Bernhard Hausdorf, personal communication. 29 August, 2018).

A search of North American Museum collections (USNM, RBCM, LACM, SBMNH, CAS, UAM) as well as my own extensive collection of Alaskan mollusks revealed no specimens of either species from the stated type locality of Sitka, Alaska. Indeed in many expeditions to Southeastern Alaska in general,

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and Sitka in particular, no specimens of either species were found. An inquiry to ADFG biologists Aaron Baldwin (formerly of Sitka) and Scott Walker (Ketchikan) confirmed that no specimens are known from the Sitka region, or indeed anywhere in southeastern Alaska. A literature search also confirmed that no specimens are known from the eastern Gulf of Alaska (Dall, 1921) listed both species from the Pribilof, Aleutian and Kodiak Islands. Bernard (1970) listed *P. harpa* [as *P. deformis* (Reeve, 1847)] from British Columbia, based no doubt on its proximity to the type locality, as no specimens are known from British Columbia.

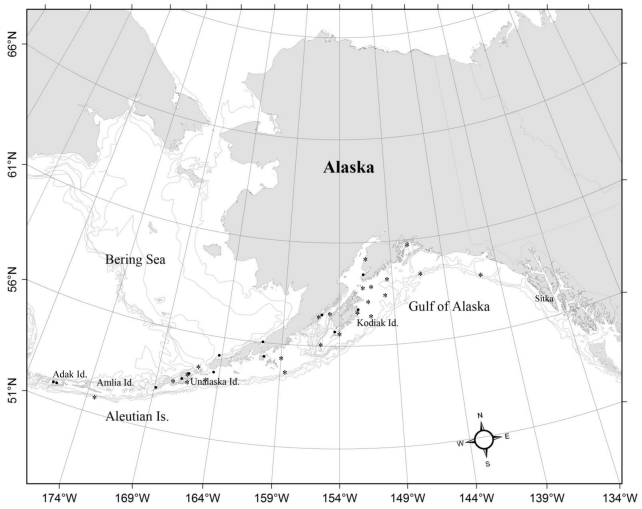

Figure 1. Map, Gulf of Alaska. • = *V. castaneus*; * = *P. harpa*.

Baxter (1987) listed *P. harpa* (as *Volutopsius harpa*) from Prince William Sound, Kodiak and the Aleutian Islands as well as the Cook Inlet, and Kenai Peninsula area, and Kessler (1985) recorded *V. castaneus* from north and south of the Alaska Peninsula, and distinguished it from the similar but distinct *Volutopsius stefanssoni* Dall, 1919. Kessler also recorded *P. harpa* from south of the Alaska Peninsula.

Novo-Archangelsk (New Archangel, now Sitka) was the capital of Russian America from 1804 to 1867. However Kodiak was the capital of Russian America from 1784 to 1803 (Chevigny, 1965), and the type specimens were undoubtedly collected in this region where both species are uncommon in shallow water. For this reason, it is proposed that the type localities for both *Volutopsius castaneus* and *Pyrulofusus harpa* be amended, and corrected from Sitka to Kodiak.

SYSTEMATICS

Buccinidae
Volutopsiinae Habe & Sato, 1973
Genus: *Volutopsion* Habe & Ito, 1965
Type species: *Fusus* (*Volutopsius*) *castaneus* Mörch, 1857

Diagnosis. Shells relatively large, 10-14 cm; calcitic, often producing axial lamillae; nucleus relatively large, bulbous; aperture large, more than ½ to ¾ of shell height; periostracum lacking. Operculum smaller than aperture, with terminal nucleus. Radula: Rachidian tooth with 5-7 denticles, lateral teeth with two denticles.

Volutopsion castaneus (Mörch, 1857)
(Figures 2A - 2F)

Type: ZMH 40073

Type locality. Sitka (in error). Amended to: USA, Alaska, Kodiak Island, Chiniak Bay (57°47'N, 152°26'W).

Description. Translation from Oldroyd (1927): "Shell ovate, thin, smoothish, spire projecting, apex obtuse; six convex whorls, divided by a profound suture, with plications of growth not regularly arranged, the last one very large; aperture large, oblong; columella slightly sinuate and barely callous; short broad tail (canal) subcurvate; outer lip simple; cheeks milky-white, subrosy".

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Extended description: Length to 10 cm (type 69.5 mm; largest examined 83.0 mm, RNC 4707), aperture about 2/3 to ¾ of shell height; nuclear whorls purplish; axial pleats irregular, sometimes forming low, varices. Color uniformly dark brown, orange-brown, tan or rarely white. Radula: rachidian tooth with five denticles, three central denticle subequal in length, two outer denticles much longer and heavier. (Figure 3L)

Distribution. A shallow water, near-shore species found in the Bering Sea, along the north side of the Alaska Peninsula (Kessler, 1985), along the Aleutian Islands, west to Adak Island [54°44'N, 176°30'W (RNC 4801)], Prince William Sound (Baxter, 1987), western Gulf of Alaska, along the south side of the Alaska Peninsula, East to Cook's Inlet and the Kenai Peninsula, and at Kodiak Island. Also may have a disjunct distribution, at Kamchatka (Kantor, 1990). Bathymetric range: 1-90 m.

Habitat. Lives on both sandy/muddy bottoms and on gravel and rocky bottoms, often on the sides of cobble and boulders, and in *Modiolus modiolus* beds, at depths of 1-35 m. Rarely taken below 50 m.

Notes: *Volutopsion castaneus* forms a complex with the Arctic *Volutopsius stefanssoni* Dall, 1921, which is often erroneously synonymized with it, but is distinct. *Volutopsius stefanssoni* is larger (length to 130+ mm), heavier shell, typically with a stronger shoulder, and is much more prone to developing laminae or axial knobs. Additionally it has orange nuclear whorls, and the rachidian tooth of the radula has five subequal denticles. *Volutopsius stefanssoni* occurs from the Arctic Ocean south the Pribilof Islands, it is an offshore species typically found at 70-140 m (20-80 m+ in the Arctic) on muddy bottoms. *Volutopsion simplex* (Dall, 1907) may be distinct species or subspecies, or merely a smooth form of *V. stefanssoni*, it occurs in the western Bering Sea, from Kamchatka south to Hokkaido, Japan, and east to the near Islands, at the western end of the Aleutians. The species resembles *V. stefanssoni*, in its orange-brown shell and pink-orange nuclear whorls, but lacks sculpture and is typically more slender. Kantor (1990) considered *V. stefanssoni* a synonym and *V. simplex* a variety of *V. castaneus*. The radula of *V. simplex* is unknown to me. A fourth (as yet undescribed) species occurs sympatricly with *V. castaneus* along both sides of the Alaska Peninsula, and in the easternmost Aleutians. The species is larger, up to 140 mm, more slender with a spire half of shell length. The rachidian tooth of the radula of the undescribed species has seven denticles, five slender, widely spaced central denticles flanked by a much longer outer denticle on each side. *Volutopsion trophnius* Dall, 1902 is also a member of this complex, it is distinguished by its numerous axial lamellae. It is found only along the shelf break NW of the Pribilof Islands.

Genus: *Pyrulofusus* Mörch, 1869
Type species: *Fusus deformis* Reeve, 1847.

Diagnosis. Large, relatively thin shells with very short spire and large body whorl; may be sinistral or dextral; nucleous very large, smooth, rather flat-topped; spiral sculpture usually prominent, axial sculpture of large, often obscure folds; outer lip expanded and thickened. Periostracum thin, dehiscent; operculum much smaller than aperture, with a terminal nucleus.

Pyrulofusus harpa (Mörch, 1857)
(Figures 2G - 2K)

Type: ZMH 40071

Type locality. Sitka (in error). Amended to: USA, Alaska, Kodiak Island, Chiniak Bay (57°47'N, 152°26'W).

Description. Large, sinistral shell (type 84.8 mm; largest examined 155 mm, RNC 4379), ovate, dull blueish-white; apex obtuse; aperture very large; five whorls divided by a deep suture; axial sculpture of regular oblique costae, spiral sculpture of coarse, flat-topped cords with broad interspaces.

Distribution. Prince William Sound (Baxter, 1987), Northern Gulf of Alaska 60°03 N, 147°03.96 W [(UAM 2321)], east to near Yakutat [59°24 N, 140°28 W (UAM Inv 2327)], Western Gulf of Alaska, Kenai Peninsula, Cook's Inlet and Kodiak Island, and along the Aleutian Islands, West to Amlia Island, [51°57 N, 173°40 W (RNC 4563)].

Habitat. Lives on rocky, and sandy/mud bottoms at depths of 2-506 m.

Notes: This species is often confused with the Arctic *Pyrulofusus deformis* (Reeve, 1847) from which it differs in its coarser sculpture, much smaller central denticle on the rachidian tooth of the radula, and distribution (Figure 3M).

Cowan (1965) described a mature egg capsule as large, hemispherical, 39 mm in diameter and 21 mm in height, bearing a single near-hatchling 19.5 mm in length, with no nurse eggs.

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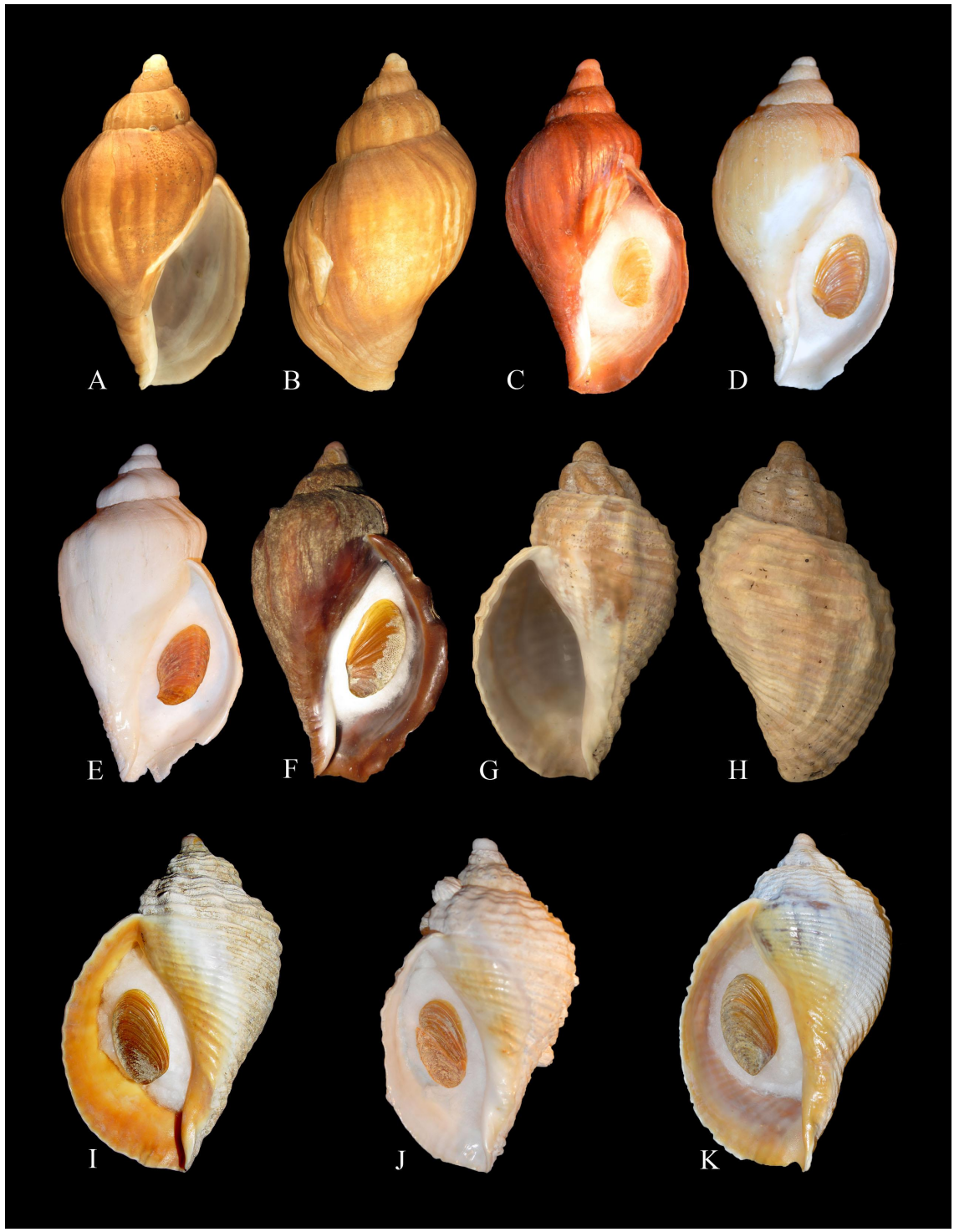

Figure 2. *Volutopsion castaneus* **A & B** = Holotype ZMH 40073; **C** = RNC 4184, Kenai Peninsula, Seldovia, 1 m, 65.9 mm; **D** = Chiniak Bay, Kodiak Island, 2-5 m, 72.9 mm; **E** = Chiniak Bay, Kodiak Island, 2-5 m, 79.7 mm; **F** = RNC 4801, Blind Cove, Adak Island, Aleutian Islands, 13 m, 76.2 mm; *Pyrulofusus harpa* **G & H** = Holotype; **I** = RNC 4180, East of Afognak Island, 120 m, (NMFS 21-197701-20), 132.6 mm; **J** = RNC 4378, Chiniak Bay, Kodiak, 15 m, 109.5 mm; **K** = RNC 4563, Amlia Island, Aleutian Islands, 100 m, (NMFS 94-200201-39), 127.4 mm.

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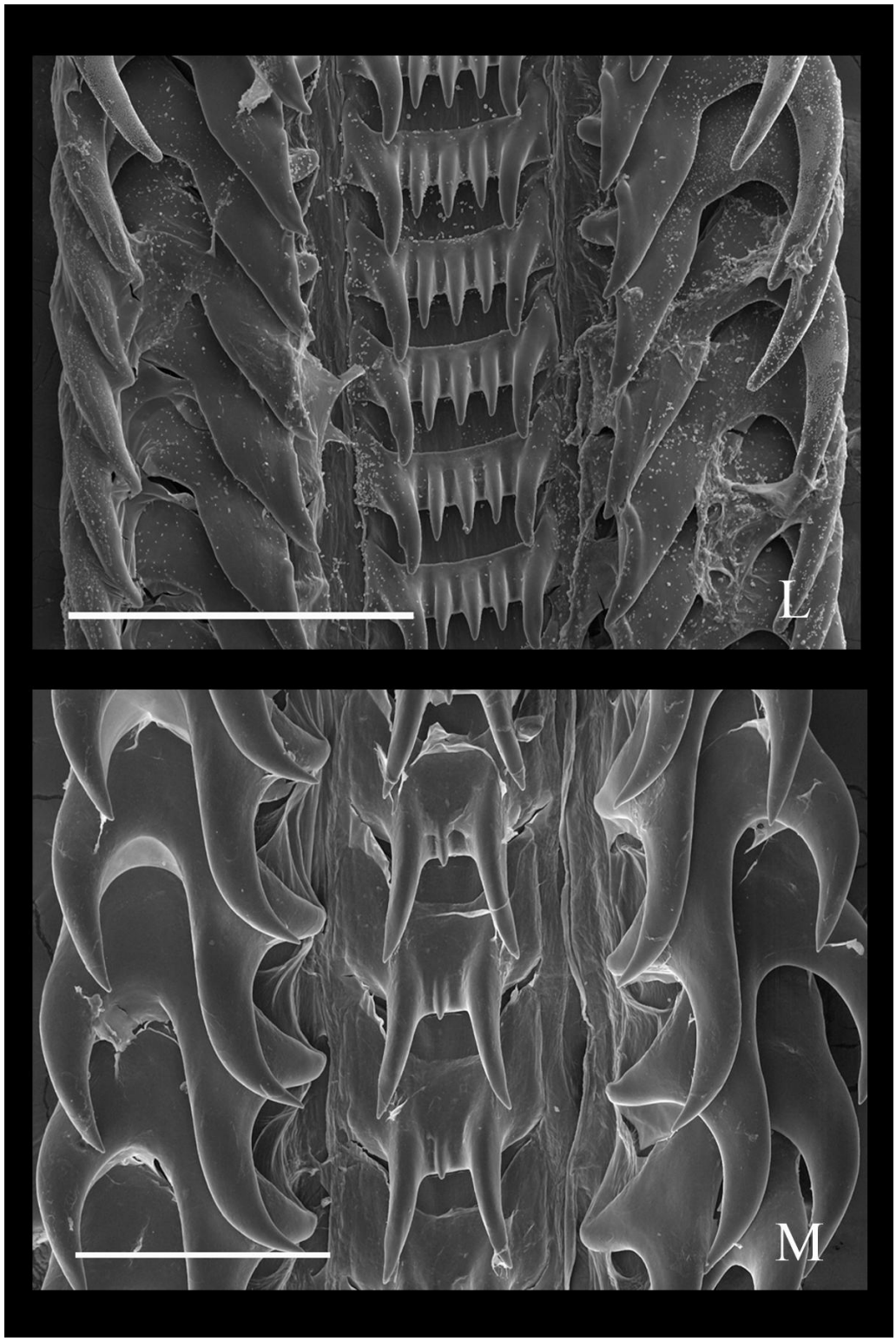

Figure 3. **L** = Radula. *Volutopsion castaneus*, Seldovia, Alaska, 2 m, RNC 4184; bar = 0.5 mm. **M** = Radula. *Pyrulofusus harpa*, RNC 4209, South of Unimak Pass, Aleutian Islands, 124 m (NMFS 95-199401-7); bar = 0.25 mm.