

## Three new Trichotropid gastropods (Capulidae: Trichotropinae) from Alaska

Roger N. Clark

Research Associate, Malacology Department Natural History Museum of  
Los Angeles County, California & Santa Barbara Museum of Natural History

[insignis69@gmail.com](mailto:insignis69@gmail.com)

**ABSTRACT** Three new hairy snails (Caenogastropoda: Capulidae) are described from Alaskan waters, *Turritropis cryptis* n. sp., *Ariadnaria willetti* n. sp. from the Gulf of Alaska, and *Ariadnaria exiguus* n. sp. from the central and western Aleutian Islands. The new species are compared to similar species from the region.

**KEY WORDS** Capulidae, *Trichotropis*, *Turritropis*, *T. cryptis*, *Ariadnaria*, *A. exiguus*, *A. willetti*

### INTRODUCTION

The family Capulidae is well represented in Alaskan waters, with nine species in six genera. To this total three new species are described, *Turritropis cryptis* Clark n. sp. and *Ariadnaria willetti* n. sp. from the Gulf of Alaska, and *Ariadnaria exiguus* Clark n. sp. from the central and western Aleutian Islands. Previously all species were assigned to the genus *Trichotropis* Broderip & G. B. Sowerby I, 1829, and most prior references to this group are as this genus, however presently several additional genera are recognized. The biology and reproduction of the common *Turritropis cancellata* (Hinds, 1843) (as *Trichotropis cancellata*) was discussed by Yonge, 1962. Clark, 2016 reported brooding behavior by the Arctic *Trichotropis bicarinata* (G.B. Sowerby I, 1825), and the feeding behaviors of three species, *Turritropis cancellata*, *T. cryptis* Clark n. sp. (as *Trichotropis conica* Möller, 1842) and *Ariadnaria insignis* (Middendorff, 1849) (as *Trichotropis insignis*), were discussed by Iyengar (2007). *Trichotropis cryptis* Clark n. sp. is kleptoparasitic on the tube worm *Serpula columbiana* Johnson, 1901, where it competes with its congener *T. cancellata*. The feeding

habits of *A. willetti* n. sp. and *A. exiguus* n. sp. are unknown.

WoRMS, <http://marinespecies.com>, synonymizes the family Trichotropidae with Capulidae, without subfamily recognition, however I recognize the subfamily Trichotropinae as distinct from Capulinae, by 1) the coiled shell, as opposed to the limpet-like shell of Capulinae, and 2) the presence of and operculum in adult animals, which is lacking in Capulinae. WoRMS also synonymizes *Turritropis* with *Trichotropis*, but *Turritropis* is here recognized as distinct and valid, differing in having both axial and spiral sculpture. Axial sculpture is lacking in *Trichotropis*, which is sculptureless save for two strong spiral cords or angulations.

### ABBREVIATIONS

LACM, Natural History Museum of Los Angeles County, Malacology Department.

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.

USNM, National Museum of Natural History (Smithsonian)

**SYSTEMATICS**

Family: Capulidae Fleming, 1822  
 Subfamily: Tricotropinae Gray, 1850  
*Turritropis* Habe, 1961

Type species: (OD) *Turritropis cedonulli* [*sic*], of Habe, 1961:36 (not *Trichotropis cedo-nulli* A. Adams, 1860)] [= *Turritropis turrita* Habe, 1962]. Shikoku, Japan).

*Turritropis cryptis* Clark, new species  
 (Figures 1-2)

*Trichotropis bicarinata*, non Sowerby: Cowan, 1964: 112

*Trichotropis conica*, non Möller: Baxter, 1987: 57; Iyengar, 2008: 57.

**Description.** Profile tall, with 5-6 whorls, bicarinate, spiral sculpture of strong, broad shoulder and basal cords, with one smaller secondary and 2-3 much finer tertiary cords between; subsutural ramp with five fine cords; base with six similar cords. Axial sculpture of 10-13 undulations, forming rectangular cancellations on spire. Periostracum bearing strongly projecting, spinose tufts on shoulder and basal cords. Height to 22.0 mm, holotype 16.1 mm.

**Type material.** Holotype: LACM 3791 (*leg.* RNC, 4 October, 1993; SCUBA), Paratypes: 5 (wet), LACM 3792; 3, LACM 3793 (dry); 1, (ex—LACM) SBMNH 184001; 3, RNC 3523.

**Additional material.** 1, RNC 3937, Eider Point, Unalaska Id., Alaska; 3, RNC 3971, Eider Point, Unalaska Island, Alaska, 10 m; 2, RNC 3630, Chiniak Bay, Kodiak Island, Gulf of Alaska, 5 m; 1, RNC 4421, Auke Bay, SE Alaska, 15 m; 1, RNC 3426, Sitka, Baranof Island, SE Alaska; 3, South Sukoi Island, Frederick Sound, SE Alaska, 10 m; 1, RNC, 3510, Petersburg, Mitkof Island,

SE Alaska; 1, Prolewy Point, Kupreanof Island, SE Alaska; 1, Nicholes Bay, Prince of Wales Island, SE Alaska, 46-58 m; 2, RNC 3522, Tatoosh Islnd, SE Alaska, 18 m; 1, RNC 3526, Mountain Point, Revillagigedo Island, SE Alaska, 20 m; 3, RNC 3576, Mountain Point, Revillagigedo Island, SE Alaska, 10 m; 1, RNC 4526, Ogden Point breakwater, Victoria, Vancouver Island, British Columbia, Canada, 14 m.

**Type locality.** Washington Monument, pinnacle, approximately 53 km SE of Ketchikan, Revilagigedo Island, SE Alaska (55°03 N, 131°02 W), 15 m.

**Distribution.** Eider Point, Unalaska Island, Fox Islands, Aleutian Islands Alaska (53°57.5 W, 166°35.4 W), east and south to Victoria, Vancouver Island British Columbia, Canada (48°25.7 N, 123°21.9).

**Habitat.** sublittoral, 3-58 m, on the calcareous tube worm *Serpula columbiana* Johnson, 1901.

**Etymology.** From the Greek, *kryptos*, hidden.

**Remarks.** Differs from *Turritropis cancellata* (Fig. 3) in its bicarinate rather than rounded profile, and the fewer and much longer periostracal extensions. Baxter, 1987 listed *Trichotropis conica*, but was undoubtedly referring to this species.

*Ariadnaria* Habe, 1961

**Type species.** (OD) *Trichotropis borealis* Broderip & G.B. Sowerby 1, 1829). *Oceano boreali, prope Insularum Melville dictam* (near Melville Id., Arctic Ocean) (Broderip and G.B. Sowerby I, 1829:375).

*Ariadnaria exiguus* Clark, new species  
(Figures 4-5)

**Description.** Shell small, to 14.5 mm (Holotype), poorly calcified; whorls five, Protoconch paucispiral, first teleoconch whorl rounded with numerous fine spiral fine striae; profile rounded, periostracum thin, suture impressed, final whorl slightly enlarged relative to previous whorls; spiral sculpture of two low, broad cords, one at the shoulder, the other at the base; axial sculpture of sharply raised, opisthocline growth lines, forming very fine, low laminae; umbilicus, reduced to a tight chink. Periostracum forming ridges on spiral cords, and bearing well-spaced, long bristle-like extensions. Some juvenile specimens have a single, smaller secondary spiral cord between the shoulder and basal cords, when present, this cord lacks periostracal extensions.

**Type material.** Holotype LACM 3809 (*leg.* RNC, 23 July, 1997; trawled); Paratypes: 1, LACM 3810; 1, SBMNH 184005;1, RNC 3983. (Paratypes from type locality).

**Additional material.** 7, RNC 3981, 4.5-9.0 mm, S of Attu Island, Near Islands, Aleutian Islands, Alaska (52°29.3 N, 172°57.5 E), trawled, 166 m on gravel (NMFS 23-1997-1-210); 1, RNC 4541, 8.3 mm, Petrel Bank, NE of Semisopchnoi Island, Aleutian Islands, Alaska (52°30.8 N, 179°31.1 W), trawled, 141 m (NMFS 94-2002-1-181).

**Type locality.** North end of Adak Strait, Andreanof Islands, Aleutian Islands, Alaska (51°54.6 N, 176°52.4 W), 212 m. (NMFS 23-1997-1-171).

**Distribution.** Central and western Aleutian Islands, Adak Strait (176°52 W) to S of Attu Island (172°57 E).

**Habitat.** 166-212 m, on gravel and small rocks.

**Etymology.** From the Latin *exiguus*, poor or scanty in reference to its small poorly calcified shell.

**Remarks.** This shell at first resemble a juvenile *Trichotropis bicarinata*, but lacks the biangulate whorls and thick periostracum, has well-spaced periostracal extensions, and has axial sculpture. It also bears close resemblance to *Turritropis willetti* Clark n. sp., but has a broader profile, and lacks the secondary spiral cords forming cancellations. The two are separated by more than 2700 km.

*Ariadnaria willetti* Clark, new species  
(Figure 6)

*Trichotropis conica*, non Möller: Dall, 1921:  
148; Oldroyd, 1927: 39.

**Description.** Shell small, to 13.2 mm (Holotype), whorls five, profile rounded, periostracum thin, suture impressed, final whorl slightly enlarged relative to previous whorls; spiral sculpture of variable strength cords, the strongest defining the shoulder and base; two cords of lesser strength between major cords, base also with cords of lesser strength. Axial sculpture lacking except for sharply raised, opisthocline growth lines, producing fine cancellations with spiral striae when viewed under magnification. Umbilicus represented by tight chink. Protoconch paucispiral, first teleoconch whorl rounded with numerous fine spiral cords.

**Type material.** Holotype, USNM 216358, Paratype, LACM 3794.

**Type locality.** Forrester Island, SE Alaska (approx. 54°48 N, 133°30 W)

**Distribution.** Known so far only from the vicinity of Forrester Island, SE Alaska (54°48 N, 133° W). Known only from the type material.

**Habitat.** Sublittoral, 90 m.

**Etymology.** Named for the late George Willett [1879-1945] (LACM Mammology/Orinthology), who collected the type specimens.

**Remarks.** The paratype specimen (11.1 mm) has an additional strong cord between the two main cords and has a broader umbilical chink due to a growth injury. Differs from the Arctic-Atlantic *Ariadnaria conica* (Möller, 1842) (Fig. 7) in having a less rounded profile, and bearing a prominent mid-whorl rib. Resembles *Ariadnaria exiguus* Clark n. sp., but differs in having secondary spiral striae, and less prominent growth lines, which form cancellations, however similarities between these two species are impressive, and it is not impossible that they represent extreme forms of the same species, however given the great geographical separation (2700 km), and material from between the type localities is lacking, despite much searching (many thousands of samples), they are considered provisionally distinct.

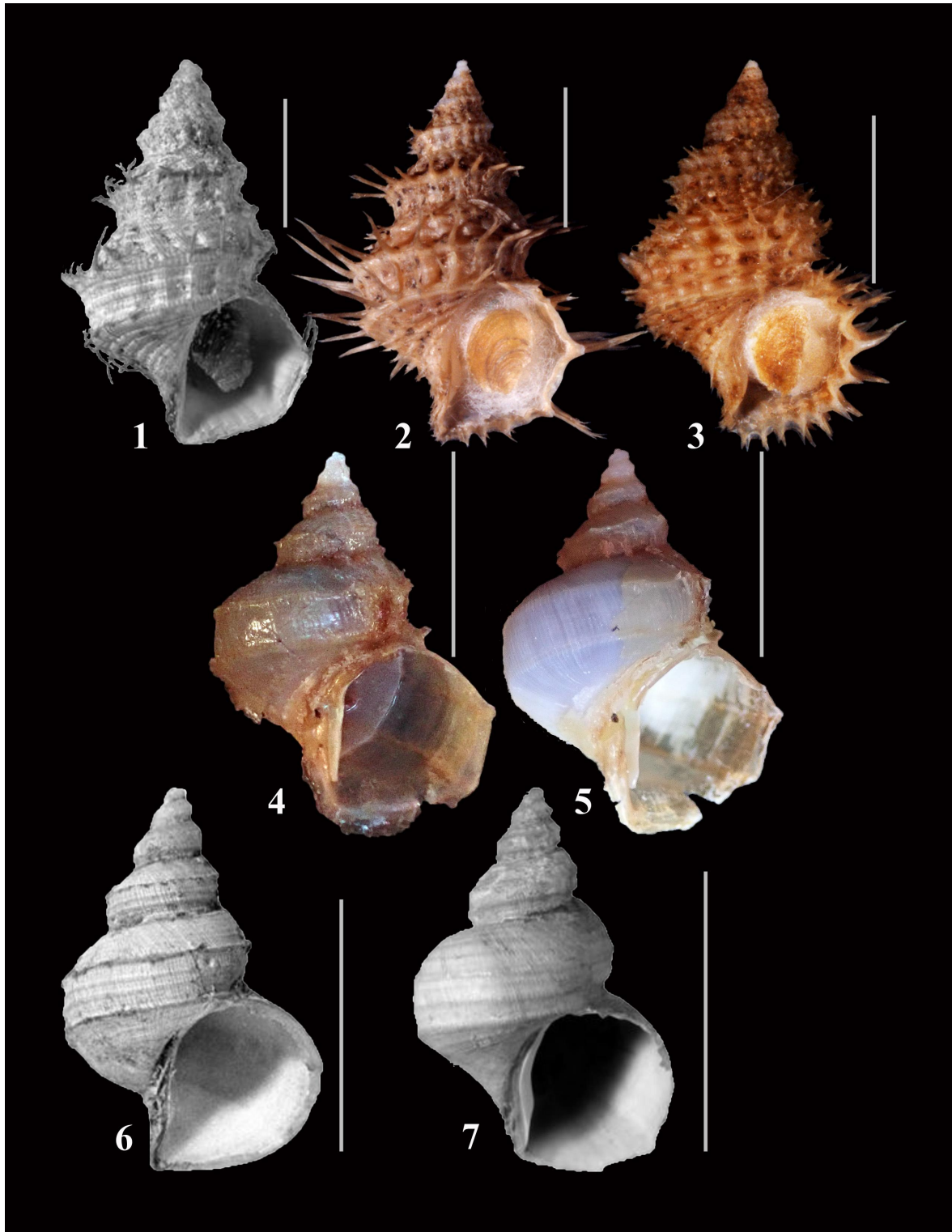
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**Figures 1-2=** *Turritropis cryptis* Clark, n. sp.; 1, Holotype, LACM 3791, 2, Paratype, RNC 3523; **Figure 3=** RNC 3686 *Turritropis cancellata* (Hinds, 1843), Sitka, Alaska; **Figures 4-5=** *Ariadnaria exiguus* Clark, n. sp., Holotype, LACM 3809, periostracum removed to view sculpture in Figure 5; **Figure 6=** *Ariadnaria willetti* Clark, n. sp., USNM 216358; **Figure 7=** *Turritropis conica* (Möller, 1842), LACM 152831, Arctic Ocean, Kara Sea, Russia. Scale bars = 1 cm.