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A NEW SPECIES OF *ACETABULASTOMA*  
SHORNIKOV FROM CENTRAL CALIFORNIA  
WITH A REVIEW OF THE GENUS<sup>1</sup>

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While most paradoxostomids are associated with marine plants, at least three genera are known to be commensal with crustaceans (McKenzie, 1969). Recently Shornikov (1970) described the new genus *Acetabulastoma* to accommodate several species parasitic on boreal gammarid amphipods. Hart (1971) described a new species, *A. kozloffii* from Washington State. This paper describes a new species in this genus from California.

SUBCLASS OSTRACODA LATREILLE 1806

ORDER PODOCOPIDA MULLER 1894

Paradoxostomatidae Brady and Norman 1889

Paradoxostomatinae Brady and Norman 1889

*Acetabulastoma* Shornikov 1970

*Type-species: Acetabulastoma littorale* Shornikov, 1970:1132-1133.

*Diagnosis:* The following diagnosis is modified from Shornikov (1970). The carapace is smooth, but sometimes may have a scarcely perceptible sculpture. It is flattened ventrally so that in end view it presents a triangular shape. The anterior margin is pointed, the posterior broadly rounded; the carapace being highest posteriorly. On the anterior ventral surface the valve margins are modified such that when the valves are closed an opening remains through which the animal can move the sucking disc. A vestibule is present anteriorly and posteriorly. Marginal pore canals are simple, rare, and occur only on the anterior and posterior

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TABLE I. Species of *Acetabulastoma*, their hosts and their distribution

Species	Hosts	Distribution
<i>A. littorale littorale</i> Shornikov	<i>Gammarus oceanicus</i> Dementieva	East Murman Coast
<i>A. l. robustum</i> Shornikov	<i>Gammarus setosa</i> Dementieva	East Murman Coast Cross Bay, Bering Sea
<i>A. arcticum</i> Shornikov	<i>Gammarus wilkitzii</i> Birula	Arctic basin
<i>A. longum</i> Shornikov	<i>Amphithoe djakonovi</i> Curjanova	Providence Bay, Bering Sea
<i>A. kurilense</i> Shornikov	Host unknown	Urup Island
<i>A. rhomboideum</i> Shornikov	Host unknown	Posjet Bay, Sea of Japan
<i>A. kozloffii</i> Hart	<i>Amphitoe humeralis</i> Stimpson	San Juan Archipelago Washington
<i>A. californica</i> sp. nov.	Host unknown	Tomales Point, California

margins. Normal pore canals are simple. The hinge is lophodont with the tooth on the right valve strong, pointed and directed distally. There are four adductor muscle scars in a slantwise arrangement, and two frontal scars. The eye is single, very small, and located medially in the anterior of the carapace. The first antenna is six segmented. The terminal endopodite segment of the second antenna possesses a single claw. A three-segmented palp is present on the mandible while the maxilla does not possess a palp.

*Ecology and distribution:* For the most part, the species in this genus have been found to be ectoparasitic on gammarid amphipods. The known species, their hosts, and their geographic distribution are given in Table I. Shornikov (1970) notes that the ostracodes are found on the ventral side or in the incubation chamber of the hosts. When they feed, the ostracodes apparently pierce the host integument with the stylelike mandibles. Eggs are laid on the branchial vesicles. The ostracodes probably spread throughout the amphipod population by contact. Baker and Wong (1968) describe similar habits for specimens identified as *Paradoxostoma rostratum* Sars. On the basis of host specificity, Shornikov (1970) believes the specimens of Baker and Wong to be synonymous with *Acetabulastoma arcticum*, and not to belong to *Paradoxostoma rostratum*.

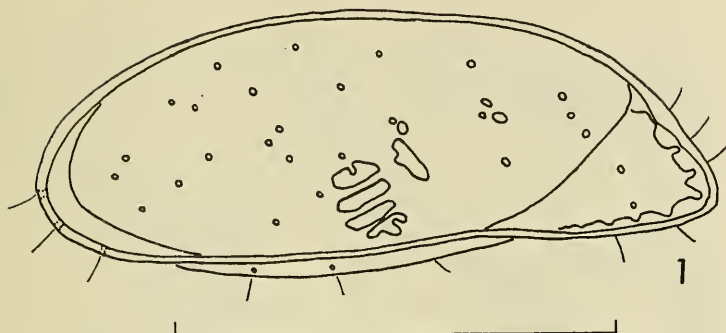


FIG. 1. *Acetabulastoma californica* n. sp., male, left valve, lateral view. Scale equals 0.5 mm.

***Acetabulastoma californica* new species**

Figures 1-11

*Holotype*: U.S.N.M. 128702.

*Paratype*: U.S.N.M. 128701.

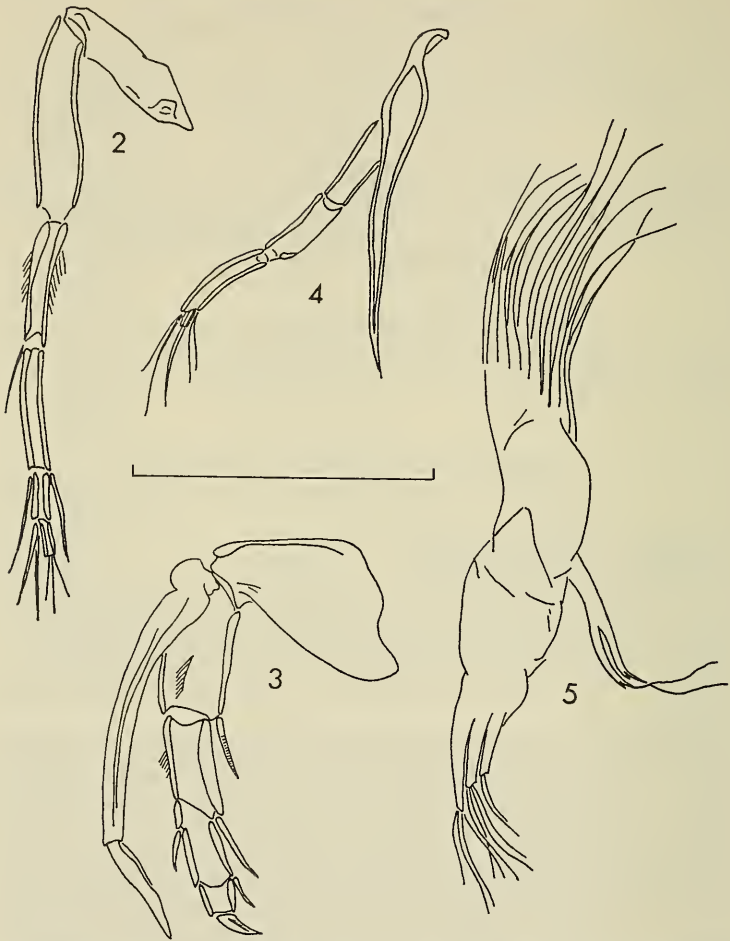
*Type-locality*: All specimens were taken in the low intertidal zone on the exposed side of Tomales Point, Marin County, California (122° 57' W. long., 38° 12' N. lat.) in the zone of the red alga *Corallina gracilis*.

*Material*: Three adults, consisting of two males and one female were examined.

*Diagnosis*: The species is distinguished from the other species in the genus by the suboval, upper scar in the adductor muscle scar group, the lack of a seta on the distal-ventral corner of the fifth segment of first antenna, and the strong, sub-triangular falcate structure on the male copulatory apparatus.

*Description*: The carapace is clear, highest posteriorly, flattened ventrally and presents a triangular shape in end view. The valves are equal in size. The dorsal margin is strongly convex; the ventral margin is straight with an anterior opening for the protrusion of the sucking disc. The anterior end is acutely rounded below while the posterior end is broadly rounded, without the appearance of a caudal process. The marginal zone is moderately wide with a vestibule present anteriorly and posteriorly. Marginal pore canals are few in number. The normal pores are open and widely scattered. No hinge structures were observed. The central muscle scar group consists of four, obliquely vertical adductor scars and a large frontal scar.

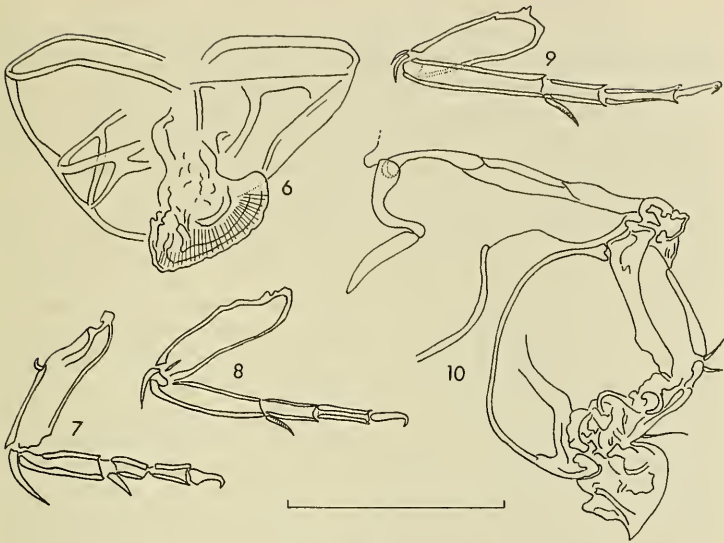
The first antenna consists of six segments. The second, third, and fourth segments are elongate. The lengths of the segments (in microns) being as follows: I 44; II 55; III 39; IV 39; V 17; VI 8. The first and second segments are without hairs or bristles. The third segment has a



FIGS. 2-5. *Acetabulastoma californica* n. sp., male. 2, first antenna; 3, second antenna; 4, mandible; 5, maxilla. Scale equals 0.1 mm.

dorsal-distal bristle and a row of fine hairs on the dorsal and ventral side. The fourth segment has a single bristle on the dorsal and ventral distal corners. On the fifth segment are two bristles at dorsal distal corners, these bristles extending beyond the terminal bristles of the last segment. The sixth segment has three terminal bristles.

The second antenna is composed of a two-segmented exopodite and a three-segmented endopodite. The lengths of the segments are as follows: protopodite 66; exopodite I 103; II 33; endopodite I 36; II 68; III 11.



FIGS. 6-10. *Acetabulastoma californica* n. sp., male. 6, upper and lower lips and sucking disc; 7, first walking leg; 8, second walking leg; 9, third walking leg; 10, male copulatory apparatus. Scale equals 0.1 mm.

The protopodite is subtriangular in outline and is without hairs or bristles. Both exopodite segments are also without hairs or bristles; a ventral groove extends the length of both segments. The endopodite first segment has a lateral row of fine hairs and a ventral-distal bristle. The second segment is superficially jointed, thus appearing as two segments. On the dorsal side of the segment is a proximal row of fine hairs and a medial bristle; on the ventral side is a single medial and a single distal bristle. The third segment has only a single terminal claw.

The mandible first protopodite segment is styliform; the palp consists of the second protopodite segment and three endopodite segments. The lengths of the segments are as follows: protopodite I 110; II 39; endopodite I 28; II 33; III 8. All segments are devoid of bristles except the second and third endopodite segments. The second segment has two ventral and two dorsal-distal bristles; the third segment has a single terminal bristle.

The maxilla consists of a thinly sclerotized vibratory (respiratory) plate and three endites. A palp is not present. A respiratory plate has 10 plumose bristles and two aberrant setae. The endites become shorter posteriorly, and bear four, four, and two bristles, respectively.

The walking legs increase in length posteriorly. The lengths of the segments are as follows: first walking leg I 69; II 39; III 19; IV 17;

second walking leg I 66; II 50; III 20; IV 17; third walking leg I 55; II 61; III 22; IV 33. The first segment of the first leg bears a sharply upturned bristle on the dorsal surface and a large bristle at the dorsal-distal corner. The second segment has a single bristle at dorsal-distal corner while the fourth segment bears a terminal, hooked claw. The second leg is similar to the previous leg but is without the upturned seta on the first segment. The third leg is similar to the second but has two bristles at the dorsal-distal corner of the first segment.

The male paired copulatory structures consists of heavily sclerotized, extremely muscular, sub-circular penifera and ventrally situated sub-triangular falcate structures (terminology from Hart and Hart, 1969).

*Discussion:* The possession of a styliiform mandible coxale, together with the reduced maxilla palp and endites characterizes this genus as a member of the Subfamily Paradoxostomatinae as outlined by McKenzie (1969). The suctorial disc on the oral cone allies this genus with both *Paradoxostoma* and *Cytherois*. The styliiform mandible coxale, the lack of a maxillary palp, and the strong distal spine on the protopodite of the first walking leg suggests a closer affinity with *Paradoxostoma* than with *Cytherois*, which lacks these features. Furthermore, the mandible palp of *Paradoxostoma* is two segmented while that of *Acetabulastoma* is three segmented. The outline and ventral flattening of the valves of this genus had been illustrated previously only for *Paradoxostoma rostratum* Sars (Sars, 1928; Elofson, 1940).

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#### RÉSUMÉ

*Acetabulastoma californica* n. sp., est décrit. Les caractères distingués sont les valves ventralement aplatit, la large empreinte de front, la palpe mandibulaire de trois segments, et la maxille sans une palpe.

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