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Batillipes gilmartini, a New Marine Tardigrade from a California Beach

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NOTES

Batillipes gilmartini, a New Marine Tardigrade from a California Beach[1]

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TWO SPECIES of marine tardigrades have been reported from the Pacific coast of North America. Schuster and Grigarick (1965) studied *Echiniscoides sigismundi* Schultze, 1865, from algae and barnacles. This species is thought to occur along much of the west coast. *Styraconyx sargassi* Thulin, 1942, was reported as *Bathyechiniscus tetronyx* Steiner, 1926, from washings of *Dictyota* sp. by Mathews (1938). Although marine tardigrades are often found in association with algae and a variety of animals, they are most abundant in the interstitial spaces of sandy beaches. The apparently rich interstitial fauna of the west coast has not as yet been investigated.

While working at Hopkins Marine Station on a Stanford Oceanographic Expedition post-cruise research grant, I sampled interstitial fauna from beaches near the laboratory. Two species of tardigrades, *Halechiniscus remanei* Schulz, 1955, and a new species of *Batillipes,* were abundant on the beach southwest of the laboratory.

METHODS

Interstitial fauna was sampled and processed by the methods described by McGinty and Higgins (1968). Several hundred specimens were sorted and 40 of each species were mounted for study. Body and appendage measurements were taken and analyzed. Body length does not include caudal spine nor cephalic cirri. Spine and cirri lengths include pedestals where present. Table 1 gives some results of statistical analyses of meristic data.

Halechiniscus remanei Schulz, 1955
Fig. 1

The type locality of *Halechiniscus remanei* is Naples, Italy. Other reports of this species include Arcachon, France (Renaud-Debyser, 1959) and the east coast of North America (McGinty and Higgins, 1968). This report extends its distribution record into the Pacific Ocean.

Body and appendage measurements of the Pacific coast population varied little from those described by Schulz (1955). Juveniles having two toes were observed. The length of the claws is longer in this population than in that studied by Schulz. Leg spine IV is distinct, terminating in a spade-shaped structure.

Batillipes gilmartini n. sp.
Fig. 2

DIAGNOSIS: *Batillipes* with blunt caudal spine inserting directly on body, with two distinct dorsal protrusions lateral to the caudal spine, with incomplete dorsal plates.

HOLOTYPE: Adult; total body length 185μ; coll. M. M. McGinty, 20 May 1968, author's no. C-1.6. Deposited in U. S. National Museum, USNM 38976.

TYPE LOCALITY: Sandy beach southwest of Hopkins Marine Station, Pacific Grove, California; 36°38′N, 121°56′W; medium grain sand; mid to high tide, 0 to 20 cm depth.

DESCRIPTION: Total body length 185μ; median cirrus 10μ long inserted on pedestal; in-

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TABLE 1

Comparison of Measurements of Taxonomic Characters of *Halechiniscus remanei* and *Batillipes gilmartini* (all measurements in μ)

	Halechiniscus remanei		*Batillipes gilmartini*	
CHARACTER	Range	Mean	Range	Mean
Body length	82–123	102	82–204	169
Median cirrus	10–12	10	8–12	10
Internal cirrus	12–17	15	9–14	11
External cirrus	9–12	10	8–16	13
Clava	10–13	12	9–13	11
Lateral cirrus	18–23	22	20–32	27
Lateral spine	22–25	23	18–26	21
Caudal spine	12–24	18	8–13	10

ternal cirri 14μ long with pedestals; external cirri 14μ long, ventral; clava 11μ long, constricted at one-half its length; lateral cirri 39μ long, mounted on common base with clava; lateral spine ca. 16μ long.

Cuticle transparent with pores throughout the cuticle. Mouth ventral, mouth tube straight to slightly curved to the right; pharynx spherical. Eyes absent.

Body divided into incomplete segments with plates visible dorsally. Body width increases only slightly posteriorly. Lateral projection between legs III and IV slight.

Spatulate toes large, inserted on short legs. Legs I to III with single short straight spine; fourth leg spine having short constriction distally, terminating in tiny bulbous structure visible under phase oil.

ETYMOLOGY: This species is named in honor of Dr. Malvern Gilmartin of Stanford Oceanographic Expeditions, who made this research possible.

DISCUSSION: This species is very similar to *Batillipes pennaki* Marcus, 1946. Observations and measurements of taxonomic characters of *B. pennaki* were made and compared with those of *B. gilmartini.* No significant differences were evident between the two species in the length or morphology of cephalic appendages, or in body or head shape. Pharynx, legs, and toes were of the same types. In both species leg spines of all four legs were similar, although the distinctive spine on leg IV has not been described previously in *B. pennaki.* The expansion of the end of leg spine IV may be caused by preservation techniques; this detail is not observable except under high magnification. Leg and lateral spines were not always visible.

The protrusion of the body between legs III and IV which is often visible in *B. pennaki* was not observed in *B. gilmartini.*

The structure of the caudal spine is different from that of *B. pennaki.* There is no wide basal support for the spine, which is blunt rather than acuminate. The protrusions dorsolateral to the caudal spine are distinct from the caudal spine and have no counterpart in *B. pennaki.*

Another character which allows the separation of the two species is the presence of dorsal plates in *B. gilmartini.* An indistinct head plate and five trunk plates are present; however, all plate divisions may not always be visible. The presence of segmental plates is uncommon in marine tardigrades. This organization is reminiscent of the freshwater family Echiniscidae.

Juveniles were observed having a complement of four toes.

SUMMARY

Batillipes gilmartini shows striking similarity to *B. pennaki,* but because of the distinctly different caudal spine and the phylogenetically significant dorsal plates it is described as a new species.

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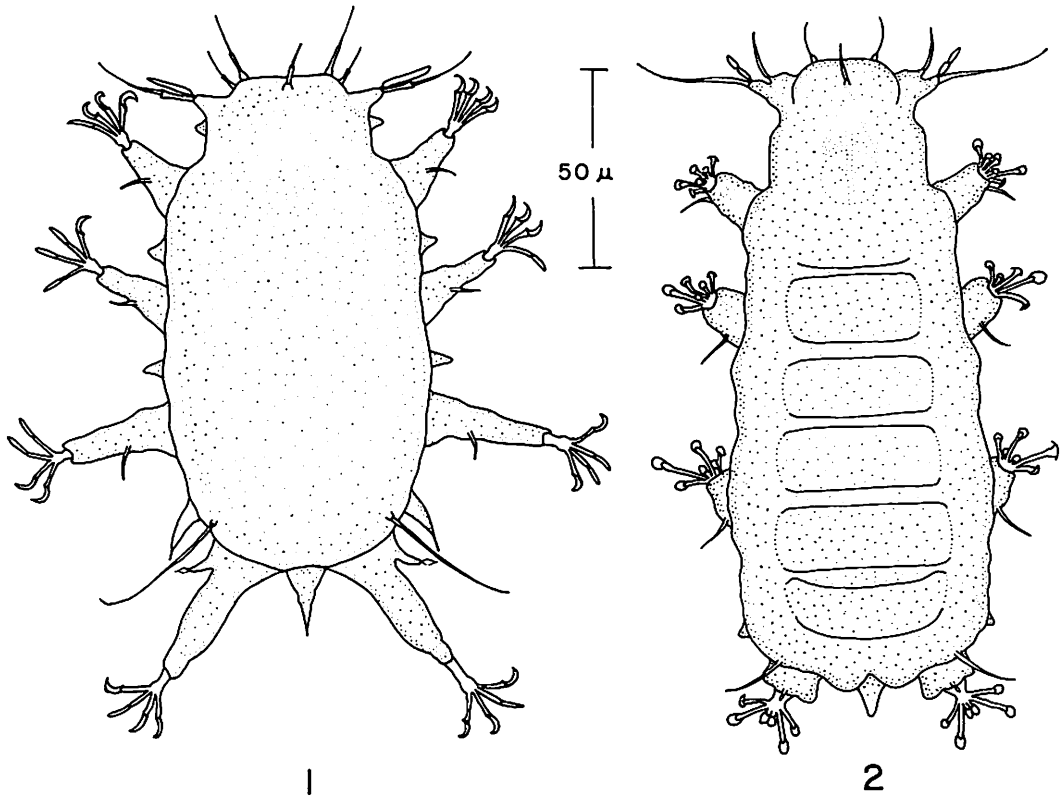

FIG. 1. Dorsal view of *Halechiniscus remanei* Schulz, 1955.
FIG. 2. Dorsal view of *Batillipes gilmartini,* n. sp.

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