

REEXAMINATION OF THE SPECIES REFERRED TO THE
GENUS *FLABELLIDERMA* HARTMAN (POLYCHAETA:
FLABELLIGERIDAE AND ACROCIRRIDAE)

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Abstract.—The polychaete genus *Flabelliderma* (Flabelligeridae) is re-defined and its relationship to the genus *Flabelligera* clarified. An expanded description is given for the sole species, *Flabelliderma essenbergae* (Hartman), and the range and bathymetric distribution are extended. *F. commensalis* Moore is referred back to the genus *Flabelligera* in the Flabelligeridae, and an emended description is given for *F. macrochaeta* (Fauchald), now placed in the genus *Flabelligella* in the Acrocirridae.

The discovery of a specimen of *Flabelliderma* from Guadalupe Island off the west coast of Baja California led to an examination of the types of the three species previously assigned to this genus. *Flabelliderma* was established by Hartman (1969:286) for two species: *F. commensalis* (Moore, 1909) and *F. essenbergae* (Hartman, 1961), the latter designated as the type-species. *Flabelliderma macrochaeta* Fauchald, 1972 was subsequently added. As a result of the present study, *F. commensalis* is returned to the genus *Flabelligera* Sars in the Flabelligeridae, where it was originally placed. Following the revision by Orensanz (1974:114), *F. macrochaeta* is referred to *Flabelligella* Hartman in the Acrocirridae. *F. essenbergae* remains in the emended and now monotypic genus *Flabelliderma* in the Flabelligeridae.

Flabelliderma was distinguished from *Flabelligera* by Hartman (1969:286) "in that the body lacks a mucus-sheath and is covered by papillae; in *Flabelligera* the epithelium is smooth or nearly so, and the body is covered by a thick, mucoid sheath." However, as noted by Pettibone (1954:289) for *Flabelligera affinis* M. Sars, 1829, the type-species of the genus, and by Chamberlin (1919:398) for *F. infundibularis* Johnson, 1901 [= *F. affinis*, according to Pettibone (1954:289)], this mucilaginous sheath is frequently missing. Specimens of *F. infundibularis* from Alaska and Monterey Bay (CAS) show a similar reduction or absence of the mucilaginous sheath. This character thus appears to be of only marginal value in separating the two genera.

The family Acrocirridae was erected recently by Banse (1969:2592-2620) to include *Acrocirrus* Grube and *Macrochaeta* Grube, both genera removed from the family Cirratulidae. Banse commented on the apparent close relationship of the Acrocirridae with the Flabelligeridae. Orensanz (1974:113-118) emended the Acrocirridae to include the genus *Flabelligella*

Hartman, placed originally in the Flabelligeridae (Hartman, 1965a:172-180) and subsequently in the Fauveliopsidae (Hartman, 1971:1411). This revision was followed by Fauchald (1977:30-31), although Orensanz would favor placing the Acrocirridae in the same group with the Flabelligeridae and the Fauveliopsidae, rather than associated with the Cirratulidae (Suborder Cirratuliformia of Fauchald, 1977:29-30).

Family FLABELLIGERIDAE Saint-Joseph

Type-genus.—*Flabelligera* M. Sars, 1829.

Diagnosis.—Body cylindrical, fusiform or grublike, epidermis typically covered with papillae, often impregnated with sand or mud in gelatinous matrix. Prostomium and peristomium retractable into anterior setigers, with 2 large palpi and numerous filiform branchiae. Setae of first 1-4 setigers usually elongated and directed forward, forming more or less prominent cephalic cage. Parapodia biramous, rami widely separated. Notosetae all slender smooth or annulated capillaries; neurosetae similar to notosetae or distally whiplike, flattened or falcate, tips unidentate or bidentate; neurosetae simple, compound or pseudocompound. Anus terminal. Blood green, containing chlorocruorin.

Genus *Flabelligera* M. Sars, 1829

Type-species.—*Flabelligera affinis* M. Sars, 1829:31, pl. 3, fig. 16.

Chloraema Dujardin, 1839:648.

Siphonostoma Rathke, 1843:211 [part].

Tecturella Stimpson, 1854:32.

Diagnosis.—Body elongate, vermiform, not dorsoventrally compressed, with only one kind of papillae of long, pedunculate type with clavate tips (see Fig. 3) usually embedded in thick, transparent, mucilaginous sheath or its rudiments; papillae not encrusted with mud or sand. Buccal segment formed of fused prostomium and peristomium and bearing 2 thick palpi and numerous filamentous, retractile gills; prostomium with 4 eyes. Cephalic cage well developed, formed of capillaries from both rami of setiger 1, thereafter all notosetae thin, transversely striated, smooth capillaries and all neurosetae compound or pseudocompound falcigers.

Flabelligera commensalis Moore, 1909

Flabelligera commensalis Moore, 1909:286-288, pl. 9, figs. 62-63.—Hartman, 1961:117-118.—Stasek, 1966:11-12.

Flabelligera haerens Chamberlin, 1919:16. *Fide* Hartman, 1961:117.

Flabelliderma commensalis: Hartman, 1969:285, figs. 1-3.—Spies, 1973:

465-490, pls. 1-9.—1975:187-207, pl. 1, fig. 1, pl. 2, fig. 2.—1977:323-345, pls. 1-6.

Material.—California: Vicinity of Monterey Bay, from among spines of the echinoid *Strongylocentrotus purpuratus* (Stimpson), holotype and 1 paratype (CAS Type Series 41 and 42, respectively). Pigeon Point, San Mateo Co., between spines of *Strongylocentrotus* sp., P. Carlstrom, coll., 1 specimen (CAS 000010). Off NW San Clemente Island, 9-Fathom Reef, 27 Oct. 1975, D. Powell, coll., 1 specimen, associated with the diadematiid echinoid *Centrostephanus coronatus* (Verrill) (CAS 002638).

Remarks.—Fauchald (1977:116) erroneously listed *Flabelligera commensalis* Moore, 1909 as the type-species and only member of the genus *Flabelliderma*. *F. commensalis* was assigned to the genus *Flabelliderma* by Hartman (1969:285-286) solely on the basis of its supposed lack of a mucilaginous sheath enveloping the body. An examination of the above material revealed a rudimentary sheath to be present over scattered parts of the dorsolateral surfaces of the body. In view of the foregoing revision, *F. commensalis* is herein transferred back to the genus *Flabelligera*.

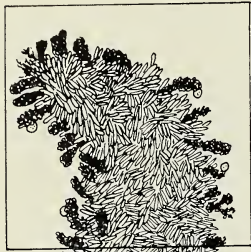
Distribution.—Central and southern California, intertidal to shelf depths (Hartman, 1961:117; 1969:285), free-living in kelp holdfasts or commensal with urchins or polychaetes.

Genus *Flabelliderma* Hartman, 1969, emended

Type-species.—*Flabelligera essenbergae* Hartman, 1961 [= *Stylaroides papillosa* Essenberg, 1922 (homonym)], designated by Hartman, 1969:286.

Emended diagnosis.—Body short, grublike, dorsoventrally compressed, lacking any trace of mucilaginous sheath. Buccal segment formed of fused prostomium and peristomium and bearing 2 prominent, grooved, ventral palpi and numerous filiform branchiae; prostomial eyes present or absent. Cephalic cage well developed, formed of capillaries from both rami of setiger 1; thereafter all notosetae thin, transversely striated, smooth capillaries and all neurosetae compound or pseudocompound falcigers. With 2 kinds of papillae: (1) long, pedunculate, with clavate tips covering body, heavily encrusted with fine sand or mud grains; (2) much larger, balloon-shaped, attached to notopodia by long, stringlike stalks bearing central canals. Parapodia biramous, rami widely separated; notopodia comprising laterally extended, tangled skeins of pedunculate papillae of first type (see Fig. 3) heavily coated with sand or mud. Anus simple, terminal.

Remarks.—*Flabelliderma* appears to be closely related to the genus *Flabelligera*. It differs in bearing two kinds of epithelial papillae, of which the balloonlike forms are diagnostic for the genus, and in having a



1

1.75 cm



2

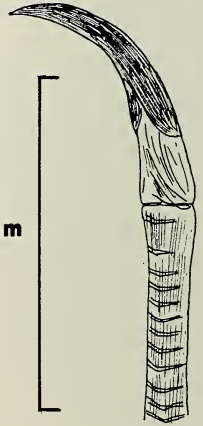
7.3 mm

1.2 mm



3

0.4 mm



4

short, dorsoventrally compressed, grublike body heavily encrusted with mud and sand. *Flabelliderma* never exhibits any trace of a gelatinous sheath, but the frequent absence of such a sheath in the genus *Flabelligera* makes this a doubtful taxonomic character.

Hartman (1969:116) commented that *Flabelliderma essenbergae* and *Flabelligera commensalis* both differ from typical species of *Flabelligera* in bearing neuropodial falcigers that are pseudocompound, rather than fully compound. However, this feature is variable, and compound neurosetae are also exhibited by specimens of *F. essenbergae* from central California and Mexico (Fig. 4).

Flabelligera essenbergae tenebricosa C. Berkeley, 1966 from British Columbia has been referred to *Brada sachalina* Annenkova, 1922 by Hobson (1976:137-138). *Flabelliderma* is thus a monotypic genus.

Flabelliderma essenbergae (Hartman, 1961)

Figs. 1-4

Stylaroides papillosa Essenberg, 1922:379-381, figs. 1-8.

Flabelligera papillosa: Hartman, 1959:416. [Not *Siphonostoma papillosum* Grube, 1840].

Flabelligera essenbergae Hartman, 1961:118-120, pl. 22, figs. 1-2, pl. 23, figs. 1-4.—1965b:60.

Flabelliderma essenbergae: Hartman, 1969:287-289, figs. 1-6.—Spies, 1975: 187-193, pl. 2, fig. 3, pl. 4, fig. 11.

Material.—California: Arch Rock, Corona del Mar, -1.5 tide in eelgrass bed, 2 syntypes of *Flabelligera essenbergae* (AHF 0536). Point Lobos, Monterey Bay, 20 m, 6 May 1972, A. J. Ferreira, coll., 2 specimens (CAS 000012).

Western Mexico: Old Sealer's Cove, Guadalupe Island, off west coast of Baja California, from lower intertidal associated with yellow sponge, 1 January 1975, W. L. Lee and A. J. Ferreira, coll., 1 specimen (CAS 000011).

Description.—Body 20-70 mm long, 5-10 mm wide, 28-40 segments. Body dorsoventrally compressed, grublike in overall appearance (Fig. 1), covered dorsally and ventrally with closely packed, teardrop-shaped globules of mud or sand (Figs. 1-2) enclosing long papillae with clavate tips; globules longer than wide in specimens from Baja and central California (compare

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Figs. 1-4. *Flabelliderma essenbergae* (Guadalupe Island, CAS 000011). 1, Entire animal, dorsal view; 2, Anterior end contained within box in Fig. 1; 3, Left parapodium, comprising skeins of pedunculate papillae, debris, and balloonlike papilla; 4, Neuropodial falciger.

pl. 23, fig. 4, Hartman, 1961). Notopodia formed of loose skeins of long, pedunculate papillae with clavate tips forming sub-groups coated with sand grains resembling small bracts or scales (Figs. 2-3) in Mexican specimen; animals from central California exhibiting similar parapodial configuration, but bracts less well developed; in type specimens notopodial papillae cemented together into large, mud-encrusted, tubular mass (Hartman, 1961, pl. 23, fig. 4); different configurations due solely to nature of encrusting mud or sand. Individual clusters of papillae frequently projecting from notopodial mass, resulting in distinctly tessellated appearance (Figs. 2-3). Large balloonlike papillae arising from notopodia on long, stringlike stalks which apparently connect with body cavity (see Hartman, 1961:120, for discussion of the possible secretory nature of these papillae). Notosetae long, transversely striated capillaries (Fig. 3); neurosetae from setiger 2 on pseudocompound (Hartman, 1969, fig. 5) or compound (Fig. 4) falcigers. Eyes present (central and southern California) or absent (Mexico). Anus simple, terminal.

Remarks.—The anterior end was completely retracted in the Mexican specimen. Dissection revealed a complete absence of eyes and a dense cluster of thick, annulated, filiform gills, together with 2 thick ventral palpi. All California specimens bear 4 prominent eyes on the prostomium just below the gills. The gills in central California specimens are somewhat annulated, whereas those from southern California are delicate and filamentous, and show no evidence of such transverse creases. Examples from Monterey Bay exhibit the parapodial tessellation and scalelike clumping to a lesser degree than in the specimen from Guadalupe Island. The only consistent difference between the animals from California and Mexico is the absence of eyes in the latter. However, it does not seem justifiable to erect a subspecies based solely on this feature in a single specimen from Mexico.

Distribution.—The range of *F. essenbergae* is here extended from southern California north to central California and south to Guadalupe Island; its bathymetric distribution is extended from the intertidal to 20 meters (Monterey Bay).

Family ACROCIRRIDAE Banse; emended Orensanz, 1974

Type-genus.—*Acrocirrus* Grube, 1872.

Diagnosis.—Body vermiform or grublike, with pair of grooved, frontal palpi. Prostomium reduced, generally with eyes, lying dorsally atop peristomium; prostomium and peristomium often retracted into anterior setigers. One pair of gills per segment above notopodia from segment 2 (excluding prostomium and peristomium), generally 1 or 3-4 pairs, or gills absent. No cephalic cage. Parapodia biramous, rami more or less widely separated.

Notosetal capillaries distinctly annulated and spinose; neurosetae compound, with long appendage bearing subterminal, V-shaped hood and with hyaline sheath covering articulation; sometimes with stout, neuropodial aciculae. Anus simple, terminal.

Genus *Flabelligella* Hartman, 1965a; emended Orensanz, 1974

Type-species.—*Flabelligella papillata* Hartman, 1965a, by original designation.

Diagnosis.—Acrocirrids completely covered with soft papillae, often with adhering detritus or mud. Frontal palpi short, globular, or palpi lacking. One pair of very delicate branchiae or branchiae completely lacking. Anterior segments uniramous in some species.

Flabelligella macrochaeta (Fauchald, 1972)

Figs. 5–6

Flabelliderma macrochaeta Fauchald, 1972:222–223, pl. 46. figs. a–b.

Flabelligella macrochaeta: Orensanz, 1974:114, 118.

Material.—Western Mexico: Off Islas Tres Marias, 21°54'30"N, 106°50'00"W, 1480 m, *Velero IV* sta. 13767–70, holotype (AHF F4118); 21°53'00"N, 106°49'00"W, 1536 m, *Velero IV* sta. 13768–70, 1 specimen (AHF F4120).

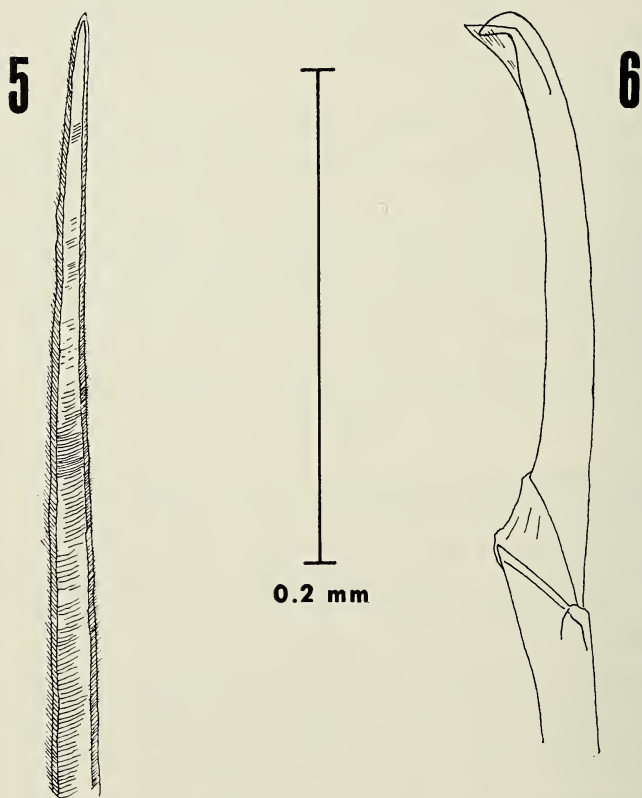
Supplementary description.—Prostomium reduced to small, biscuit-like palpode lying atop peristomium; with pair of distinct eyespots. Partially eversible proboscis present. Capillary notosetae with annulated sheaths bearing many fine spines (Fig. 5), one capillary per ramus; 1–4 compound neurosetae per ramus with long, falcigerous appendage bearing subterminal, V-shaped, transparent hood and with hyaline sheath covering articulation (Fig. 6).

Remarks.—The secondary hyaline sheath was not figured in the original description, although it was alluded to by Fauchald (1972:222–223). The subdistal hyaline hood is a single, V-shaped structure rather than two flaps as originally described, and the sheaths of the notosetae are annulated and spinose (Fig. 5), rather than smooth capillaries as indicated by Fauchald.

Distribution.—Known only from slope depths off western Mexico.

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Figs. 5-6. *Flabelligella macrochaeta* (holotype, AHF F4118). 5, Notoseta; 6, Compound neuropodial falciger.

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