LOS ANGELES COUNTY SANITATION DISTRICTS
Converting Waste Into Resources

Voucher Sheet
B. Haggin
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Cossura pygodactylata Jones, 1956

P-Code – P132
ITI – none assigned

Synonyms: *Cossura lepida* Tamai, 1986

Family: Cossuridae
Infraclass: Scolecida
Subclass: Sedentaria
Class: Polychaeta
Phylum: Annelida

Diagnostic Characters: (*sensu* Jones {1956} & Hilbig {1996})

- Branchial filament arising from middle-posterior of chaetiger 2
- Thorax with 13-21 chaetigers (17-19 – Jones {1956}) (most commonly 17-18 – Hilbig {1996})
    - Expanded range to 13-21 by Bachelet & Laubier (1994)
- Pygidium with a dorsal cleft, 3 long anal cirri (2 dorsolateral, 1 ventral) & 6-10 short cirri on each side **(Image 1)**

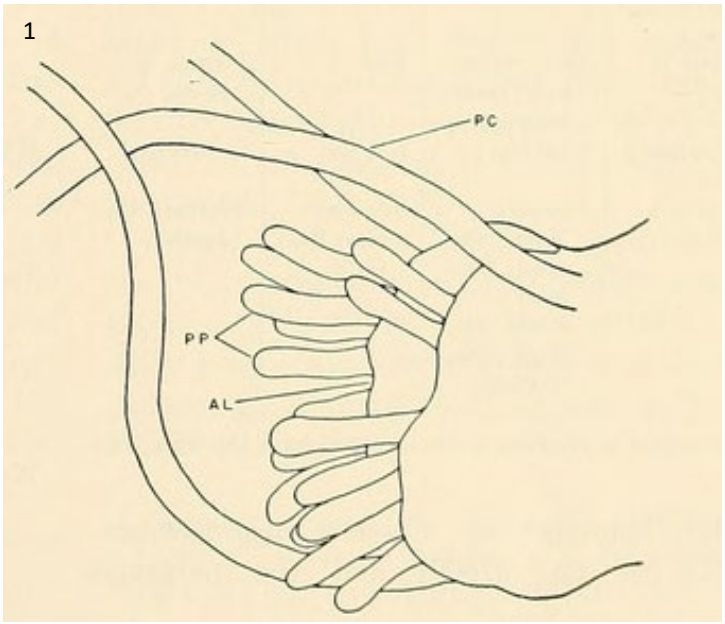
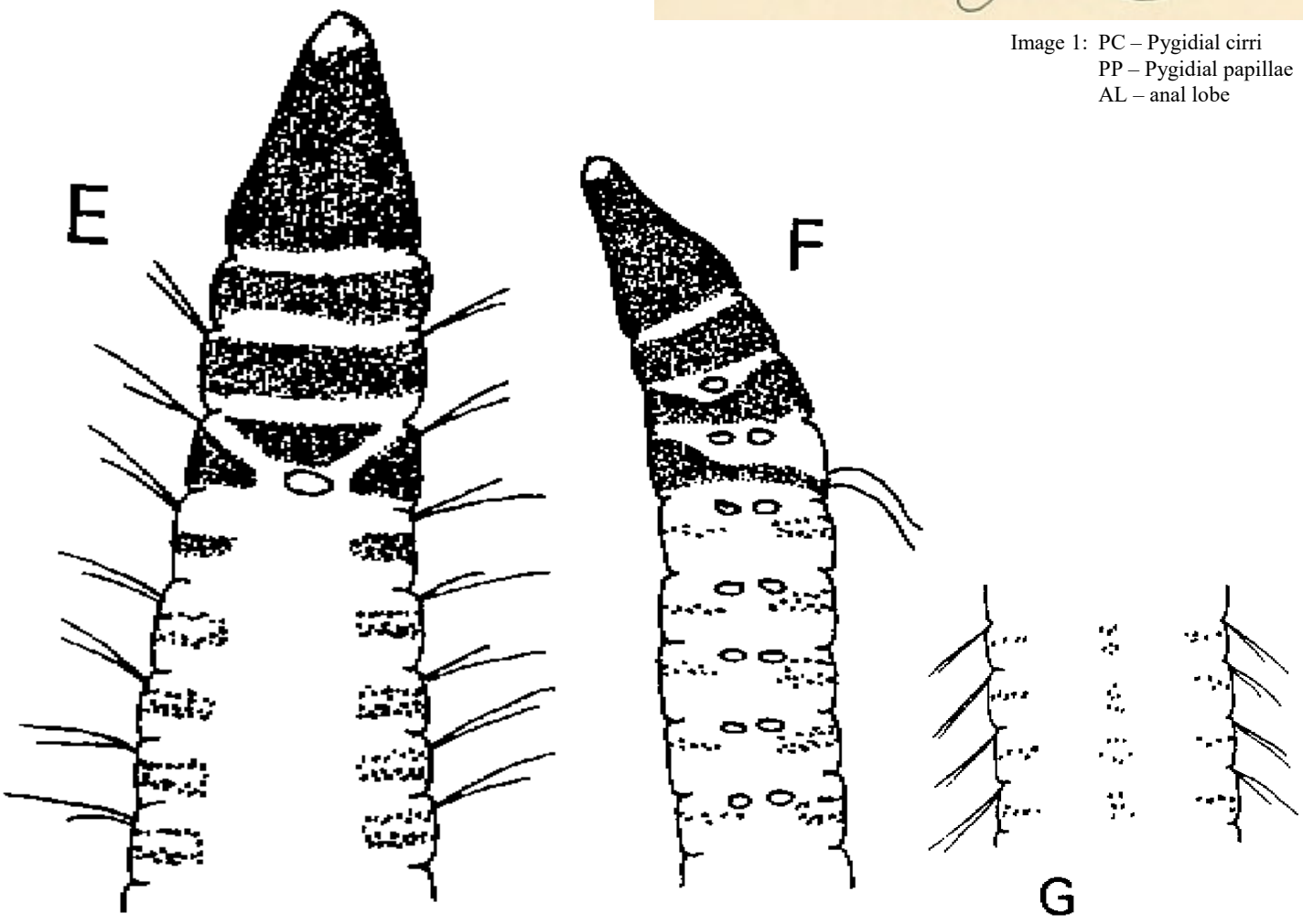


Image 1: PC – Pygidial cirri
PP – Pygidial papillae
AL – anal lobe



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Pigmentation/Methyl Green Stain Pattern: (*sensu* Hilbig {1996})

- Prostomium (except for tip), peristomium & chaetiger 1 staining deeply
- Chaetiger 2 with wedge shape pointing toward branchial insertion **(Image E)**
- Thorax with dorsolateral patches of scattered cells, not connecting laterally **(Images E & F)**
- Ventrolateral & midventral patches weakly staining **(Image G)**
- Abdomen without stain
- Pygidium with thin ring of stain

Material Examined:

No specimens available for examination

Image 1 modified from Jones (1956)
Images E, F & G modified from Hilbig (1996)

Habitat:

Cossura pygodactylata was originally described from San Francisco Bay from a depth of 1-9m. It currently has a reported distribution of North Pacific Ocean from Japan – central California; Atlantic Ocean from Cape Hatteras, North Carolina – South Carolina; Western France & English Channel, and the Whites Sea. The depth range has since been expanded to 1-2720m.

Similar Species:

Cossura bansei Hilbig, 1996—*Cossura bansei* is similar to *Cossura pygodactylata* by having dorso– and ventrolateral thoracic stain patches that do not connect laterally behind the chaetal fascicle. The two differ in the insertion of the branchial filament, with *Cossura bansei* being inserted posterior to the chaetal fascicle of chaetiger 3 while *Cossura pygodactylata* is inserted anterior to the chaetal fascicle of chaetiger 3 on the posterior of chaetiger 2, and in the number of thoracic chaetigers, 20-31 in *Cossura bansei* and 13-21 in *Cossura pygodactylata*. If specimens are complete, *Cossura pygodactylata* has 3 long anal cirri and 6-10 short pairs of short cirri on the pygidium. *Cossura bansei* lacks the additional short cirri. *Cossura bansei* is a shelf and upper slope animal, reported from 23-301m.

Cossura brunnea Fauchald, 1972—*Cossura brunnea* is similar to *Cossura pygodactylata* in the number of thoracic chaetigers, 13-21 in *C. pygodactylata*, usually 17-18, and 16-18 in *C. brunnea*. The two species differ in the insertion of the branchial filament, the middle of chaetiger 3 in *C. brunnea* and the posterior of chaetiger 2 in *C. pygodactylata*. If specimens are complete, *Cossura pygodactylata* has 3 long anal cirri and 6-10 short pairs of short cirri on the pygidium. *Cossura brunnea* lacks the additional short cirri. *Cossura brunnea* has very dark stain patches in the thorax that connect laterally behind the chaetal fascicle while *Cossura pygodactylata* has scattered dorso- and ventrolateral stain patches in the thorax that do not connect laterally behind the chaetal fascicle. *Cossura brunnea* is a very deep-water animal, reported from 1600-2200m.

Cossura candida Hartman, 1955—*Cossura candida* differs from *Cossura pygodactylata* in most respects. *Cossura candida* has a longer thorax with 24-35 thoracic chaetigers while *Cossura pygodactylata* has only 13-21 thoracic chaetigers. The branchial filament is inserted on chaetiger 3 in *C. candida* and on chaetiger 2 in *C. pygodactylata*. While both species have 3 long anal cirri, *Cossura pygodactylata* also has 6-10 short cirri on each side of the pygidium that are lacking in *Cossura candida*. The dorso- and ventrolateral stain patches connect laterally in *Cossura candida* but do not connect laterally behind the chaetal fascicle in *Cossura pygodactylata*. The type of *Cossura candida* is from 14 m inside Los Angeles Harbor but has been reported down to 2478m.

Similar Species cont.:

Cossura modica Fauchald & Hancock, 1981 – *Cossura modica* and *Cossura pygodactylata* have an overlapping range of thoracic chaetigers, *C. modica* with 14-26 and *C. pygodactylata* with 13-21. The two species differ in their stain pattern, with *C. modica* having stain patches that connect laterally behind the chaetal fascicles and *Cossura pygodactylata* lacking stain patches that connect laterally behind the chaetal fascicle. *Cossura pygodactylata* has 3 long anal cirri and 6-10 additional short papillae on each side. The additional short papillae are absent in *Cossura modica*. *Cossura modica* was described from deep-water off Oregon and has a reported depth range of 985-2955m.

Cossura rostrata Fauchald, 1972—*Cossura rostrata* is differentiated from *Cossura pygodactylata* by the insertion of the branchial filament on chaetiger 3 rather than on chaetiger 2, and by the longer thorax, 29-36 in *Cossura rostrata* and 13-21 thoracic chaetigers in *Cossura pygodactylata*. *Cossura rostrata* has an intense thoracic stain that connects laterally behind the chaetal fascicle while *Cossura pygodactylata* has weak dorso– and ventrolateral thoracic stain patches that do not connect laterally behind the chaetal fascicle. If specimens are complete, *Cossura pygodactylata* has 3 long anal cirri and 6-10 short pairs of short cirri on the pygidium. *Cossura rostrata* lacks the additional short cirri. *Cossura rostrata* has been reported from Oregon to western Mexico from 6-3348m. See additional comments on the *Cossura rostrata* voucher sheet.

Cossura sp A SCAMIT, 2025 §—*Cossura* sp A is similar to *Cossura pygodactylata* by having the insertion of the branchial filament anterior to the chaetal fascicle of chaetiger 3 and in having dorso– and ventrolateral thoracic stain patches that do not connect laterally behind the chaetal fascicle. The two differ in the number of thoracic chaetigers, 24-30 in *Cossura* sp A and 13-21 in *Cossura pygodactylata*. If specimens are complete, *Cossura pygodactylata* has 3 long anal cirri and 6-10 short pairs of short cirri on the pygidium. *Cossura* sp A lacks the additional short cirri. *Cossura* sp A is reported from 8-305 m.

Cossura sp LA2 Haggin, 2025 §—*Cossura* sp LA2 is similar to *Cossura pygodactylata* in having the insertion of the branchial filament anterior to the 3rd chaetal fascicle and thoracic lateral stain patches that do not connect laterally behind the chaetal fascicle. The two are differentiated by the longer thorax, 32-33 in *Cossura* sp LA2 and 13-21 thoracic chaetigers in *Cossura pygodactylata*. If specimens are complete, *Cossura pygodactylata* has 3 long anal cirri and 6-10 short pairs of short cirri on the pygidium. The pygidium of *Cossura* sp LA2 is currently unknown. *Cossura* sp LA2 is currently known only from bays and harbors, being report from 8m in LA/LB Harbor and 7m from Newport Bay.

Discussion:

The most recent diagnosis of the genus *Cossura* was given by Liñero-Arana & Díaz-Díaz (2010) and is provided below.

Diagnosis: Prostomium pointed or rounded anteriorly or with well developed anterior lateral horns. Peristomium subdivided by a dorsal transverse furrow. Single branchial filament arising middorsally between segments 2 and 5. Simple capillary bilimbate or hirsute and heavy sickle-shape setae.

Cossura pygodactylata was originally described from shallow-water in San Francisco Bay. The main characteristic that differentiates *Cossura pygodactylata* from other cossurids is the presence of many small papillae in addition to the 3 long anal cirri on the pygidium. Bachelet & Laubier (1994) examined specimens from Orcas Island, Washington, North and South Carolina, the English Channel and the Bay of Biscay, Western France while reviewing *Cossura soyeri* Laubier, 1964. Their results expanded the range of thoracic chaetigers from 17-19 to 13-21 (16-21 in adults) and expanded the range from California to also include Washington, the Carolinas and Europe and expanded

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Discussion cont.:

the depth to 100m. Bachelet & Laubier (1994) commented on the great range expansion of the thoracic chaetigers but still called their specimens *Cossura pygodactylata*. Hilbig (1996) synonymized *Cossura lepida* with *Cossura pygodactylata*, extending its distribution across the Pacific to Japan. *Cossura lepida* was described with only 10-12 thoracic chaetigers and would have fallen outside of the range of thoracic chaetigers described for *C. pygodactylata* if not for the expansion of characters made by Bachelet & Laubier (1994). Hilbig (1996) also reported *Cossura pygodactylata* from depths of 1263m and 2720m, greatly expanding the depth range of the organism. Zhadan *et al*. (2012) redescribed *Cossura pygodactylata* based on material from the Whites Sea region, nowhere near the type locality, and extended its distribution to include West Greenland, the Spanish Basque coast and the Whites Sea.

With the exception of Hilbig (1996), none of the other papers describe or use the MGS pattern to aid in the identification of the organisms, and it is unclear if Hilbig's description of MGS pattern for *Cossura pygodactylata* comes from type material or from the deep-water material collected during the MMS sampling. It is very likely that this species as reported is a species complex and reports of *Cossura pygodactylata* from outside of California, and possibly the deep-water specimens from the MMS sampling, belong to 2 or more cryptic species. As cossurids fragment easily, and the pygidial characteristics are the main distinguishing features of this organism, MGS should be used, in addition to the location of branchial insertion, as an aid to identification.

Lovell & Phillips (SCAMIT {2014}) once proposed that *Cossura* sp A might be *Cossura pygodactylata*. However, the differences in the number of thoracic chaetigers and the additional pygidial papillae present in *Cossura pygodactylata* show this not to be the case. *Cossura pygodactylata* should be considered a bay/shallow-water species and deep-water records should be re-evaluated.

Anterior fragments of less than 35 chaetigers, or even whole animals with inconclusive stain patterns should be identified as *Cossura* sp. The P-code assigned is a generic code assigned to all taxa within the genus.

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Version History:

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