LAOPHONTINA POSIDONIAE N.SP. FROM THE GULF OF CALVI (COPEPODA, HARPACTICOIDA, LAOPHONTIDAE)

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L. POSIDONIAE n.sp.
GOLFE DE CALVI
PRÉFÉRENCE DE SUBSTRAT
CLÉ D'ESPÈCES

RÉSUMÉ. — Cet article donne la description d'un Harpacticoïde interstitiel nouveau, *Laophontina posidoniae* n.sp. provenant du Golfe de Calvi (Corse). Cette espèce nouvelle se rapproche de *L. dubia* T. Scott et de *L. paradubia* Cottarelli. Le faciès d'herbier dans le golfe peut se subdiviser en trois types suivant le développement et la nature du substrat. *L. posidoniae* n.sp. se trouve dans les sédiments sablo-graveleux, contenant moins de 10 % de vase.

L. POSIDONIAE n. sp.
GULF OF CALVI
SUBSTRATE PREFERENCE
KEY

ABSTRACT. — *Laophontina posidoniae* n.sp. found in the *Posidonia* meadows of the Gulf of Calvi (Corsica) is described. *L. posidoniae* n.sp. is closely related to *L. dubia* T. Scott and *L. paradubia* Cottarelli. In the Gulf of Calvi *Posidonia* beds occur along the entire coast on a particular bottom facies. The new species, found in the sediments covered by *Posidonia oceanica*, occurs only in sediments containing less than 10 % mud.

INTRODUCTION

During a stay of Dr. K. Wouters (K.B.I.N.) at the « Station de Recherches sous-marines et océanographiques » (STARESO) at Calvi, a large collection of sediment samples from various depths were collected. In some samples, recovered by SCUBA diving by Dr. D. Bay head of the station, a new species, *Laophontina posidoniae* n. sp. was found. This paper deals with the description of this species, and shows the preference of the animal for a certain type of substrate.

SYSTEMATICS

Laophontina posidoniae spec. nov.

Type-locality : Gulf of Calvi (N.W. Corsica).
The animals occurred in sediments covered by *Posidonia oceanica* (Angiospermae).

Type-series : The holotype is a dissected female, mounted in lactophenol and labeled COP 1500. The slide with the dissected male is labeled : COP 1501. The other paratypes (3 ♀♀ and 3 ♂♂) are preserved in alcohol (COP 1502). The preparations and the preserved animals are deposited in the collections of the Recent Invertebrates Section of the « Koninklijk Instituut voor Natuurwetenschappen » in Brussels.

Etymology : The specific name, *posidoniae* refers to the typical habitat in which this species was found (*Posidonia* beds).

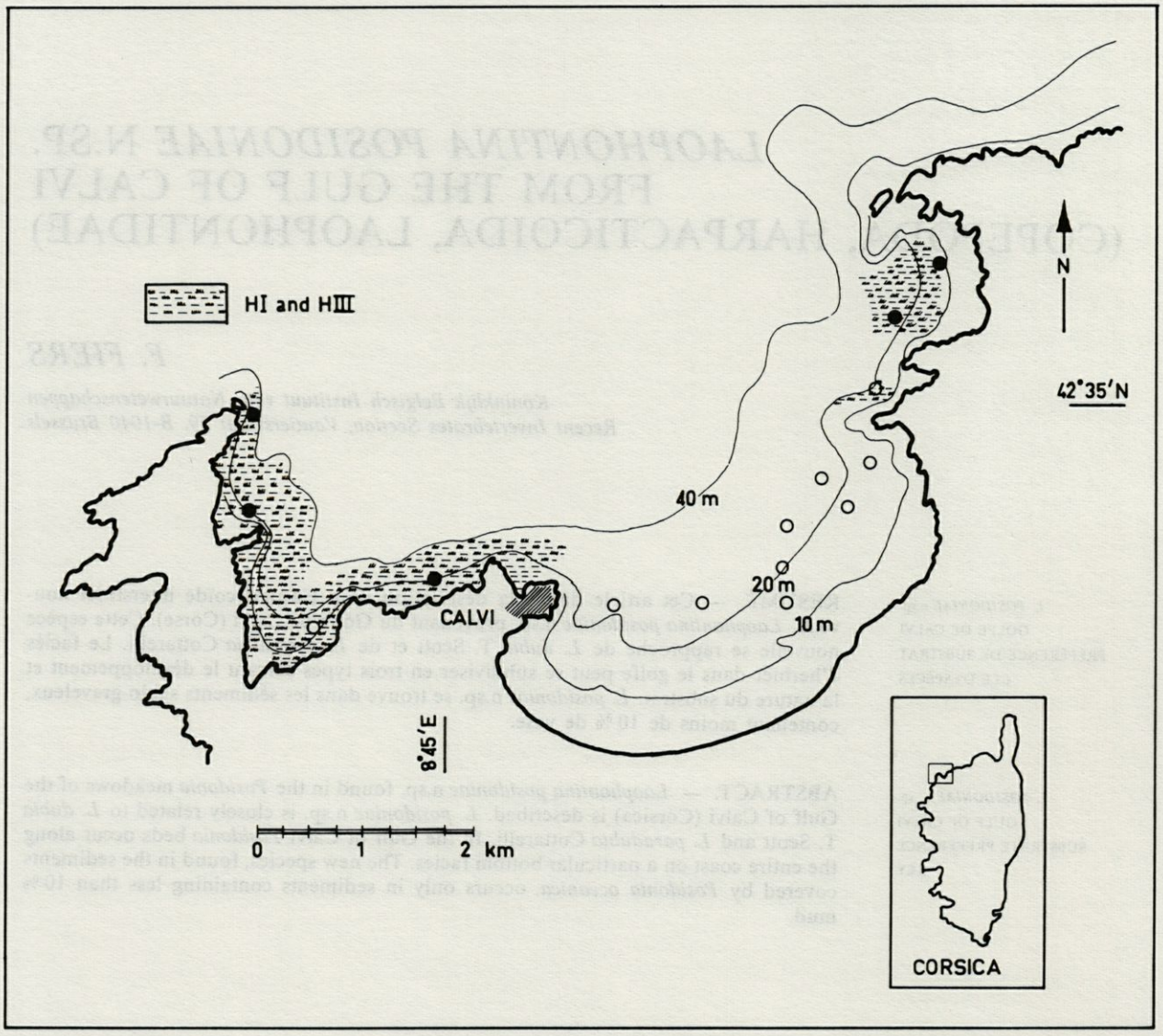

Fig. 1. — Map of the Gulf of Calvi. The black dots indicate the stations with *Laophontina posidoniae* n. sp. projection of the *Posidonia*-beds after Burhenne, 1981.

Description

Female (holotype): Habitus (Fig. 2a and b): length 540 µm; body with almost parallel-sided margins, only slightly tapering towards the anal segment; cephalothorax smooth, latero-ventral edge extended posteriorly; rostrum with a small protuberance; sternites invested by an irregular pattern of integumental teeth (Fig. 2e); posterior ridge of all the segments provided with an incised hyaline fringe; genital segments dorsally with a strong integumental band; ventral side of the penultimate segment with a single transversal row of slender hairs; anal segment without lateral teeth but with a densely denticulated operculum.

Furcal rami (Fig. 2c and d) about three times as long as broad, with parallel margins, and extended in a slightly curved dorsal hook; dorsal seta articulating with the ramus on a basal part; three external setae, implanted near the middle of the ramus; principal setae fused near their implantation; internal principal seta typically notched with a feathered distal part; internal distal seta short and smooth. Each ramus is densely covered with small hairs along their ventral and lateral surfaces. The dorsal sides of the rami are bare.

Antennule (Fig. 3a) six-segmented; first segment with a rounded posterior knob and a sharp anterior one; second segment extended in a long curved hook, pointing in posterior direction; aesthetasc implanted on the fourth segment and accompanied by two setae.

Antenna (Fig. 3b) : allobasis bearing an internal seta; external surface with small teeth; exopodite

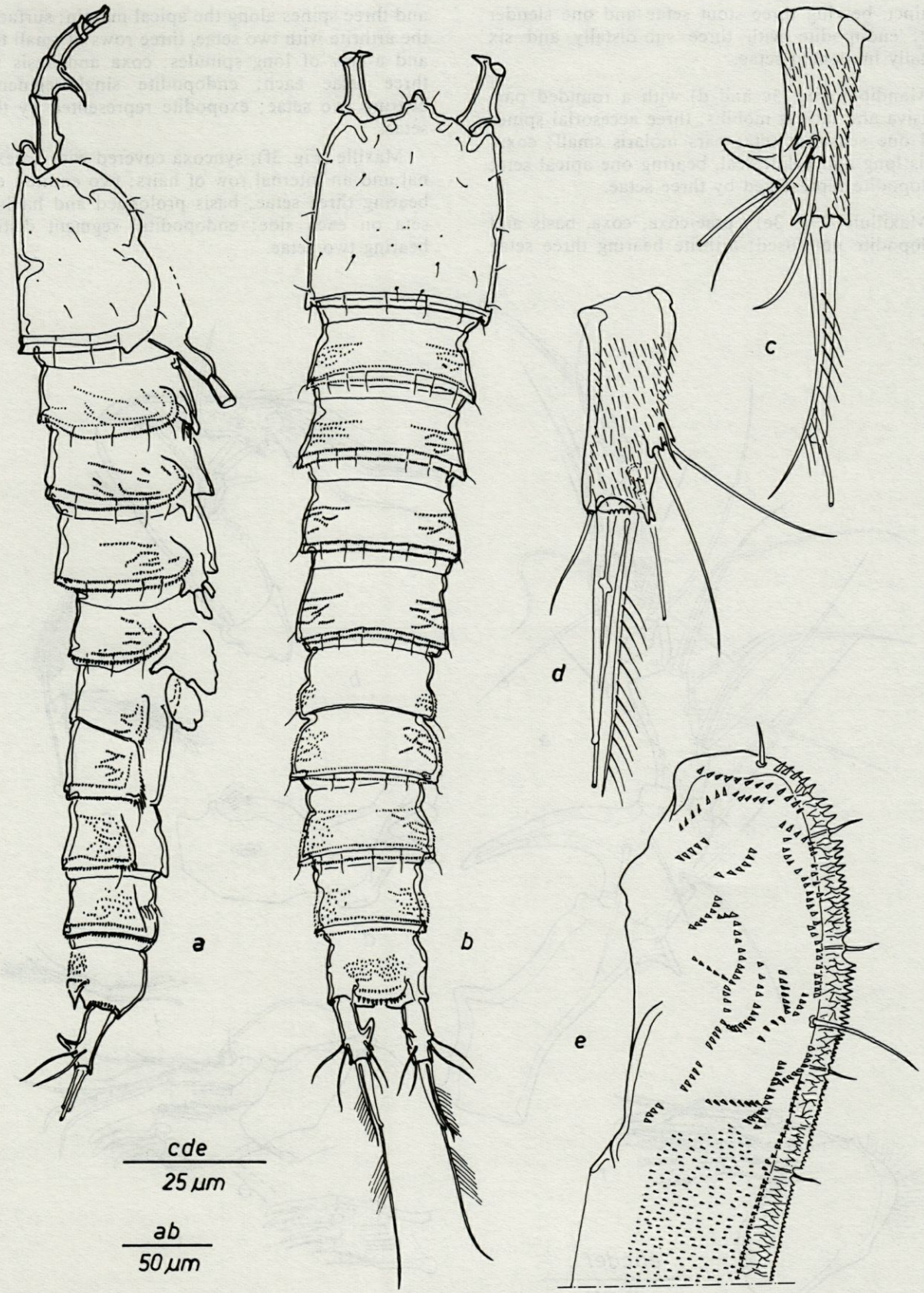

Fig. 2. — *Laophontina posidoniae* n. sp. a, habitus of the female lateral view; b, habitus of the female, dorsal view; c, furcal ramus in lateral (external) view; d, furcal ramus in ventral view; e, integumental structures on the second thoracic segment.

distinct, bearing three stout setae and one slender one; endopodite with three sub-distally and six distally implanted setae.

Mandible (Fig. 3c and d) with a rounded pars incisiva and lacinia mobilis; three accesorial spines and one sensorial seta; pars molaris small; coxa-basis long and cylindrical, bearing one apical seta; endopodite represented by three setae.

Maxillule (Fig. 3e) : prae-coxa, coxa, basis and endopodite not fused; arthrite bearing three setae and three spines along the apical margin; surface of the arthrite with two setae, three rows of small teeth and a row of long spinules; coxa and basis with three setae each; endopodite single-segmented, bearing two setae; exopodite represented by three setae.

Maxille (Fig. 3f); syncoxa covered with an external and an internal row of hairs; two endites, each bearing three setae; basis prolonged and having a seta on each side; endopodital segment distinct, bearing two setae.

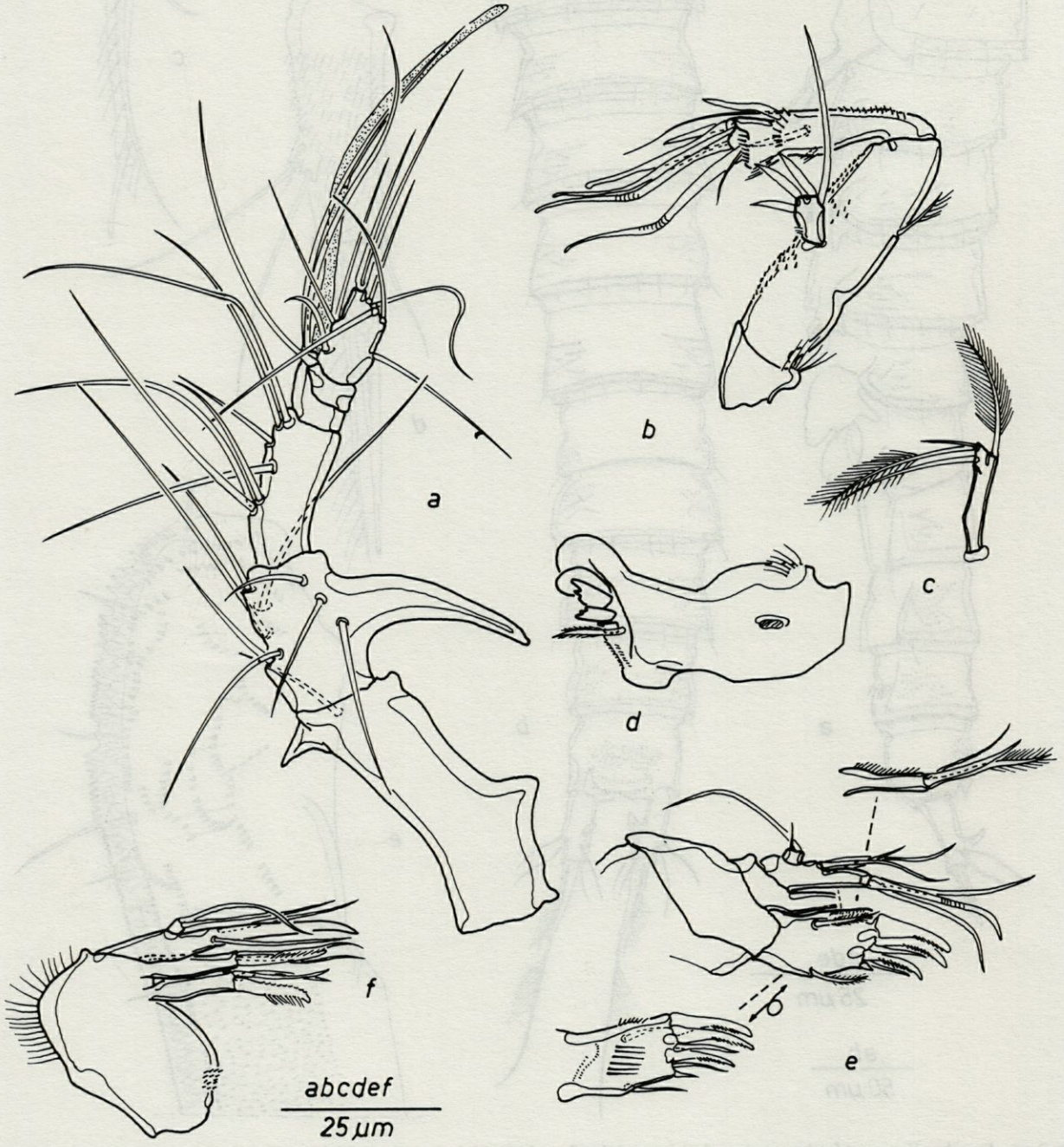

Fig. 3. — *Laophontina posidoniae* n. sp. a, antennule of the female; b, antenna; c, mandibular palp; d, mandible; e, maxillula; f, maxilla.

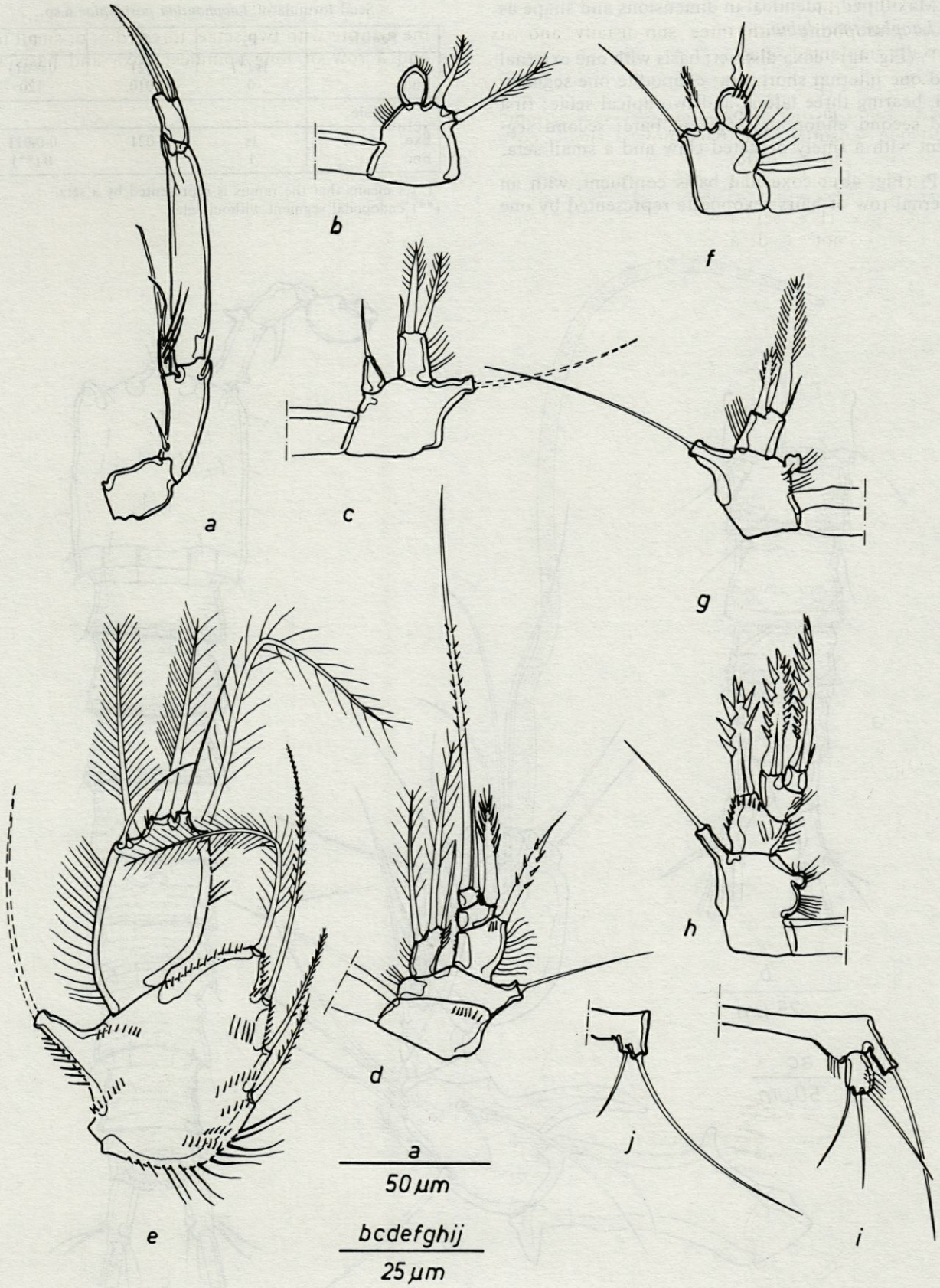

Fig. 4. — *Laophontina posidoniae* n. sp. a — e, first to fifth leg of the female; f — j, second to sixth leg of the male.

Maxilliped : identical in dimensions and shape as in *Laophontina dubia.*

P_1 (Fig. 4a) : coxa distinct; basis with one external and one internal short seta; exopodite one-segmented, bearing three lateral and two apical setae; first and second endopodal segment bare; second segment with a finely dentated claw and a small seta.

P_2 (Fig. 4b) : coxa and basis confluent, with an internal row of hairs; exopodite represented by one

Setal formula of *Laophontina posidoniae* n.sp.

Female	P_2	P_3	P_4
Exo	1s (*)	021	0-0-011
End	0	010	120
Male			
Exo	1s	021	0-0-011
End	1	—	0 (**)

(*) s means that the ramus is represented by a seta.
(**) endopodal segment without setae.

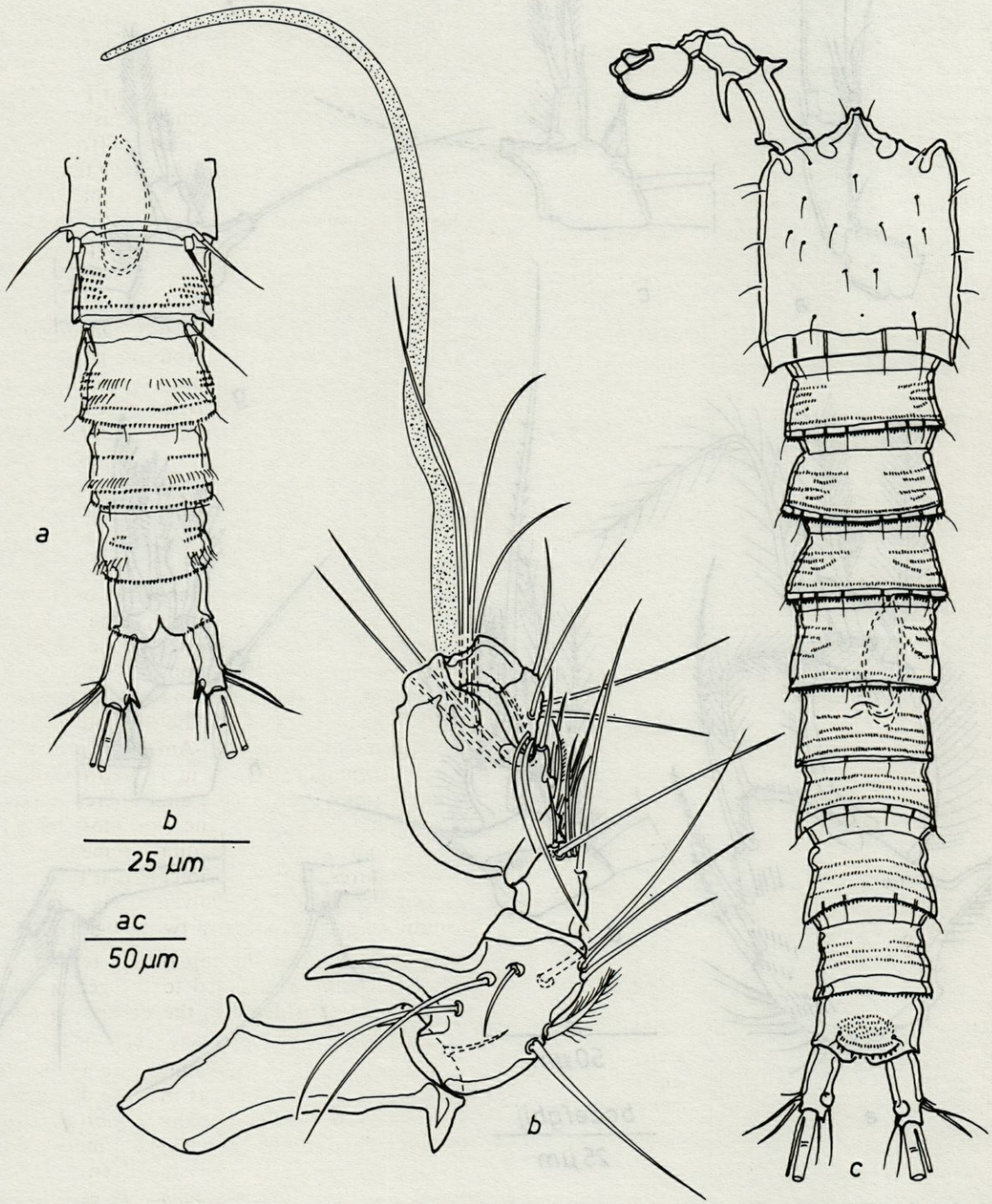

Fig. 5. — *Laophontina posidoniae* n. sp. a, abdomen of the male in ventral view; b, antennule of the male; c, habitus of the male in dorsal view.

feathered seta; endopodite single-segmented, without setae but carrying some hairs.

P_3 (Fig. 4c) : coxa and basis confluent; exopodite single-segmented with two strong feathered setae and one small smooth seta; endopodite single-segmented bearing one smooth apical seta.

P_4 (Fig. 4d) : basis and coxa not fused; exopodite three-segmented; first and second segment each with one strong external spine; last segment bearing one short external and one long internal seta; endopodite single-segmented with three, sub-distally and distally implanted setae.

P_5 (Fig. 4e) : surface of the baseoendopodite covered with several rows of small teeth; internal margin of the baseoendopodite and the external margin of the exopodite, with long hairs; exopodital surface smooth; baseoendopodite having four setae, exopodite bearing five setae.

Male (paratype) : length 500 μm; with parallel-sided margins; dorsal integumental structures identical to the female; abdominal segments ventrally with transversal rows of slender hairs; spermatophore 67 μm long.

Antennule (Fig. 5b) six-segmented; first and second segment as in the female; third to sixth segment geniculating; aesthetasc implanted on the fourth segment and measures 150 μm.

Antenna, mandible, maxillule, maxille, maxilliped and P_1 as in the female.

P_2 (Fig. 4f) : coxa and basis confluent; exopodite represented by a single seta; endopodite distinct, single-segmented bearing a smooth seta.

P_3 (Fig. 4g); coxa and basis fused; exopodite as in the female but the setae are more strongly armed; endopodite reduced and represented by a small rounded knob.

P_4 (Fig. 4b) : coxa and basis fused; exopodite three-segmented; external setae more marked than in the female; apical internal seta much shorter than in the female; endopodite reduced and represented by a rounded knob.

P_5 (Fig. 4i) : exopodite distinct, bearing three setae; baseoendopodite reduced, without setae.

P_6 (Fig. 4j) : represented as two setae, implanted on a small socle.

Diagnosis

A species of the genus *Laophontina;* anal segment and anal operculum without large extensions; female with a distinct endopodital segment in the P_2; Male with well developed sexual dimorphism in the P_2, P_3 and P_4.

DISCUSSION

Within the genus, *Laophontina posidoniae* n. sp. resembles most to *L. dubia* Normann and Scott, 1905 (Geddes, 1982) and *L. acantha* Noodt, 1955 (Wells and Clark, 1965). In common to those three species is the habitus, the anal segment, the furcal rami, the denticulated anal operculum and the setation of the P_5. *L. posidoniae* n.sp. differs from them in the segmentation of the legs and the presence of the sexual dimorphism in the male. In this species the male endopodital segment of the P_2 bears a seta, in contrast with the bare female endopodital segment. Furthermore, the endopodites of the P_3 and P_4 are reduced while the exopodites are conspiciously stronger armed in the male. These features differ remarkably from *L. dubia* and *L. acantha* in which the exopodites of the P_3 and P_4 show almost no sexual differences. This dimorphism also contrasts with all the other species of the genus *Laophontina,* except for *L. triarticulata* Coull and Zo, 1980, having comparable modifications in the male.

If *L. distincta* Wells, 1967 and *Laophontina* spec. Mielke, 1982 are excluded from the genus *Laophontina,* two geographical groups of species can be demonstrated. The Mediterrean-Boreal group comprises *L. dubia, L. acantha L. paradubia* Cottarelli, 1983, *L. noodti* Kunz, 1983 and *L. posidoniae n.sp.,* and the Amphi-American group comprises *L. triarticulata* (syn.? *Galapagolaophonte pacifica* Mielke, 1981) *L. variabilis* Coull and Zo, 1980 and *L. reducta* Coull and Zo, 1980.

In both groups the general shape of the habitus, the furcal rami, the antennule and the P_1 are almost identical. However, the species of the Mediterrean-Boreal group show a smooth of finely teethed integument, a denticulated anal operculum and two uniquely smooth setae on the exopodite of the P_5. The species of the Amphi-American group have a pitted integument (at least in *L. triarticulata,* strong dentiform processes on the anal operculum and the anal segment, and only one (the most apical one) smooth seta on the exopodital segment of the P_5. These features, probably indicate that the species of the genus *Laophontina* evolved along two different evolution lines, resulting in two geographic groups.

As mentioned at the top of the reasoning, two species, actually designated to the genus *Laophontina,* are not considered in the discussion here.

Laophontina distincta Wells, 1967 shows up such particular features in the habitus, the antennule and the segmentation of the legs that the designation to the genus *Laophontina* remains doubtful. *Laophontina* spec. Mielke, 1982 has a sexual modification in the legs which hitherto only has been found in the monotypic genus *Mexicolaophonte,* established by Cottarelli for *Mexicolaophonte arganoi* in 1977.

Habitat

The Gulf of Calvi (Fig. 1) is situated on the north-western coast of Corsica. The largest width is about 6.5 km and the maximum depth is close to 100 m. The gulf is divided by a tongue of land into two smaller bays : the Bay of Revellata in the western part and the Bay of Calvi in the eastern part.

In the Bay of Revellata *Posidonia*-beds occur from the shoreline to about 40 m of depth and in the Bay of Calvi from 10 m to 30 m of depth.

The textural classes of the sediments, on which the *Posidonia*-beds grow, are different in these two parts of the gulf (Burhenne, 1981). *Laophontina posidoniae* n.sp., a typical interstitial species, seems to prefer a certain type of substrate. Although not abundant, *L. posidoniae* occurs in the sediments of the sand-gravel class only. This sediment contains 5 to 30 % gravel and more than 90 % sand. Less than 10 % of the sediment particles are smaller than 0.062 mm in diameter (HI and HIII facies in Burhenne, 1981). In the other part of the gulf, mainly the Bay of Calvi (except for some smaller areas in the eastern part), the mud content becomes too high (> 50 %). As indicated by the open circles in Figure 1, *L. posidoniae* was not found here. The interstitial species are replaced by burrowing animals of the families Ectinosomatidae, Diosaccidae and Tetragonicepsidae.

Key to the species of the genus *Laophontina*.

1. First segment of the antennule about two times as long as the second one; first segment with an inner and outer process; apical furcal seta modified 2

   First segment of the antennule as long as the second one; first segment without inner or outer processes; furcal seta pedunculate .... *L. distincta* Wells

2. Anal operculum with a median large spiniform process; posterior edges of the anal area extended, forming processes; most apical seta of the P_5 of the female smooth 3

   Anal operculum sealed with spinules along the posterior margin; edges of the anal area smooth of provided with small spinules; most apical and most external seta of the P_5 of the female smooth 5

3. Endopodite of the P_3 and the P_4 represented as a seta; baseoendopodite of the P_5 of the female with three setae ..... *L. reducta* Coull and Zo

   Endopodite of the P_4 single-segmented; endopodite of the P_3 one- or two-segmented; baseoendopodite of the female P_5 with four setae 4

4. Exopodite of the P_3 three-segmented; endopodite of the P_2 two-segmented; endopodite of P_3 and P_4 of the male strongly modified *L. triarticulata* Coull and Zo

   Exopodite of the P_3 two-segmented; endopodite of the P_2 single-segmented; male unknown..... *L. variabilis* Coull and Zo

5. Baseoendopodite of the P_5 in the female with three setae 6

   Baseoendopodite of the P_5 in the female with four setae..... 7

6. Endopodite of the P_3 present, without setae; endopodite of the P_4 with three setae; male unknown..... *L. noodti* Kunz

   Endopodite of the P_3 absent; endopodite of the P_4 with two setae; endopodite of the P_4 of the male absent..... *L. acantha* Noodt

7. Endopodite of the P_3 of the female absent; rami of the P_2 vestigial and represented as setae..... 8

   Endopodite of the P_3 of the female single-segmented; exopodite of the P_2 vestigial, endopodite single-segmented with one seta in the male and without any in the female *L. posidoniae* n.sp.

8. Outermost seta of the exopodite of the P_5 of the female strongly developed; exopodite of the P_3 with one strong and armed spine; endopodal claw of the P_1 almost as long as the first endopodal segment ..... *L. paradubia* Cottarelli

   Outermost seta of the exopodite of the P_5 very slender; exopodite of the P_3 with two stong spines only; endopodal claw of the P_1 much shorter as the first endopodal segment ..... *L. dubia* Norman and T. Scott

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