

OBSERVATIONS ON THE GENUS *SALENTINELLA*
(CRUSTACEA, AMPHIPODA)
WITH DESCRIPTION OF *SALENTINELLA FORMENTERAE* N. SP.

by

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SUMMARY

Samples from wells in the coastal region of the département Var (France), from Mallorca and from a cave in Formentera (Balearic islands) contained among other amphipods species belonging to the genus *Salentinella* Ruffo; the status of the specimens from Var and from Mallorca is discussed. *Salentinella formenterae* n. sp. is described from Formentera and some remarks on the discriminating features used within the genus are given.

RÉSUMÉ

Parmi d'autres Amphipodes, des échantillons prélevés dans des puits de la zone côtière du département Var (France) et de Majorque, ainsi que dans une grotte de Formentera (Baléares), contenaient aussi des représentants du genre *Salentinella* Ruffo; le statut des exemplaires de Majorque et du département Var est discuté. On décrit *Salentinella formenterae* n. sp. de l'île Formentera, et on fait des considérations sur les caractères distinctifs utilisés à l'intérieur du genre.

INTRODUCTION

The genus *Salentinella* comprises ten (sub)-species and has been treated by several taxonomists. Karaman (1979) solved many of the taxonomic problems by regarding four (sub)-species as junior synonyms of *Salentinella angelieri* Delamare Deboutteville & Ruffo, 1952, a widely variable species.

His results, together with my own observations, made me consider *S. juberthiae* Coineau, 1968, a junior synonym of *S. angelieri* as well. Likewise, I question the status of *S. lescherae* Coineau, 1968, as a valid taxon.

MATERIAL EXAMINED

Sample I: France, dépt. Var: Bandol, well at left bank of Grand Vallat, close to the shore, 10-I-1980, leg. J. H. Stock, 2 specimens.

Sample II: France, dépt. Var: two wells along road D559b, near hamlet Aires, 1.1 km N. of Bandol, 29-II-1979, leg. J. H. Stock, 7 specimens.

Sample III: France, dépt. Var: well along road D559b, near Bandol, 2 km N. of coast, 29-II-1979, leg. J. H. Stock, 3 specimens.

Sample IV: France, dépt. Var: well E. of hamlet Fontanieu, N. of Bandol, 12-I-1980, leg. J. H. Stock, 2 specimens.

Sample V: France, dépt. Var: Fontaine de Tournon, N.N.W. of Plan de Castellet, among gravel in small stream, 1-I-1981, leg. J. H. Stock, 1 specimen.

Sample VI: Mallorca, Porto Cristo, well near Bar El Avion, salinity 4‰, 9-V-1983, leg. J. H. Stock, 2 specimens.

Sample VII: Mallorca, Porto Cristo, noria (kind of well) of S'Hort d'en Servera, salinity 6‰, 9-V-1983, leg. J. H. Stock, 11 specimens.

Sample VIII: Mallorca, well near crossing of roads C717 and C715, salinity 5.5‰, 7-V-1983, leg. J. H. Stock, 1 specimen.

Sample IX: Mallorca, Santa Ponsa, 800 m N. of village centre, W. of connecting road between road C719 and Santa Ponsa, 29-XII-1977, leg. J. H. Stock, 1 specimen.

Sample X: Formentera, Coves de Sa Pedrera, 17-VIII-1982, leg. J. A. Alcover, 3 specimens.

DESCRIPTIVE PART

Salentinella formenterae n. sp.

(Figs. 1-2)

Material. — Formentera, sample X (see above): 1 holotype (ZMA Amph. 107.756 A), 2 paratypes (ZMA Amph. 107.756 B).

Description of holotype. —

Body length 2.91 mm.

Prosome: Head with rounded lateral lobes (fig. 1A), eyes absent. Peduncle segments of first antenna (fig. 1B) diminishing in length

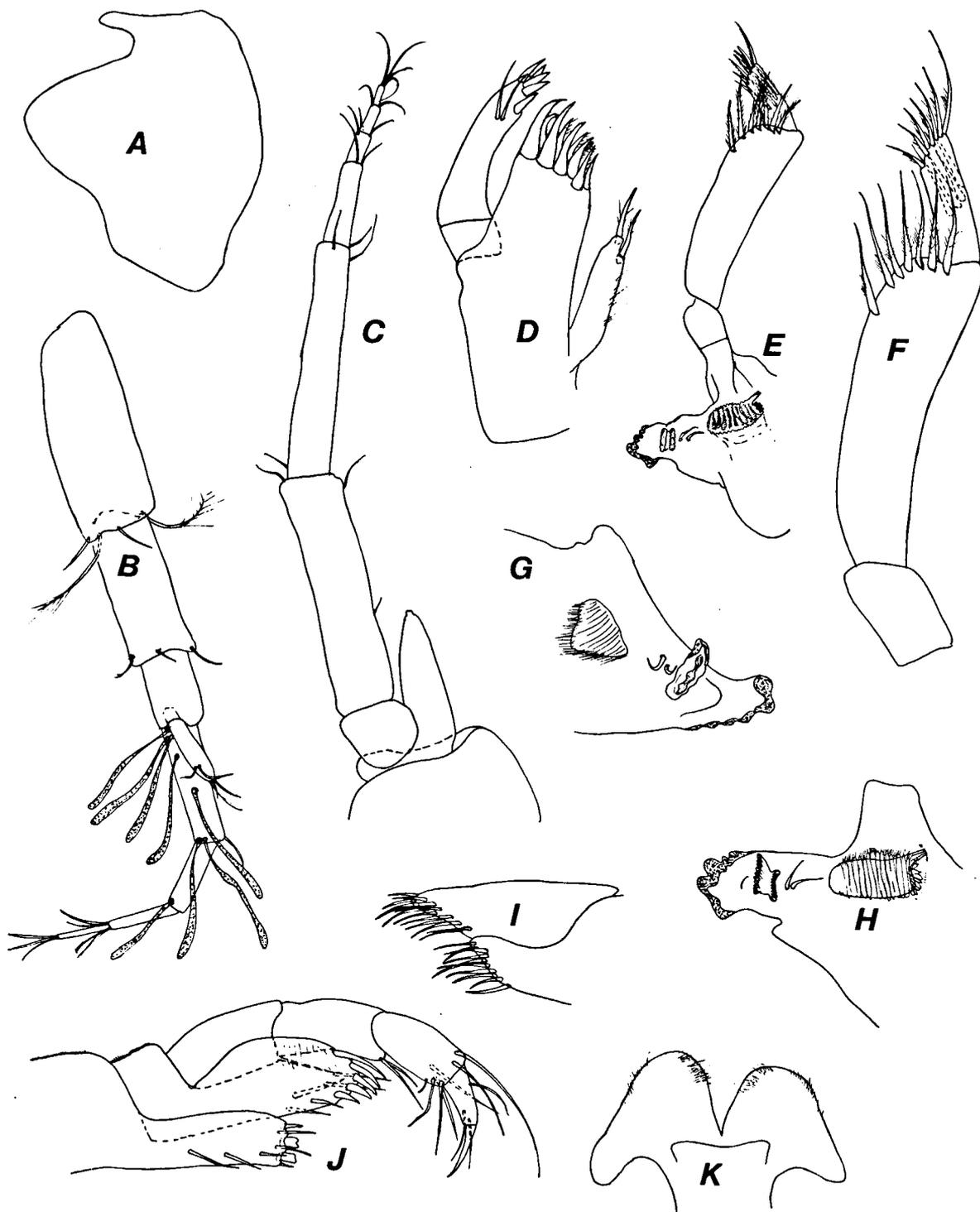


Fig. 1. *Salentinella formenterae* n. sp.: A, head (scale II); B, antennule (II); C, antenna (II); D, maxilla I (III); E, right mandible (II); F, palp of right mandible (III); G, left mandible (III); H, right mandible (palp and distal part of molar seta omitted); I, maxilla 2 (III); J, maxilliped (III); K, lower lip (II). All from sample X.

from first to third, flagellum consisting of four segments. First segment of flagellum nearly twice as long as the other segments, provided with seven aesthetascs. Accessory flagellum uniarticulate, about half the length of the first flagellum segment.

Second antenna with strongly developed antennal gland cone and four-segmented flagellum. Total length subequal to first antenna (fig. 1C).

Upper lip without special features, lower lip (fig. 1K) without inner lobes.

Right mandible (fig. 1E, H) with seta at base of pars molaris. Lacinia mobilis consisting of two lobes provided with small denticles. Palp (fig. 1F) three-segmented, second segment with seven ventrodistal feathered setae. Third segment truncate, with four C-setae and seven distal E-setae, all feathered. Pars molaris of left mandible (fig. 1G) without seta, lacinia mobilis with few strong teeth.

Inner lobe of first maxilla (fig. 1D) with two feathered setae, outer lobe with nine spines, some of which have spinules on their inner margin. Palp two-segmented with five apical spines and two lateral setae.

Inner lobe of second maxilla (fig. 1I) with nine setae, outer lobe with twelve setae, all curved.

Maxilliped (fig. 1J) with two broad apical teeth on inner lobe, outer lobe with five spines, palp four-segmented, segments subequal in length.

Pereiopod 1 (fig. 2A) with broad basis. Merus, carpus and propodus with a group of setules on posterior margin. Palm of propodus with six setae, four of which feathered. Propodus not strongly expanded at its base.

Carpus of pereiopod 2 (fig. 2B) with five groups of setae at posterior margin, propodus with four groups at palm, five setae at anterior margin of propodus.

Pereiopods 3 and 4 subequal (fig. 2C), propodus with four setae on posterior margin.

Basis of pereiopod 5 (fig. 2D) with broad posterodistal lobe and set with two spines anterodistally. Posterior and anterior margins set with small setae.

Pereiopod 6 (fig. 2E) with four spines at anterior margin and eight setules on posterior margin of basis. Posterodistal lobe not reaching beyond ischium.

Pereiopod 7 (fig. 2F): basis with very broad posterodistal lobe, reaching well beyond ischium. Propodus with three groups of spines.

Pleopods (fig. 2H) with two bifid feathered setae (fig. 2I) on inner ramus (see Coineau, 1963), peduncle with two retinacula.

Uropod 1 (fig. 2K) slender, rami with subapical group of spines, inner ramus with two marginal spines.

Uropod 2 (fig. 2L) short, about as long as peduncle of first uropod.

Inner ramus of uropod 3 about 50% of first segment of outer ramus. Second segment with apical notch (fig. 2J).

Telson (fig. 2G) long, incised $\frac{2}{3}$ of its total length, lobes longer than broad, apical incisions provided with small spine. Two dorsal setae are found on each lobe at $\frac{1}{4}$ of total length from apex.

Remarks. —

This new species is closely related to *Salentinella angelieri* Delamare Deboutteville & Ruffo, 1952 (see Ruffo & Delamare Deboutteville, 1952, and Delamare Deboutteville & Ruffo, 1954). It differs from it by its larger size (which is not an unusual phenomenon for cave inhabitants as compared with other stygobionts), by the setation and structure of the mandibular palp, and by the structure and setation of carpus and propodus of pereiopod 2.

REMARKS ON DISCRIMINATING FEATURES WITHIN *SALENTINELLA*

The status of *Salentinella juberthieae* Coineau, 1968 and *S. lescherae* Coineau, 1968. —

All specimens found in samples I to IX from Var and Mallorca agree very well with the diagnosis of *S. angelieri* Delamare Deboutteville & Ruffo, 1952, except for the flagellum of both antennae in some specimens (figs. 3A-H, 4A-B,

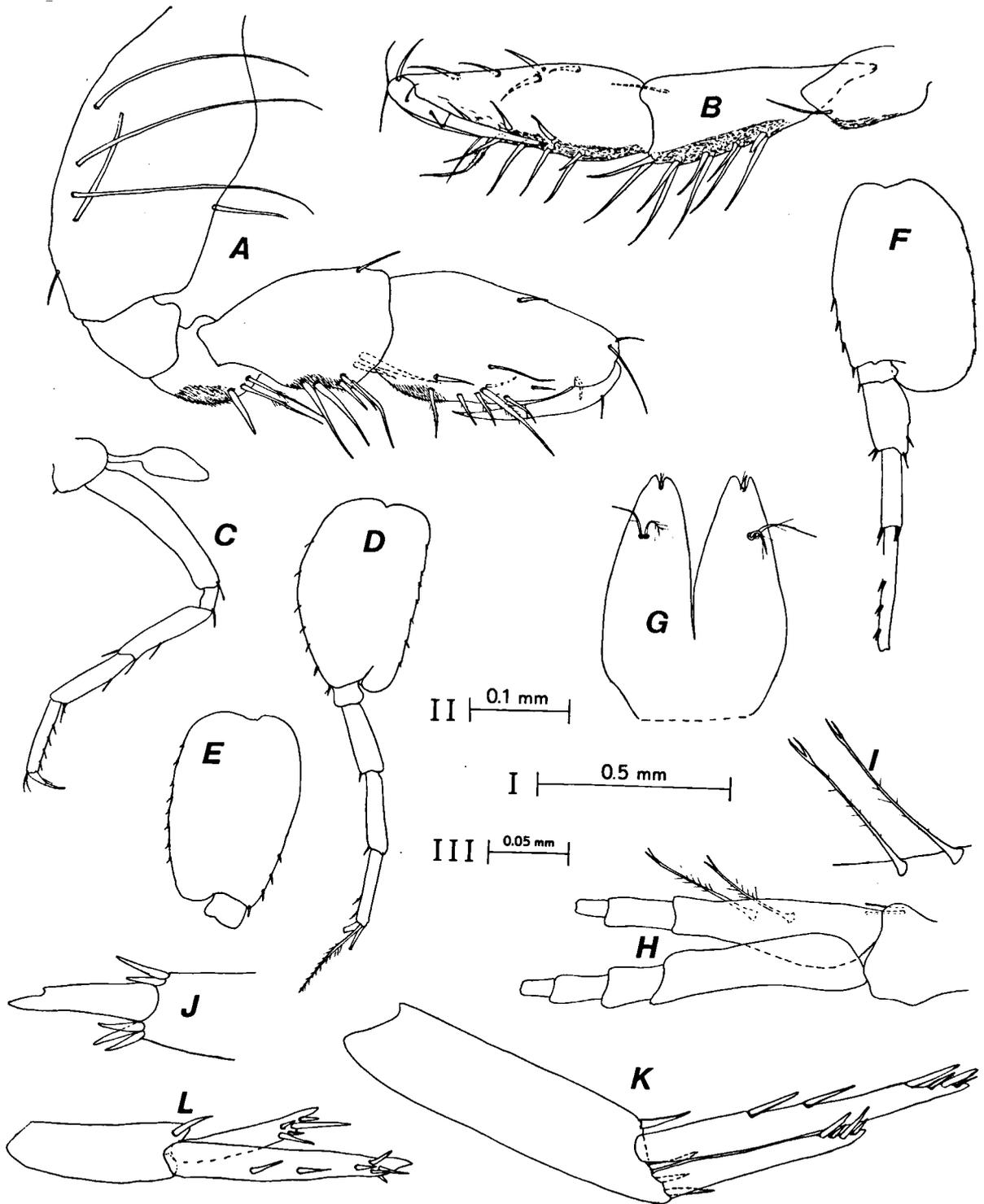


Fig. 2. *Salentinella formenterae* n. sp.: A, pereiopod 1 (scale II); B, distal part of pereiopod 2 (II); C, pereiopod 4 (I); D, pereiopod 5 (I); E, basis of pereiopod 6 (I); F, pereiopod 7 (I); G, telson (II); H, pleopod 1 without setae (II); I, bifid setae on inner ramus of pleopods, enlarged (III); J, apex of uropod 3 (III); K, uropod 1 (II); L, uropod 2 (II). All from sample X.

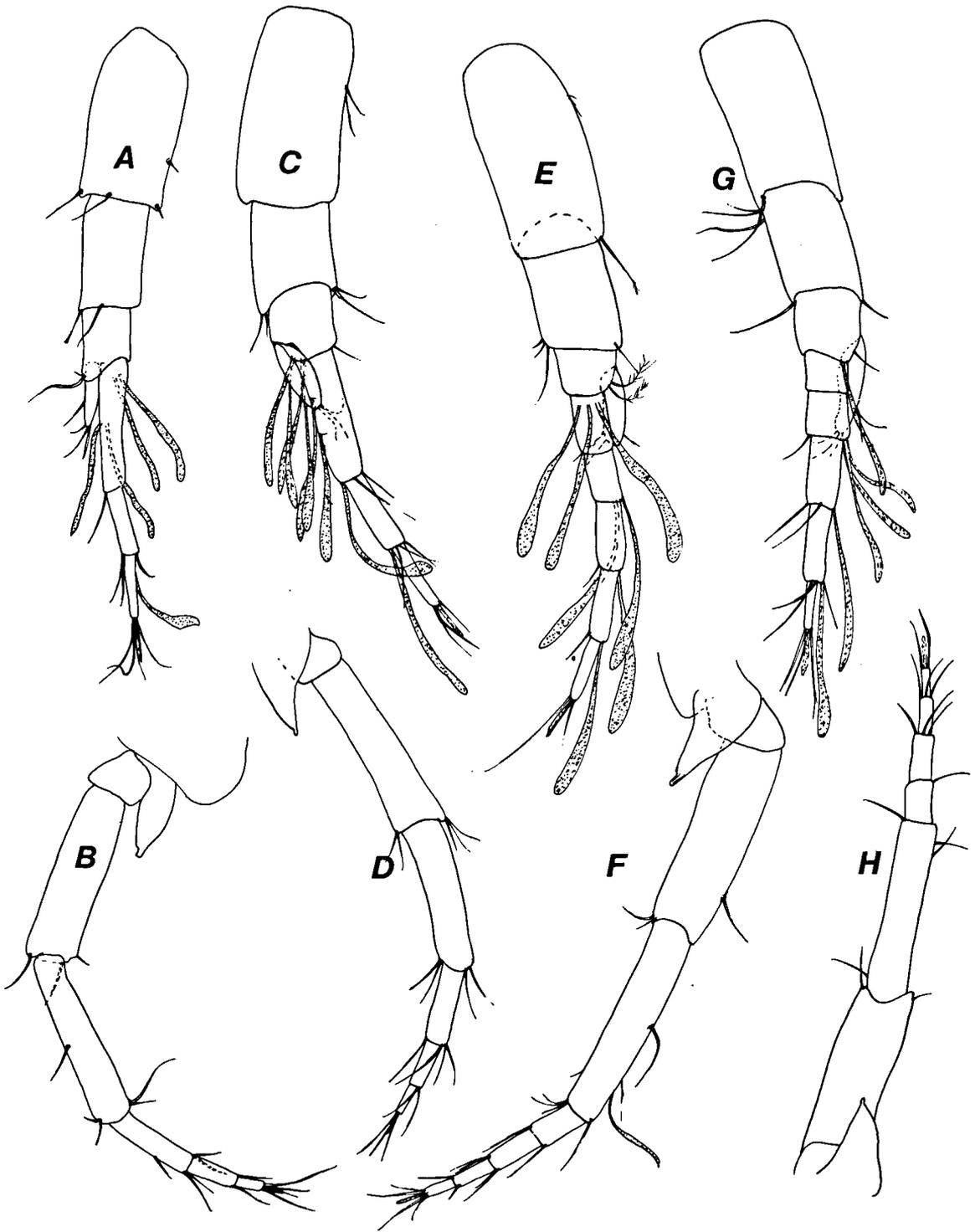


Fig. 3. *Salentinella angelierii* Delamare Deboutteville & Ruffo, 1952: A, B, antenna 1 + 2 (specimen of 1.4 mm); C, D, antenna 1 + 2 (specimen of 1.95 mm); E, F, antenna 1 + 2 (specimen of 1.9 mm); G, H, antenna 1 + 2 (specimen of 1.7 mm). All specimens from sample II, all scale III.

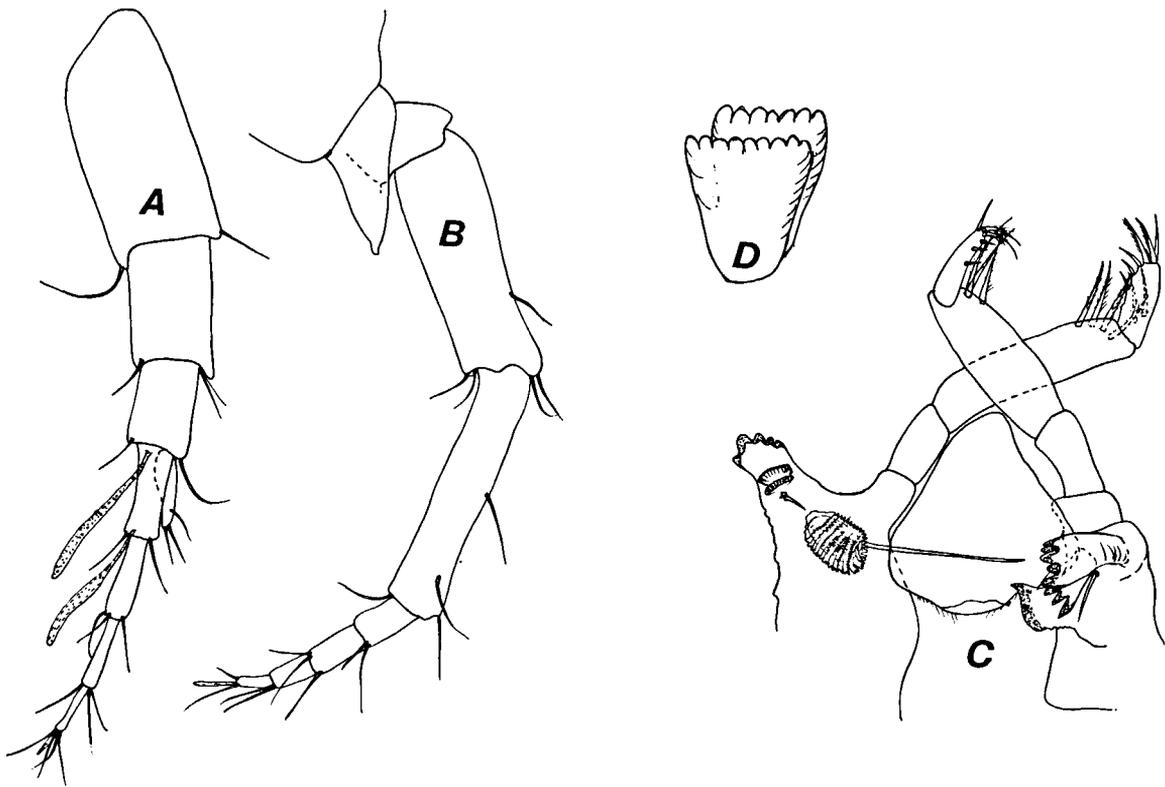


Fig. 4. *Salentinella angelieri* Delamare Deboutteville & Ruffo, 1952: A, B, antenna 1 + 2 from sample IV (scale III); C, mandibles with upper lip from sample VII (III); D, free-hand sketch of right lacinia mobilis, from sample VII.

table I), which varies from 3- to 5-segmented. In case of a 3-segmented flagellum, the first flagellum segment always is about twice the length of the following segments.

TABLE I

Number of flagellar segments in *S. angelieri* specimens from different samples.

Sample no.	Number of specimens	Number of flagellar segments	
		antennule	antenna
I	1	4	4
II	5	3	3
II	2	5	4
III	2	3	3
III	1	-	4
IV	1	3	3
IV	1	4	4
V	1	5	4

The segmentation of the flagellum is the result of the division of flagellar segments during growth (Sexton, 1924; Sutcliffe & Carrick, 1981). Coineau (1968) shows a body size-dependent number of flagellar segments in *S. major* Barbé, 1965. In the present study the segmentation did not appear to be dependent on the size of the specimens.

Ruffo (1953) however, presumes that in this genus the long proximal flagellar segment is the result of fusion of the first two segments in older specimens. The way the aesthetascs are implanted on the first segments possibly indicates the place where fusion has taken place or division will take place: in this genus the aesthetascs always seem to be implanted close to the articulation of the flagellar segments. In the case of fusion it might even be possible that three segments are fused (fig. 3C). This would ex-

plain the differences found in some of the samples. Since no other morphological differences between specimens with a 3-segmented flagellum and with a 5-segmented flagellum in A1 from the same station have been found, I consider the segmentation of the flagellum of both antennae variable, and therefore not valid for taxonomic use within the genus *Salentinella*.

The segmentation, as well as the number of aesthetascs, might be subject to sexual dimorphism, growth and physical circumstances. Coineau (1968) based her description of *S. juberthieae* mainly on the flagellar segmentation. She also used the structure of the propodus of the male gnathopods, which is, in my opinion, subject to variability as well. The way the propodus is drawn is dependent on the way the propodus is mounted on slides and therefore it is hard to use this feature for comparative purposes. Thus, *S. juberthieae* must be considered a junior synonym of *S. angelieri*.

Coineau (1968) also described *S. lescherae* as a species very closely related to *S. major* Barbé, 1965, with the flagellar segmentation as major discriminating feature. The other differences are, in my opinion, due to individual or local variations, which leads me to the conclusion that *S. lescherae* must be a junior synonym of *S. major*.

On the mouthparts of *Salentinella*. —

Barbé (1963, 1965) for the first time noticed an asymmetry in the lacinia mobilis of the left and right mandibles in this genus. For *S. prognatha* Barbé, 1963, he described the right lacinia as "bi-lobée". In all specimens from the present study I found such a bilobed lacinia mobilis as well (figs. 4C, D); the two lobes are provided with small denticles.

Since I did not see material of the other species I can only assume that this asymmetry is common within the genus *Salentinella*, like in

many other gammarids (except for *S. major* Barbé, 1965, where according to Barbé's drawings the lacinia mobilis seems very much reduced).

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