

name. The type species of *Lekanesphaera* is *Europosphaera* (*Lekanesphaera*) *excavatum* Verhoeff, 1943. As shown below this name is a junior synonym of *Lekanesphaera monodi* (Arcangeli, 1934).

Key to the European, Mediterranean and NW. African species of
Lekanesphaera Verhoeff, 1943

1. Propodus of pereopod I without distal setae next to rostro-distal spine (e.g. fig. 17e) 2
- Propodus of pereopod I with few to many bare distal setae next to rostro-distal spine (e.g. fig. 15e) 7
2. Dorsal surface of pleotelson with two longitudinal rows of more or less prominent tubercles, one on either side of midline. External margin of exopod of uropod smooth (if external margin of exopod of uropod with prominent teeth, then go to 8) 3
- Dorsal surface of pleotelson smooth. External margin of exopod of uropod smooth or provided with 2(-3) small, but prominent, teeth (e.g. fig. 8a) 4
3. Exopod of pleopod III without any sign of articulation. In older male specimens distal half of lateral margin of pleotelson raised, giving it a spoon-like appearance. Marine *terceirae*
- Exopod of pleopod III with rudimental articulation (e.g. fig. 8e). Distal half of lateral margin of pleotelson not ridge-like or raised. Found in brackish water *hookeri*
4. Uropodal rami clearly reaching beyond posterior margin of pleotelson, not inwardly bent. Exopod of pleopod III with rudimental articulation. Adult specimens reaching length up to 10-14 mm 5
- Uropodal rami in male inwardly bent, more than in female, reaching to or little beyond posterior margin of pleotelson. Exopod of pleopod III without rudimental articulation. Adult specimens reaching length up to 4-6 mm 6
5. Uropodal rami cylindrical, ending in sharp point. Exopod with 2(-3) small teeth *ephippium*
- Uropodal rami flat, ending bluntly. Exopod smooth *glabella*
6. Distal part of pleotelson slightly upcurved. Exopod of uropod in male truncate, in female rounded. External margin smooth in both sexes. Uropodal rami reaching posterior margin of pleotelson. Usually found buried 1-2 cm deep in sand *teissieri*
- Distal part of pleotelson straight, not upcurved. Exopod of uropod in male truncate, smooth. In female more rounded, more or less crenulated

- at external margin. Uropodal rami reaching little beyond posterior margin of pleotelson. Usually found buried 10-15 cm deep in sand . . .
 *weilli*
7. Setae on ischium and merus of pereopod I long, sparsely plumose, ending in long, smooth spine (about 1/3 of total length of seta) (fig. 1b). Uropodal rami reaching far beyond posterior margin of pleotelson. External margin of exopod of uropod with prominent teeth 8
- Setae on ischium and merus of pereopod I long and smooth (fig. 1c). Uropodal rami not reaching, or reaching beyond posterior margin of pleotelson. External margin of exopod with or without prominent teeth 9
8. Propodus of pereopod I with 5-10 setae inserted distally in transverse row next to rostro-distal spine. Dorsal surface of pleotelson with four ridges: two long, in medium area and parallel to midline, and two short, in rostro-lateral part of pleotelson. In lateral view pleotelson subapically concave, but not apically upcurved *marginata*
- Propodus of pereopod I with (0-)1-2 setae inserted distally in semi-transverse "row" next to rostro-distal spine. Dorsal surface of pleotelson sometimes bearing two ridges of tubercles, parallel to midline; sometimes granulated; or sometimes smooth. In lateral view pleotelson subapically concave, with lateral margins in distal half ridge-like, raised (in older specimens) *monodi*
9. Propodus of pereopod I with 2-3 setae inserted distally in transverse row next to rostro-distal spine. Flagellum articles of antenna with fringe of few short setae at distal interior angle. Seta 1.5 times length of article. Palp articles II-IV of maxilliped with pronounced lobes: ratio of width of third segment to that of protruding internal margin being 2.8 to 1 (e.g. fig. 16c) 10
- Propodus of pereopod I with more than three setae inserted distally in a transverse row next to rostro-distal spine. Flagellum articles of antenna with fringe of long setae, 2 to 3 times length of article. Palp articles II-IV of maxilliped with less pronounced lobes: ratio of width of third segment to that of protruding internal margin being 4 to 1 (e.g. fig. 15c) . . 11
10. Dorsal surface of pleotelson slightly granular. External margin of exopod of uropod smooth. Uropodal rami reaching beyond posterior margin of pleotelson. Exopod of pleopod III with rudimental articulation
 *rugicauda*
- Dorsal surface of pleotelson smooth. External margin of exopod of uropod with 2-3 small, rounded teeth in male. In females this margin crenulated. Uropodal rami short, not reaching posterior margin of

- pleotelson. Exopod of pleopod III without any articulation *bocqueti*
11. Propodus of pereopod I with 4-8 setae inserted distally in transverse row next to rostro-distal spine. Dorsal surface of pleotelson smooth. In lateral view pleotelson subapically concave. External margin of uropod with 6-7 teeth *levii*
- Propodus of pereopod I with 9-15 setae inserted distally in transverse row next to rostro-distal spine 12
12. Dorsal surface of pleotelson slightly granular. Pleotelson subapically concave, slightly upcurved. External margin of exopod of uropod with 5-7 little teeth, giving it crenate appearance *hoestlandti*
- Dorsal surface of pleotelson with row of 6-7 partly fused tubercles on each side of midline; rows slightly diverging. Pleotelson subapically concave, but not upcurved. External margin of exopod of uropod with 6-7 pronounced teeth *panousei*

Lekanesphaera monodi (Arcangeli, 1934)

(fig. 7)

“*Sphaeroma serratum* oder *cinereum*” Rathke, 1837: 391.

Sphaeroma tridentulum Grube, 1864; Stalio, 1877: 1372.

Sphaeroma tridentatum (err. pro *S. tridentulum* Grube, 1864; Sovinskii, 1898: 505; Sovinskii, 1904: 108-109, 137.

Sphaeroma serratum (Fabr., 1787); Sovinskii, 1898: 539; Dollfus, 1899: 124; Chichkoff, 1912: XXXVII; Borcea, 1925: 448, 541; Borcea, 1926: 136; Borcea, 1931a: 677, 692, 694-695, 717, 721, 723, 726, 736-737; Borcea, 1931b: 757; Băceșcu, 1940: 475, 483, 491, 495, 497, 511, 517.

Sphaeroma pulchellum Monod, 1931b: 41-42; Pora, Pora & Jitariu, 1949: 1-48; Cărăușu, 1950: 298-391; Pauli, 1954: 128-129; Kaneva-Abadjieva, 1960: 399; Daguerre de Hureaux, Hoestlandt & Lejuez, 1960: 296; Daguerre de Hureaux et al., 1964: 9, 12; Kussakin, 1969: 420; Tsikhon-Lukanina & Lukasheva, 1969: 139-140; Bocquet & Lejuez, 1969: 12; Bocquet & Rezig, 1973: 2497; Rezig, 1974: 340; Rezig, 1977a: 26; Rezig, 1977b: 13; Kussakin, 1979: 375, 391-393; Negoescu, 1979: 171-176; Argano & Ponticelli, 1981: 227-234.

Sphaeroma monodi Arcangeli, 1934: 149; Argano, 1979: 40, 47-49; Argano & Ponticelli, 1981: 227-234.

Sphaeroma ghigii Arcangeli, 1941: 22-29; Argano, 1967: 337-351; Bocquet & Lejuez, 1969: 12; Kerambrun, 1970: 438-441; de Casabianca & Kerambrun, 1970: 491-493; de Casabianca & Kerambrun, 1972: 935-946; Bocquet & Rezig, 1973: 2497; Rezig, 1974: 340; Kerambrun, 1975a: 95-100; Kerambrun, 1975b: 101-109; Rezig, 1977a: 26; Argano & Ponticelli, 1981: 227-234.

Europosphaera excavatum Verhoeff, 1943a: 171-174; Verhoeff, 1943b: 281; Verhoeff, 1944a: 111; Verhoeff, 1944b: 156.

Europosphaera (Lekanesphaera) excavatum Verhoeff, 1943a: 172.

Europosphaera noduliger Verhoeff, 1943a: 171-172, 174; Verhoeff, 1944a: 111; Verhoeff, 1944b: 156.

Europosphaera excavatum sorrentinum Verhoeff, 1943b: 281; Verhoeff, 1944a: 111; Verhoeff, 1944b: 156.

Europosphaera media Verhoeff, 1943b: 281-282.

Sphaeroma lejeuzi Bocquet & Rezig, 1973: 2497-2499; Prunus & Pantoustier, 1974: 161; Rezig, 1974: 340; Rezig, 1976: 21-27; Prunus & Pantoustier, 1977: 252, 256-257; Rezig, 1977a: 5-28; Rezig, 1978: 67-72; Argano & Ponticelli, 1981: 227-234.
Not *Sphaeroma monodi* Bocquet, Hoestlandt & Levi, 1954 (see *Lekanesphaera levii*).

Material examined. — RMNH: Israel: near Tel Aviv (coast, leg. L. Fishelson, August 1983, many specimens). Turkey: Black Sea, near Samsun (rocky shore, depth 0-2 m, Turkey Exp. C. Swennen, June 1959, many specimens); Black Sea, Ilnye (scraped from scaffolding-poles, Turkey Exp. C. Swennen, June 1959, 1♂); Black Sea, Trabzon (harbour, pelagic at night, Turkey Exp. C. Swennen, 2♀); Black Sea, surroundings of Trabzon (depth 0-5 m, Turkey Exp. C. Swennen, 9 specimens); Sea of Marmara, Jalova (Turkey Exp. C. Swennen, June 1959, 1♀); Aegean Sea (depth 0-2 m., Turkey Exp. C. Swennen, June 1959, many specimens); Mediterranean Sea, Antalya (harbour, depth 5-20 m, among sea-weed and under stones, a strong flow of fresh water, Turkey Exp. C. Swennen, June 1959, 1♂, 2 juvs.); Black Sea, Persembe (leg. R. Argano, June 1973, 3♂, 2♀). Romania: Black Sea, Constantza (littoral, under stones, leg. T. Negoescu, July 1980, many specimens). Greece: Aegean Sea, Etang near Porto Lago, Thrace (brackish water, Turkey Exp. C. Swennen, June 1959, many specimens). MNP: Egypt: Port-Said (*S. rugicauda* Leach, det. Dollfus and *S. pulchellum* (Colosi), det. Monod). ZSBS: Italy: Ischia (north coast, leg. G. Buchner: syntypes *Europosphaera noduliger* 1♂, 2♀); Ischia and San Remo (leg. G. Buchner and K.W. Verhoeff: syntypes *E. excavatum* 3♂); Agnello di Sorrento (beach, leg. G. Buchner: syntype *E. e. sorrentinum* 1♂); San Remo (beach, leg. K.W. Verhoeff: syntype *E. media*, 1♀). PCJ: Greece: Rhodos, near Kalithea (under stones, depth 4 cm, leg. B.J.M. Jacobs, June 1984, 1♂).

Diagnosis of adult male. — Antenna with five-segmented peduncle and flagellum of 10-15 articles. Each article of flagellum bearing fringe of smooth setae at distal interior angle. Adult male with these setae more abundant, up to two to three times length of article. In female these setae reaching only as far as end of next segment.

Interior endite of maxilliped with fringe of robust, plumose setae with swollen base on semicircular distal margin. Palp segments II-IV with pronounced lobes: ratio of width of third segment to that of protruding internal margin 3 : 1. Palp segments II-V with fringe of long, bare setae. Third and fourth segments bearing, in external distal corner, one and 3-4 long, bare setae, respectively.

Propodus of pereopod I with one stout comb-like infero-distal spine and one serrated rostro-distal spine. Near rostro-distal spine semi-transverse "row" of (0-)1-2 bare setae being inserted (number differs in different populations). Merus and ischium tergally bearing 20-25 and 30-40 long, sparsely plumose setae, respectively. These setae ending in long, smooth spine (about 1/3 of total length of seta).

Dorsal surface of pleotelson sometimes bearing two ridges of tubercles, one on either side of midline (Arcangeli, 1934; Argano, 1967), sometimes granular (Cărăușu, 1950) or smooth (Rezig, 1976). I found all three forms in one population (from Constantza): female and juvenile mostly smooth or slightly granular, old male sometimes having two ridges of tubercles or being slightly

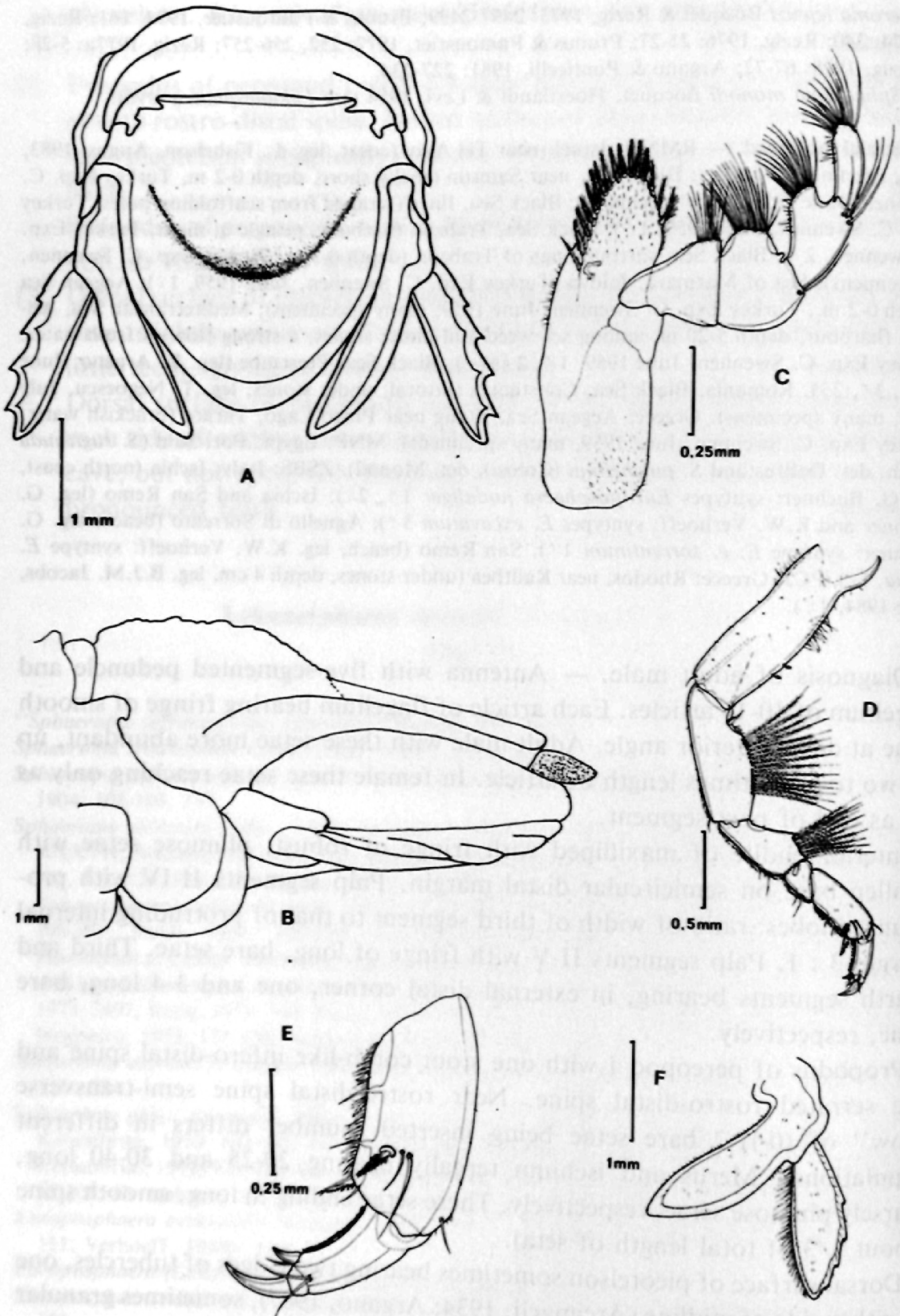


Fig. 7. *L. monodi* (Arcangeli). a, syntype *Europosphaera excavatum* Verhoeff (1943a): pleotelson in lateral view; b-e, after Rezig (1977a): b, pleotelson in dorsal view; c, Mxp; d, Pl; e, uropod ♀.

to prominently granular. In lateral view pleotelson concave subapically, distal half of lateral margin raised, giving spoon-like appearance. Posterior margin rounded.

Uropodal rami slender, reaching far beyond posterior margin of pleotelson. External margin of exopod with 4-6 well pronounced teeth, first near apex, second relatively far from first, rest following close.

Ecology. — *L. monodi* is an intertidal species, restricted to sheltered places, often found in crevices and under stones, preferring clean coarse-grained sand. Sometimes together with *S. serratum*.

Distribution. — The species is found throughout the Mediterranean, from San Remo, N. Italy (Verhoeff, 1943a) to Port-Said, Egypt (Monod, 1931), including the Adriatic and the Black Sea.

Remarks. — Argano & Ponticelli (1981) showed *S. ghigii* Arcangeli, 1941 and *S. pulchellum* (Colosi, 1921) sensu Cărbăușu et auctorum to be conspecific with *S. monodi* Arcangeli, 1934. They mentioned *S. lejeuzi* as being a third synonym of *S. monodi*; after comparing Bocquet & Rezig's description of *S. lejeuzi* with the material of *L. monodi* at my disposal, I fully agree with Argano & Ponticelli.

Verhoeff (1943a) described four Mediterranean species, together forming his genus *Europosphaera*. For their distinction he used the form of the pleotelson. In some of his specimens the lateral margins of the pleotelson are raised ridge-like (adult male *L. monodi*). On this character Verhoeff based the new subgenus *Lekanesphaera* containing one new species *Europosphaera excavatum* Verhoeff, 1943a with the new subspecies *E. excavatum sorrentinum* Verhoeff, 1943b. The subspecies *sorrentinum* was distinguished from the nominate subspecies by having the granulations of the pleotelson more distinct. Studying Verhoeff's type-material of the two subspecies I could not tell any real difference. Some of the material placed by Verhoeff in his subgenus *Europosphaera* was assigned to two new species *E. (E.) media* and *E. (E.) noduliger*. Examination of the type of *E. media* showed this to be an adult female and those of *E. noduliger* were two juvenile males and one juvenile female. The character on which Verhoeff distinguished these "species", viz., not having the lateral margins of the pleotelson raised and ridge-like (*E. media*) or showing only the beginning of these ridge-like raised margins (*E. noduliger*), prove not to be specific but due partly to the different age of the specimens and partly to sexual differences. Like *E. (L.) e. excavatum* and *E. (L.) e. sorrentinum*, the characters of *E. (E.) media* and *E. (E.) noduliger* all fall within the range of variation of this character shown in my material of *L. monodi*. As I can find no consistent character to separate these taxa I have no hesitation in synonymizing Verhoeff's three species with *L. monodi* (Arcangeli, 1934).

Lekanesphaera ehippium (Costa, 1882)
(fig. 8)

Sphaeroma ehippium Costa, 1882: 1-42; Hansen, 1905: 116; Torelli, 1929: 3-5; Torelli, 1930: 305, 338; Monod, 1931b: 20-21, 39-40; Arcangeli, 1934: 151-152; Arcangeli, 1941: 28; Daguerre de Hureaux, Hoestlandt & Lejuez, 1960: 296; Daguerre de Hureaux, Elkaïm & Lejuez, 1964: 12; Elkaïm, 1966: 262, 264; Bocquet & Rezig, 1972: 129-145; Rezig, 1972: 245-249; Bocquet & Rezig, 1973: 2497; Rezig, 1974: 324, 334, 340; Rezig, 1976: 21-27; Rezig, 1978: 67-72; Argano, 1979: 46-48.

Material examined. — RMNH: Tunisia: Gulf of Bou Grara, SE. coast of Djerba (leg. L.D. Brongersma, April 1961, 1♂); Khereddine (beach, leg. G.A.L. Bisseling, April-June 1951, 3 specimens, dry). Italy: Sicily: Trapani (salt-works, leg. B. Palma, June 1981, 3♂ 1♀).

Diagnosis of adult male. — Antenna with five-segmented peduncle and flagellum of 15-20 articles. Each article of flagellum bearing fringe of smooth setae at distal interior angle. Adult male with these setae more abundant, up to 2 to 2.5 times length of articles. In female these setae reaching only as far as end of next segment.

Interior endite of maxilliped with fringe of robust, plumose setae with swollen base on semicircular distal margin. Palp segments II-IV with pronounced lobes: ratio of width of third segment to that of protruding internal margin 3 : 1. Palp segments II-V with fringe of long, bare setae. Fourth segment bearing four long, bare setae in external distal corner.

Propodus of pereopod I with one stout comb-like infero-distal spine and one serrated rostro-distal spine. No setae being inserted near rostro-distal spine. Merus and ischium tergally bearing 20-25 long, sparsely plumose setae each. These setae ending in long, smooth spine (about 1/3 of total length of seta).

Dorsal surface of pleotelson smooth. Caudally pleotelson ending in rather narrow apex (male only). In lateral view pleotelson concave subapically and slightly upcurved.

Uropodal rami cylindrical, slender, ending in sharp point and reaching beyond posterior margin of pleotelson. External margin of exopod with two(-three) well marked, but not protruding teeth.

Exopod of pleopod III with rudimental articulation, being 1/5-1/4 of total breadth of ramus.

Ecology. — *L. ehippium* is an intertidal species, restricted to sheltered places, often found under stones laying on a muddy substratum, sometimes among *Ulva*.

Distribution. — The species has so far been found in the central part of the Mediterranean: in Tunis, the south coast of Sardinia and in Sicily.

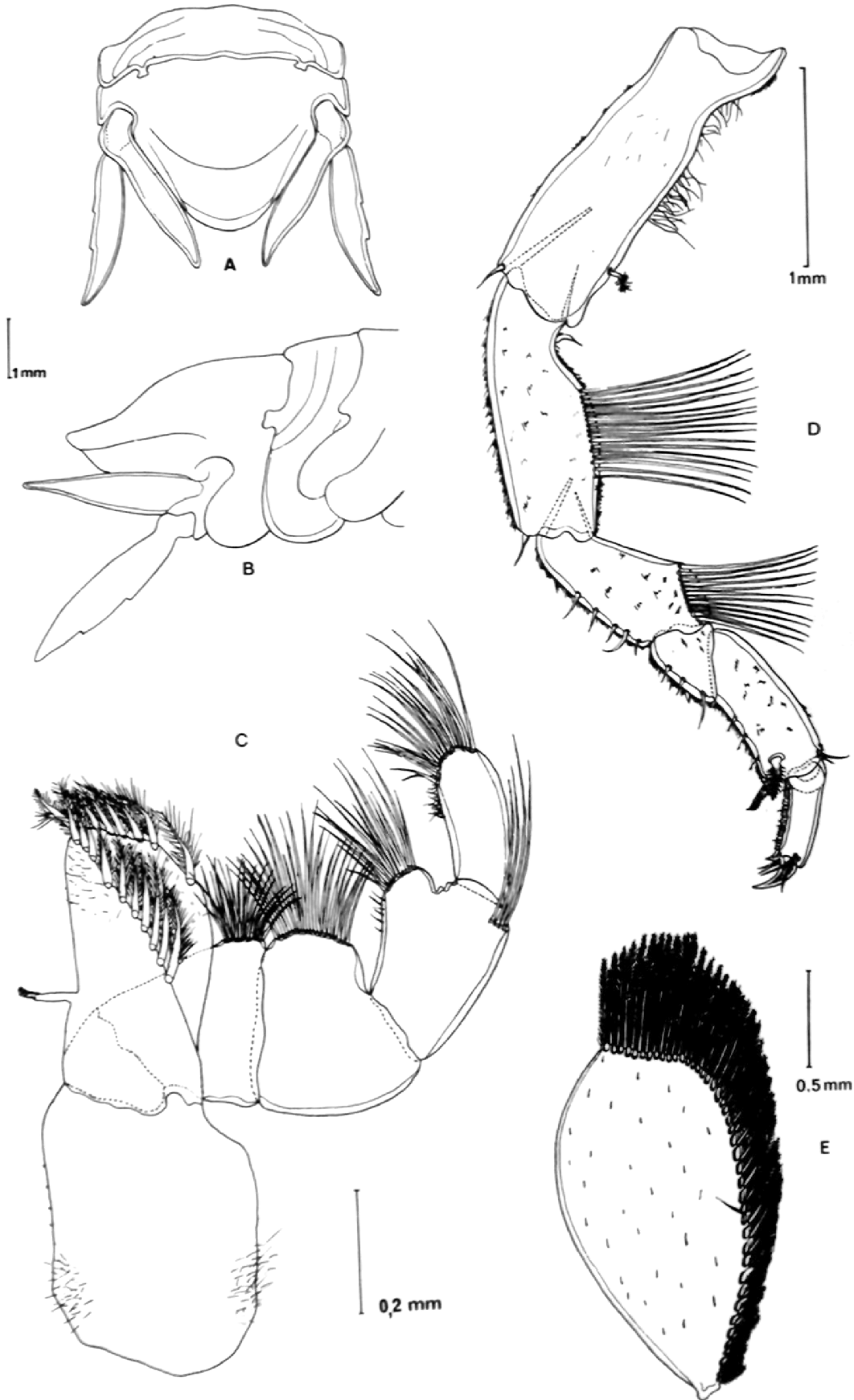


Fig. 8. *L. ephippium* (Costa). a-e, after Bocquet & Rezig (1972): a, pleotelson in tergal view; b, pleotelson in lateral view; c, Mxp; d, Pl; e, Plp III.

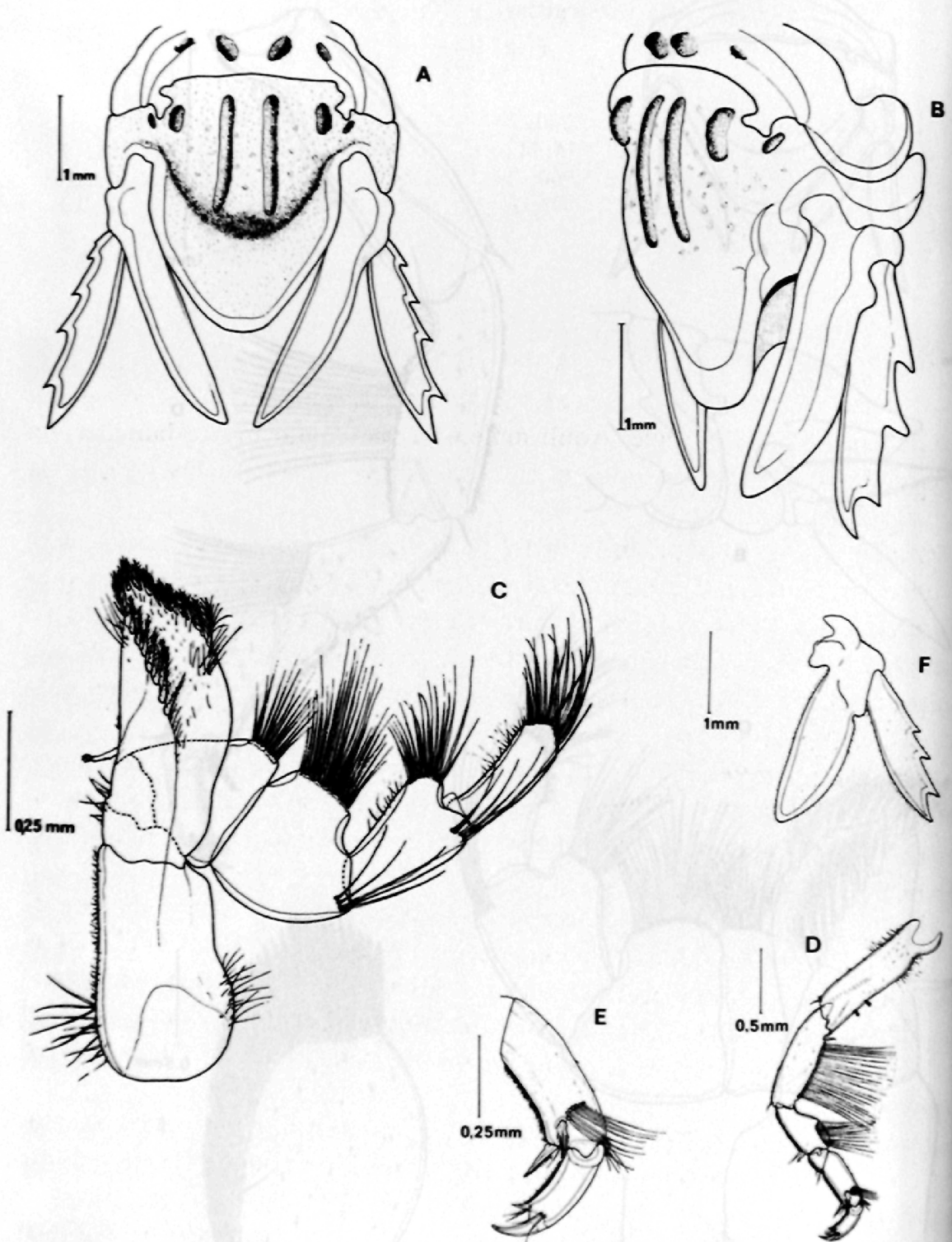


Fig. 9. *L. marginatum* (Milne Edwards). a-f, after Rezig (1974): a, pleotelson in tergal view; b, pleotelson in dorso-lateral view; c, Mxp; d, Pl; e, detail Pl; f, uropod ♀.

Lekanesphaera marginata (Milne Edwards, 1840)

(fig. 9)

Sphaeroma marginata Milne Edwards, 1840: 206.

Sphaeroma marginatum Hansen, 1905: 116; Monod, 1931b: 20, 23, 38-39; Giordani Soika, 1950: 225-230; Daguette de Hureaux et al., 1960: 296; Bocquet & Lejuez, 1969: 12; Bocquet & Rezig, 1972: 130; Bocquet & Rezig, 1973: 2497; Rezig, 1974: 323-342; Rezig, 1976: 21-27; Rezig, 1977a: 18; Rezig, 1978: 67-72.

No material examined.

Diagnosis of adult male. — Antenna with five-segmented peduncle and flagellum of 11-16 articles. Each article of flagellum bearing fringe of smooth setae at distal interior angle. Adult male with these setae more abundant, up to 2 to 2.5 times length of article. In female these setae reaching only as far as end of next segment.

Interior endite of maxilliped with fringe of robust, plumose setae with swollen base on semicircular distal margin. Palp segments II-IV with pronounced lobes: ratio of width of third segment to that of protruding internal margin 3 : 1. Palp segments II-V with fringe of long, bare setae. Third and fourth segments bearing, in external distal corner, four and five long, bare setae, respectively.

Propodus of pereopod I with one stout comb-like infero-distal spine and one serrated rostro-distal spine. Near rostro-distal spine transverse row of 5-10 bare setae being inserted. Merus and ischium tergally bearing 25-30 and 40-50 setae, respectively.

Dorsal surface of fused abdomen with four tubercles. Dorsal surface of pleotelson with four ridges; two long ridges, one on either side of midline, and two short rostro-lateral ridges, one on either side; also one rostro-lateral tubercle on each side. In lateral view pleotelson concave subapically, distal half of lateral margin raised, giving spoon-like appearance. Posterior margin rounded.

Uropodal rami slender, reaching far beyond posterior margin of pleotelson. External margin of exopod with 4(-6) distinct teeth, proximally less pronounced than distally.

Ecology. — *L. marginatum* is an intertidal species, restricted to sheltered places, often found under stones or in empty shells (Lamellibranchiata), along rocky coasts, preferring a not too muddy substratum; sometimes in patches of *Ulva*.

Distribution. — The species is found in the Mediterranean. Milne Edwards described it from the Languedoc, S. France. At present it has been found in two other areas: Tunisia and the Lagoon of Venice.

Lekanesphaera hoestlandti (Daguerre de Hureaux, Elkaïm & Lejuez, 1965)
(fig. 10)

Sphaeroma hoestlandti Daguerre de Hureaux, Elkaïm & Lejuez, 1965: 117-122; Bocquet & Lejuez, 1969: 8, 12; Bocquet & Rezig, 1973: 2497; Rezig, 1974: 339-340; Rezig, 1977a: 6.
? *Sphaeroma podicipitis* (part.) Monod, 1931: 26, fig. 19A-B, 23C, 24A (only specimen from Sidi Maklouf).

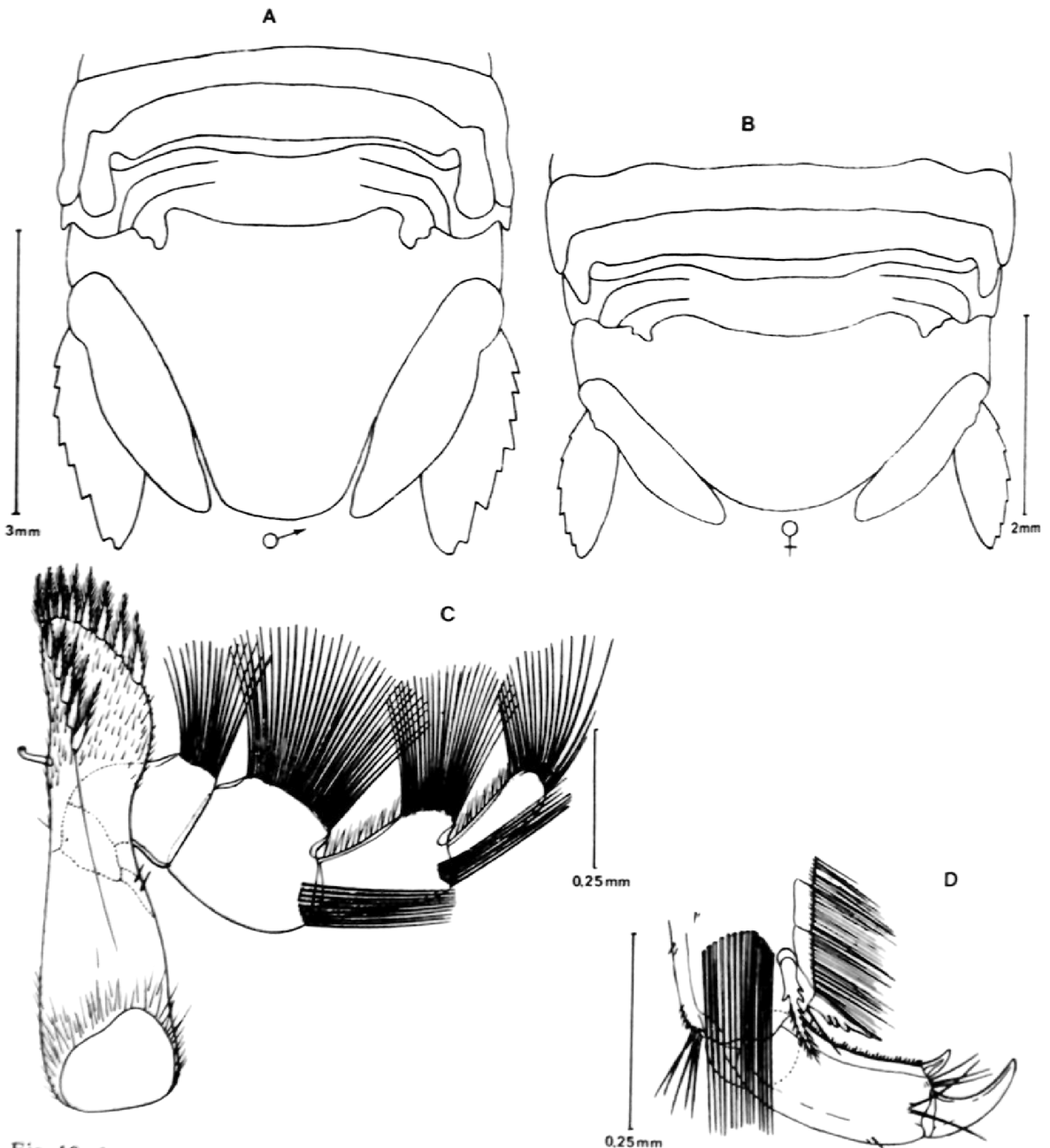


Fig. 10. *L. hoestlandti* (Daguerre de Hureaux, Elkaïm & Lejuez) et al. (1965): a, pleotelson ♂ in tergal view; b, pleotelson ♀ in tergal view; c, pleotelson ♂ in lateral view; d, Mxp; e, detail Pl.