

WERTHELLA AMPLIATA N. SP.,
A NEW PSAMMOPHILOUS HALACARID MITE
(ACARI: HALACARIDAE: COPIDOGNATHINAE)
FROM WESTERN AUSTRALIA

BY I. BARTSCH*

COPIDOGNATHINAE
NEW SPECIES
LITTORAL
WESTERN AUSTRALIA

ABSTRACT: *Werthella ampliata* n. sp. is described from Rottnest Island, Western Australia, where it inhabits shallow tidal, sandy substrata. This species is closely related to *W. vietsi* from the southern shores of South America.

COPIDOGNATHINAE
NEUE ART
LITTORAL
WESTAUSTRALIEN

ZUSAMMENFASSUNG: *Werthella ampliata* n. sp. von Rottnest Island, Western Australia, wird beschrieben. Die Art besiedelt sandige Flachwassersubstrate. Sie ist nah verwandt mit der von der Südspitze Südamerikas bekannten *W. vietsi*.

COPIDOGNATHINAE
ESPÈCE NOUVELLE
LITTORAL
AUSTRALIE OCCIDENTALE

RÉSUMÉ : *Werthella ampliata* n. sp., est décrite de Rottnest Island, Western Australia, récoltée dans des sables littoraux. *W. ampliata* est très apparentée à *W. vietsi*, provenant d'Amérique du Sud.

INTRODUCTION

The genus *Werthella* is distributed in the oceans of the Southern Hemisphere, in permanently water-logged intertidal habitats, as well as in deep-sea basins (NEWELL, 1971, 1984; BARTSCH, 1986). Sandy substrata collected in January 1991 on the shores of Rottnest Island, Western Australia, and studied for halacarid mites, were found to include a representative of *Werthella*, described here as *W. ampliata* n. sp.

material in the Zoologisches Institut und Zoologischen Museum, Hamburg (ZIMH) and the author's halacarid collection.

Abbreviations used in the descriptions are: *AD*, anterior dorsal plate; *AE*, anterior epimeral plate; *ds*, dorsal setae on idiosoma, *ds-1*, first pair of dorsal setae; *GA*, genitoanal plate; *GO*, genital opening; *OC*, ocular plate(s); *P*, palp, *P-2*, second palpal segment; *pas*, parambulacral setae; *PD*, posterior dorsal plate; *PE*, posterior epimeral plate. Legs are numbered I to IV.

METHODS

The mites were cleared in lactic acid and mounted in glycerine jelly. Figures were prepared using a drawing tube. The holotype is deposited in the Western Australian Museum, Perth (WAM); other

Genus *Werthella* Lohmann, 1907

Diagnosis

Dorsal plates *AD*, *OC* and *PD* with porose areolae. *AE* with conspicuous epimeral pores. Male

* Biologische Anstalt Helgoland, Notkestr. 31, 22607 Hamburg, Germany.

with perigenital setae arranged in a ring around *GO*. Gnathosoma, rostrum and palps short; rostrum pointed; *P*-2 with dorsal seta, *P*-3 without seta, *P*-4 with a single seta in basal whorl; tectum extending beyond rostral trough. Tibiae I and II with two or three ventral and four dorsal setae. Tarsi I with one to three ventral setae. Solenidion on both tarsus I and tarsus II dorsolateral in position.

Type species: *Halacarus parvirostris* Trouessart, 1889.

Werthella ampliata n. sp.

(Figs. 1–22)

Material examined

Holotype male (WAM 95/400), Rottneet Island, North Point, coarse sediment and shell from 2 m depth, 20 January 1991, leg. I. BARTSCH.

One male (WAM 95/401), one protonymph (WAM 95/402), one male (ZIMH A12/95) and one male (author's collection), Nancy Cove, intertidal unsorted sediment, 12 January 1991. Three males (author's collection), Nancy Cove, unsorted sediment with red algae (*Gelidium* sp.) from tidal terrace, 12 January 1991. One protonymph (author's collection), Bickley Point, epiflora and fauna on seagrass *Amphibolis* sp. from 2 m depth, 18 January 1991. One male (author's collection), Parakeet Bay, medium to coarse sand from low tide zone, 22 January 1991.

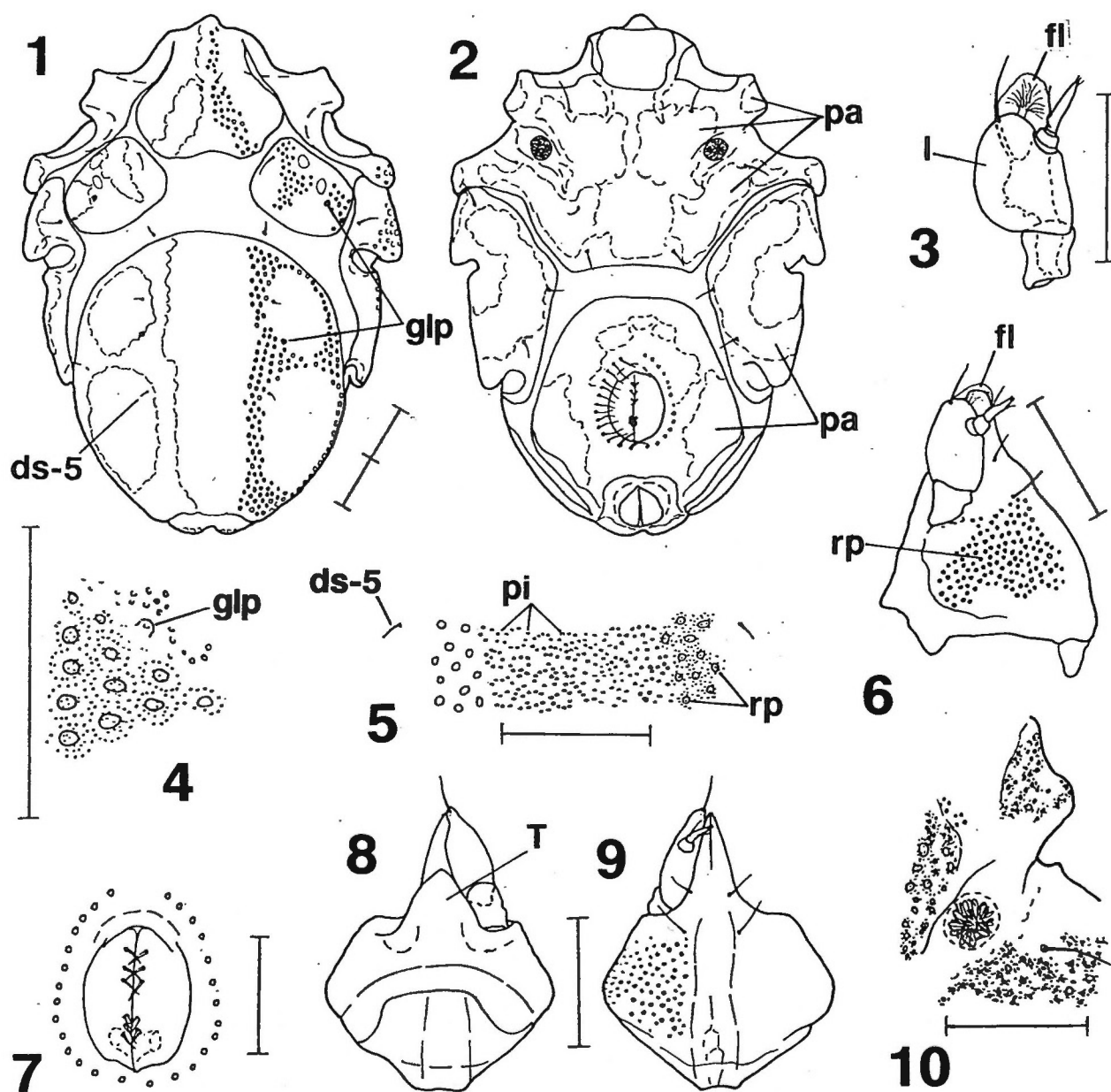
MALE

Idiosoma. Length 465–540 μ m; holotype 465 μ m long. Dorsal plates with very distinct, slightly-raised areolae with rosette pores. Rosette pore with 3–4 μ m wide superficial ostium, a slightly widened alveolus and more than 20 canaliculi beneath and around the alveolus (Fig. 5). Remainder of plate with small pits. *AD* of holotype 125 μ m long, 137 μ m wide, with oblong anterior and pair of elongate posterior porose areolae (Fig. 1). Pair of gland pores at anterior edge of paired porose areolae. *OC* 95 μ m long, 87 μ m wide; with elongate

median and circular lateral porose areola. Large spots with dark-brown eye pigment present beneath the very faint corneae and also beneath anterior *AD*. *OC* with gland pore adjacent to medial margin of lateral porose areola. *PD* 260 μ m long, 248 μ m wide. With pair of medial and lateral porose costae. Medial porose costae about three pores wide; lateral costae two pores wide. Each medial costa widened and fused with lateral costa anteriorly, on a level with insertions of legs IV and in posterior margin. Porose areolae enclosing two pairs of ovate areas with small pits. Pair of gland pores present adjacent to anterior margin of transverse porose areolae. Margin of anal plate thickened and with rosette pores. Dorsal setae small; setae *ds*-1 on *AD*, at anterior edge of pair of porose areolae; *ds*-2 in anteromedial *OC*; *ds*-3 within striated integument anterior to *PD*; *ds*-4 and *ds*-5 on *PD*, level with insertions of legs III and IV; *ds*-6 at base of anal plate, but obscured by *PD*.

Ventral plates coarsely porose. Integument marginally and, within areas of epimera, slightly thickened, with more or less pycnic rosette pores. These pores have small ostia at the surface and numerous canaliculi in deeper integumental layers. *AE* 161 μ m long, 334 μ m wide. *AE* with three pairs of setae and a pair of epimeral pores (Fig. 2), the latter being enlarged, 20 μ m in diameter and placed within a slightly sunken groove (Fig. 10), its porus closed by 11–12 teeth which, in turn, are studded with cuticular setulae. *PE* with one dorsal and three ventral setae. *GA* 211 μ m long, 196 μ m wide. *GO* 65 μ m long, 48 μ m wide. Genital sclerites with three pairs of anterior setae and 2.5 pairs of posterior spurs (Fig. 7). Perigenital setae, 13–14 pairs, inserted in a close ring around *GO*; two posteriormost pairs of perigenital setae bristle-like, the others more slender, seta-like. Distance from anterior margin of *GO* to that of *GA* almost same as length of *GO*. Spermatopositor large, extending well beyond ring of perigenital setae. Marginal areas of genital plate thickened.

Gnathosoma. Length 110 μ m. Gnathosomal base wide, ventral and marginal areas with rosette pores (Fig. 6). Dorsum with triangular tectum that extends beyond rostral trough (Fig. 8). Rostrum shorter than gnathosomal base, slender, with taper-



FIGS. 1-10: *Werthella ampliata* n. sp., male.

1. — Idiosoma, dorsum (left side showing outline of porose areolae, right side showing ostia from rosette pores); 2. — Idiosoma, venter; 3. — Palp, lateral; 4. — Portion of right PD on level with gland pore; 5. — Portion of median PD on level with *ds-5* (canaliculi omitted on left costae); 6. — Gnathosoma, lateral; 7. — Genital opening; 8. — Gnathosoma, dorsal; 9. — Gnathosoma, ventral; 10. — Portion of AE with epimeral pore. (*ds-5*, fifth pair of dorsal setae; *fl*, filamentous lamella; *glp*, gland pore; *l*, lamella; *pa*, porose areola; *pi*, pits; *rp*, rosette pores; *T*, tectum). Scale divisions = 50 μ m.

ing tip. One pair of maxillary setae at gnathosomal base and one pair on basal rostrum (Fig. 9). Palps hardly extending beyond rostral tip (Fig. 19). *P*-2 very wide, with large dorsal lamella (Fig. 3, l), the latter with dorsal seta and apically with a 3 μ m long cuticular "stem", with numerous delicate filaments which form a lamella (Fig. 3, fl). *P*-3 short, about as long as wide. *P*-4 short and slender, three times longer than wide, with a single seta in the basal whorl and a setula and two spurs apically.

Legs. Short and very stout. Trochanters I and II about as wide as long, trochanters III and IV longer than wide and with spine-like dorsal lamella. Basifemora I and II ventrally with three projecting lobes (Figs. 11, 13), basifemora III and IV with a single lobe (Figs. 14, 15). Telofemora I to IV 1.4, 1.3, 1.3 and 1.3 times longer than high, respectively; each with about 12 μ m-high ventrolateral lamella and narrow ventromedial ridge. Lamellae somewhat sinuate, but not serrate. Telofemora III and IV each with small, distidorsal carina (Fig. 15). Genua I and II about as long as wide; laterally with small, spine-like lamella. Genua III and IV wider than long. Tibiae shorter than telofemora; each with large posterolateral lamella. All tarsi with huge lateral membrane of claw fossa; medial membrane of claw fossa lacking. Lateral membranes of tarsi I and II with denticulate lamellae (Figs. 17, 18), those of tarsi III and IV slightly serrate. Telofemora I-IV and trochanters III and IV with rosette pores on their dorsal and lateral flanks (Figs. 12, 16); medial flanks with reticulate ornamentation, but without porose areolae. Lateral flank of tibiae I and II with reticulate sculpturing. Basifemora ventrally with very delicate villosity. Numbers of setae, from trochanter to tarsus: leg I, 1, 2, 5, 4, 6, 11; leg II, 1, 2, 5, 4, 6, 8; leg III, 1, 2, 2, 3, 5, 6; leg IV, 0, 2, 2, 3, 5, 5. Ventral seta on I-5 and II-5 basally rather wide, apically slender, tapering. Tarsus I with three ventral and three dorsal setae, a dorsolateral solenidion, and a pair of doubled *pas* (Fig. 17), tarsus II similar but ventral setae lacking (Fig. 18). Tarsus III with two basalmost setae inserted adjacent; paired setae apically. Tarsi III and IV each with spine-like lateral *pas* and slender, seta-like medial *pas*. Tarsi with slender claws and small median claw. Accessory process on claws with two to three

teeth. No pecten present. Median claw on tarsus I distinctly bidentate; median claw of the other tarsi with upper tooth largely reduced.

FEMALE

Not seen.

PROTONYMPH

Idiosoma. Length 490–524 μ m. Dorsal plates (Fig. 20) much smaller than in male. *AD* with three, oblong, porose areolae. Setae *ds*-2 inserted within striated integument. *PD* extending only slightly beyond setae *ds*-4. Medial porose costae two to three pores wide. Lateral costae reduced. *AE* with large epimeral pores and three pairs of ventral setae. *PE* with a dorsal and two ventral setae. Genital plate 38 μ m long, 52 μ m wide (Fig. 2).

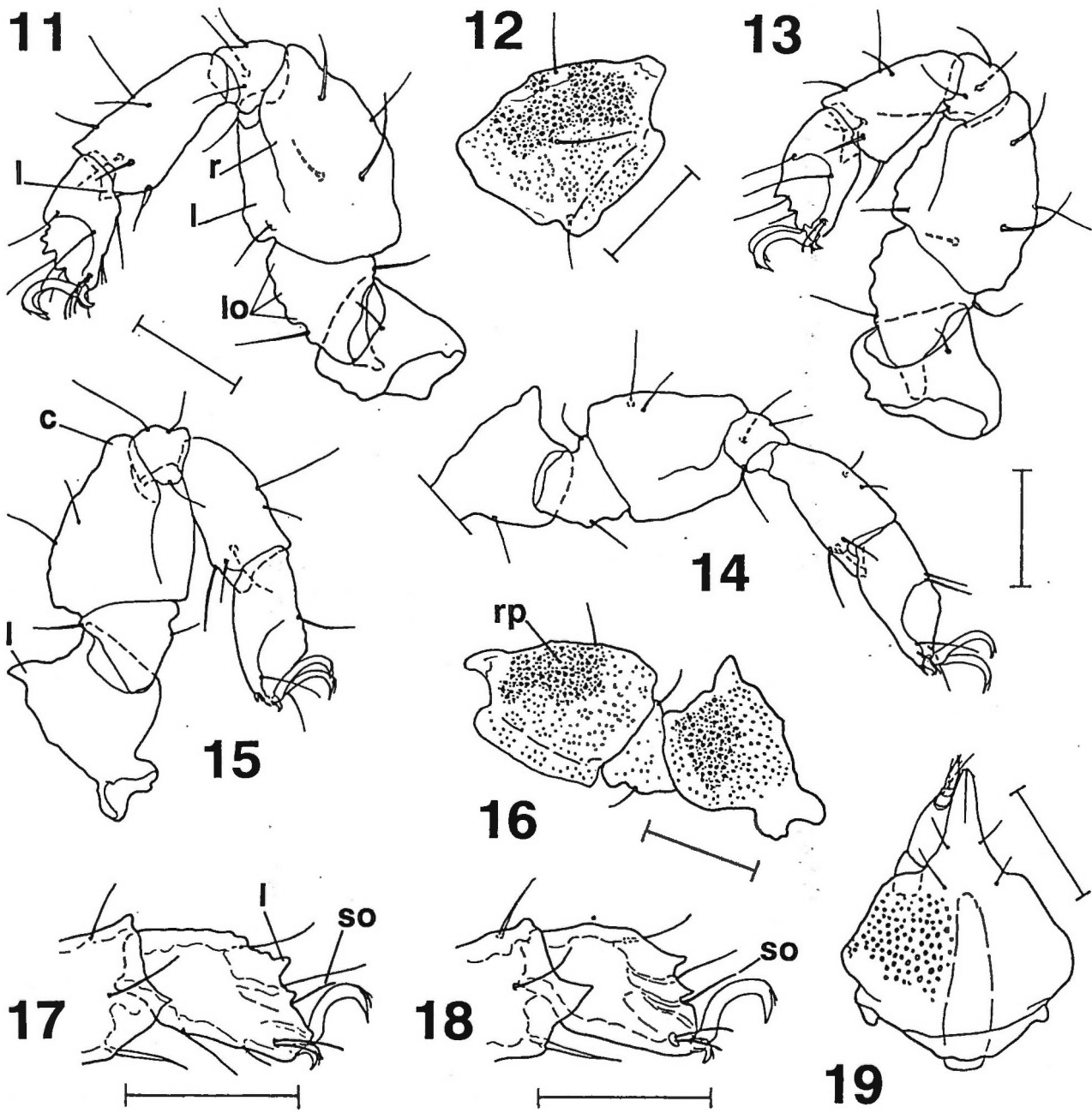
Gnathosoma. Similar to that of male.

Legs. Similar to those of males. Telofemora with ventral lamellae; tibiae with posterolateral lamellae. Porose areolae on lateral flank of telofemora with rosette pores. Leg chaetotaxy reduced, leg I, from trochanter to tarsus, with 1, 2, 3, 4, 5, 11 setae (Fig. 22).

REMARKS

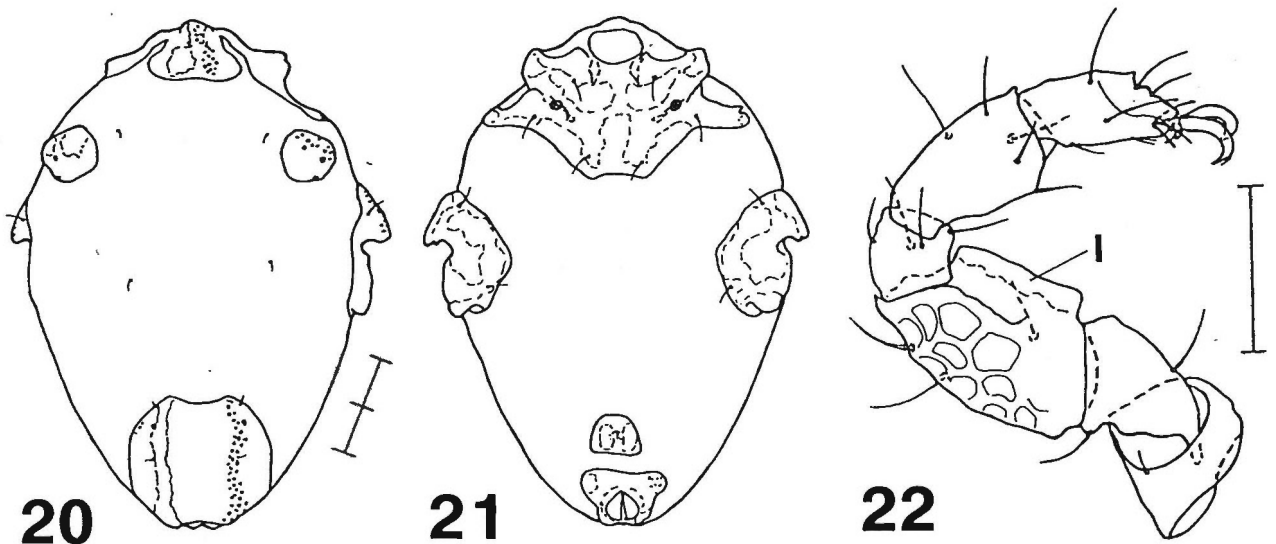
The most conspicuous characters of *Werthella ampliata* are the ornamentation of the *PD* with the porose areolae enclosing two pairs of ovate areas, the dorsal lamella on *P*-2, and the ventrolateral lamellae on the telofemora. Similar ornamentation of the *PD*, lamellar *P*-2 and lamellae on telofemora are present in *W. vietsi* Newell. The latter species is represented with two subspecies: *W. vietsi ambrosiensis* Newell was taken off western South America (26°S, 80°W), from 160–170 m depth (NEWELL, 1971); *W. vietsi vietsi* Newell is recorded from shallow waters along the coast of South America, from Callao (Peru) to the Strait of Magellan (NEWELL, 1971, 1984), and also from the Falkland Islands (VIETS, 1952; NEWELL, 1984).

W. ampliata is easily distinguished from *W. vietsi*: the former's porose areolae of the *AD* are elongate, the paired areolae extend to posterior margin of the



FIGS. 11-19: *Werthella ampliata* n. sp., male.

11. — Leg I, medial; 12. — Telofemur I, lateral; 13. — Leg II, medial; 14. — Leg III, medial; 15. — Leg IV, medial; 16. — Trochanter-telofemur IV, lateral; 17. — End of tibia and tarsus I, lateral (medial setae and claw omitted); 18. — End of tibia and tarsus II, lateral (medial setae and claw omitted); 19. — Gnathosoma, ventral. (c, carina; l, lamellar membrane; lo, lobes; r, ridge; rp, rosette pores; so solenidion). Scale divisions = 50 μ m.



FIGS. 20–22: *Werthella ampliata* n. sp., protonymph.
20. — Idiosoma, dorsum; 21. — Idiosoma, venter; 22. — Leg I, medial. (I, lamellar membrane). Scale divisions = 50 μ m.

AD; in contrast, *W. vietsi vietsi* has an anterior, a pair of large and circular median, and a pair of minute posterior porose areolae, the latter enclosing 8–10 rosette pores. In *W. vietsi ambrosiensis*, the posterior pair of porose areolae encloses 4–5 rosette pores. *W. ampliata* has rounded epimeral pores, whereas those of *W. vietsi* are oblong. In *W. ampliata*, the ventrolateral lamellae of the telofemora I and II have slightly sinuate margins, the margins are not serrate as in *W. vietsi vietsi*.

ECOLOGICAL REMARKS

Various substrata around Rottneest Island were studied for their halacarid faunas, such as filamentous and scrubby green, brown and red algae, large algal fronds, calcareous colonies of tube-building polychaetes, barnacles and corals, gills and gill chambers of decapods and molluscs, fine, medium and coarse, sorted and unsorted sandy deposits. *Werthella ampliata* was chiefly extracted from unsorted sandy deposits, either bare or with scrubs of algae. Although sparse, these data indicate that *W. ampliata* is an inhabitant of sandy surface deposits.

ACKNOWLEDGEMENT

Thanks are due to R. SMILEY for organizing the loan of *Werthella vietsi vietsi* and *W. vietsi ambrosiensis*, housed in the United States National Museum of Natural History.

REFERENCES

- BARTSCH (I.), 1986. — Zur Gattung *Werthella* Lohmann, *Pelacarus* n. gen. und *Werthelloides* n. gen. (Halacaridae, Acari). — *Cah. Biol. mar.*, **27**: 211–223.
- NEWELL (I. M.), 1971. — Halacaridae (Acari) collected during cruise 17 of the R/V Anton Bruun, in the southeastern Pacific Ocean. — *Anton Bruun Rep.*, **8**: 58 pp.
- NEWELL (I. M.), 1984. — Antarctic Halacaroida. — *Antarctic Res. Ser.*, **40**: 1–284.
- TROUËSSART (E.), 1889 — Revue synoptique de la famille des Halacaridae. — *Bull. scient. Fr. Belg.*, (3) **20**: 225–251.
- VIETS (K.), 1952. — Nachträge zu “Die Meeresmilben (Halacaridae, Acari) der Fauna Antarctica.” — *Further zool. Res. Swed. Antarct. Exped.*, **4** (10): 11 pp.