

Two new species of the genus *Bradyagaue* (Halacaroidea, Acari) from the Southern Indian Ocean

I. Bartsch

Biologische Anstalt Helgoland, Notkestr. 31, 2000 Hamburg 52

Résumé : Deux espèces nouvelles, *Bradyagaue crozetis* n. sp. et *B. scutella* n. sp. sont décrites. Les spécimens ont été capturés dans l'Océan Indien, *B. crozetis* près des îles Crozet, parmi des ramifications hydrozoaires, et *B. scutella* en dehors de l'Australie du Sud-Ouest, fréquentent les épiflore et épifaune sur des herbiers de *Amphibolis antarctica*.

Abstract : Two new species, *Bradyagaue crozetis* n. sp. and *B. scutella* n. sp., are described. *B. crozetis* was taken off the Island Crozet ; the specimens were found clinging to stolons of hydroids. *B. scutella* was collected in south-western Australia ; it is generally found on the seagrass *Amphibolis antarctica*, on leaves with a dense epiflora and epifauna.

INTRODUCTION

Representatives of the genus *Bradyagaue* are easily recognized on the basis of the slender, slightly curved idiosoma, long and narrow rostrum and palps, slender legs with tarsi III and IV curved, and tibiae, genua and posterior telofemora with setigerous processes, each process with a short and pointed bristle. The species are adapted to live on stolonaceous organisms.

In the recent decade, several new species from the Southern Hemisphere have been described (Newell 1984, Bartsch 1990), and now, another two species, *Bradyagaue scutella* n. sp. and *B. crozetis* n. sp., have to be added.

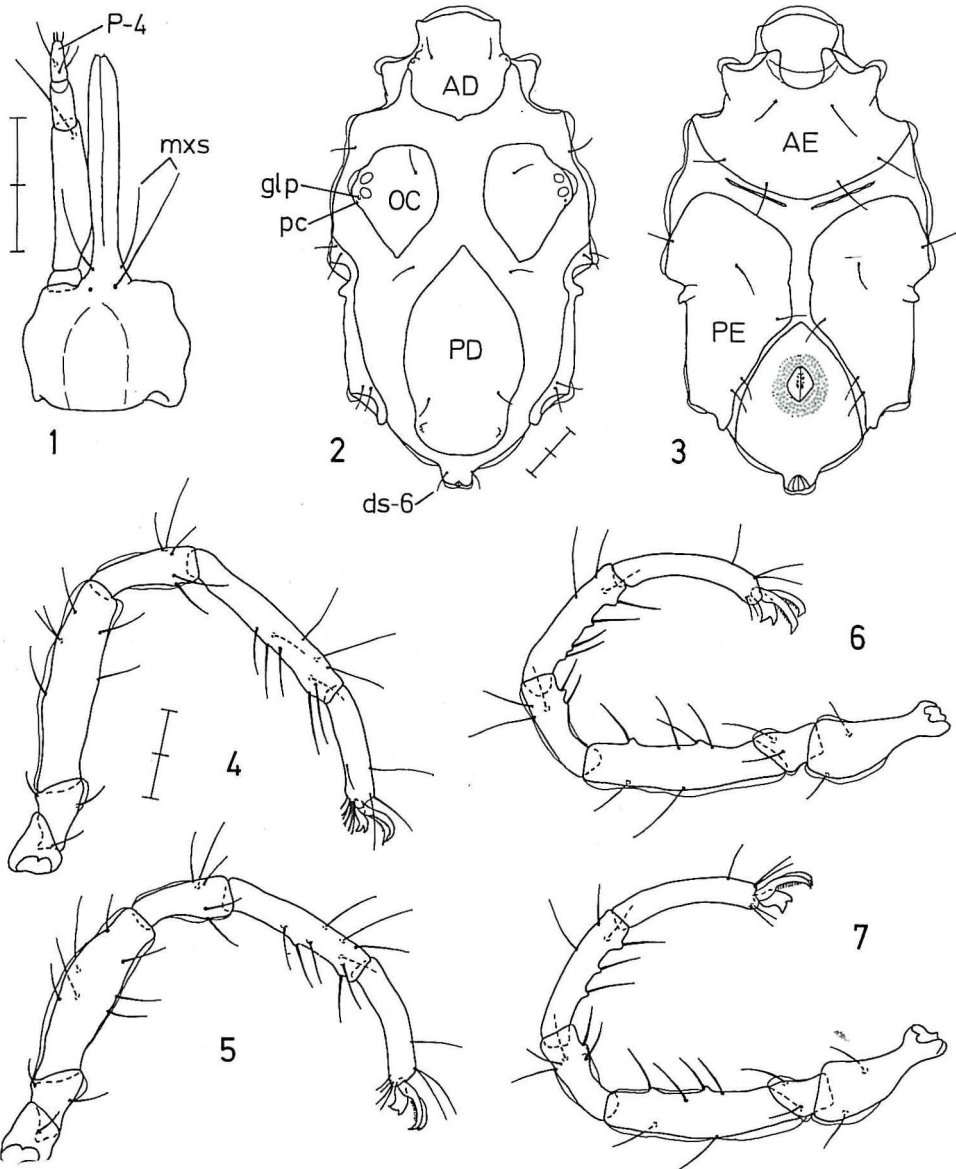
Abbreviations used in the description : AD anterior dorsal plate ; AE anterior epimeral plate ; ds dorsal setae, numbered ds-1 to ds-6 ; eup eupathidia (hollow sensory setae) ; GA genitoanal plate ; glp gland pore ; GO genital opening ; GP genital plate ; mxs maxillary setae ; OC ocular plate(s) ; P palp, numbered P-1 to P-4 ; pas parambulacral setae ; pc pore canaliculus ; PD posterior dorsal plate ; PE posterior epimeral plate ; pgs pergenital setae, sgs subgenital setae ; so solenidion.

DESCRIPTION

Bradyagaue crozetis n. sp. (Figs 1-13)

syn : *Agauae alberti drygalski* Bartsch, 1979 : 332, 333, fig. 24.

Material examined : holotype male, Muséum National d'Histoire Naturelle, Paris, n° 63A11 ; 46°17'0 S, 49°37'0 E, 275 m, 18 April 1976, M/S "Marion Dufresne", Cruise 08, station n° 67.



Figs 1-7: *Bradyagaue crozetis* n. sp.

1) gnathosoma, ventral, female, 2) idiosoma, dorsum, male; 3) idiosoma, venter, male; 4) leg I, medial, male, 5) leg II, medial, male, 6) leg IV, medial, male; 7) leg III, medial, male. (AD anterior dorsal plate; AE anterior epimeral plate; ds-6 sixth dorsal setae; glp gland pore; mxs maxillary setae; OC ocular plate; P-4 fourth palpal segment; pc pore canaliculus; PD posterior dorsal plate; PE posterior epimeral plate).

Each scale = 50 μ m.

One male, Muséum National d'Histoire Naturelle, Paris, n° 50G13 ; 46°07'3 S, 50°19'8 E, 62 m, 16 April 1976, station n° 52. One female and one deutonymph, Muséum National d'Histoire Naturelle, Paris, n° 50G14 ; 46°24'5 S, 51°53'8 E, 100 m, 21 April 1976, station n° 79.

Four males, 4 females and juveniles in the author's collection, 45°52'-46°24' S, 50°20'-52°00 E, 100-250 m. (Collection of the material was organized by the Muséum National d'Histoire Naturelle and Terres Australes et Antarctiques Françaises, and the halacarid mites sorted by the Centre National de Tri d'Océanographie Biologique, Brest, France).

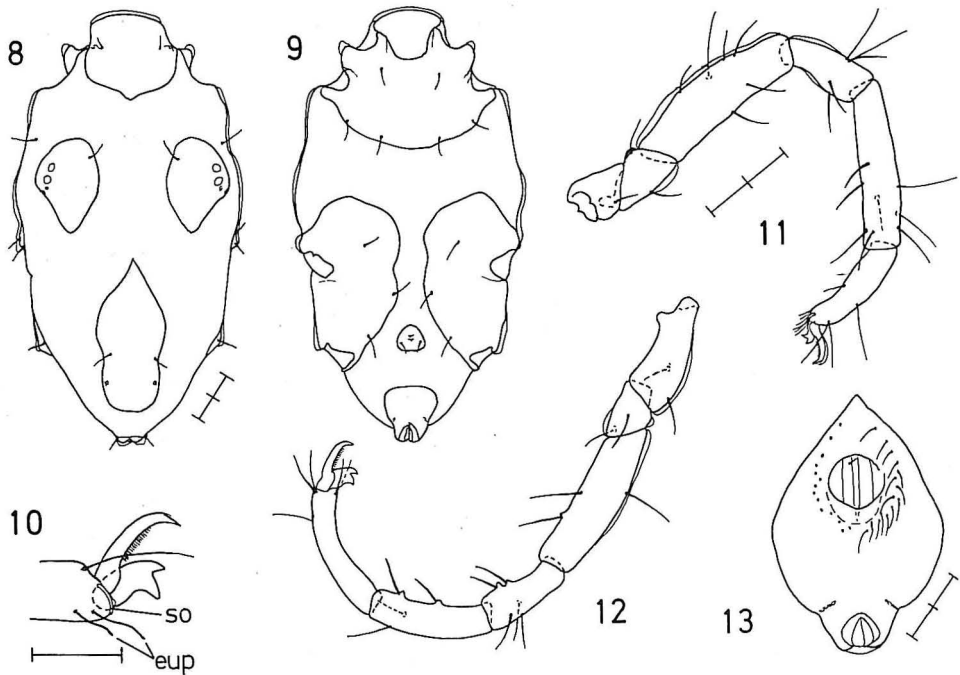
Male : length of idiosoma 767-895 μm , that of holotype 805 μm , its width 440 μm . Plates with evenly scattered canaliculi. Integument and plates covered with delicately punctate cerotegument. AD 187 μm long, 186 μm wide. Anterior cerotegumental lamella 12 μm wide. Posterior AD lightly acuminate. Pair of first pair of gland pores on a level with insertion of leg I (Fig. 2). OC 199 μm long, 149 μm wide, with 2 corneae, brown eye pigment, gland pore and adjacent pore canaliculus. PD 360 μm long, 205 μm wide. With a pair of gland pores posteriorly. Setae ds-1 inserted just medial to first pair of gland pores, ds-2 within the striated integument near the idiosoma's margin, ds-3 in the anteromedial OC, ds-4 within the striated integument just posterior to the OC, ds-5 on the PD and ds-6 on either side of the anal cone.

AE 186 μm long, 362 μm wide, with 3 pairs of setae. Elongate sclerites present between AE and PE. PE with 3 marginal setae anterior to leg III, 2 dorsal setae anterior to leg IV (Fig. 2), and 3 ventral setae (one or more of the setae may be doubled) (Fig. 3). GA 278 μm long, 205 μm wide. GO, 56 μm long, in anterior GA, its distance to anterior margin of GA about 1.5 the GO's length. About 150 slightly plumose pgs arranged in a dense cluster around the GO.

Gnathosoma 238 μm long, 118 μm wide. Rostrum long and slender, less than twice as long as the base of gnathosoma. Both pairs of maxillary setae inserted close together (Fig. 1). The basal pair of maxillary setae longer than the distal pair of setae. Palps slender. P-4 shorter than P-3.

Legs slender. Trochanters III and IV, basifemora, telofemora and genua with cerotegumental lamellae (Figs 4-7). Telofemur I slightly longer than tibia I, telofemora II, III and IV distinctly longer than tibiae. Leg chaetotaxy, from trochanter to tibia : leg I, 1, 2, 6, 5, 9-10 ; leg II, 1, 2, 6-7, 5, 9-10 ; leg III, 2, 2, 5-6, 5, 6-7 ; leg IV, 2, 2, 6, 5, 6-7. All genua with 2 ventral bristles, those on III-4 and IV-4 inserted on setigerous processes. Tibiae I and II generally with 5-6 ventral bristles though single species with no more than 4 setae occur (asymmetry in setation is fairly common). Tibiae III and IV with 4, rarely 3, ventral bristles, all of them on setigerous processes. Telofemora III and IV with 2 dorsal and 4-5 ventral setae. All tarsi with 3 dorsal setae. Solenidion on tarsus I dorsolateral in position, on tarsus II dorsomedial in position. Tarsus I with 1 ventral seta and 8 eupathidia, tarsus II with 3-4 eupathidia. Lateral claws slender, their pecten with numerous tines (Fig. 10). Median claw stout, bidentate.

Female : length of idiosoma 824-1 103 μm . In dorsal aspect similar to male. In a 1 025 μm long female, GA 330 μm long, 229 μm wide, GO 73 μm long and 92 μm wide. Distance to anterior margin of GO about same as length of GO. With 9-15 pairs of pgs and 1 sgs (Fig. 13).



Figs 8-13 : *Bradyagaue crozetis* n. sp.

7) idiosoma, dorsum, deutonymph, 8) idiosoma, venter, deutonymph ; 10) tip of tarsus II, medial, male (lateral setae and claw omitted) ; 11) leg I, medial, deutonymph, 12) leg III, medial, deutonymph ; 13) genitaloanal plate, female. (eup eupathidia ; so solenidion).

Each scale = 50 μ m.

Deutonymph : Length of idiosoma 850-883 μ m. Dorsal plates similar though smaller than in adults. AD with rounded posteromedian edge. PD slender, anteriorly acuminate (Fig. 8). Ventral plates smaller than in adults. PE with 2 marginal setae anterior to leg III and 1 setae anterior to leg IV. GP with 1 pair of pgs (Fig. 9), 2 pairs of sgs, and 2 pairs of internal genital acetabula. Legs with cerotegumental lamellae. Number of setae smaller than in adults. All genua with 2 ventral and 3 dorsal setae. Tibiae I-IV with 4, 4, 2, 2 ventral setae (Figs 11, 12).

Remarks : *B. crozetis* is most similar to *B. drygalskii* (Lohmann), a circumpolar Antarctic species (Lohmann 1907, Newell 1984) and *B. grandiphora* Newell, known from southern South America (Newell 1984, Bartsch 1990). The three species are very similar in size, and the outline of dorsal and ventral plates is almost identical. The species are distinguishable on the basis of the ventral setae on genua and tibiae (Table I) (if possible, several specimens in a given population should be studied as intraspecific variation in the leg chae-

totaxy is fairly common). The data for *B. drygalskii* were obtained from 5 adults and 2 deutonymphs, in material from the German South Polar Expedition 1901-1903, winter station off Wilhelm II coast, 12 January 1903, 580 m. The data for *B. grandiphora* are based on 5 adult and 1 deutonymph specimens from the Atlantic coast of southern South America, taken in February and October 1971 as part of the United States Antarctic Research Program (Bartsch 1990).

TABLE I

Number of ventral setae on genua and tibiae

species \ leg	genua				tibiae			
	I	II	III	IV	I	II	III	IV
adults								
<i>drygalskii</i>	2	2	2	2	4	4	3	3
<i>grandiphora</i>	2	2	1	1	4	(3-) 4	4	(3-) 4
<i>crozetis</i>	2	2	2	2	5-6	5-6	3-4	3-4
deutonymphs								
<i>drygalskii</i>	2	2	2	2	2	2	2	2
<i>grandiphora</i>	2	2	1	1	2	2	2	2
<i>crozetis</i>	2	2	2	2	4	3-4	2	2

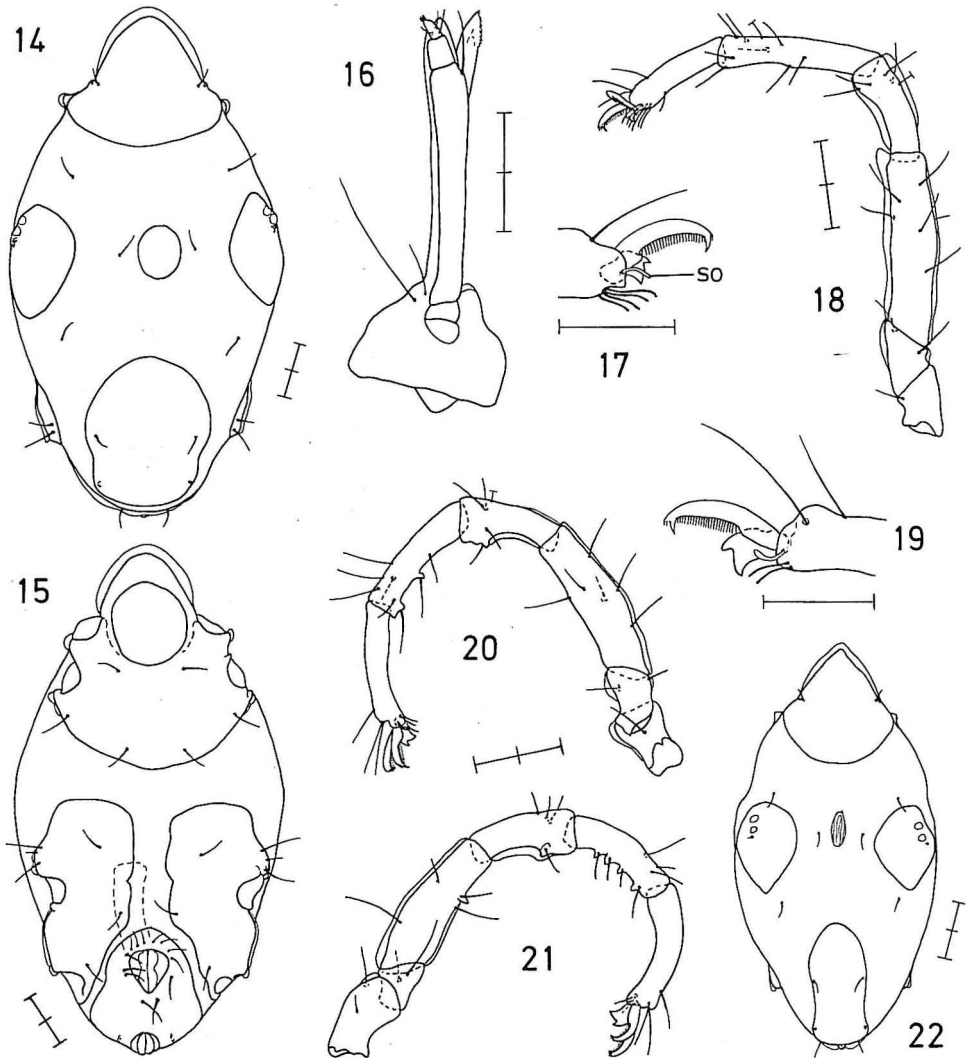
Bradyagaue scutella n. sp. (Figs 14-22)

Material examined : female holotype, Western Australian Museum, Perth, WAM ; Western Australia, Rottnest Island, Bickley Bay, amongst epifauna and epiflora on the seagrass *Amphibolis antarctica*, 1-2 m, 17 January 1991 ; coll. I. Bartsch.

One female paratype, National Museum of Victoria, Australia, NMV ; 3 female paratypes and 1 deutonymph, author's collection ; all from type locality.

Female : idiosoma 875-954 μm long, holotype 899 μm long. Dorsal plates with delicately villose covering. AD 220 μm long, 267 μm wide ; anterior AD cuculliform ; anterior cerotegumental lamella 14 μm thick. Pair of gland pores and setae ds-1 in lateral margins. Setae ds-2, ds-3 and ds-4 within the striated integument. OC 211 μm long, 126 μm wide, with 2 small corneae and 1 gland pore in anterolateral margin (Fig. 14). Dorsum with a median plate, 97 μm long and 87 μm wide, placed between the ds-3 and covered with striated integument. PD 291 μm long, 235 μm wide, with setae ds-5 and gland pores. Setae ds-6 on GA on either side of genital sclerites.

Ventral plates with cerotegumental villosity. AE 186 μm long, with 3 pairs of ventral setae. PE with 3 dorsal (marginal) setae anterior to trochanter III, 2 dorsal setae anterior to trochanter IV, and 3 ventral setae. Rather truncate opposing margins of PE with a small



Figs 14-22 : *Bradyagaue scutella* n. sp.

14) idiosoma, dorsum, female ; 15) idiosoma, venter, female, 16) gnathosoma, lateral, female ; 17) tip of tarsus I, lateral (medial setae and claw omitted), female ; 18) leg I, medial, female ; 19) tip of tarsus II, medial, female (lateral setae and claw omitted) ; 20) leg II, medial, female ; 21) leg III, lateral, female, 22) idiosoma, dorsum, deutonymph. (so solenidion).
Each scale = 50 μ m.

incision between areas corresponding to epimera III and IV. GA 235 μ m long. GO 80 μ m long, its distance to the anterior edge of GA less than its length ; GO surrounded by 6 pairs of pgs. Ovipositor extending beyond GO for about twice the GO's length (Fig. 15).

Gnathosoma 310 μm long. Rostrum very slender, almost 3 times longer than gnathosomal base. P-2 slender, with stout distal bristle. No seta on P-3. P-4 shorter than P-3 (Fig. 16), with 3 short setae in the basal whorl. Both pairs of maxillary setae inserted close together; basal pair of setae very long, the other pair much shorter and more delicate. Tip of rostrum with 2 pairs of tiny rostral setae.

Legs slender. Telfemora and genua with villose cerotegument. Setation from trochanter to tarsus (solenidion excluded): leg I, 1, 2, 6, 5, 9, 12, leg II, 1, 2, 6, 5, 8, 7; leg III, 2, 2, 4, 4, 7, 5; leg IV, 2, 2, 5, 4, 7, 5. Genua II-IV and telfemora III and IV each with 1 setigerous process. Tibiae I-IV with 4 ventral bristles, tibia II with 2 of these bristles on setigerous processes, tibiae III and IV with all 4 bristles on sharply delimited processes. Tibia I longer than tarsus I, tibiae II-IV about as long as tarsi (Figs 18, 20, 21).

Lateral claws flattened, with accessory process and numerous delicate tines. Median claw massive, bidentate, that on tarsus I smaller than that on posterior tarsi (Figs 17, 19).

Male: Not seen.

Deutonymph: Idiosoma 677 μm long. Anterior AD cuculliform. Dorsum with an ovate, platelet-like area between pair of ds-3 which is covered with striated integument. PD slender. Genital plate small, squarish. Genua I and II each with 2 ventral and 3 dorsal setae, genua III and IV with 1 ventral and 2 dorsal setae. Tibiae I-IV with 2/5, 2/4, 2/3, 2/3 ventral/dorsal setae respectively.

Biology: *Bradyagaue scutella* is a common inhabitant of the epifauna and epiflora on leaves of the seagrass *Amphibolis antarctica*.

Remarks: *Bradyagaue scutella* is distinguished from all other species by its median plate within the dorsal striated integument.

B. scutella is most similar to *B. medialis* Newell, a species recorded from South Africa (Newell 1984). Both species have anteriorly prolonged AD with rather thick cerotegumental lamellae, insertion of ds-3 is medial to the OC, the setigerous processes on genua and tibiae are well developed, and the anus is subventral in position. *B. scutella* is distinguished from *B. medialis* as well as from all other species by its median dorsal platelet.

ACKNOWLEDGEMENTS

Bradyagaue scutella was collected during the Fifth International Marine Biological Workshop: The Marine Flora and Fauna of Rottnest Island, Western Australia. Thanks are expressed to Dr. F. E. Wells and his colleagues for organizing the workshop. I also want to thank Dr. M. Segonzac, Centre National de Tri d'Océanographie Biologique, Brest, France, for submitting halacarid mites taken during Cruise 08, M/S "Marion-Dufresne", and M. Naudo, Muséum National d'Histoire Naturelle, Paris, for the loan of halacarid specimens stored in the Museum.

REFERENCES

- BARTSCH, I., 1979. Halacaridae (Acari) aus der Subantarktis. *Cah. Biol. mar.*, 20 : 325-339.
- BARTSCH, I., 1990. Antarctic Halacaroidea (Acari) : Genera *Agaue*, *Bradyagaue* and *Halacarellus*. *Antarct. Res. Ser.*, 52 : 185-217.
- LOHMANN, H., 1907. Die Meeresmilben der Deutschen Südpolar-Expedition 1901-1903. *Dt. Südpol. Exped.* 1901-1903, 9 : 361-413.
- NEWELL, I.M., 1984. Antarctic Halacaroidea. *Antarct. Res. Ser.*, 40 : 1-284.