MINISTERIE VAN ONDERWIJS, KUNSTEN EN WETENSCHAPPEN

ZOOLOGISCHE MEDEDELINGEN

UITGEGEVEN DOOR HET

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE TE LEIDEN

DEEL XXXVII, No. 1 31 maart 1960

FORTUYNIA MARINA NOV. GEN., NOV. SPEC., AN ORIBATID MITE FROM THE INTERTIDAL ZONE IN NETHERLANDS NEW GUINEA

by

L. VAN DER HAMMEN

(Rijksmuseum van Natuurlijke Historie, Leiden)

(With text-figs. 1-5, and plate I)

On December 7, 1953, while collecting animals along the south coast of Biak Island (Netherlands New Guinea), in the neighbourhood of the Base of the Royal Netherlands Navy [1]), I was surprised in seeing red Trombidiid mites creeping on stones in the intertidal zone. These stones, which fall dry at low tide, were overgrown with green *Cladophora socialis* and several species of red algae [2]). I became interested in the fauna of the littoral, especially in the possible presence of other Acari, and I spent several mornings in observing the animal life on the stones.

The Trombidiid mites later appeared to belong to a *Platytrombidium* species, closely related to the species described by Michener (1946) as *Microtrombidium littorale* from mangrove forests along the Pacific coast of Panama. It will be dealt with by Dr. Womersley of the S. Australian Museum, who studies also the Mesostigmata and the Acaridiae mentioned below.

In order to collect other Acari, I took a large sample of algae on December 10, 1953 and put it in a modified Tullgren apparatus. Within two days I had a large collection of small animals: Collembola, Amphipoda, young Grapsoid crabs, Isopoda, Polychaeta, larvae of Insects, and a considerable

1) The stay in Biak formed part of a journey to Netherlands New Guinea, which was made possible by the generous cooperation of the Royal Netherlands Navy and by a grant from the Netherlands Organization for Pure Research (Z.W.O.).

2) I am very grateful to Dr. Josephine Koster (Rijksherbarium, Leiden), who identified a sample of the algae.

amount of mites that, according to Womersley (in litt.), belong to two species of Mesostigmata and one species of *Hyadesia*. Among the material I found only one specimen of an Oribatid mite.

After my return it soon became clear that the Oribatid specimen represented a very interesting new species for which it were necessary to create a new family. Due to the absence of immature stages it was, however, difficult to get a definite idea about the systematic position.

In the meantime Grandjean (1955) published a thorough study of an antarctic species that he named *Podacarus auberti*; a new family Podacaridae was created and the extensive material of all stages made it possible to demonstrate a relationship with the Ameronothridae.

Although my species from New Guinea represents a new genus, there are now arguments to classify it for the moment with this family Podacaridae. A detailed description of the species, which I name *Fortuynia* [1]) ***marina,*** necessarily precedes, however, the discussion of the relationship and the diagnosis of the genus.

Fortuynia marina nov. spec.

Material. One female (holotype), collected at the south coast of Biak Island (district of South Biak), near the Base of the Royal Netherlands Navy, December 10, 1953, from *Cladophora socialis* and red algae on stones in the intertidal zone (sample K 14). At the locality the sea-water is mixed with fresh water from a small source in the coastal rocks of coral limestone. A photograph of the type-locality is given on pl. I.

Description. Measurements 0.590 × 0.380 mm. Habitus as in figs. 1, 2, 3. The animal contains two eggs and some dark irregular fragments.

Colour in alcohol dark. After treatment with lactic acid it appears to be brown, although of irregular intensity; anal and especially genital plates are darker; the border of the notogaster, the femora and genua, and a part of the gnathosoma are also dark; the anterior part of the notogaster is lighter.

The cerotegument is a smooth compact colourless layer of heterogeneous structure. In the type specimen some parts have come off after treatment with lactic acid; I could observe that the layer on the notogaster is continuous, except perhaps for an area between the hairs c_1 and *da*.

The cuticle is smooth, not wrinkled, and rather solid.

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1) It is a pleasure to me to dedicate the single marine Oribatid mite from my New Guinea collection to vice-admiral G. B. Fortuyn, R. Neth. N., at the time of my journey C. in C. Naval Forces Netherlands New Guinea; his continuous help and vivid interest have been of inestimable value to me.

The prodorsum has two pairs of ridges: a pair of distinct large ones (*ce*), and a faint inner pair (*ci*); they are shown in figs. 1, 3, 4a. The remaining part of the prodorsum is smooth. There is no frontal incision, and no incisio

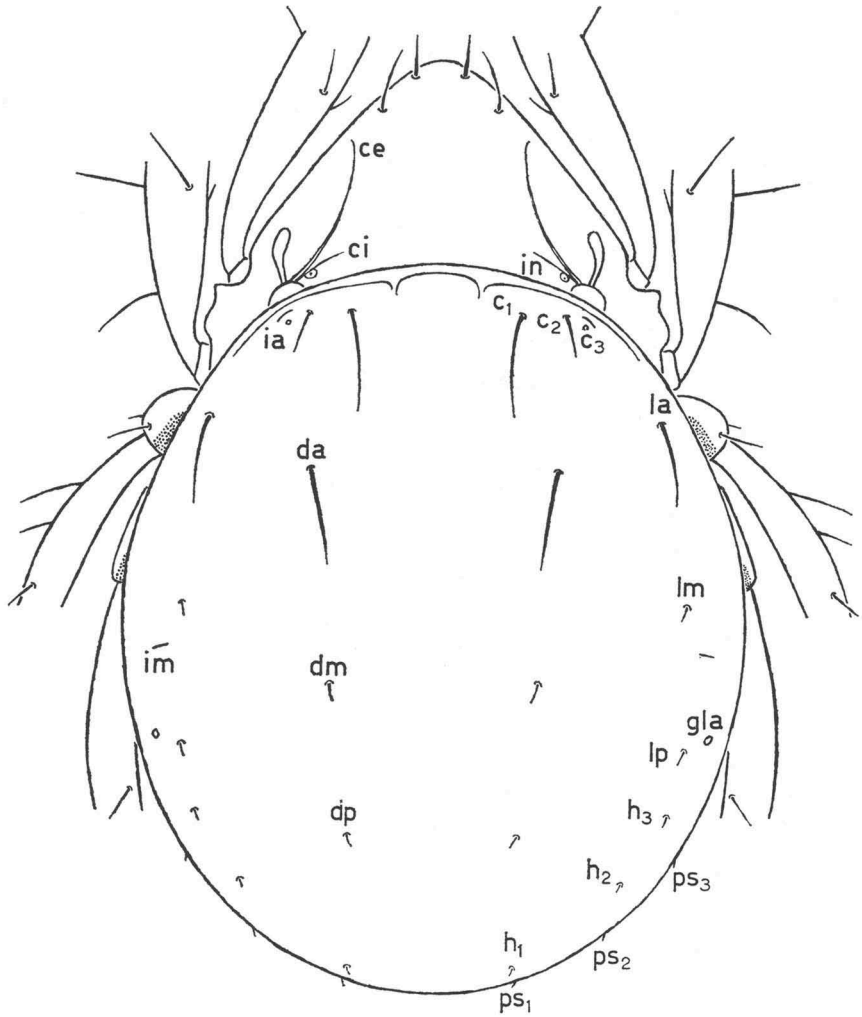

Fig. 1. *Fortuynia marina* nov. spec., dorsal view, × 210.

genae ("incision génale" of Grandjean). The sensillus has a thickened head; it is smooth. The bothridium has a small circular entrance. The interlamellar and exobothridial hairs are extremely small. The rostral hairs are longer and slightly stronger than the lamellar hairs.

The notogaster (figs. 1, 3) is rather convex and smooth, and overlaps the ventral plate. It has 28 hairs and one pair of vestiges (fig. 4a). I have given the notation of unideficiency to the hairs, the vestige being c_3. The anterior

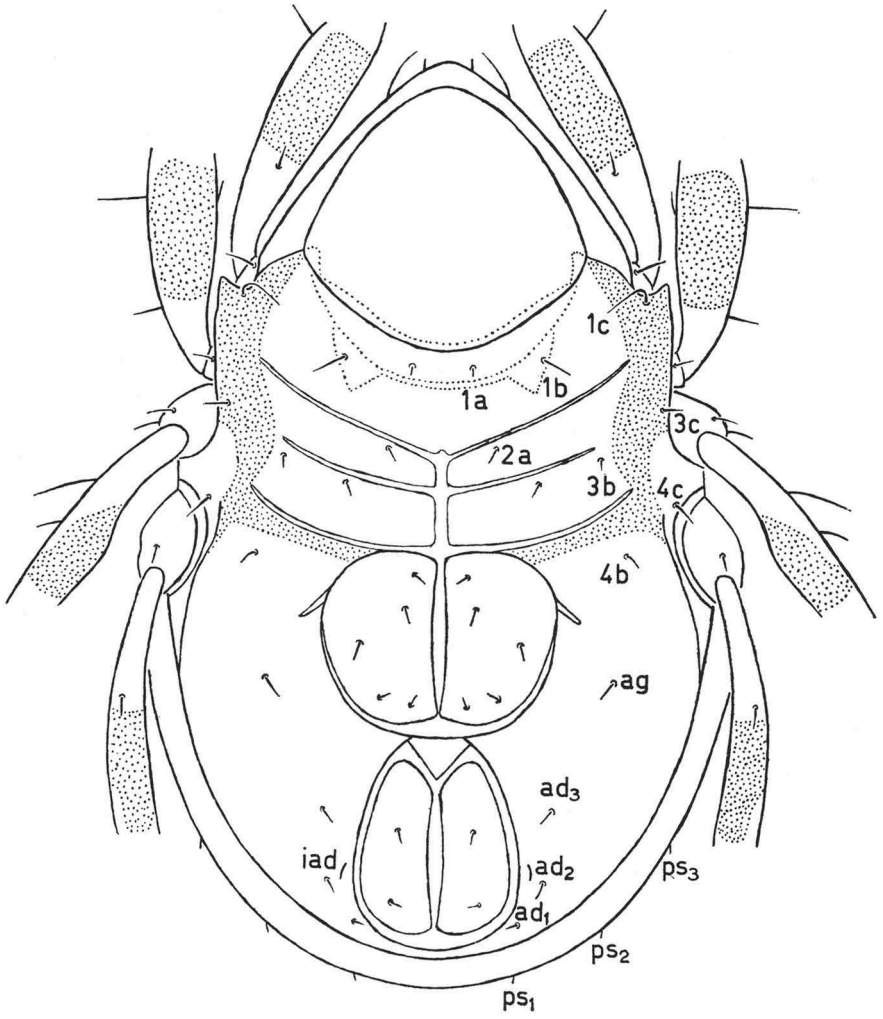

Fig. 2. *Fortuynia marina* nov. spec., ventral view, × 210.

hairs, especially c_1, *da*, and *la* are rather long and strong; the remaining hairs are small. The position of the latero-abdominal gland (*gla*) and the fissures (*ia, im, ip, ih, ips*) is given in figs. 1, 3. The notogaster has no porose areas.

The ventral plate (fig. 2) is solid and smooth. Anal and genital openings are close together. There is one pair of aggenital hairs.

Each anal plate has two hairs; the anal fissure is absent. There are three pairs of adanal hairs; the adanal fissure (*iad*) is situated near ad_2.

The number of genital hairs is 5, of which three have a more or less marginal position. The ovipositor is rather large with long narrow lobes.

The epimeres are transversely separated; with the exception of epimera I, there is also a longitudinal separation. The chaetotaxy of the epimeres is to be expressed in the formula 3-1-3-2; I am not absolutely certain as to the

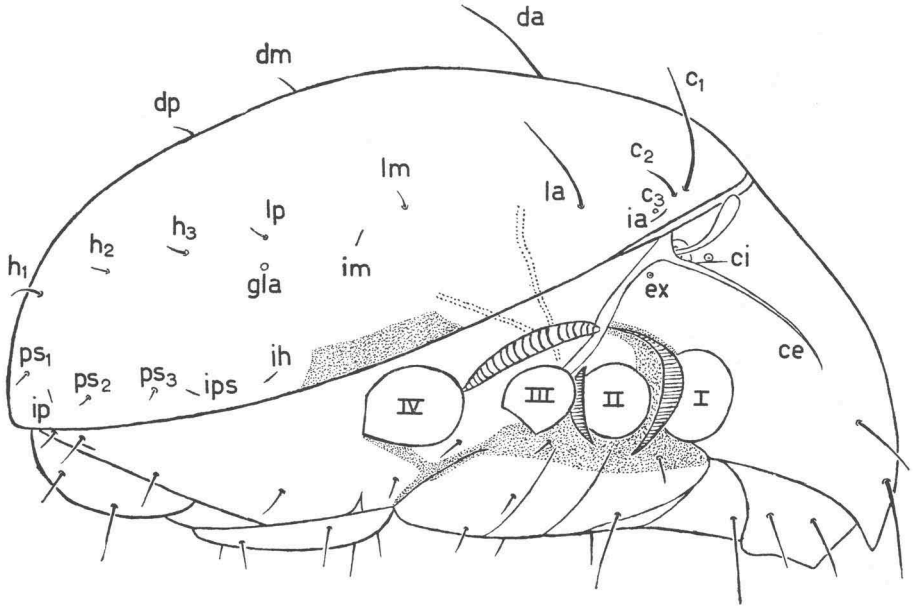

Fig. 3. *Fortuynia marina* nov. spec., lateral view, trochanteres not removed, × 210.

last two numbers which may also be 2-3. The notation 3a or 4a is therefore omitted on fig. 2. The lateral parts of all epimeres and the anterior part of the fourth have porose areas.

A lateral view of the species is given in fig. 3. It shows that pedotectum I is large, whilst pedotectum II is much smaller. There is a strongly scleritized tube with distinct rings, which runs as a lateral ridge from acetabulum IV to above the second leg. The porose areas of the podosoma are best visible in lateral view. There is also a remarkable continuous porose area under the border of the notogaster (partly shown in fig. 3). The tracheae are easily visible; part of the sejugal trachea is figured.

The ventral surface of the gnathosoma is shown in fig. 4c. The articulatio

labiogenae ("articulation labiogénale" of Grandjean) is of the diarthry type (cf. Grandjean, 1957). The rutellum has a pantelebasic expansion. The hairs

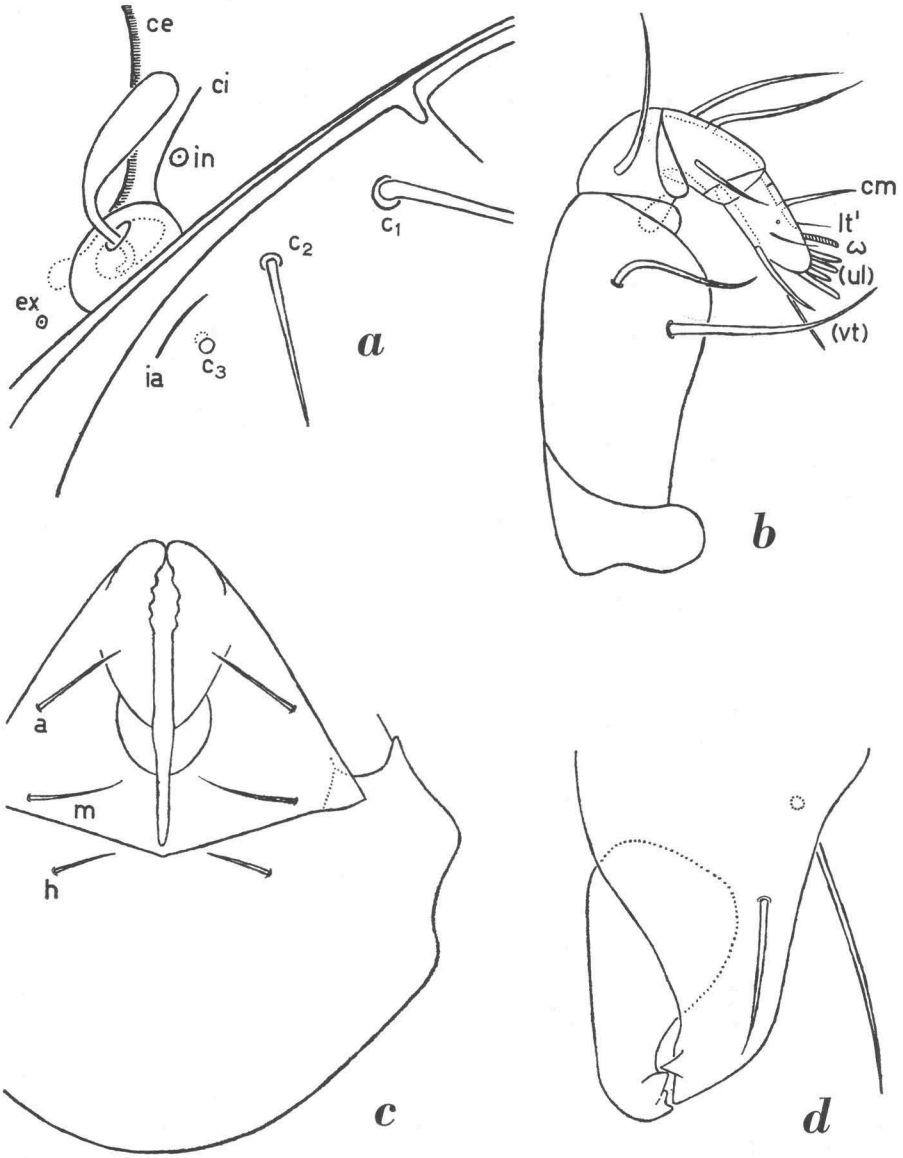

Fig. 4. *Fortuynia marina*, nov. spec.; *a*, posterior part of prodorsum and anterior part of notogaster, × 735; *b*, right palp, antiaxial side, × 955; *c*, subcapitulum, ventral view, × 485; *d*, mandible, distal part, × 955.

h, *m*, and *a* are simple and long. The distal part of the mandible is shown in fig. 4b.

The formula of the palp (cf. fig. 4d) is 0-2-1-3-9. The solenidion ω is free, not coupled; *acm*, (*ul*), and *sul* are eupathidia (*sul* rather long); *cm* is rather long, (*vt*) strong and long, and (*lt*) rather thin.

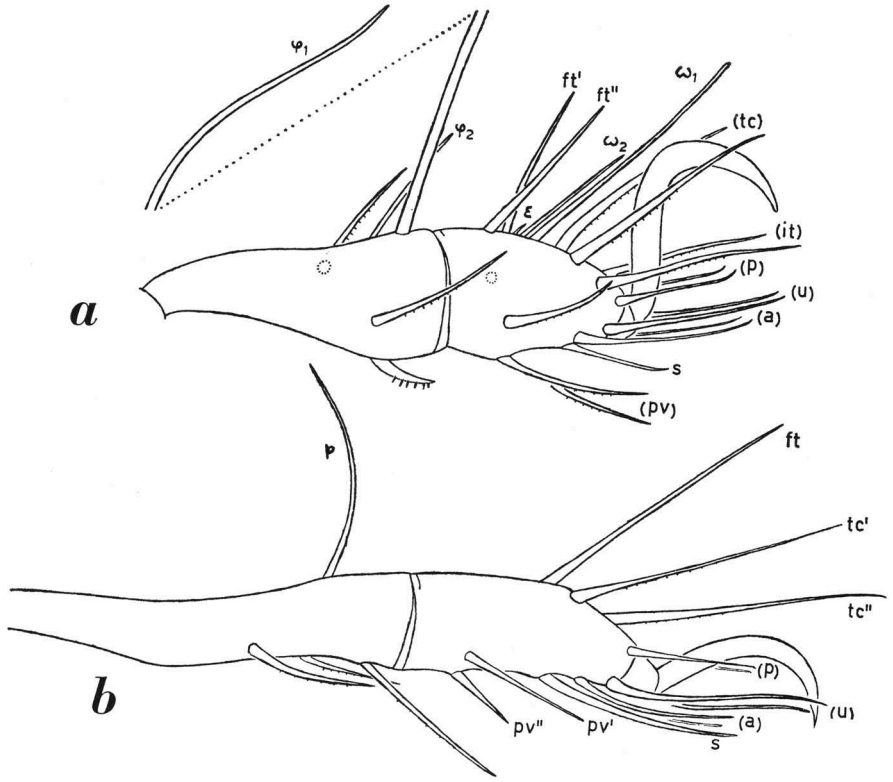

Fig. 5. *Fortuynia marina* nov. spec.; *a*, tibia and tarsus of the first right leg, antiaxial side, × 545; *b*, tibia and tarsus of the fourth left leg, antiaxial side, × 545.

Tibia and tarsus of leg I and leg IV are represented in fig. 5. There are porose areas on parts of the femora I-IV (lower and lateral surfaces, cf. fig. 2) and on trochanteres III and IV (cf. fig. 1). In the single type specimen the legs have not been removed so that the number of hairs is not completely certain as to genu I and II. I prepared the following formulae for the hairs: I (1-4-2-3-18-1), II (1-4-2-3-15-1), III (2-3-1-3-15-1), IV (1-2-2-3-12-1), and the following for the solenidions: I (1-2-2), II (1-1-2), III (1-1-0), IV (0-1-0). The solenidions are rather large; those on genu and

tibia are free, not accompanied by dorsal hairs. The legs are monodactyle; the claws are large.

Systematic position

The occurrence in the inter-tidal zone, the presence of 30 notogastral hairs (if we include the 2 vestiges) and the absence of the incisio genae pointed in 1954 already to a relationship with the Ameronothridae.

In 1955, after the creation of the Podacaridae, a number of differential characters of this family appeared to apply also to *Fortuynia marina*. Of these characters I mention the following: the habitus is different from the Ameronothridae; the cuticle is normally scleritized; the notogaster is distinctly separated from the prodorsum; σ and φ are not accompanied by a dorsal hair *d*; pedotecta and porose areas on the legs are present; the interlamellar hair is present, although extremely small; *it* IV is absent; c_3 is a vestige.

Nevertheless there are some important differences from *Podacarus*, e.g. the absence of the special type of cerotegument, the diarthry of the infracapitulum, the free solenidion ω of the palp, and the number of genital hairs (5 instead of 6). I do not think that these characters justify the creation of a new family, so that I classify *Fortuynia* with the Podacaridae and give the following diagnosis of the new genus.

Fortuynia nov. gen.

The cuticle is well scleritized and smooth, without wrinkles. The cerotegument is of the ordinary type. Anal and genital openings are contiguous. The number of the genital hairs is 5. The articulatio labiogenae is of the diarthry type. The solenidion ω of the palp is free.

Type: *Fortuynia marina* nov. spec.

Finally I want to draw attention to a remarkable parallel of the Podacaridae with the Ameronothridae. In the arctic regions the Ameronothridae are terrestrial and live in various types of vegetation, whilst the representatives in the temperate regions of the northern hemisphere generally occur in the intertidal zone. On the other hand, *Podacarus auberti* was collected in large numbers in antarctic grass-lands, whilst the *Fortuynia* from New Guinea originates from the littoral.

I remark that *Fortuynia marina* is the single Oribatid species that I found to occur in the marine littoral of New Guinea. Other Oribatids have been collected by me in brackish parts of mangrove forests; these are also new and the description will follow in future papers.

REFERENCES

GRANDJEAN, F., 1955. Sur un acarien des îles Kerguélen. Podacarus auberti (Oribate). Mém. Mus. Nat. Hist. Nat. ser. A., Zool., vol. 8, pp. 109-150, figs. 1-10.

——, 1957. L'infracapitulum et la manducation chez les Oribates et d'autres acariens. Ann. Sci. Nat., Zool. (11), vol. 19, pp. 233-281, figs. 1-7.

MICHENER, C. D., 1946. The taxonomy and bionomics of some Panamanian Trombidiid mites (Acarina). Ann. Ent. Soc. Am., vol. 39, pp. 349-380, text-figs. 1-59, tab. 1-9.

EXPLANATION OF PL. I

South coast of Biak Island, near the (1953) Base of the R. Neth N.; type locality of *Fortuynia marina* nov. spec.