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IGUANACARUS, A NEW SUBGENUS OF CHIGGER MITES
FROM NASAL FOSSAE OF THE MARINE IGUANA
IN THE GALAPAGOS ISLANDS, WITH A REVISION
OF THE GENUS VATACARUS SOUTHCOTT
(ACARINA, TROMBICULIDAE) ¹

BY

P. H. VERCAMMEN-GRANDJEAN ²

I. — INTRODUCTION.

On the occasion of a recent scientific expedition to the Galapagos Isles ³, the
marine iguana (Amblyrhynchus cristatus (Bell.)) received the particular attention
of many of the workers.

For instance, they were recognized to be the regular host of a certain number
of parasites, among these several species of helminths and more than a dozen
species of acarines (ticks, chigger mites).

Among the acarines are two remarkable new trombiculid species parasitizing
the nasal cavities of the marine iguana. These two species possess characters
of the genus Vatacarus Southcott, 1957 (r), but on the other hand they show cer­
tain other characters and must be considered worthy of subgeneric rank; this
new subgenus is now named Iguanacarus.

II. — REVISION OF THE GENUS VATACARUS.

In 1957, R. V. SOUTHCOTT erected the genus Vatacarus for the unique species
V. ipoides. This chigger mite was found in the lungs of a sea snake: Laticauda
laticaudata. In order to place this genus he created the family VATACARIDAE (3).

¹. This study was supported by PHS Research Grant AI-03793-03 from the National
Institute of Allergy and Infectious Diseases, U.S. Public Health Service.
². Research Parasitologist, The George Williams HOOPER Foundation, University of Cali­
fornia Medical Center, San Francisco 22, California, U.S.A.
³. An expedition, January 10-March 18, 1964, sponsored by the University of California,
under the aegis of the CHARLES DARWIN Foundation for the Galapagos Isles.

In a later revision, it was demonstrated that *V. ipoides* belongs to the genus *Eutrombicula* of the family *Trombiculidae* (4). As a consequence, *Vatacarus* became a subgenus of *Eutrombicula* (5). Subsequently, in 1963, Audy, Nadchatram and Vercammen-Grandjean decided to reinstate the genus *Vatacarus* for taxonomic reasons and because of the peculiar biology of this species (1). Today, in the light of recent discoveries of chigger mites parasitizing the nasal fossae of marine iguanas in the Galapagos Islands, the reinstatement of the genus seems extremely appropriate (6, 7). By virtue of many common or close characters, *Vatacarus* is to be divided into three subgenera:

A. *Vatacarus* Southcott, 1957.
B. *Iguanacatus* n. sg..
C. *Babiangia* Southcott, 1954.

Genus *Vatacarus* Southcott, 1957 (3).

**Diagnosis**: Trombiculines very close to the genus *Eutrombicula*. Larva of large to very large size (leg-index $l_p > 750$). Palpo-tibial claw bifurcate and robust. Palpo-tarsal formula: $fT = 7$B.S. Subquadrate scutum with anterior
"shoulders"; AW greater than PW and SB large to very large. Galeal setae nude. Solenida, famuli, pretarsalae present on leg-tarsi 1 and 2. Subterminala and parasubterminala present on leg-tarsus 1. Leg-tibiala 3 always present.

_Type-species_: _Vatacarus ipoides_ Southcott, 1957.

_Hosts_: Reptiles.

_Parasitope_: Respiratory tract of sea snakes; nasal fossae of iguanas; skin of lizards.

_Distribution_: Pacific region, Australasia and Southeast Asia.

**A. Subgenus Vatacarus** Southcott, 1957 (3).

_Diagnosis_: Very large species (Ip $>$ 1000). Scutum with concave anterior margin; SB very large. Sensillae flagelliform, nude or provided with few barely perceptible ciliae. Base of AM behind the base line of the ALs. Palpo-tibial claw bifurcate and robust. Four or five genualae on the three legs. Body setae very thick near bases (as in _Babiangia_). Mastitarsala present on leg 3. Phenomenon of neosomy apparent during the considerable engorgement (1).

_Type-species_: _Vatacarus ipoides_ Southcott, 1957.

_Hosts_: Sea snakes.

_Parasitope_: Tracheal sacs.

_Locality_: Southeast Asia and Australasia (Pacific).

**B. Subgenus Iguanacarus** n. sg.

_Diagnosis_: Very large species (Ip $>$ 1000). Scutum subquadrate, with very prominent anterior "shoulders"; AM base anterior to the base line of the ALs; sensillae flagelliform (a few ciliae). Chelicera with a dorsal butting tooth or hook and a lateral, often strong, hook which is a continuation of the tricuspid cap. Palpo-tibial claw bifid. Three genualae on leg 1, the two internal inserted very proximally in comparison to the external one. Mastitarsala 3 present. Slight neosomy appearing during the relatively large engorgement (thickening of the anterior ectostracum).

_Type-species_: _Iguanacarus amblyrhynchus_ n. sp.

_Host_: Marine iguana.

_Parasitope_: Nasal fossae.

_Locality_: Galapagos Islands (Pacific).
C. Subgenus *Babiangia* Southcott, 1954 (2).

*Diagnosis*: Large species (Ip > 750). Scutum very similar to *Vatacarus*, with a concave anterior margin. AM base slightly behind the base line of the ALs. Sensillae branched on their distal half. Chelicerae robust. Palpo-tibial claw bifurcate. As in *Iguanacarus*, the two internal genualae are inserted very proximally in comparison to the external one. No true mastitarsala 3.

*Type-species*: *Babiangia bulbifera* Southcott, 1954.

*Host*: Lizards.

*Parasitope*: In the skin under the body squamae.


III. — Subgenus *Iguanacarus* nov.

The larvae of *Iguanacarus* were found in the nasal passages of five marine iguanas (*Amblyrhynchus cristatus*), the only specimens we were authorized to autopsy. The two species recorded here were found in about equal number, and in a large amount, fixed in the mucosa of the nasal cornices of each iguana examined.

1. — *Vatacarus* (*Iguanacarus*) *amblyrhynchus* n. subg., n. sp.

(Pl. A. — 6 figs.)

The larger of the two known species (Ip = 1740 ± 40). Unengorged larvae reddish orange, engorged larva light orange; ocular pigment dark red. The young larva ambulates with moderate speed; the impediment of its voluminous body notwithstanding, the engorged larva is still fairly active.

A. — *Description*:

1) *Measurements*: The means in microns of the eleven larvae studied (a) are compared with those of the eleven larvae of *intranasalis* (b); together with observed extremes (+ and —):

(a) *V. amblyrhynchus* n. sp. (means of II):

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V. intranasalis n. sp. (means of nr).

2) Scutum: (fig. 2). Somewhat pentagonal, punctation dense and well marked; scutal setae thick, straight, and inflexible, ornamented with scarce, short barbs; sensillae flagelliform, bearing a dozen minute ciliae; SB relatively small; biocellate eyes with underlying dark red pigment.

3) Idiosoma: (fig. 1). Body pilosity formulae are:

\[ jD = 2H + 6.6.6.4.2 = 26 \text{ dorsal setae}, \]
\[ jV = 8.8.6.4.8.4.6.4.2.2 = 64 \text{ ventral setae} \]

and \( NDV = 26 + 64 = 90 \) body setae. Uropore between the ventral setae of the fourth row. One is able to observe characteristic neosomic formations as thickenings of the anterior body ectoscutum (endocuticle).

4) Legs: (figs. 4, 5 & 6). Fairly long; \( jsp = 7.7.7, jCx = r.r.r \) and \( jSt = 2.2 \). Genualae and tibiapalae as follows: \( ga = 3, gm = 1, gp = 1 \) and \( tp = 1 \). On leg 1, the two internal genualae are inserted more proximally than the external one; behind the tibial solenidion an entirely nude seta is observed, also behind the tarsal solenidion one entirely nude seta can be seen. On leg 2 the genuala is inserted very distally.

On leg 3 genuala and tibiala are inserted distally; long nude mastitarsa (80 \( \mu \)).

5) Gnathosoma: (figs. 1 & 3). Robust and capable of fast and efficient attachment; strong chelicers, with a dorsal hook and a stronger lateral hook (prolongation of the tricuspid cap); basal articulation with a triple apophysis. Galeal setae nude. Powerful palps. Femoral and genual setae each bearing only a few small and fine barbs; all three tibial setae nude; very strong bifid tibial claw; palpal formula: \( fPp = (B) - (B) - (N).N.N.G_2 - E.B.B.B.S.B.(B).(B).(B) \) and \( fT = 7B.S. \)

B. — Locality and Date: Santa Cruz, Galapagos Isls. (Ecuador).

C. — Host and Parasitope: Amblyrhynchus cristatus (Bell.); nasal fossae.

D. — Type material: Holotype #1264/A/1 deposited in the U.S. National Museum, Washington, and 10 paratypes numbered 1264/A/2 to 1264/A/11.
2. — *Vatacarus* (*Iguanacarus*) *intranasalis* n. sp.  
(Pl. B. — 6 figs.)

The smaller of the two known species (*I*ₚ = 1412 ± 50). Young larva reddish orange, engorged larva light orange; ocular pigment dark red.

A. — *Description*:

1) *Measurements*: (1) see under *amblyrhynchus*.

2) *Scutum*: (fig. 2). Subquadrate; densely punctate; scutal setae thick and stiff, bearing rare and minute barbs; sensillae flagelliform; SB relatively large; biocellate eyes with underlying dark red pigment.

3) *Idiosoma*: (fig. 1). Dorsal setae less thick and as a direct result, more flexible than those of *amblyrhynchus*; barbs more numerous and visible;

\[
\begin{align*}
J_D &= 2H + 6.6.8.8.6 = 36 \text{ dorsal setae} \\
J_V &= 8.8.8.6.6.2 = 44 \text{ ventral setae and} \\
NDV &= 36 + 44 = 80 \text{ body setae. Uropore between the ventral setae of the fourth row.}
\end{align*}
\]

In the engorged specimens, neosomic thickenings similar to those of the preceding species can be seen.

4) *Legs*: (figs. 4, 5 & 6). Fairly long; \( f_p = 7.7.7, f_Cx = 1.1.1 \) and \( f_St = 2.2. \) Genualae and tibialae as follows: \( ga = 3, gm = 1, gp = 1, \) and \( tp = 1. \) On leg 1, the two internal genualae are much more proximal than the external one; behind the tibial solenidion, one seta is almost nude; behind the tarsal solenidion, a long nude seta can be seen.

The mastitarsala bears a few barely perceptible basal ciliae.

5) *Gnathosoma*: (figs. 1 & 3). Robust, a little bit smaller than that of *amblyrhynchus*. Cheliceral blade with butting tooth and a lateral hook (prolongation of the tricuspid cap); basal articulation with a triple apophysis. Galeal setae nude. Powerful palps; palpal articulation formula:

\[
\begin{align*}
\text{and } f_T &= 7B.S.
\end{align*}
\]

B. — *Locality and Date*: Santa Cruz, Galapagos Isls. (Ecuador).

C. — *Host and Parasitope*: *Amblyrhynchus cristatus* (Bell.), nasal fossae.

D. — *Type material*: Holotype #1264/B/1 deposited in the U.S. National Museum, Washington, and ten paratypes numbered 1264/B/2 to 1264/B/11.
SUMMARY.

1. The genus *Vatacarus* Southcott is revised to include the following subgenera: *Vatacarus* sens. str., infesting the tracheal sacs of amphibious sea snakes of the genus *Laticauda*; *Babiangia* Southcott 1957, infesting the skin of lizards; and *Iguanacarus* n. subg., infesting the nasal fossae of marine iguanas on the Galapagos Islands. The genus *Vatacarus* is clearly derived from the same stem as *Eutrombicula* Ewing.

2. A new subgenus, *Iguanacarus*, is described with two new species: *V. (I.) amblyrhynchus* (type species) and *V. (I.) intranasalis*, both from nasal fossae of marine iguanas, *Amblyrhynchus cristatus* (Bell.) from the Galapagos Islands (ECUADOR). All five specimens of *Amblyrhynchus cristatus* autopsied were found heavily infested by an equal number of both species.

RÉSUMÉ.


BIBLIOGRAPHY


