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FOUR NEW SPECIES AND RECORDS OF FLEAS FROM WEST IRIAN (SIPHONAPTERA, PYGIOPSYLLIDAE)

by

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With 12 text-figures

ABSTRACT

Records of fleas collected in West Irian, formerly Netherlands New Guinea, by the Third Archbold Expedition 1938-1939 are given, including the description of four new species of the genera *Striopsylla*, *Parastivalius* and *Obtusifrontia*.

INTRODUCTION

Smit (1953) described four new genera and nine new species of fleas collected by Dr. L. J. Toxopeus and other members of the Third Archbold Expedition 1938-1939 in the territory formerly known as Netherlands New Guinea, and stated that the collections included 11 new species of *Stivalius* to be described in a later paper.

Since that time, however, our knowledge of the fleas of New Guinea and our understanding of the relationships among the species groups formerly included in the genus *Stivalius* have been greatly increased with the result that the groups of New Guinean species of *Stivalius* are now regarded as genera, described by Holland (1969). More detailed discussions of the taxonomic status of these groups are given by Holland (1969) and Mardon (1976).

Thus the new species of *Stivalius* referred to by Smit (1953) are now classified within five of the genera described by Holland, *Stivalius* (s. str.) being unknown in New Guinea. Material of five species of *Papuapsylla* Holland, 1969, was described in a revision of that genus (Mardon, 1976) and the remaining material, of species of *Striopsylla* Holland, *Parastivalius* Holland, *Obtusifrontia* Holland, and *Rectidigitus* Holland, is described below. One of the species, *R. traubi* Holland, 1969, has been described since 1953,

while another, represented by one female, is not described for reasons given on p. 4.

Full details of the expedition and its collecting stations were given by Smit (1953) and need not be repeated here.

Holotypes and a number of paratypes of the new species are deposited in the Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands; other paratypes are in the British Museum (Natural History).

Striopsylla Holland, 1969

One new species of this genus is described below, which agrees with Holland's (1969) generic description except in the shape of the pronotal spines which are acute rather than rounded (fig. 4).

Striopsylla mercurius new species (figs. 1-4)

Types. — ♂ holotype, ex *Pogonomelomys ruemmleri*, Letterbox Camp, 3700 m, near Mt. Wilhelmina, Dutch New Guinea [West Irian], 12.ix.1938, W. B. Richardson and L. J. Toxopeus. Paratypes: 12 ♂, 7 ♀ with data as holotype; 1 ♂, ex *Phascogale* sp., Letterbox Camp, ix.1938, W. B. Richardson and L. J. Toxopeus; 1 ♂, Scree Valley Camp, 3800 m, near Mt. Wilhelmina, 27.ix.1938, W. B. Richardson and L. J. Toxopeus. Holotype and 6 ♂ 3 ♀ paratypes in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands, 8 ♂ 4♀ paratypes in British Museum (Natural History), London.

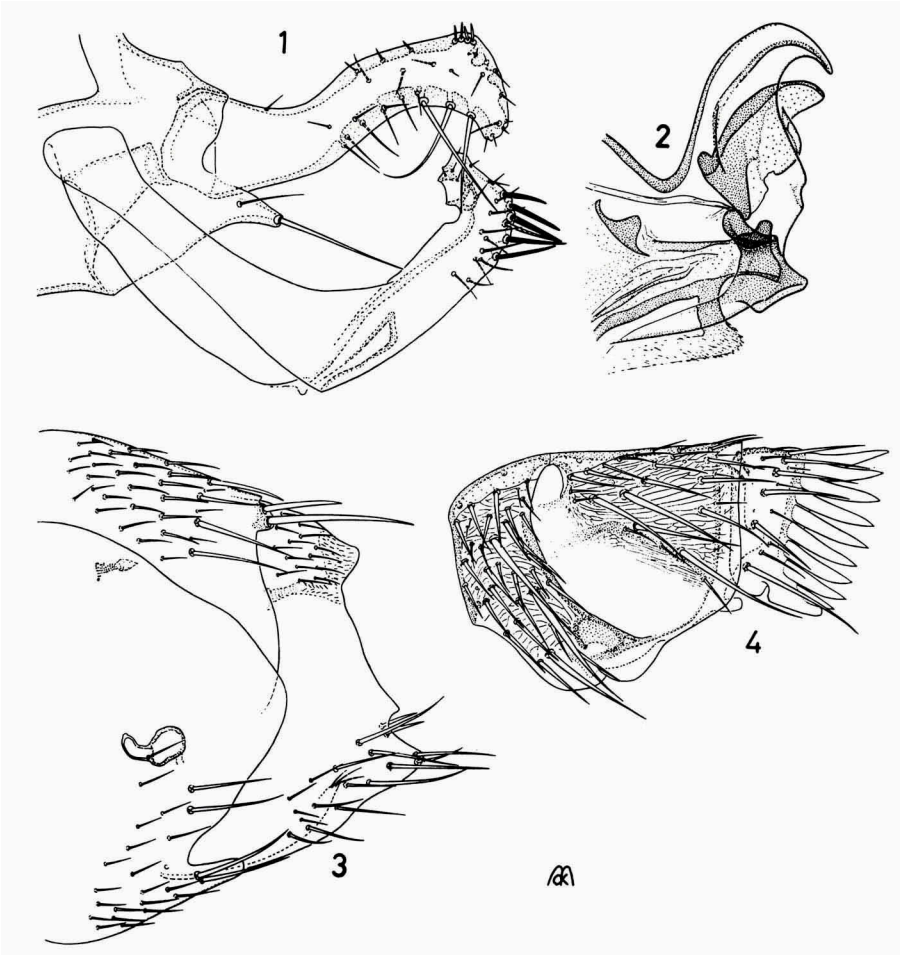
Diagnosis. — Head (fig. 4) with less conspicuous striae and more slender setae than in *S. rugata* (Jordan), thus more closely resembling *S. vandeuseni* Holland, but differing from both these species in the more acutely pointed pronotal spines. Males readily distinguished by the apex of sternum IX (fig. 1), which is more distinctly angled dorsad than in *S. rugata*, and which shows a conspicuous D-shaped incrassation, and which lacks the conspicuous, round, dorsal sinus of *S. vandeuseni*.

Description. — Head (fig. 4) longer than high, with conspicuous longitudinal striae. Frontal margin distinctly angulate, relatively straight below the angle. Setae on head only slightly thickened basally. Eye large, but not heavily pigmented.

Labial palp just longer than maxillary palp, reaching about two-thirds down fore coxa, its segments all longer than broad.

Pronotal comb (fig. 4) of about nine spines each side which are more or less acutely pointed apically.

Male. — Clasper generally similar to the described species, but movable process slightly broader (fig. 1).



Figs. 1-4. *Striopsylla mercurius* new species. 1, clasper and sternum IX of holotype; 2, apex of aedeagus of holotype; 3, segments VII and VIII and spermatheca of female paratype; 4, head and pronotum of male holotype.

Distal arm of sternum IX (fig. 1) with angular process produced dorsad from its apex, the process enclosing a conspicuous D-shaped incrassation. Ventro-apical margin bearing several long spiniforms.

Aedeagus generally similar to those of the described species, except for the apical sclerites (fig. 2). Ford's sclerite taller than long, with weakly developed caudal lobes on its lateral margins; dorsal portion curved caudad but not decurved or hookshaped. Sclerotised inner tube with ventral armature, smaller than that of *S. rugata* but longer than that of *S. vandeuseni*, terminating ventrally in a densely spiculose surface.

Female. — Tergum VII (fig. 3) without lobes or sinuses. Sternum VII (fig. 3) with a broadly rounded lobe above the pronounced subventral sinus; posterior row of strong setae with about two above and two below the sinus. Tergum VIII (fig. 3) with distinct marginal sinus just dorsad of its apex.

Spermatheca (fig. 3) similar to those of the described species, the hilla usually about as long as bulga or slightly shorter.

Length: male, 2.5-3.0 mm; female, 3.3-3.7 mm.

Obtusifrontia Holland, 1969

The collection includes two new species, described from males only. The new species agree well with Holland's generic description based on the type species *O. simplex* Holland, differing slightly in details such as length of the proboscis. However, in one of the new species tergum VII bears a pronounced caudal lobe between the pairs of antesensilial setae, the presence or absence of which is therefore a specific rather than generic character in this group.

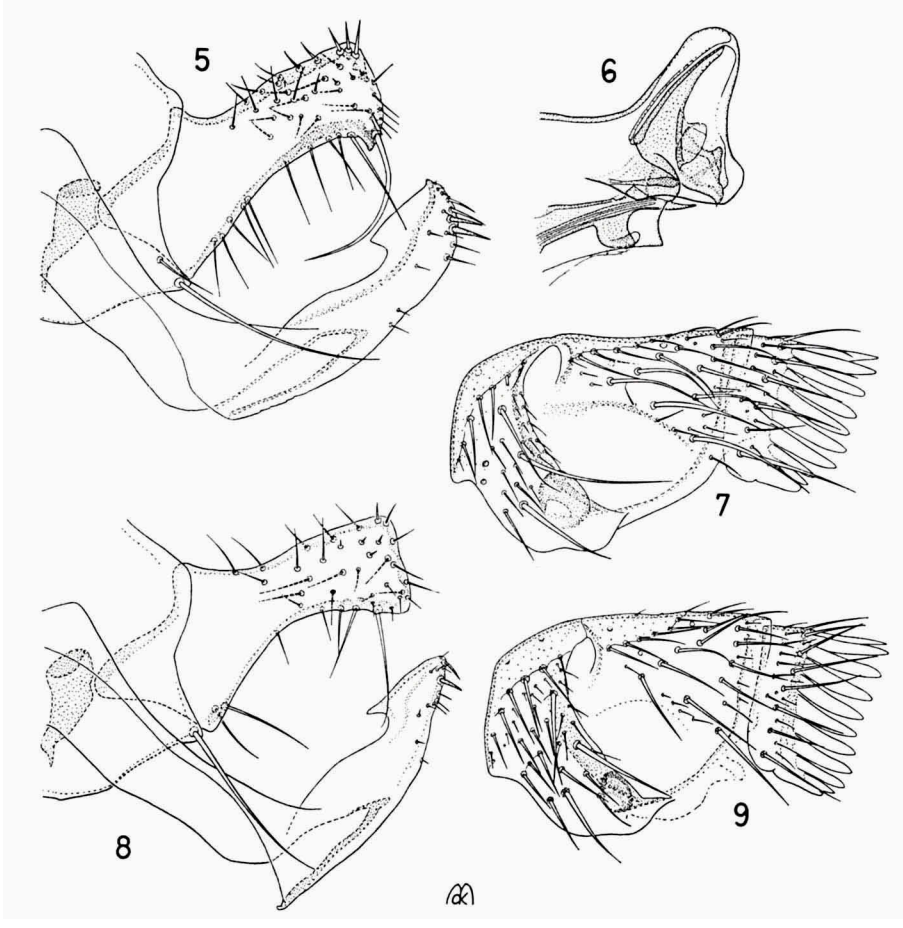
The collection also included a female specimen which is probably a species of *Obtusifrontia*. As females of the species of this genus have not been described, identification or description of this specimen has not been attempted. There is no evidence to indicate that it is conspecific with the males described.

Obtusifrontia falcata new species (figs. 5-7)

Types. — ♂ holotype, ex *Stenomys* sp., Letterbox Camp, 3600 m, near Mt. Wilhelmina, Dutch New Guinea [West Irian], 9.ix.1938, L. J. Toxopeus. Paratypes: 2 ♂, ex *Pogonomelomys ruemmleri*, Letterbox Camp, 3700 m, 12.ix.1938, W. B. Richardson and L. J. Toxopeus. Holotype in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands; paratypes in British Museum (Natural History), London.

Diagnosis. — Distinguished from *O. simplex* and *O. simula* new species by the larger eye (fig. 7). Males also distinguished by the broader apex of sternum IX (fig. 5) and the presence of a large decurved seta on the apical margin of the movable process. Distinguished also from *O. simplex* by the straighter movable process (fig. 5), lacking an angulate dorsal margin, and from *O. simula* new species by the more prominent median dorsal lobe of the aedeagus, and the absence of the caudal process on tergum VII between the pairs of antesensilial setae.

Description. — Male. Head longer than high, with unmodified setae (fig. 7). Frontal margin weakly angulate about mid-way between oral angle and



Figs. 5-9. *Obtusifrontia* species. 5, *O. falcata* new species, clasper and sternum IX of holotype; 6, *O. falcata* new species, apex of aedeagus of paratype; 7, *O. falcata* new species, head and pronotum of male holotype; 8, *O. simula* new species, clasper and sternum IX of holotype; 9, *O. simula* new species, head and pronotum of male holotype.

falx, flattened on either side of the angle. Eye large, about as wide as antennal pedicel, and with a large sinus reaching to its centre.

Proboscis reaches for about two-thirds the length of fore coxa.

Pronotum with two rows of setae and comb of about 9-10 straight spines each side (fig. 7). Pleural arch well-developed.

Terga II-VII with 2 or 3 rows of setae and sometimes part of a fourth, with a subdorsal spinelet each side on terga II-V or VI, and sometimes a second on tergum II.

Modified abdominal segments and genitalia. — Tergum VII without a

pronounced caudal process between the pairs of antesensilial setae. Movable process (fig. 5) tapering strongly in basal third, of roughly uniform width in distal half or two-thirds; apex squarely truncate, its ventral corner protruding slightly to form a rudimentary stiva and with a large, prominent, decurved seta on the ventral end of the apical margin; dorsal margin concave basally, straight distally, but without a distinct angle: ventral margin concave, with one long subapical seta and about 6-9 smaller setae distributed over its length.

Distal arm of sternum IX (fig. 5) about as broad distad of the dorso-marginal notch as proximad of it, the ventro-apical margin strongly convex, bearing about four small spiniform or subspiniform setae and terminating in a short, dorso-apical point.

Aedeagus with a more pronounced median dorsal lobe than in the other known species (fig. 6). Ford's sclerite filling the end-chamber, with a weakly sclerotised median dorsal portion and angulate ventro-lateral processes.

Length: male, 2.0-2.5 mm.

Obtusifrontia simula new species (figs. 8, 9)

Types. — Male holotype, ex *Neophascogale lorentzii*, Letterbox Camp, 3600 m, Dutch New Guinea [West Irian], ix.1938, W. B. Richardson and L. J. Toxopeus; in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.

Diagnosis. — Males distinguished from both *O. simplex* and *O. falcata* new species by the presence of the caudally projecting lobe between the pairs of antesensilial setae. Also differs from *O. simplex* in the nearly straight, rather than angulate, dorsal margin of the movable process (fig. 8), and from *O. falcata* new species in the narrower apex of sternum IX and the absence of the prominent decurved seta on the apical margin of the movable process.

Description. — Male. Head longer than high, with unmodified setae (fig. 9). Frontal margin weakly but distinctly angulate about mid-way between oral angle and falx; the margin flattened below frontal angle. Eye smaller than in *falcata* new species, not as wide as antennal pedicel.

Proboscis reaches for about three-quarters the length of the fore coxa.

Pronotum with two rows of setae and a comb of about 10 spines each side (fig. 9).

Pleural arch well-developed.

Abdominal terga II-VII with 2-3 rows of setae and sometimes part of a fourth. Terga II-VI inclusive with a sub-dorsal spinelet each side.

Modified abdominal segments and genitalia. — Tergum VII with a large lobe projecting caudad between the pairs of antesensilial setae. Movable

process (fig. 8) widest basally, narrowing to a point about two-fifths from base to apex and widening gradually towards its apex; apex squarely truncate, without a stiva. Concave ventral margin with one long subapical seta, and about 4-6 smaller, irregularly placed setae along its length. Dorsal margin nearly straight, without an angle.

Distal arm of sternum IX (fig. 8) with a pronounced dorso-marginal notch bounded distally by an acute process directed cephalad, and distad of which the sternum tapers strongly to a narrower apex; ventro-apical margin not strongly convex, with about two subspiniform setae.

Aedeagus without a prominent median dorsal lobe. Ford's sclerite large and filling the end-chamber, apparently generally similar to those of the other species but the detailed characters not visible in the only known specimen. Sclerotised inner tube similar to *O. falcata* new species (fig. 6) but with a slightly longer ventral armature.

Length: male, 1.9 mm.

Parastivalius serus new species (figs. 10, 11)

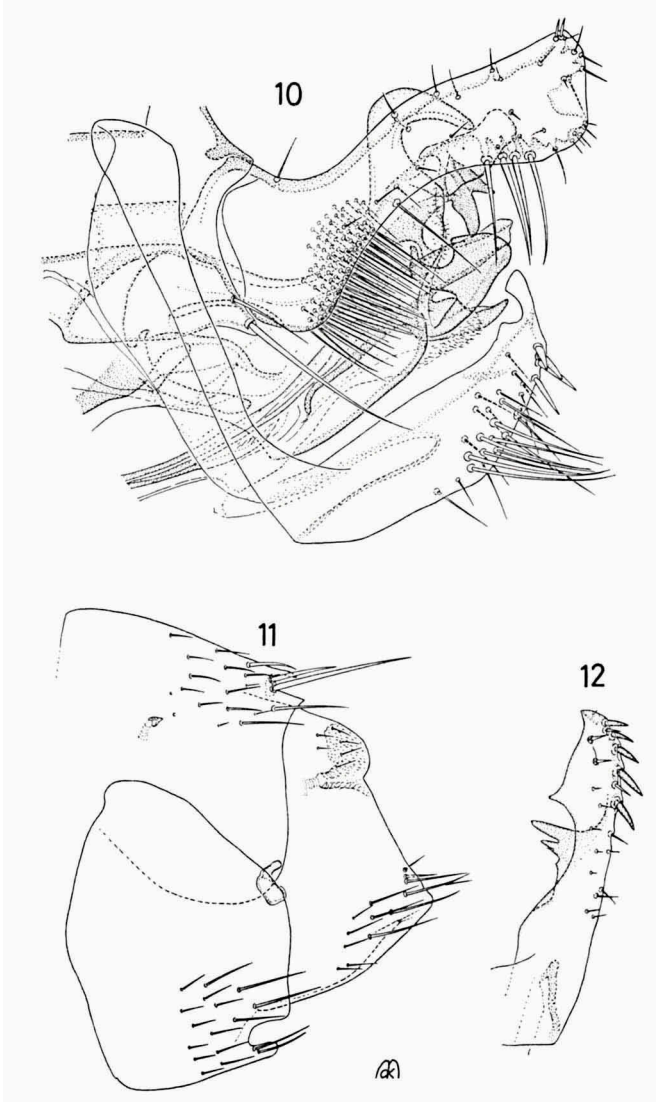
Types. — Male holotype ex *Satanellus albopunctatus*, Mist Camp, 1800 m, on Idenburg River, Dutch New Guinea [West Irian], 19.i.1939, L. J. Toxopeus. Paratypes: 4 ♂, 1 ♀, data as holotype; 1 ♀ from *Peroryctes longicaudata dorsalis*, other data as holotype; 1 ♂ from *Phascolosorex doriae*, Rattan Camp, 1150 m, near Araucaria River, 14.v.1939, L. J. Toxopeus. Holotype and 2 ♂ 1 ♀ paratypes in Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands; 3 ♂ 1 ♀ paratypes in British Museum (Natural History), London.

Diagnosis. — Reliably distinguished from *P. novaeguineae*, *P. gracilentus*, *P. gressitti* and *P. brassi* only by the male genitalia.

Males differ from all other known species in sternum IX, which bears a single narrow apical process, broadest and truncate at its tip and separated from the dorso-anterior margin by a small rounded notch (fig. 10), rather than either a subapical process, or a much larger, curved apical process. Distinguished from *P. novaeguineae* and *P. gracilentus* by the Ford's sclerite with two acute points directed ventro-caudad (fig. 10), and from *P. brassi* and *P. gressitti* by the longer, more hook-shaped median dorsal lobe of the aedeagus (fig. 10).

Description. — Head, thorax, appendages and unmodified abdominal segments closely resemble those of *P. novaeguineae* (described in detail by Holland, 1969: 37-38).

Male. — Movable process (fig. 10) generally similar to those of the described species but with a relatively poorly defined ventro-apical angle and



Figs. 10-12. *Parastivalius serus* new species and *Rectidigitus spooneri*. 10, *P. serus* new species, genitalia of male paratype; 11, *P. serus* new species, segments VII and VIII and spermatheca of female paratype; 12, *R. spooneri*, distal arm of male sternum IX, Mist Camp.

the 3 or 4 prominent ventro-marginal setae placed a short distance proximad of the apex.

Apex of sternum IX (fig. 10) produced into a narrow, truncate, dorsally-directed process which is wider apically than basally and separated from the

dorso-anterior margin by a small, rounded sinus. With 3 or 4 spiniforms on the ventro-apical margin and a number of prominent setae on distal half of outer and inner surfaces.

Aedeagus with long capsule as in other species. Median dorsal lobe (fig. 10) strongly decurved, hook-shaped. Ford's sclerite with a conspicuous decurved, acute process directed ventrad bearing on its caudal side a pair of smaller, acute tooth-like processes directed ventro-caudad, and a pair of dorso-lateral membraneous processes barely visible in most specimens (fig. 10). Phylax bluntly rounded on caudal side, with upturned process on proximal side.

Female. — Tergum VII (fig. 11) with about 12-14 setae each side excluding intercalaries and antesensilials, and with acute lobes between and below the pairs of antesensilial setae as in other species of *Parastivalius*. Sternum VII with about 13-17 setae each side, of which 1 or 2 of the posterior row are attached below the sinus and slightly caudad of its apex. Tergum VIII (fig. 11) with about 6-7 small setae in region of the spiracle and about 7-12 external setae on its lower half; apex bluntly rounded, the margin just dorsad of the apex with 2 very shallow sinuses.

Spermatheca (fig. 11) with striated bulga distinctly broader at caudal end than at the end adjoining the hilla; breadth of bulga at broadest end just more than half its length.

Length: male, 2.1-2.8 mm; female, 4.2-5.1 mm.

Comments. — This species is known from only a small series which is clearly inadequate to show the full range of variation of the characters described, especially in the female.

An additional female specimen of *Parastivalius* sp. collected from *Echymipera doreyana*, Hollandia, Dutch New Guinea [West Irian], July 1938, W. B. Richardson and L. J. Toxopeus, has been excluded from the type-series, and is deposited in the British Museum (Natural History). It differs from the females described in having a more acute apex on tergum VIII and a more ovoid bulga of the spermatheca, not widest at its caudal end.

Parastivalius novaeguineae (Rothschild, 1904)

Rattan Camp, 1150 m, 14.vi.1939, ex *Phascolosorex doriae*, L. J. Toxopeus, 1 ♂.

Rectidigitus spooneri (M. Rothschild, 1934)

Letterbox Camp, 3600 m, Sept. 1938, ex *Neophascogale lorentzii*, W. B. Richardson and L. J. Toxopeus, 1 ♀; in Rijksmuseum van Natuurlijke Historie, Leiden. Mist Camp, 1800 m, 14.i.1939, ex *Neophascogale lorentzii*, L.

J. Toxopeus, 1 ♂; in British Museum (Natural History), London. The male specimen differs from the syntypes illustrated by M. Rothschild (1934) and Holland (1969), in lacking an inner, sclerotised, tooth-like process on the apical portion of sternum IX (fig. 12). However, a rudiment of this structure appears to be present on the right side of the sternum. The apex of the sternum is also slightly broader than in the syntypes.

Rectidigitus traubi Holland, 1969

Mist Camp, 1800 m, 19.i.1939, ex *Peroryctes longicaudata dorsalis*, L. J. Toxopeus, 2 ♂ 1 ♀; 1 ♂ in Rijksmuseum van Natuurlijke Historie, Leiden, 1 ♂ 1 ♀ in British Museum (Natural History), London.

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