STUDIES IN NEOTROPICAL MALLOPHAGA. XII (PART 7):  
LICE OF THE TINAMOUS ¹

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(With 11 text-figures)

Parts 1, 2, 5 and 6 of this series of papers have appeared in this publication; 3 and 4 in the Boletin de Entomologia Venezolana.

For further explanation regarding the material treated in this paper see the introduction to part 5. In this paper is treated the remainder of the genus Rhyncothura Carriker, 1936 (part).

All measurements are in millimeters and all drawings made by the author.

Rhyncothura carrikeri Clay, 1987

P. Z. S., B, 1: 143, text-figs. 5, 6a and b (Nothoprocta cinerascens (Burmeister).  
Heteropeostus carrikeri (Clay), Carriker, Proc. U.S. Nat. Mus., 85, (3180), 1944, p. 176, figs. 29c-t (Nothoprocta cinerascens (Burmeister)).

With the exception of the male genitalia this species is a typical Rhyncothura, and the genus Heteropeostus was based entirely on that character. Unless additional species are discovered with this curious type of genitalia it seems best to leave the species in Rhyncothura.

The genital armature is exceedingly unique and so totally different from all others found in Rhyncothura and allied genera that it seems impossible that this curious type of genitalia could have developed from the ordinary type, without any other generic changes in the insect.

In addition to the genitalia the species may be recognized by the entire absence of a frontal carina and internal incrasations, with but one incrasation and almost no carinae along sides of head, and by the transverse incrasations in anterior portion of the pleurites; occipital margin sinuate and not extending posterior to the occiput at any point; lateral margins of pro and mesothorax strongly convex and lateral angle of former covered by sides of latter.

¹ Received for publication July 29, 1961.
Rhyncothura testudo (Clay, 1937)

Heptapsogaster testudo Clay, P. Z. S., B. 1 : 140 (Nothura maculosa peruviana Berlepsch & Stolzmann).

This is such a typical Rhyncothura that I feel certain that Miss Clay must have placed it in Heptapsogaster by mistake. I have a pair of paratypes and an additional male from the type host.

Head very long with circular frons and straight sides, slightly expanded laterally in posterior portion; occipital margin sinuate, with tips of temples falling short of line of occiput; frontal carina broad, serrated on inner margin and with one incrassation on each side; temples with broad carinae, escalloped on inner margin.

Prothorax long, sides nearly straight and divergent; mesothorax unusually long; more than usual amount of lateral margins of metathorax exposed but not trace of postero-lateral angles; tergites and pleurites closely fused, former wide, unbroken across abdomen, but with narrow hyaline interspaces; sternites well developed, covering median portion of abdomen only.

Female with frons narrower, more strongly circular; sides of head convex; thorax and abdomen very similar to male. Male genitalia simple and typical.

Rhyncothura boraquira (Clay, 1943)

Heptapsogaster boraquira Clay, Field Mus. Nat. Hist., Zool., 24 : 378 (Nothura boraquira (Spix)).

Represented in my collection by male and female paratypes. Species closely related to testudo, with long head and prothorax and narrow, circular frons, slightly flatter in male; temples with straight, divergent sides, slightly concave near tips; occipital margin strongly sinuate, with temples extending but slightly beyond occiput; frontal and temporal carinae wide, with three incrassations on each side of frons, the median ones poorly developed; temples with three long incrassations and ocular blotch.

Abdomen long in both sexes; tergites and pleurites of equal pigmentation, closely fused, the former unbroken across abdomen but separated by hyaline spaces; sternites occupying median portion of abdomen only.

Female with head narrower than male, frons more convex and temples less divergent; incrassations of frons more strongly developed and nearly uniform in length. Thoracic segments and abdomen very similar in the sexes. Male genitalia typical of the genus.

Rhyncothura boultoni (Clay, 1943)

Heptapsogaster boultoni Clay. Ibid.: 380, figs. 31a, 33b and g (Nothura boraquira (Spix)).

Male and female paratypes in author's collection. Species of very unusual shape and structure. Head similar in shape in the sexes but temples wider
at tips in female; frons wider in female and more convex, frontal carina very wide and poorly chitinized, with no incrasations; temporal carinae narrow and weakly chitinized, with two small projections.

Prothorax with convex, divergent sides and lateral angles almost touching mesothorax, the latter very wide; abdomen short and rounded in both sexes. Pleurites large, with a well developed, elongated incrasation in median portion; tergites separated from pleurites by narrow hyaline space, and continuous across abdomen, narrower in median portion, and separated by wide hyaline bands. Peculiar genital sternites in both sexes; female tergites more widely separated from pleurites and median portion unpigmented.

*Rhyncothura testudo heterura* Carriker, 1944

*Rhyncothura heterura* Carriker, *Proc. U.S. Nat. Mus.*, 95 (3180): 169, figs. 18c and d (*Nothoprocta cinerascens* (Burmeister)).

Female unknown, and at time of its description I had not seen *testudo* (Clay), but have since acquired paratypes of that species, and after careful comparison of structure and measurements it is evident that they are conspecific. The outstanding differences between *testudo* and *heterura* are the shape of the pro and mesothorax, larger abdomen in *heterura* and decidedly different size and proportions of parameres and endomera, both being longer and wider in *testudo*.

In the original figure of *heterura* the clear spots on the pleurites are too large and conspicuous, they being merely a slight lighter area surrounding the spiracles; the frontal carina is clear-cut and deeply pigmented, with the inner margin corrugated, and with a less deeply colored, irregular shaped area contiguous to the carina in which are irregular markings and pigmentation. In *testudo* prothorax with slightly convex sides, with protruding posterolateral angles, but in *heterura* sides are uniformly concave to the lateral angle; metathorax longer in *testudo*.

*Rhyncothura subteres* Carriker, 1944


The species has the same peculiar incrasation of the pleurites as *R. teres*, these two species being the only one know having such markings, which consist of two transverse bands across anterior end of pleurites II to VI, with their inner ends overlapping. Narrower in *subteres* and less strongly pigmented.

Head of *subteres* wider at frons and temples; pro and mesothorax shorter and narrower and metathorax longer and narrower; abdomen smaller.

Parameres shorter and wider in *teres*; endomera longer and narrower. In *subteres* cephalic carinae narrow and poorly chitinized, with frons devoid
of incrasations, and with but two small ones on temples behind ocular blotch, the same as in teres, but in teres shape of head in female differs, the frons more convex and sides of head straight from antennal sinus to tips of temples instead of concave posteriorly. Apparently closely related to teres, but specifically distinct.

**Rhyncothura andina** Carriker, 1944


The smallest species of *Rhyncothura* now known and very different in many characters, as would be expected with its host so different from *Nothura* and *Nothoprocta*.

Like teres and subteres, there are no internal projections on the narrow carina of frons; lateral temporal carinae absent, but with one prominent incrasation in median portion. Male with temples strongly divergent and sides slightly convex, while in female frons is wider, with sides of head straight and less divergent, a most unusual form of dimorphism. Whole insect short and wide, especially head and abdomen, the latter almost round in male. Prothorax very wide but short; meso and metathorax very short, with latter nearly as wide as former.

There is no apparent pleurite on segment I, and only a narrow fragment on II, in posterior portion, while in III to VI they are well developed but narrow. Tergite I fills the whole segment, but is not fused medially, the inner ends merely touching; II to VI are widely separated medially and transversely by hyaline areas, while they taper towards inner ends. Male genitalia also presents unusual character.

**Rhyncothura brevicapitis** sp. n.

(Figs. 1 and 2)

Type, male adult, from *Nothoprocta p. pentlandi* (G. R. Gray), collected by the author at Padilla, Bolivia, Dec. 31, 1937 (author's coll.). Type No. 697.

**Diagnosis** — Species represented by two males only, both in good condition and showing no signs of shrinkage or excessive clearing.

Margins of frons and sides of temples decidedly crenulated, a natural condition, present equally in both specimens.

In *brevicapitis* this crenulation, taken in connection with shape of head, small size and unmarked abdominal sclerites, are sufficient for its separation from *R. minuta*, its nearest relative.

Tergites clearly fused with pleurites, continuous across abdomen, narrower in median portion and separated by hyaline areas. Chaetotaxy of entire body
unusually long for the genus, with many very coarse setae; sides of prothorax uniformly circular, without lateral angle, but with a strong seta set just posterior to middle of segment. Mesothorax of same width as head at temples; metathorax narrow; abdomen oval and of normal size. Genitalia small;

*Rhynocothura brevicapitis* sp. n., male — Fig. 1: Body; fig. 2: genitalia. *Rhynocothura subminuta* sp. n. — Fig. 3: Body of male; fig. 4: head and tip of abdomen of female; fig. 5: male genitalia.

parameres short and wide; endomera disproportionally large, the entire genitalia resembling those of *subminuta* more than *minuta*. Legs very small (not shown in fig.); tibiae and femora short and thick, all with numerous stout bristles. Measurements follow next species.
Rhyncothura subminuta sp. n.

(Figs. 3-5)

Types 2 and 2 adults, from Notoprotea pericardia Kitlitz, taken from a dried skin by Mr. K. C. Emerson at a west-german musem (in Emerson coll.).

Diagnosis — Very different from teres Clay, from same host, although its host was indicates as being Noturpa maculosa peruviana.

It is apparently closest to R. minuta Carriker, from which it differs in having a wider and longer head; wider thoracic segments and abdomen shorter and wider; endomera also considerably shorter and wider.

Head in both sexes similar in shape to minuta, but eye much larger; internal incrasations of frons longer in male, median pair the longest, while in the female this is reversed, the lateral pair longest in minuta and shortest in subminuta. Prothorax much wider than in minuta, with convex, divergent sides, ending in a protruding, rounded angle in posterior portion.

Abdominal structure similar to minuta, excepting that the pleurites and tergites are closely fused, the line of fusion invisible. No incrasations on pleurites I to III, as in minuta. Entire chaetotaxy shorter and differing on apical segments of both sexes, especially the female.

Measurements of males of minuta and brevicapitis and 2 and 2 of subminuta:

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Rhyncothura lunulata Carriker, 1936


The species represents the extreme type of the genus, where temples are not expanded or pointed, merely terminating in a sharp point on a line with the occiput, the only species of this type presently known.

Known only from female and easily distinguished from all others of the genus by the shape of the head and entire absence of internal incrasations on the cranial carinae. Frons and sides of head flatly circular; occipital margin strongly sinuate and prothorax with lateral angles in median portion; carina of frons narrow, that of temples wider and broken.
Tinamicola was erected for the species of Heptapsogastrinae closely related to Heptapsogaster, but with non dimorphic antennae, and contained, in addition to the genotype, Goniocotes rotundatus Rudow, T. latithorax Carriker, Goniocotes coxatus Piaget and Goniocotes alatofasciatus Piaget. Miss Clay has since proven that alatofasciatus is a synonym of rotundatus, both from the same host, while G. coxatus is a true Goniocotes, host unknown. There remain in Tinamicola only rotundatus Rudow, the genotype, and latithorax Carriker.

A re-examination of these two species shows that with the exception of the non-dimorphic antennae they cannot be separated from the Rhyncothura tesselata group. Incrassations of cephalic carinae are the same, only larger, while those of the pleurites are rather similar. It will be noted that in these two species segment VII of abdomen is more or less encircled by VI, as in tesselatus, although to less extent. Posterior margins of temples and anterior margin of mesothorax are serrated as in tesselatus while the structure of the metathorax is typical of Rhyncothura, and there are no trace of scent glands. Like tesselatus, these are border-line types and not typical Rhyncothura, especially in the antennae, which character, in this case, does not seem to be of generic significance, so that it seems best to reduce the genus Tinamicola to a synonym of Rhyncothura.

Rhyncothura freilingi (Eichler, 1941)
(Figs. 6-8).

Tinamicola freilingi Eichler, Arch. Naturg., 10: 371, fig. 2 (Cariama cristata (Linne)).

I have in my collection three fine pairs of this species, thanks to the generosity of Dr. Guimarães. At first glance they seem to be separable generically from Rhyncothura, on account of the curious cephalic carinae, but a careful analysis shows them to be of specific rather than generic significance. Shape of head and antennae similar to the tesselata group of Rhyncothura. Thoracic segments all typical of that genus, with the same chaetotaxy and with posterior margin of metathorax circular and deeply embedded within abdomen. Shape of abdomen, its chaetotaxy and structure of its sclerites are typical of many species of Rhyncothura; the genitalia is also typical, while there is no trace of scent glands.

The differences in the cranial incrassations are not so different as they appear to be. Quite a number of species of Rhyncothura lack all incrassations on frontal carina; the eye is very large and there is but a single incrassation at anterior end of temporal carinae, while in other species there are two or three; tips of temples are truncated as in tesselatus, with 2 short, thick setae, and with same setae on dorsal surface of head. Male genitalia very simple and typical of Rhyncothura. They differ from tesselata in not having abdominal
segment VII enclosed within VI. Taking all of these considerations into account it seems best to include *Timanicola freilingi* Eichler under *Rhyncothura*, in the *tesselata* group.

*Rhyncothura freilingi* (Eichler) — Fig. 6: Body of female; fig. 7: head and tip of abdomen of female; fig. 8: male genitalia. *Heptarthrogaster odontophorae* sp. n. — Fig. 9: Body of male; fig. 10: head, prothorax and abdomen of female; fig. 11: male genitalia.

**Heptarthrogaster** Carriker, 1936

*Heptapsogaster* (Carriker), Hopkins and Clay, 1952 *Checklist Mall.*: 71.

I fail to find any logical reason for synonymizing this genus. The meta-
thorax has a circular posterior margin, with no trace of postero-lateral angles,
as in Heptapsoagaster, the whole segment being embedded in segment I of
abdomen as in Rhyncothura. All species of this genus parasitic on the Tina-
midiæ are provided with scent glands, while those found on Odontophorus
have none. These glands are enormously developed in H. grandis and parvulus,
a large flower-like gland on V and a globular one on VI. The genus was based
principally on the shape of head, dimorphic antennae and the endocarinae with
their incassations, there being a strong sexual dimorphism in shape of head
in all species of the genus. The sides of the head are straight and divergent
in the males, forming strongly rounded angles with the occipital margin and
never extending much beyond the occiput, although the occipital margin
is slightly but uniformly concave, never sinuate as in Heptapsoagaster and Rhyn-
cothura.

In the female the sides of head are convex, more strongly divergent and
broadly rounded in the postero-lateral portion, with never any lengthening of
the temples. Temples much more expanded laterally in the females of the
species found on Odontophorus, while in these species there are but two
incassations on each side of frons, never three, with none at all on the post-
antennal carinae in the female, with only a vestigial one in male. The
abdominal chaetotaxy is also very different from those on Tinamiidiæ.

In the Tinamiidiæ species all endocarinae are narrow and lightly
pigmented, with 3 to 4 incassations on each side of frons, as a rule poorly
developed and with lateral pair sometimes obsolete, and with none on post-
antennary carinae. All species possess incassations on pleurites, these being
much larger in species from Odontophorus. The genus, as now constituted
is a very homogenous one, excepting the three species from Odontophorus in
which the entire chaetotaxy differs radically, which character may prove to
be of subgeneric value.

Heptarthrogaster parvulus (Taschenberg, 1903)

_Goniodes parvulus_ Tasch., _Nov. Acta Leop. Carol._, 44:38, pl. 1, fig. 4

(Host: _Tinamus robustus_ Sal. & Salvin).

88 : 134, pl. 20, fig. 1, 1a, 1b (Tinamus major fascipennis (error = _T._
major castaneiceps_ Salvadori); Guimarães, 1942; _Papéis Avulsos_, 2 (2):23.
figs. 14-19; Keler, 1939, _Arb. morph. taxon. Ent._, Berlin-Dahlem, 6:235,
fig. 9; Carriker, 1944, _Proc. U. S. Nat. Mus._, 95 (3180) : 178, fig. 20 d.


In view of the fact that so much has been written about this species and
so many figures published, further remarks seem to be unnecessary.
Heptarthrogaster minutus (Carriker, 1903)

Goniodes minutus Carriker, 1903. Univ. Neb. Stud., III (2):33, pl. 4, figs. 1, 2
Heptarthrogaster minutus, Carriker, 1942, Papéis Avulsos, II (2):24, figs. 23-25; Carriker, 1944, Proc. U.S. Nat. Mus., 95 (3180):177, fig. 2g.

*Heptapsogaster minutus* (Carriker), Hopkins and Clay, 1952, Checklist Mall.: 169.

The species has been fully discussed in previous publications and in the notes on the genus on previous page.

Heptarthrogaster grandis Carriker, 1936

*Proc. Acad. Nat. Sci. Phila.*, 88:136, pl. 20, fig. 3 (female) (*Tinamus s. servatus* = *T. major peruianus* Bonaparte).

Heptarthrogaster oliverioi Guimarães & Lane, 1937, Rev. Mus. Paul., 23:10, fig. 3 (*Tinamus solitarius*) (Vieillot).


*Heptapsogaster grandis* (Carriker), Hopkins and Clay, 1952 Checklist Mall.: 168.

Undoubtedly *Guimarães* was correct in reducing *H. oliverioi* to the synonymy of *grandis*. There are no appreciable differences between the two.

A very unusual case of distribution found in this species. The female holotype is from *Tinamus major peruianus*, the male allotype from *T. tao septentrionalis*, and *oliverioi* from *T. solitarius*. These host records are unquestionably correct, and there is no appreciable difference in specimens from the three hosts. It appears to be one of the very stable species.

Heptarthrogaster keleri Guimarães, 1942


Resembles *minutus* in shape of head, mandibles being set far forward in female; head in male similarly shaped, but mandibles not so far forward, and sides of temples slightly less rounded. Dorsal carina of frons narrow, with six irregularly shaped and pointed increscences; a broad sternal carina extends to tips of increscences; no increscences on post antenney carinae behind the small nodus. Parameres unusual, having their tips broadly truncate, somewhat as in *Heptapsus*.

Heptarthrogaster laticephalus Carriker, 1944


*Heptapsogaster laticephalus* (Carriker), Hopkins & Clay, 1952, Checklist Mall.: 169. Note. — Original spelling of species in error = *laticephalus*.

The host of this species is completely wrong, requiring considerable explanation. The vial containing specimens bore the number of an *Odonto-
phorus. The specimens mounted, it was apparent that they were a Heptopso-
gastrinae and I concluded that a field error was responsible. Search of records
revealed that a specimen of Crypturellus u. undulatus had been killed on
same day, and the immediate conclusion was that the lice came from it, the
slides being so labelled. At the same time I described a similar species
(H. costaricensis), giving its host as Crypturellus soui modestus, although the
slide was labelled Odontophorus melanotis. A specimen of Crypturellus had
been taken the previous day, and the conclusion was that the lice were from
it and not the Odontophorus, and were thus published.

In 1949, while collecting in northwestern Colombia, numerous specimens
of Odontophorus gujanensis marmoratus were taken, from which quantities of
Mallophaga were collected. Imagine my surprise to find in several of these
vials, from far distant localities, numerous specimens of a Heptapsgastrinae,
very similar to H. laticephalus and costaricensis, but specifically distinct. An
immediate careful search into the history of the material involved revealed the
true facts, which were, that the true hosts of H. latithorax and H. costaricensis
are Odontophorus g. simonsi and O. melanotis. The large series taken on
O. g. marmoratus left no doubt.

We are now confronted with another case in which species of Heptapsga-
strinae are parasitic on hosts to which they do not logically belong, a case
similar to that of the two species described by Eichler and noted above.
Unquestionably the acquisition of Heptapsgastrinae by Odontophorus must
have taken place before that genus spread over much of South America and
before it evolved into many species. If it had been found only from northwest
Colombia to Costarica we might suppose that it had been fairly recent, but
having spread to southeastern Bolivia makes such a theory untenable. On the
other hand there may have been two simultaneous infestations of Odonto-
phorus from Tinamus, the tinamou louse nearest to it being Heptarthrogaster
grandis, taken on the species of Tinamus, which would explain the wide
dissemination of the aberrant Heptarthrogaster.

Heptarthrogaster costaricensis Carriker, 1944

Proc. U. S. Nat. Mus., 95 (3180): 182, figs. 20c, 1. (Crypturellus soui modestus,
error = Odontophorus erythroceph melanotis Salvin).

Heptapsogaster costaricensis (Carriker), Hopkins & Clay, 1952, Checklist Mall.: 168.

Original description and figures full and complete. No further remarks
seem necessary.

Heptarthrogaster odontophorae sp. n.

(Figs. 9-11)

Types, $\delta$ and $\varphi$ adults, from Odontophorus gujanensis marmoratus
(Gould), collected by the author at Tarazá, Antioquia, Colombia, Apr. 26,
1948 (coll. author). Type No. 693
Diagnosis — Shape of head in both sexes similar to costaricensis, being very different from laticephalus, the latter have frons strongly convex in both sexes. Size and shape of head approximating the two previous species from Odontophorus. Slight difference in length of thoracic segments, but are slightly wider than in costaricensis; abdomen very different from both, being much larger in both sexes; incrasations of pleurites about the same as in costaricensis but differ from laticephalus in shape and position; tergites same in the three species, continuous across abdomen and separated by hyaline strips; chaetotaxy of segment VII in female about equal to costaricensis, but in laticephalus there is a row of short setae across posterior part of segment, instead of the patch on each side.

Size and length of abdominal chaetotaxy conspicuously different, being more abundant and much longer in odontophorae than in laticephalus, while in costaricensis it is about midway between the other two.

The distinguishing characters of odontophorae are the flattened frons in the male, large abdomen in both sexes and the long, strong and abundant chaetotaxy of the abdomen. Represented by ♂ holotype, ♀ allotype; 6 ♂ ♂ and 2 ♀ ♀ paratypes, also 14 ♂ ♂ and 30 ♀ ♀ from type host in different localities of Antioquia, Santander N. and Magdalena, Colombia.

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<td>0.62</td>
<td>0.677</td>
<td>0.895</td>
<td>0.865</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.29</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basal plate</td>
<td>0.103</td>
<td>0.07</td>
<td></td>
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</tr>
<tr>
<td>Parameres</td>
<td>0.106</td>
<td>0.033</td>
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</tbody>
</table>

Additions and corrections for species from Odontophorus — In the original descriptions of the first two no mention was made of the location of the long setae on the posterior and inner margin of the pleurites. In the figures they were shown as being dorsal (left side of figure), but a closer examination shows them to be, without question, sternal.

In the figures here given for H. odontophorae this error was also carried on in the figure of the male and on pleurites V and VI of female. The correct abdominal chaetotaxy of the female is shown on the right side of the figure (sternal). Setae of tergites I-III correctly shown. The number and arrangement of the setae of the abdomen are correctly shown in the figures.

Sternal setae of the females in H. odontophorae: Pleurite I, 2; II, 4; III, 6; IV, 7; V, 6 and VI, 9. H. costaricensis: 1, 0; II, 1; III, 3; IV, 5; V, 5; VI, 7. H. laticephalus: No. I, O; II, 2; III, 2; IV, 3; V, 3; VI, 3. The innermost seta on V is shorter, while on VI it is very short.