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BIRD LICE FROM THE TINAMIDAE

BY THERESA CLAY

DEPARTMENT OF ENTOMOLOGY, BRITISH MUSEUM (NATURAL HISTORY)

The species of Mallophaga described by Rudow from Nothura boraquira Spix (=Tinnamus bannaquira of Rudow) have caused difficulty owing to the fact that Rudow's original material has been lost and no subsequent author has examined material from the type host. In 1939, while on a visit to the United States, Colonel Meinertzhagen and I secured four species of Mallophaga from specimens of Nothura boraquira in the collection of Field Museum of Natural History. As a consequence, I am able, in this paper, to make some contribution to the elucidation of Rudow's species. Descriptive and synonymical notes on other Mallophaga from Tinamidae are included. Acknowledgment is due Mr. Rudyerd Boulton, Curator of Birds, for his kind co-operation in making the material available for study, and Mr. Clifford C. Gregg, Director of Field Museum, for providing publication facilities.

In considering Rudow's descriptions it must be remembered that these tend to be somewhat inaccurate, as can be shown by comparing them with the descriptions and figures made by Taschenberg (1882) from Rudow's specimens. Hopkins (1940, p. 418) has also shown that the measurements given by Rudow cannot be taken into consideration, as they seem to have little relation to reality and appear to be the "wildest of guesses." As the majority of Rudow's specimens have been lost, it is important to fix his names definitely to the species from the type hosts which follow the descriptions most closely, even though there are apparent discrepancies. It cannot be emphasized too strongly that once these names have been fixed it is in the interests of all to adopt the usage of the names even if there are differences of opinion over the interpretation of the original descriptions.
Heptapsogaster dilatatus Rudow


Goniodes dilatatus Giebel, Insecta Epizoa, p. 192, 1874. Host: as above.

Neotype from skin of Nothura boraquira Spix from Bolivia. Female, slide No. 12667, in the Meinertzhagen Collection.

Neoallotype from skin of same host from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

![Diagram](image)

Fig. 31. a, Heptapsogaster boultoni, male; head. b, H. dilatatus, male; head. c, H. dilatatus, female; paratergal plate III.

Neoparatypes from skins of same host from Bolivia and Brazil. Two males, one to be deposited in the collection of Field Museum of Natural History, one, slide No. 12667, in the Meinertzhagen Collection.

Description of female.—General shape as in H. s. stultus Clay. Head as shown in fig. 33, a, with bands, markings and chaetotaxy as shown for male (fig. 31, b). Thorax as in male. Abdomen with first two segments modified as is typical for Heptapsogaster (see Kéler, 1938, p. 306). Tergal plates II–VII approximating or fusing medially; paratergal plates well marked (fig. 31, c); sternal thickening in the form of a central quadrangular plate in each segment. Tergal plate I has one hair each side of midline; plates II–III have one lateral hair and one hair each side; plates IV–V have one lateral
hair and one hair each side of midline. Paratergal plates II–VII have one marginal hair; plates III–IV have one stout ventral hair; plate V has two ventral hairs. Sternal plates II–III have two small hairs each side of midline; plates IV–V have three small hairs each side of midline. Chaetotaxy and form of terminal segments of the abdomen as shown in fig. 34, c.

Description of male.—Similar in general appearance to the female but the abdomen is less elongated. Head and thorax as shown in fig. 31, b. Abdomen with general arrangement of plates on segments I–V as in female; terminal segments of abdomen as shown in fig. 34, d. Tergal plates I–II with chaetotaxy as in female; plates III–VI with one lateral hair each side. Chaetotaxy of paratergal plates and sternal plates I–V as in female. Genitalia as shown in fig. 33, e.

MEASUREMENTS

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th></th>
<th>FEMALE</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Length mm.</td>
<td>Breadth mm.</td>
<td>Length mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.300–0.322</td>
<td>0.470–0.510</td>
<td>0.338</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.108–0.123</td>
<td>0.295–0.308</td>
<td>0.108</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.108–0.115</td>
<td>0.510–0.540</td>
<td>0.108</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.560–0.630</td>
<td>0.585–0.615</td>
<td>0.740</td>
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<td>Total</td>
<td>1.08–1.17</td>
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<tr>
<td>C.I.</td>
<td>1.53–1.66</td>
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<td>1.57</td>
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Remarks.—Mr. G. H. E. Hopkins (1941, p. 48) maintains that Giebel’s identification of dilatatus Rudow was correct, and with this I agree. Giebel’s description differs from dilatatus as described above in that he states there are four marginal blotches on the anterior margin, whereas in this species and others of this type of Heptapso-gaster there are actually six. It is possible, however, that the outer blotches, which are small, were not counted by Giebel; this may also apply to the blotches on the temple margin where there are three and not two, as stated by Giebel.

Taschenberg’s statements (1882, p. 48) on this species are of little value, as he presumed that dilatatus was described from Rhynchotus rufescens and the Rudow material which he saw was all from this host. Thus his subsequent remarks concerning dilatatus are largely invalidated.

It is therefore proposed to apply dilatatus Rudow to the species described above and to consider dilatatus Giebel as the same. Since Rudow’s description must apply to the female, this sex has been chosen as the neotype.
This species is of the same general type as *H. s. stultus* Clay (1937, pl. 1, fig. 4), from which it is distinguished by the form of the internal thickening of the paratergal plates, the male genitalia, and the terminal segments of the female abdomen.

**Heptapsogaster boraquirae** sp. nov.

*Holotype* from skin of *Nothura boraquira* from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

**Fig. 32.** a, *Heptapsogaster boraquirae*, male; head. b, *Strongylocotes tinnami*, male; head.

*Paratypes*, same data as the holotype. Two males and three females to be deposited in the collection of Field Museum of Natural History; four males and twelve females, slide No. 12667, in the Meinertzhagen Collection.

*Description of male.*—A somewhat elongated form showing surface sculpture. Head and thorax as shown in fig. 32, a. Abdomen with first segment (=true segment II) modified as in all species of *Heptapsogaster*; segment II large. Tergal plates transversely continuous; paratergal plates without distinct internal thickening. Sternal thickening in the form of central quadrangular plates, the lateral margins continuous, thickened, and somewhat raised,
forming a dark line down each side of the abdomen. Terminal segments of abdomen as shown in fig. 35, d. Tergal plate I with a hair each side of midline; plates II–III with one lateral, one medium-sized and one small hair each side; segments IV–V with one lateral and two small hairs each side of midline. Paratergal plates II–VII with one marginal hair each side of abdomen; plates III–IV with one ventral hair; plates V–VII with two ventral hairs. Sternal plate II with one hair on each side of midline; and plates III–V with two hairs on each side of midline. Chaetotaxy of terminal segments as shown in fig. 35, d. Genitalia as shown in fig. 33, d, and characterized by the forked endomereres.

Description of female.—Similar in general appearance to male with head as shown in fig. 33, c. Chaetotaxy of head and characters of thorax as in male, except that the hair each side of midline of occiput is considerably smaller. Plates on segments I–V arranged as in male. Sternal plate II with one to two hairs each side of midline; plates III–IV with two to three hairs each side; plate V with four

---

**Fig. 33.** a, *Heptapsogaster dilatatus*, female; head. b, *H. boultoni*, female; head. c, *H. boraquirae*, female; head. d, *H. boraquirae*, male; genitalia. e, *H. dilatatus*, male; genitalia. f, *Strongylocotes tinnami*, male; genitalia. g, *Heptapsogaster boultoni*, male; genitalia.
hairs each side of midline. Chaetotaxy of terminal segments as shown in fig. 35, c.

**Measurements**

<table>
<thead>
<tr>
<th></th>
<th><strong>Length</strong> mm.</th>
<th><strong>Breadth</strong> mm.</th>
<th><strong>Length</strong> mm.</th>
<th><strong>Breadth</strong> mm.</th>
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<tbody>
<tr>
<td>Head</td>
<td>0.370-0.384</td>
<td>0.500-0.525</td>
<td>0.384-0.400</td>
<td>0.480-0.510</td>
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<td>Prothorax</td>
<td>0.138-0.154</td>
<td>0.320-0.330</td>
<td>0.138-0.154</td>
<td>0.322-0.340</td>
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<td>Pterothorax</td>
<td>0.138-0.154</td>
<td>0.460-0.475</td>
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<tr>
<td>Abdomen</td>
<td>0.915-0.925</td>
<td>0.584-0.610</td>
<td>1.065-1.080</td>
<td>0.690-0.725</td>
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<td>Total</td>
<td>1.55-1.61</td>
<td>1.73-1.75</td>
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</tbody>
</table>

C.I. 1.315-1.365 1.235-1.295

**Remarks.**—This species is similar to *H. testudo* Clay, and the same thickened lateral margins on the sternal plates give a characteristic appearance to the abdomen. It is distinguished from *testudo*, amongst other characters, by the shape of the head in both sexes and by the male genitalia.

**Heptapsogaster boultoni** sp. nov.

*Holotype* from a skin of *Nothura boraquira* from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

*Paratypes*, same data as the holotype. Two males and two females in the collection of Field Museum of Natural History; nine males and nine females, slide No. 12667, in the Meinertzhagen Collection.

*Description of male.*—Head and thorax as shown in fig. 31, a. Abdomen with first two segments modified as in typical *Heptapsogaster*. Tergal plates on segments II–IV separated medianly; those on segments V–VII approximating or fusing centrally. Paratergal plates with elongated internal thickening and with backwardly directed projections on the posterior margin in some of the segments. Segment II may have a small projection; segment III has two, each bearing a hair; and segments IV–V have one projection. Sternal thickening in the form of a central plate in each segment. Form and plates of terminal segments as shown in fig. 35, b. Tergal plate I has one hair each side of midline; plates II–III have one lateral hair and two on each side; plates IV–V have one lateral hair and one each side of midline. Paratergal plates II–VI have one marginal hair each side and plates III–V have two ventral hairs. Sternal plates I–II have one hair each side of midline; plates II–IV have three hairs each side; and plate V has five hairs each side of midline.
Chaetotaxy of terminal segments as shown in fig. 35, b. Genitalia of the same general type as in other *Heptapsogaster* (fig. 33, g).

*Description of female.*—Similar in general appearance to male but somewhat larger. Head as shown in fig. 33, b. Thorax as in male.

Abdomen somewhat more elongated than in male and differing markedly in having the sternal thickening in the form of two lateral plates in each segment, not as a single continuous central plate as in the male. Tergal plates separated medianly; paratergal plates similar to those of the male but with one minute and three normal backwardly directed processes on segments III–IV and with one normal and one minute similar process on segment V. Tergal plate I has one central hair each side; plates II–IV have one lateral hair and two on each side of the midline. Paratergites with marginal hairs as in the male; paratergites III–VI with three ventral hairs. Sternal plates I–II with one hair each side of midline; plates III–V with five hairs each side of midline. Chaetotaxy of terminal segments as shown in fig. 35, a.
MEASUREMENTS

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length mm.</td>
<td>Breadth mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.520–0.540</td>
<td>0.890–0.915</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.200–0.215</td>
<td>0.475–0.480</td>
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<tr>
<td>Pterothorax</td>
<td>0.214–0.225</td>
<td>0.780–0.795</td>
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<tr>
<td>Abdomen</td>
<td>1.015–1.080</td>
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<tr>
<td>Total</td>
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<tr>
<td>C.I.</td>
<td>1.685–1.740</td>
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Remarks.—This species has been placed in Heptapsogaster, although it cannot be considered at all typical of the genus as now constituted. However, it is the opinion of the author that too many genera have been erected for the species from the Tinamidae and that as more species are discovered some of the genera will have to be sunk. As it is probable that Heptapsogaster will have to be widened to include a number of more diverse forms, it seems more satisfactory to keep this species within the genus Heptapsogaster, at any rate for the present. H. boultoni is larger than the typical members of the genus and lacks the internal projections from the clypeal band. The species is named in honor of Mr. Rudyerd Boulton.

Strongylocotes tinnami Rudow


Nirmus ansatus Rudow, l.c., p. 474. Type host: as above.

Neotype from skin of Nothura boragira Spix from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

Neoparatypies, same data as the neotype. Male and female to be deposited in the collection of Field Museum of Natural History; two females, slide No. 12667, in the Meinertzhagen Collection.

Description of male.—A typical Strongylocotes with head and thorax as shown in fig. 32, b. Abdomen tapering evenly to the narrow terminal segments and with segment I (= true segment II) modified as in other species of Strongylocotes (see Kéler, 1938, p. 308). Tergal plates with pitted surface; plates on segments I–VII separated medianly; lateral internal thickening in the form of pillar-like structures. Sternal thickening in the form of two plates, one heavily sclerotized, narrow, and with the longest axis lying horizontal, the other two more lightly sclerotized and with the longest axis vertical.
Characters and chaetotaxy of segments I–II and VI–IX as shown in fig. 34, a. Tergal plates III–V have one long hair and one smaller hair at the inner margin of the plates. Paratergal plates II–IV have two marginal hairs each side; plate V has three; plate VI has four; plate VII has three to four; plate VIII has four to five. Sternites III–IV have one fine hair on each side of midline and sternite V has two hairs each side. Genitalia of the same general type as found in other species of *Strongylocotes* (fig. 33, f).

*Description of female.*—Head of same general shape as that of male but proportions somewhat different (see Table of Measurements). Chaetotaxy of head, and shape and chaetotaxy of thorax as in male. Abdomen with segments I–VI similar to those of male but with tergal plates V–VI somewhat broader and those on segments II–VI with an indentation in the posterior margin. Chaetotaxy of tergites, paratergites, and sternites I–V as in male. Chaetotaxy and characters of terminal segments as shown in fig. 34, b.

<table>
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<tr>
<td><strong>Male</strong></td>
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<tr>
<td>Length</td>
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<tr>
<td>mm.</td>
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<tr>
<td>Head</td>
</tr>
<tr>
<td>Prothorax</td>
</tr>
<tr>
<td>Pterothorax</td>
</tr>
<tr>
<td>Abdomen</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

C.I. 0.97 .................................................. 0.928–0.945

*Remarks.*—If it is assumed that *Nirmus crassiceps* Rudow (1870, p. 473) is *Strongylocotes lipogonus* Nitzsch, as figured by Carriker (1936, pl. 6, fig. 1), then it can be assumed that *N. tinnami* Rudow is also a *Strongylocotes*. If it is also assumed, as suggested by Carriker (1936, p. 93) that *tinnami* and *ansatus* are the two sexes of the same species, then it is necessary to find a species of *Strongylocotes* in which the hind end of the head is rounded and in which one sex has the abdomen with “dreihöckrigem Ende” and the other has the abdomen with “Enden abgerundet, dicht behaart, der vorletzte Ring ragt mit einer Spitze in den letzten über.” A species of *Strongylocotes* of the *lipogonus* group from the type host complies with these qualifications and, except for the description of the general shape of the head and some of the proportions given by Rudow, fits the descriptions of *tinnami* and *ansatus*. The heads of these specimens from *Nothura boraquira* do not appear obviously more triangular than that of
lipogonus (=crassiceps), but, as the other characters of these specimens agree with the description and as the head can be considered to be slightly more triangular, it seems most convenient to apply these names to the species described above.

It is not possible to state definitely which, if either, of the descriptions applies to the male, as it is not unlikely that one of the specimens examined by Rudow was immature, thus emphasizing the differences between the two. However, it is stated that ansatus has the longer head and, as the description of the terminal segments of the abdomen can apply to either sex, it is proposed to consider ansatus as the female and tinnami as the male. This has the added advantage of making it possible to designate the male as the neotype.

This species is distinguished from lipogonus by the shape of the head and by the characters of the terminal segments of the abdomen in both sexes.

Strongylocotes Taschenberg


Through the kindness of Mr. Carriker it has been possible to examine the specimens of *Nirmocotes nirmoides* Carriker and there appears to be little doubt that this and the other species of *Nirmocotes* are actually immature *Strongylocotes*. This being the case, it is necessary to review the synonymy of the species contained in the genera *Nirmocotes* and *Strongylocotes*.

**Strongylocotes orbicularis** Carriker


The figure of the male to which the name must apply, as this sex is mentioned first, appears to represent an almost mature male of the *Strongylocotes lipogonus* type. The figure of the female (i.e., pl. 5, fig. 1, *a*) appears to be identical with immature specimens of *Strongylocotes paucisetosus* Kéler, i.e., *S. glabrous* Carriker (see below) from the same host, examined by the present author.

**Strongylocotes glabrous** Carriker


(?) *Nirmocotes orbicularis* Carriker, l.c., p. 79, pl. 5, fig. 1, *a*, 1936 (part, female). Type host: *C. tataupa* Temminck.


Carriker's figure of *glabrous* appears to represent a somewhat more mature specimen of the species figured as the female of *orbicularis* and appears conspecific with immature specimens of *S. paucisetosus* Kéler except for the anterior margin of the head. It is possible that the specimen of *S. glabrous* is somewhat distorted, as the clypeal band appears to be pushed out in such a manner as to give the appearance of another pair of trabeculae. *S. paucisetosus* Kéler must therefore be considered as a synonym of *S. glabrous* Carriker.

**Strongylocotes complanatus complanatus** Piaget

*Goniodes complanatus* Piaget, Les Pédiculines, p. 262, pl. 21, fig. 8, 1880. Type host: *Crypturellus o. obsoletus* Temminck (= *Tinamus obsoletus*).


Carriker's figure of *nirmoides* appears to represent an immature female of *Strongylocotes c. complanatus* and is identical with immature specimens of this species from the type host, *Crypturellus o. obsoletus*. 
Nirmocotes nirmoides Carriker must therefore be considered as a synonym of S. c. complanatus Piaget.

Strongylocotes cordiceps Carriker


This appears to be an immature *Strongylocotes* of the *spinosus* type. A single male specimen examined from *Tinamus major castaneiceps* Salvadori of the *spinosus* type is probably this species.

Strongylocotes wernecki Guimarães and Lane

*Strongylocotes wernecki* Guimarães and Lane, Rev. Mus. Paul., 23, p. 17, pl. 5, figs. 6, 6a, and 6b, 1937. Type host: *Tinamus solitarius* Vieillot.


*S. latithorax* Kéler must be considered a synonym of *S. wernecki* Guimarães and Lane from the same host.

Cuclotogaster Carriker


Mr. Carriker has kindly sent me the female of *Cuclotogaster laticorpus* Carriker from *Crypturellus soui modestus* Cabanis mentioned on page 68 (Carriker, 1936). Although this specimen is in poor condition, it appears to be certainly congeneric with and probably conspecific with *Gallipeurus h. heterographus* Giebel, the genotype of *Gallipeurus* Clay. Mr. Carriker has also written in a letter which he gives me permission to quote, that "I can find absolutely no difference between the two specimens (type of *Cuclotogaster* and specimen of *heterographus*) as to shape, proportions, markings and chaetotaxy. The only discrepancy I find is in the measurements, principally of the abdomen."

However, as there is considerable variation in the size of the abdomen among specimens of *heterographus*, it can be assumed that these two species are the same. Thus *Cuclotogaster laticorpus* Carriker (1936, p. 67) is a synonym of *Gallipeurus h. heterographus* Giebel and therefore necessitates the sinking of *Gallipeurus* as a synonym of *Cuclotogaster* (for further synonymy of *G. h. heterographus* see Clay, 1938, p. 136).

Discussing the occurrence of *heterographus* on *Crypturellus*, Mr. Carriker states: "It is barely possible that I might have carried a dead
chicken in my collecting bag. Also I have noted that *Crypturellus soui* does frequently inhabit the brush around small villages, in which villages domestic fowl are constantly prowling about, and they might occasionally pick up some of their parasites."

It is possible therefore that the chickens and tinamous may share dust baths and thus exchange parasites (see Hoyle, 1938, p. 379).

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HOPKINS, G. H. E.

HOYLE, WILLIAM L.

KÉLER, S.

PIAGET, E.

RUDOW, FERDINAND

TASCHENBERG, ERNST OTTO W.
INDEX

Current names in roman type, synonyms and secondary references in italic type, new names in bold-faced type.

abbas, Thraupis, 221
Ablabes decemlineatus, 80
purpurans, 285
abyssinicus, Unio, 124
Acanthagron interruption, 372–373
Acanthodactylus arabicus, 63
asper, 62
euphraticus, 63
fraseri, 162
iracensis, 60–62
orientalis, 62
robustus, 63
syriacus, 63
Acanthotropis, 95
acarnanicus, Psilunio, 134
Accipiter bicolor, 202
velox, 202
Acontias pundatus, 337
acuminatq, Dryiophis, 318
acuminatus, Coluber, 291–292, 318
Oxybelis, 291–292, 318
Acuticosta chinensis, 263
adjuncta, Stachyris, 110–111
adolph, Phoethornis, 207–208
adelphi, Phoethornis, 207–208
adramitana, Agama, 56
agilis, 57
caucasica, 57
microlepis, 57
nupta, 57
pallida, 57, 161
persica, 57, 162
picia, 58
ruderata, 57
scutellata, 59
sinaia, 58
stellio, 58, 162
Agelalus matudae, 221
agilis, Agama, 57
Agrion ecellata, 204–205
Agyria candida, 208
Akaetulla nigromarginatus, 283
Albiceps festae, 67
albifrons, Leptotyphlops, 23
albigularis, Falco, 204
albilinea, Iridoprocne, 216
albinucha, Thryothorus, 217
albiventris, Aramides, 205
aleroni, Unio, 126
Alsophylax blanfordii, 55
tuberculatus, 54–55
Amazilis rutila, 208
tzacatl, 208
yucatanensis, 208
Amazona autumnalis, 206–207
nana, 206
xantholora, 206
Amblena gigantea, 261
plicata, 260–261
Ambly cercus holosericeus, 220
Ameiva undulata, 242–243
americana, Mycteria, 202
americanus, Coccyzus, 207
Amystes ehrenbergii, 64
Anas leucogenis, 349–350
Anguis jaculus, 71
angusticeps, Chelidophorus, 24–25
angustifolius, Rhinolophus, 43
angustilineatus, Dromicus, 308–309
annectens, Rhinolophus, 37–38
annulata, Leptodeira, 289, 311–312
Leptodeira, 289
annulatum, Sibon, 311–312
annulatus, Coluber, 289
Anodonta cygnea, 136–138, 265
grandis, 260
lauta, 262
vescoiana, 138, 265
woodiana, 138
Anodontinae, 136–138
Anolis auratus, 9
barkeri, 7–9
cozumelae, 19–20
holotropis, 9
laeviventris, 20–21
meridionalis, 9
nebuloides, 21
ophiolepis, 10
rosenbergii, 9
schmidti, 21–23
Anoura, 274
ansolis, Nirmus, 382–384
Anthracothorax prevostii, 208
Anthus rubescens, 218
Antiagron, 370–371
Anticordulia, 367–370
Apathya urmiana, 60
Aporoscelis benti, 59
approximans, Holbrookia, 341–342
Holbrookia, 342–343
arabicus, Acanthodactylus, 63
Phrynocephalus, 58
Rhyncocalamus, 77
Scincus, 69–70
Ara macao, 206
Aramides albiventris, 205
Aratinga astec, 206
Ardea herodias, 201
argentea, Coluber, 292
Oxybelis, 292
armata, Merganetta, 353-356
Arremonops chloronotus, 224
verticalis, 224
Ascalabotes sthenodaetatus, 54
ascanius, Unio, 122
asian, Zamenis, 72-73
asian, Coluber, 72-73
asiatica, Zenaida, 205
Aspatharia petersi, 353-356
Arremonops chloronotus, 224
verticalis, 224
Aratinga astec, 206
asuncionis, Diplodon, 262
Aspatharia petersi, 337
Aspis cerastes, 88, 165
assimilis, Pipromorpha, 216
astec, Aratinga, 206
asuncis, Diplodon, 262
Atractaspis conradsi, 337
Atractus badius, 285-286
emmell, 286
nigricaudus, 327-329
pauciscutatus, 326-327
vertebralis, 286
atra, Coragyps, 202
atriceps, Saltator, 222
atrox, Coluber, 295
Trimeresurus, 295
Attila gaumeri, 212-213
Aulacorhynchus osoodei, 228-230
aura, Cathartes, 202
aurantius, Lania, 222
aurata, Lacteria, 66
Mabuya, 66
aurata, Anolis, 9
Icterus, 221
Norops, 9
auricularia, Margaritifera, 119, 264
auropapillus, Seirurus, 219
autumnalis, Amazona, 206-207
avery, Micrurus, 45-47
badius, Brachyoprhors, 285-286
balzani, Elaps, 298
Micrurus, 298
barberi, Hypopachus, 1-2
barkeri, Anolis, 7-9
barnetti, Bothrops, 322
Trimeresurus, 322
bartschi, Cymatosyrinx, 172-174
Basilsceus vittatus, 242
batavus, Unio, 130-131
baudinii, Hyla, 238
Bellamy, 94
bellii, Chrysemys, 17
Emys, 17
benti, Aporoscelis, 59
berlepschi, Merganetta, 352
bicolor, Accipiter, 202
bidens, Neogomphus, 367
birdi, Gymnophthalmus, 245
bitorquatus, Oxyrhopus, 290
Tachymenis, 290
Blake, Emmet R., A New Venezuelan Honey Creeper, 155-157; Two New Birds from British Guiana, 227-232
blanchardi, Natrix, 29
blanfordi, Ophisops, 64-65
blanfordii, Alsophylax, 55
Bunopus, 55
blatteus, Pyrocephalus, 214
Boa hortulana, 280
ortonii, 305-306
boddaertii, Coluber, 280-281
Dryadophis, 280-281
Boidae, 305-306
Boigidae, 311-319
boraquirae, Heptapsogaster, 378-380
borysthenensis, Unio, 129, 267
Bothrops barnetti, 322
microphthalmus, 295
pictus, 322-323
boucardi, Granatellus, 220
boultoni, Heptapsogaster, 380-382
bourgeticus, Unio, 125
brachidactyla, Geothlypis, 219
Brachyoprhors badius, 285-286
brachyurus, Myiochanes, 215
brachyurus, Nannorchilus, 217
brevicollis, Exprepis, 67
Mabuta, 67
Mabuya, 67
brevisirostris, Eremias, 66
Mesalina, 66
Rhyynchocyclus, 215
bruguierianus, Unio, 132
Bufo marinus, 238
microtis, 238
regularis, 332
viridis, 53, 161
wrighti, 151-154
Bunopus blanfordii, 55
tuberculatus, 54-55
Buteo conspectus, 203
direptor, 203
micrus, 203
Butorides virescens, 201
Caelatura horei, 262
caeulea, Guiraca, 223
Calamaria coronella, 78-79
calathus, Planorbis, 98
calcarifer, Chamaeleo, 70
calytratus, Chamaeleo, 71
Campeloma decisum, 94
integrum, 93
Camras, Sidney, A New Savannah Sparrow from Mexico, 159-160
<table>
<thead>
<tr>
<th>Index</th>
<th>391</th>
</tr>
</thead>
<tbody>
<tr>
<td>cancruminus, Platyrinchus, 215</td>
<td>Chironius carinatus, 281</td>
</tr>
<tr>
<td>candei, Agyrtria, 208</td>
<td>fuscus, 283</td>
</tr>
<tr>
<td>conilatus, Tachymeniscus, 315–317</td>
<td>multiventrис, 282–283</td>
</tr>
<tr>
<td>canivetii, Chlorostilbon, 208</td>
<td>Chloroceryle isthmica, 209</td>
</tr>
<tr>
<td>capax, Proptera, 261</td>
<td>stictoptera, 209</td>
</tr>
<tr>
<td>capistrata, Tenantia, 318–319</td>
<td>chloronotus, Arremonops, 224</td>
</tr>
<tr>
<td>carinata, Egerinia, 11–13</td>
<td>Tyrannus, 214</td>
</tr>
<tr>
<td>Lampsilis, 261</td>
<td>Chlorophanes guatemalensis, 219</td>
</tr>
<tr>
<td>Pseudoboа, 88</td>
<td>Chlorostilbon canivetii, 208</td>
</tr>
<tr>
<td>carinatus, Chironius, 281</td>
<td>Choenoniscus, 274</td>
</tr>
<tr>
<td>Coluber, 281</td>
<td>Choenonysters, 273</td>
</tr>
<tr>
<td>Echis, 88</td>
<td>Chondroheirax uncinatus, 202</td>
</tr>
<tr>
<td>carneus, Unio, 131</td>
<td>chysater, Icterus, 221</td>
</tr>
<tr>
<td>carolinensis, Dumetella, 217</td>
<td>Chrysemys bellii, 17</td>
</tr>
<tr>
<td>Caryothraustes poliogaster, 223</td>
<td>cinereiceps, Tolmomyias, 215</td>
</tr>
<tr>
<td>Casmerodius egretta, 201</td>
<td>cinereigulare, Omastoma, 216</td>
</tr>
<tr>
<td>caspica, Arremonops, 224</td>
<td>circinalis, Elaps, 319–320</td>
</tr>
<tr>
<td>Testudo, 89</td>
<td>Circus hudsonius, 203</td>
</tr>
<tr>
<td>Cassidix castaneus, 210</td>
<td>ciris, Passerina, 224</td>
</tr>
<tr>
<td>Dipasus, 288</td>
<td>Cissolophus rivularis, 217</td>
</tr>
<tr>
<td>Cathartes aura, 202</td>
<td>yucatanica, 217</td>
</tr>
<tr>
<td>caucasicus, Stellio, 57</td>
<td>Cistudo ornata, 216–19</td>
</tr>
<tr>
<td>caudatae, Elaphe, 76</td>
<td>yucatana, 17–18</td>
</tr>
<tr>
<td>caudatae, Zamensis, 76</td>
<td>citrea, Protonotaria, 219</td>
</tr>
<tr>
<td>Caudiculatus caudiculatus, 264</td>
<td>citrina, Wilsonia, 220</td>
</tr>
<tr>
<td>Caudiculatus, Caudiculatus, 264</td>
<td>Claravis pretiosa, 205–206</td>
</tr>
<tr>
<td>Caudisona terrifica, 296</td>
<td>clarus, Mumus, 218</td>
</tr>
<tr>
<td>Celeus castaneus, 210</td>
<td>Clay, Theresa, Bird Lice from the</td>
</tr>
<tr>
<td>cenchoa, Coluber, 289</td>
<td>Tinamidae, 375–387</td>
</tr>
<tr>
<td>Imantodes, 289</td>
<td>clelia, Clelia, 289–290</td>
</tr>
<tr>
<td>Centrotachetus loricatus, 59</td>
<td>Coluber, 289–290</td>
</tr>
<tr>
<td>Centurus dubius, 210</td>
<td>Clelia clelia, 289–290</td>
</tr>
<tr>
<td>rubriventris, 210</td>
<td>cloelia, 289–290</td>
</tr>
<tr>
<td>Ceophloeus similis, 210</td>
<td>fitzingeri, 313–315</td>
</tr>
<tr>
<td>cerastes, Aspis, 88, 165</td>
<td>Clemmys caspica, 89</td>
</tr>
<tr>
<td>Coluber, 88</td>
<td>cliffordii, Coluber, 77</td>
</tr>
<tr>
<td>persicus, 88</td>
<td>Spalerosaphis, 77, 165</td>
</tr>
<tr>
<td>Cercomacra crepera, 212</td>
<td>cloelia, Clelia, 289–290</td>
</tr>
<tr>
<td>cerebralis Protosquilla, 105–106</td>
<td>cobella, Coluber, 285</td>
</tr>
<tr>
<td>Cerithium semiferrugineum, 171</td>
<td>Liophis, 285</td>
</tr>
<tr>
<td>Chalcides ocellatus, 70</td>
<td>Coccyzus americanus, 207</td>
</tr>
<tr>
<td>Chamaeleo calcarifer, 70</td>
<td>Collinus nigrogularis, 204</td>
</tr>
<tr>
<td>calyptratus, 71</td>
<td>collaris, Coluber, 78</td>
</tr>
<tr>
<td>chamaeleon, Chamaeleo, 70</td>
<td>Eirenis, 78</td>
</tr>
<tr>
<td>Lacerta, 70</td>
<td>colombiana, Merganetta, 346–348</td>
</tr>
<tr>
<td>Chamaeleopsis palpebralis, 219</td>
<td>Coluber acuminatus, 291–292, 318</td>
</tr>
<tr>
<td>Chamberlainia hainesiana, 264</td>
<td>aesculapii, 292</td>
</tr>
<tr>
<td>Chameleo kinetensis, 336–337</td>
<td>annulatus, 289</td>
</tr>
<tr>
<td>chamissonis, Coronella, 263–284</td>
<td>argenteus, 292</td>
</tr>
<tr>
<td>Dromicus, 283–284</td>
<td>asianus, 72–73</td>
</tr>
<tr>
<td>Dromicus, 308–309</td>
<td>atrox, 295</td>
</tr>
<tr>
<td>championi, Hypopachus, 242</td>
<td>boddaertii, 280–281</td>
</tr>
<tr>
<td>chapmani, Herpetotheres, 203</td>
<td>carinatus, 281</td>
</tr>
<tr>
<td>Charadrius vociferus, 205</td>
<td>catesbyi, 288</td>
</tr>
<tr>
<td>chaseni, Rhinolophus, 38–39</td>
<td>cenchoa, 289</td>
</tr>
<tr>
<td>chinensis, Acuticosta, 263</td>
<td></td>
</tr>
</tbody>
</table>
Coluber cerastes, 88
clelia, 289-290
clelia, 289-290
corais, 281
corais, Coluber, 281
cordiceps, 386
Cordulia villosa, 367-370
coronella, Calmaria, 78-79
Eirenis, 78-79

Coronella chamissonis, 283-284
tessellata, 71-72
cortezii, Phrynosoma, 23
cortezii, Phrynosoma, 23
costata, Lasmodiga, 260
cozumelae, Anolis, 19-20
crassus, Unio, 129, 266
crepera, Cercomacra, 212
criitus, Myiarchus, 214
Cristaria discoidea, 262
hercula, 262
spatiosa, 263
crocatus, Neurergus, 52-53
Crotalidae, 322-323
Crotalus terrificus, 296
Crotophaga sulcirostris, 207
Cryptophora colombiae, 186
Crypturellus intermedius, 199-201

Ctenosaura pectinata, 23
Cyclorhagaster, 386-387
Cumingia, Hyrophis, 264
cuniculator, Tantilla, 32-34
Cyanea, Passerina, 224
cyanocinctus, Hydrophis, 87
Cyanocompsa concreta, 224
parellina, 223
cyanogenys, Psilorhinus, 216
Cyclarhis yucatanensis, 218
Cyclus pectinata, 23
cyngna, Anodonta, 136-138, 265
cylindrica, Laceolaria, 263
Cymatosyrinx bartschi, 172-174
cytherea, Unio, 129, 266
dahurica, Margaritifera, 120, 264
decemlineata, Eirenis, 80
decemlineatus, Ablabes, 80
decipiens, Unio, 125
decimus, Campeloma, 94
decoloratus, Pionus, 206
dercurtata, Hylophilus, 218
degenhardtii, Stenorrhina, 235-246
dellesterti, Psilunio, 135
delphinus, Unio, 123
dembae, Unio, 128
Dendrocincl homochroa, 211
typha, 211
Dendrocolaptes sancti-thomae, 211
Dendroica pensylvanica, 219
rubiginosa, 219
dendrophis, Drymobius, 280
Dendroica magnolia, 219
densestrata, Valvata, 102
deppei, Cnemidophorus, 243-244
Polioptila, 218
deppei, Cnemidophorus, 25
deserticola, Salvadora, 146-148
deses, Tityra, 213
INDEX

diadema, Heterodon, 74
Lytorhynchus, 74
dichrous, Spilotes, 307-308
Diglossa mandelii, 155-157
dilatatus, Gonioes, 376-378
Heptapogaster, 376-378
dimotus, Contradens, 263
Diplodon asuncionis, 262
Diplometopon zarudnyi, 60
diplozeugus, Geophis, 286-288
Dipsas catesbyi, 288
indica, 283-289
dichrous, Spilotes, 307-308
Dipsas indica, 283-289
peruanus, 288-289
rhinopoma, 85
direptor, Buteo, 203
discoidea, Cristaria, 262
diversity, Rhinolophus, 42-43
Dives divaes, 220
dives, Dives, 220
dorseyi, Placostylus, 102
Dromicus angustilineatus, 308-309
chamissonis, 283-284
chamissonis, 308-309
elegans, 317-318
indica, 325-326
ruedishus, 317-318
tachymenoides, 309-310
Dromococcxy rufularis, 207
Dryadophis boddaertii, 280-281
Dryadophis boddaertii, 280-281
heathii, 306-307
Dryophylax elegans, 317-318
Drymarchon corais, 281
melanurus, 307-308
Drymobius dendrophis, 280
Drymobius dendrophis, 280
Dryobates parvus, 211
Dryophylax elegans, 315-317
Dryophylax elegans, 315-317
freminvillei, 317-318
vitellinus, 317-318
dubius, Centurus, 210
dugesii, Geophis, 28-29
dumerilii, Siroden, 17
Dumetella carolinensis, 217
duponi, Northarchus, 209
durieui, Unio, 128
Dysithamnus septentrionalis, 212
Echis carinatus, 88
Echistota termitoxena, 186-188
Egerinia carinata, 11-13
egetta, Casmerodius, 201
ehrenbergii, Amystes, 64
Ophisops, 64
Eirenis collaris, 78
coronella, 78-79
decemlineata, 80
frasiri, 79-80
iranica, 81-82
lineomaculata, 80-81
rothi, 80
Elainea subpagana, 216
Elanoides forficatus, 202
Elaphe caudaelineata, 76
nummifiera, 75-76
rupergeri, 76
Elapidae, 319-322
Elaps balzani, 293
circinalis, 319-320
hemprichii, 293
obscura, 294
surinamensis, 295
ischudii, 320
elegans, Dromicus, 317-318
Dryophylax, 315-317
Lygodon, 317-318
Ophisops, 63-64
Philodylos, 315-317
Philodylos, 317-318
Tachymenius, 315-317
Eleutherodactylus rugulosus, 239
elisa, Phyllodactylus, 56
elongata, Pseudanodonta, 139
elongatulus, Unio, 124
emmeli, Atractus, 286
Geophis, 286
domyri, Aspidodactylus, 19
Platypeltis, 19
Empidonax minimus, 215
Emys bellii, 17
Erator fraseri, 213
Eremias brevirostris, 66
guttulata, 65
persica, 66
watsonana, 66
Erolia minutilia, 205
Erythrolamprus aesculapii, 292
crythrothorax, Syrrallaxis, 211
crythrozonus, Pteroglossus, 210
Eryx familiaris, 71
jaculus, 71
eucirrus, Unio, 128
Eucometis princeps, 67-68
variegatus, 68-69
Eumomota superciliosa, 209
euphratica, Testudo, 89
Vipera, 87
euphraticus, Acanthodactylus, 63
Pseudodontopsis, 133, 265
Trionyx, 89
Euprepis brevicollis, 67
princeps, 67-68
septemtaeniatus, 66
partitionus, 332
Eulaenia macrostemma, 29-30
megalepis, 30-31
exiguus, Momotus, 209
Falco albigularis, 204
sparverius, 204
familiaris, Eryx, 71
fellmanni, Pslilunio, 135-136
festae, Alphebus, 67
festivus, Latirus, 167–171
field, Pseudocerastes, 87–88
finitum, Todirostrum, 216
fiscallianus, Unio, 125
fitzingeri, Cletia, 313–315
Oxyrhopus, 312–313
Pseudoba, 312–315
Siphlophis, 312–313
flavidens, Parreysia, 264
flavifrons, Vireo, 218
flaviventris, Columba, 205
flaviviridis, Hemidactylus, 56
forficatus, Elanoides, 202
Formicarius pallidus, 212
formosa, Rhinolophus, 41–42
formosus, Oporornis, 219
fraenata, Merganetta, 353–356
fragilis, Lampilis, 261
fraseri, Acanthodactylus, 162
fraseri, Acantodactyly, 162
Eirenis, 79–80
fraserii, Erator, 213
freninvillei, Dryophylax, 317–318
Philodryas, 317–318
frizzelli, Oxyrhopus, 313–315
fulgidus, Coluber, 292
Oxybelis, 292
fulica, Helornis, 205
fulviventris, Leptotila, 206
fuscus, Chironius, 283
Coluber, 283
Gabillotia pseudodopsis, 140
Gaigea, 24
gabula, Icterus, 220
Gabula malanogenia, 209
Gallipeurus, 386–387
gargottae, Unio, 127
garleppi, Marganetta, 351–352
gaudioni, Unio, 122
gaumeri, Attila, 212–213
Geophis diplocepeus, 286–288
dugesii, 28–29
emmem, 286
Geothlypis brachidactyla, 219
giantea, Amblena, 261
glabrirostris, Melanoptila, 217
glabrurus, Nirmocotes, 385
Strongylocotes, 385
Glaucidium ridgwayi, 207
glaucinus, Unio, 127
Glebula suborobiculata, 261
globula, Papuina, 102
globulus, Hypopachus, 2–4
Glossophaga, 273
Glossophaginae, 271–277
glyptocercus, Gonodactylus, 105–106
Gonodactylus glyptocercus, 105–106
Gonoides complanatus, 385–386
dilatatus, 376–378
gontieri, Unio, 131–132, 266
gracileus, Sittasomus, 211
graeca, Testudo, 89
grahamiae, Salvadoria, 144–146
Granatellus boucardi, 220
grandis, Anodonta, 260
grayana, Lanceolaria, 263
griseus, Tupinambis, 60
Varanus, 60, 162
Vireo, 218
guatemalensis, Chlorophanes, 219
Phloeosceastes, 210
Pitangus, 214
guattiquae, Homalophora, 188–189
guenteri, Tarbophis, 85
guerrill, Micrastur, 204
Guira caerulea, 223
guttatus, Odontophorus, 204
guttata, Eremias, 65
Lacerta, 65
Gymnodactyly, kirmanensis, 55
kotschyi, 55
scaber, 55
Gymnophthalmus birdi, 245
Gymnostomops montezuma, 220
gymnostoma, Jacana, 205
Gyrinus mexicanus, 16–17
Haas, Fritz, Malacological Notes, 93–
103; A Tentative Classification of the
Palearctic Unionids, 115–141; Malac-
ological Notes—II, 167–174; Rec-
ords of Large Fresh-Water Mussels, 259–
270
Habia littoralis, 222
peninsularis, 222
rubicoides, 222
hainesiana, Chamberlainia, 264
hasshellquistii, Jacana, 56
Ptyodactylus, 56, 161
heathii, Dryadaphis, 306–307
Drymobius, 306–307
Herpetodryas, 306–307
Hedymeles, ludoviciana, 223
Helicops polyplepis, 280
Helornis fulica, 205
Hemidactyly flaviviridis, 56
turcicus, 56
Hemiergis initi, 13–14
hemiphaeula, Planorbis, 98
hempichii, Elaps, 293
Mricurus, 293
Henichorhina prostheleuca, 217
Heptapogaster boraquirae, 378–380
boultori, 380–382
dilatatus, 376–378
hercula, Cristaria, 262
Herpetodryas dentrophis, 280
heathii, 306–307
Herpetotheres champani, 203
herodias, Ardea, 201
Heterodon diadema, 74
Holbrookia approximans, 341–342
approximans, 342–343
Leptodeira rhombifera, 246
Leptogastus peruanus, 288–289
Leptonyxeris, 276
Leptophis nigromarginatus, 283
Leptosiaphos, 332–335
Leptotila fulviventris, 206
Leptotyphlopidae, 302–305
Leptotyphlops albifrons, 28
macrorhynchus, 71
maximus, 27–28
melanurus, 303–304
phenops, 28
rufidorsum, 302
rufidorsus, 302
suberotilla, 303
suberottilus, 303
tessellatus, 304–305
lessonii, Momotus, 209
leucogenis, Anaes, 349–350
Meganeura, 348–350
Leucophox thula, 201
lewisi, Valvata, 102
Lichonycteris, 274
Limnaceus sordidus, 98
Limnothypis swainsonii, 219
lineata, Salvador, 148–150
lineatissimus, Cnemidophorus, 25–26
lineolatum, Coluber, 86
Taphrometopus, 86
lineomaculata, Eirenis, 80–81
Lionyxeris, 276
Liophis cobella, 285
purpurans, 285
tenarius, 284
littoralis, Habia, 222
Psilunio, 138, 264–265
Lonchohylus, 276
Lonchophylla, 276
loricatus, Centroturachus, 59
Uromastix, 59
lucida, Segmentina, 98
ludivicianus, Hedymeles, 223
lunae, Sceloporus, 242
Lygophis elegans, 317–318
poeclisotomus, 315–317
tenarius, 284
Lygosoma meleagris, 332
weberi, 335–336
Lytorhynchos diadema, 74
kennedyi, 75
Macuba brevicollis, 67
tessellata, 67
Mabuya aurata, 66
brevicollis, 67
septemtaeniata, 66
tessellata, 67
varia, 332
vittata, 67
macao, Ara, 206
macroglossa, Rana, 239–241
macrorhynchus, Leptotyphlops, 71
Stenostoma, 71
macrostemma, Eutaenia, 29–30
Thamnophis, 29–30
maculata, Hobrookia, 342–343
magnolia, Dendroica, 219
major, Rostrhamus, 202
malanogena, Galbula, 209
Malpolon insignitus, 86–86
mollensis, 86
Manacus candei, 213
mancus, Unio, 126
mandeli, Diglossa, 155–157
margaritacea, Homalosoma, 292–293
Tantilla, 292–293
Margaritifera, 119–120
auricularia, 119, 264
dahurica, 120, 264
laevis, 120
margaritifera, 120
marocana, 119
middendorffii, 120
margaritifera, Margaritifera, 120
Margaritiferidae, 119–120
marinus, Bufo, 238
marmorata, Norops, 10
marocana, Margaritifera, 119
martini, Tarbophis, 84–85
martinica, Porphyryula, 295
mascareniensis, Rana, 332
massena, Trogon, 209
Masticophis melanolomus, 29
matudae, Agelaius, 221
maximus, Leptotyphlops, 27–28
maya, Xanthoura, 217
mcewani, Tarbophis, 82–83
Megacerule torquata, 209
megapols, Eutaenia, 30–31
Thamnophis, 30–31
Megalorynchus mexicanus, 214
melanocephala, Coluber, 293
Tantilla, 293
Tantilla, 318–319
Trogon, 208–209
melanochelidium, Homalosoma, 77–78
melanochelidium, Rhynchocalamus, 77–78
melanolomus, Eudryas, 29
Masticophis, 29
Melanoptila glabirostris, 217
melanurus, Drymarchon, 307–308
Leptotyphlops, 304–305
Spilotes, 307–308
meleagris, Lygosoma, 332
mentalis, Pipra, 213
Merganetta armata, 353–356
berlepschi, 352–353
colombiana, 346–348
fraenata, 353–356
garleppi, 351–356
leucogenis, 348–350
turneri, 350–351
ocellata, Agriocharis, 204–205
Ocellata, 70
ocellatus, Chalcides, 70
ochraceiceps, Hylophilus, 218
octolineatus, Cnemidophorus, 27
Odontophorus guttatus, 204
olfersii, Coluber, 291
Pholidryas, 291
Oligogopus, Oligogopus, 26–27
ollopus, Sceloporus, 242
olsoni, Micrurus, 321–322
Omostoma cinereigulae, 216
Onychorhynchus, 290
Onychorhynchus octolineatus, 215
ophiolepis, Anolis, 10
Norops, 10
Ophisops blanfordi, 64–65
ehrenbergi, 64
elegans, 62–64
mizolepis, 64–65
schueteri, 64
Opornis formosus, 219
orbicularis, Nirmocotes, 385
Strongylocotes, 385
Oreopelia montana, 206
orientalis, Acanthodactylus, 62
ornata, Cistudo, 18–19
Terrapene, 18–19
Ortalis intermedia, 204
pallidiventris, 204
ortoni, Boa, 305–306
Osgoodi, Aulacorhynchus, 228–230
Rhinolophus, 40–41
Otus thompsoni, 207
Oxyagrion rufulum, 371–372
Oxybelis acuminatus, 291–292, 318
argenteus, 292
fulgidus, 292
Oxynaia pugio, 263
Oxyrhopus bitorquatus, 290
fitzingeri, 312–313
frizzelli, 313–315
petolus, 290
trigeminus, 290
oxyrhyncha, Lanceolaria, 263
Pachyrhamphus itzensis, 213
Pacific, Rhinocoryne, 96
palaestinae, Vipera, 87
pallens, Unio, 124
pallescens, Columbigallina, 205
 Pallida, Agama, 57, 161
Eucometis, 222
pallicercissa, Columba, 205
pallidiventris, Ortalis, 204
pallidus, Formicarius, 212
palpebralis, Chamaeleypis, 219
palustris, Stagnicola, 99
Pampa pampa, 208
pampa, Pampa, 203
papa, Sarcoramphus, 202
Papuina globula, 102
parellina, Cyanocompsa, 223
Parreysia favidens, 264
parvus, Dryobates, 211
Passerella rufous, 159–160
Passerina ciris, 224
cyanae, 224
pauciscutatus, Atractus, 326–327
peccata, Ctenosaura, 23
Cyclura, 23
penchinateus, Unio, 126
Penelope purpurascens, 204
peninsularis, Habia, 222
pensylvanica, Dendroica, 219
percautus, Tanimous, 199
Periops schizatania, 77
persica, Agama, 57, 162
Eremias, 66
persicus, Ceraestes, 88
Pseudocerastes, 88
personata, Tityra, 213
peruviana, Tachymenis, 290–291, 315
Trachymenis, 290–291
peruvianus, Dipsas, 288–289
Leptognathus, 288–289
pestilens, Hypopetalia, 364
petersi, Aspthankaria, 262
petola, Coluber, 290
petolus, Oxyrhopus, 290
Phenes raptor, 361–364
phenops, Leptotyphlops, 28
Stenostoma, 28
philbyi, Scincus, 162–165
Philodryas elegans, 317–318
elegans, 315–317
freminvillei, 317–318
olfersii, 291
rufidorsatus, 315–317
simonsi, 316–317
viridissimus, 291
Phloeoeastes guatemalensis, 210
Phoenicopterus ruber, 202
Phoethornis adolphi, 207–208
Phrynocephalus arabicus, 58
scelletus, 59
Phrynosoma cortezii, 23
Phylodactylus eliasi, 56
Phymatolepis irregularis, 23–24
Piaya, Lachesis, 295, 322–323
picta, Canvasus, 290, 322–323
pictorum, Unio, 120–121, 266
pictus, Bothrops, 322–323
Trimerurus, 295, 323–324
Piculus nigriceps, 230–232
yucatanensis, 210
Pionus decoloratus, 206
pipiens, Rana, 241–242
Pipra mentalis, 213
Pipromorpha assimilis, 216
Piranga roseo-gularis, 222
rubra, 222
Pitangus guatemalensis, 214
Placostylos dorseyi, 102
Planorbis calathus, 98
hemisphaerula, 98
janeirensis, 100
swinhoei, 98
Planorbilina, 100
Platalina, 273
Platyplepis emoryi, 19
Platylysparis sumichrastii, 213
yucatanensis, 213
platyrynchoideus, Unio, 123, 267
platyrynchus, Myiarchus, 215
Planorbulina, 100
Platypeltis, 273
Platypelis emoryi, 19
Platypsaris sumichrastii, 213
yucatanensis, 213
platyrhynchoideus, Unio, 123, 267
platyrhynchus, Myiarchus, 215
Platyrinchus cancrominus, 215
Pleurovalvata, 101-103
plicata, Amblena, 260-261
poecilostomus, Lygophis, 315-317
poliogaster, Caryothraustes, 223
Polioptila deppei, 218
polylepis, Helicops, 280
Polypylis, 97
Pope, Clifford H., Copulatory Adjustment in Snakes, 249-252
Porphyria martinea, 205
praeposterus, Unio, 121
pratincola, Tyto, 207
pretiosa, Claravis, 205-206
prevostii, Anthroacothorax, 208
princeps, Eumeces, 67-68
Euprepis, 67-68
Prisotyras acarnanicus, 134
Prisotyras delesserti, 135
Prisotyras fellmanni, 135-136
Prisotyras homosensis, 135
Prisotyras komaro, 135
Prisotyras littoralis, 134, 264-265
Prisotyras semirugatus, 135
Prisotyras umbonatus, 134, 265
Prisotyras propinqua, 134
Prisotyras rhombofera, 134
Pteroglossus erythrozonus, 210
Ptyodactylus hasselquistii, 56, 161
puella, Trogon, 208
pugio, Oxynia, 263
Puliciphora termithophila, 191-192
punctatus, Aconia, 337
Typhlops, 337
purpurans, Ablabes, 285
Liophis, 285
purpurscens, Penelope, 204
Pusia torticula, 171-172
pusilla, Composothlypis, 219
Pyrocephalus blatteus, 214
Quadrulinae, 134-136
quelleneci, Unio, 125
Ramphastos sulfuratus, 210
Ramphocaeus rufulventris, 218
Rana macroglossa, 239-241
mascareniensis, 332
pipiens, 241-242
ridibunda, 53-54
raptor, Phenes, 361-364
Saltator, 222-223
rauerferi, Coluber, 76
Elaphe, 76
ravosi, Unio, 123
recta, Lampilis, 261
reginae, Coluber, 254
Leimadophis, 284
regularis, Bufo, 332
requienii, Unio, 126
Rhinocoryne pacifica, 96
Rhinolophus, 39-40
angustifolius, 43
annectens, 37-38
chaseni, 38-39
diversus, 42-43
formosae, 41-42
latifolius, 40-41
minor, 38-39
osgoodi, 40-41
septentrionalis, 40
tener, 40
rhinopoma, Dipsas, 85
Tarbophis, 85
rhodorachis, Coluber, 73, 165
Zamenis, 73
rhombifer, Leptodeira, 246
Rhyynchocalamus arabicus, 77
melanocephalus, 77-78
Rhyynchocicus brevirostris, 215
Richmondena yucatanica, 223
rigdwayi, Glaucidium, 207
Hypomorphnus, 203
Steilidopteryx, 216
ridibunda, Rana, 53-54
rivalaris, Cissolopha, 217
robustus, Acanthodactylus, 63
rodolphei, Stachyris, 110
rogerisi, Coluber, 73–74
Zamenis, 73–74
rosenbergi, Anolis, 9oseo-gularis, Piranga, 222
rostratus, Unio, 122
Rostrhamus major, 202
rothi, Eirenis, 80
rousii, Unio, 126
ruber, Phoenicopterus, 202
rubescentis, Anthis, 218
rubidoides, Habia, 222
rubiginosa, Dendroica, 219
rubra, Piranga, 222
rubriventris, Centurus, 210
ruderata, Agama, 67
rufidorsatus, Dromicus, 315–317
Philodryas, 315–317
rufidorsum, Leptotyphlops, 302
rufidorsus, Leptotyphlops, 302
rufigularis, Dromococcyx, 207
rufipennis, Columbigallina, 205
rufivenris, Ramphocaenus, 218
rufofuscus, Passerculus, 159–160
rufulum, Oxyaon, 371–372
rugulosus, Eleutherodactylus, 239
rupestris, Pristurus, 56
ruthveni, Holbrookia, 342–343
ruticilla, Setophaga, 220
rutila, Amau1is, 208
sackii, Cnemidophorus, 244–245
sallaei, Trogon, 209
Saltator atriceps, 222
raptor, 222–223
yucaatanensis, 223
Salvadora deserticola, 146–148
grahami, 144–146
lineata, 148–150
santithomae, Dendrocopeltes, 211
sandrii, Unio, 125
sanguinolentus, Veniliornis, 210
Sarcoramphus papa, 202
saucyti, Leguminaia, 133
savignyi, Hyla, 63
scaber, Gymnophthalmus, 55
Stenodactylus, 55
Sceloporus luna1i, 242
oberon, 253–257
ollopurus, 242
Schiffornis verae-pacis, 213
schiraziana, Periops, 77
schirazianus, Spalerophis, 77
Schistodasmus lampaeyanus, 263
schlueteri, Ophisops, 64
Schmidt, Karl P., Amphibians and Reptiles from the Sudan, 331–338; New Central American Frogs of the Genus Hydropalus, 1–5; A New Coral Snake from British Guiana, 45–47; A New Lizard from Mexico, with a Note on the Genus Norops, 7–10; A New Toad from Western China, 151–154; Notes on Texan Snakes of the Genus Salvadora, 143–150; Reptiles and Amphibians from Central Arabia, 161–165; Reptiles and Amphibians from Southwestern Asia, 49–92
Schmidt, Karl P., and Walker, Warren F., Peruvian Snakes from the University of Arequips, 279–296; Snakes of the Peruvian Coastal Region, 297–324; Three New Snakes from the Peruvian Andes, 325–328
schmidtii, Anolis, 21–23
schokari, Coluber, 86–87
Psamophis, 86–87
schrenkianus, Unio, 122, 267
Scincus arabis, 69–70
conirostris, 70
philbyi, 162–165
sepsoides, 70
vittatus, 67
Seleronycteris, 274
scutellata, Agame, 59
scutellatus, Phynocephalus, 59
Seeverson, Charles H., New Tertihopilous Diptera from the Neotropics, 175–193
Segmentina, 97
lucida, 98
Seiurus aurocapillus, 219
semiferrugineum, Cerithium, 171
semirugatus, Psilunio, 135
sepsoides, Chalcides, 70
septemtaeniata, Mabuya, 66
septemtaeniatus, Euprepis, 66
septentrionalis, Rhinolophus, 40
Setophaga ruticilla, 220
severus, Coluber, 284–285
Xenodon, 284–285
shuttleworthii, Hyridella, 262
Sibon annulatus, 311–312
similis, Ceophlebus, 210
simonsii, Philodryas, 316–317
sinaita, Agama, 58
sincera, Valvata, 101
Sinotaia, 96
Siphilophis fitzingeri, 312–313
Sirex dumerilii, 17
mexicanum, 16–17
Sittasomus gracilis, 211
sladeniae, Norops, 9

discussion, 458–497
Thraupis abbas, 221
Thryothorus albinucha, 217
canobrunneus, 217
thula, Leucophoix, 201
tigridis, Unio, 128–124
Tinamus percautus, 199
\textit{tinnami}, \textit{Nirmus}, 382–384
Strongylocotes, 382–384
Tityra deses, 213
personata, 213
Todirostrum finitimum, 216
Tolmomyias cineireiceps, 215
Torotoia, 96
torquata, Megacerule, 209
torticula, 209
Trachymenis peruviana, 290–291
Traylor, Melvin A., Jr., Birds from the Yucatan Peninsula, 195–225
trigeminus, 86
Oxyrhops, 290
Trigonophis iberus, 83–84
Trimeresurus atrax, 129
barnetti, 129
microphthalmus, 129
pictus, 129, 322–323
Trionyx euphraticus, 88
Tritogonia verrucosa, 260
Trogon massena, 209
melanocephala, 208–209
puella, 208
sallaei, 209
tschudii, Elaps, 320
Mierurus, 320
Mierurus, 321–322
tuberculatus, Alsophylax, 54–55
Bunopus, 54–55
tumidus, Unio, 128, 267
Tupinambis griseus, 60
turcicus, Hemidactylus, 56
Lacerta, 56
Turdus tamaulipensis, 218
turneri, Merganetta, 350–351
turtori, Unio, 125
typha, Dendrocincla, 211
Typhlops punctatus, 337
tessellatum, 303–304
vermicularis, 71
Tyrannus chloronotus, 214
Spizaetus, 203
Tyria najadum, 73
Tyto praticola, 207
tzacatl, Mabuya, 208
Uca ischnodactylus, 107–108
umbonatus, Psilunio, 134, 265
uncinatus, Chondroheirax, 202
undulata, Ameiva, 242–243
Unio, 126–132
abyssinicus, 124
aleroni, 126
ascanius, 122
batavus, 130–131
borysthenensis, 129, 267
bourgeticus, 125
bruguiernianus, 132
carneus, 131
crasus, 129, 266
cytherea, 129, 266
decipiens, 125
delphinus, 123
dembeae, 128
durieu, 128
elongatulus, 124
eucirrus, 128
fiscallianus, 125
gargotiae, 127
gaudioni, 122
glaucinus, 127
gontieri, 131–132, 266
jonicus, 131
krüperi, 125
latirostris, 121, 266–267
lawleyanus, 127
mancus, 126
middendorfii, 122
mongolicus, 122
mosquinianus, 126
moussonianus, 122
mucidus, 123
palliens, 124
penchinatianus, 126
pictorum, 120–121, 266
platyrhynchoideus, 123, 267
platyrhynchus, 122, 267
praeposterus, 121
proechistus, 122
proechus, 122
quelleneci, 125
ravoisieri, 123
requienii, 126
rostratus, 122
rousii, 126
sandrii, 125
schrenckianus, 122, 267
terminalis, 124
tigridis, 123–124
tumidus, 128, 267
turtoni, 125
valentinus, 127
Unionidae, 120–122
Unioninae, 120–122
urmianna, Apathya, 60
Uromastix aegyptius, 59, 162
loricus, 59
microlepis, 59
ustulata, Hylcocilia, 218
Uta irregularis, 23–24
valentinus, Unio, 127
Valvata densetriata, 102
lewisi, 102
sincera, 101
Varanus griseus, 60, 162
varia, Mabuya, 332
Mniotilta, 219
variegatus, Eumeces, 68–69
varius, Eupropeps, 332
velox, Accipiter, 202
Veniliornis sanguinolentus, 210
ventromaculatus, Coluber, 74
verae-pacis, Schizophis, 213
vermicularis, Typhlops, 71
verrucosa, Tritogonia, 260
vertebralis, Atractus, 286
verticalis, Arremonops, 224
escoiana, Anodonta, 158, 265
vicarius, Spizaetus, 203
viduus, Conophis, 31
villosa, Cordulia, 367–370
violacea, Nyctanassa, 201
Vipera euphratica, 87
\textit{palaestinae}, 87
virens, Icteria, 219
Vireo flavifrons, 218
\textit{griseus}, 218
virescens, Butorides, 201
viridis, Bufo, 53, 161
\textit{viridissimus}, Coluber, 291
Philodryas, 291
vitellinus, \textit{Dryophylax}, 315–317
vittata, Mahuya, 67
vittatus, Basiliscus, 242
Conophis, 31–32
\textit{Scincus}, 67
vociferus, Charadrius, 205
Volatinia splendens, 224
watsonana, Eremias, 66
\textit{weberi}, Lygosoma, 335–336
wernecki, Strongylocotes, 386
wheatleyi, Leguminaia, 133
Wilsonia citrina, 220
woodiana, Anodonta, 133
\textit{wrighti}, Bufo, 151–154
xantholora, Amazona, 206
Xanthoura maya, 217
Xenodon severus, 284–285
Xenops mexicanus, 211
\textit{Xiphophychnus yucatanensis}, 211
\textit{yucatana}, Cistudo, 17–18
Terrapene, 17–18
\textit{yucatanensis}, Amazilis, 208
\textit{Cyclarhis}, 218
\textit{Icterus}, 221
\textit{Myiarchus}, 215
\textit{Nyctidromus}, 207
\textit{Piculus}, 210
\textit{Platypus}, 213
\textit{Saltator}, 223
\textit{Thamnophilus}, 211–212
\textit{Xiphophychnus}, 211
\textit{yucatanica}, Cissolopha, 217
Richmondena, 223
\textit{Zamenis asiatica}, 72–73
\textit{caudalineatus}, 76
\textit{rhodorachis}, 73
\textit{rogersi}, 73–74
zarudnyi, Diplometopon, 60
Testudo, 89
\textit{Zenaida asiatica}, 215