TWO NEW SPECIES OF CRASPEDORRHYNCHUS (MALLOPHAGA) FROM NORTH AMERICA

By K. C. Emerson
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Species of the Ischnoceran genus Craspedorrhynchus Keler, 1938, are found in North America on avian hosts of the family Accipitridae (Hawks, Eagles and Kites). To date, no species have been recorded from hosts of the other families of Falconiformes. Species of this genus are of the short, round-bodied, robust type with a large head, and are found on the neck and head of the host. The premarginal carina and the ventral carina of the forehead are prolonged to a point well beyond the anterior margin of the dorsal anterior plate. This character and the distinctive male genitalia separate the genus from related genera found on other hosts.

The known North American species form a rather homogeneous taxon. Differences in the male genitalia do not appear to be great. The characters which appear to offer the best means of separation are: size, shape of the dorsal anterior plate of the forehead, chaetotaxy, and the sternal plate of the genital region. In some species, the chaetotaxy of abdominal segments II-VII (the first apparent segment is II) is not the same in both sexes. Individual differences of chaetotaxy within each species are slight. The sternal plate of the genital region of the male is more variable in shape than is the dorsal anterior plate of the forehead.

Two new species are herewith described and illustrated from material in the collection of the U. S. National Museum. In addition, keys are provided to the species known to occur in North America.

Craspedorrhynchus subhaematopus, new species

Holotype male: Dorsal anterior plate of forehead as shown in Fig. 8.
Terminal abdominal segments as shown in Fig. 6. Male genitalia as shown in Fig. 7. Distinctive chaetotaxy as given in the key to the males.

**Allotype female**: Dorsal anterior plate of forehead as in the male. General shape as in the male, but larger and more robust. Distinctive chaetotaxy as given in the key to females. Terminal abdominal segments as shown in Fig. 5.

**Measurements**: Holotype male and allotype female measurements in millimeters, are respectively: length of head 0.76, 0.86; breadth of head 0.73, 0.79; breadth of prothorax 0.45, 0.49; breadth of pterothorax 0.60, 0.69; breadth of abdomen 0.92, 1.12; total length 1.98, 2.27.

**Type host**: Accipiter cooperii (Bonaparte), Cooper’s Hawk.

**Type material**: Holotype male and allotype female, U. S. National Museum Catalog No. 64,938, collected at Laurel, Maryland, on 20 April 1938 by E. B. Marshall. Two paratypes collected in Leon County, Florida, on 2 December 1925 by H. L. Stoddard. Ten paratypes collected at Tillamook, Oregon, on 1 January 1931 by Alexander Walker.

**Discussion**: This species is closest to *C. haematopus* (Scopoli, 1763). In addition to the differences given in the keys, the two species can be separated by the differences illustrated in Figs. 1–8.

**Craspedorrhynchus americanus**, new species

**Holotype male**: Dorsal anterior plate of forehead as shown in Fig. 13. Genital sternal plate as shown in Fig. 9. Genitalia as shown in Fig. 17. Distinctive chaetotaxy as given in the key to the males.

**Allotype female**: Dorsal anterior plate of forehead as in the male. General shape as in the male, but larger and more robust. Distinctive chaetotaxy as given in the key to the females. Shape of genital sternal plate as in *C. haematopus* (Scopoli, 1763).

**Measurements**: Holotype male and allotype female measurements, in millimeters, are respectively: Length of head 0.87, 0.93; breadth of head 0.79, 0.85; breadth of prothorax 0.47, 0.51; breadth of pterothorax 0.66, 0.71; breadth of abdomen 1.08, 1.31; total length 2.12, 2.60.

**Type host**: Buteo jamaicensis (Gmelin), Red-tailed Hawk.


**Discussion**: This species is close to *C. buteonis* (Packard, 1870), *C. dilatatus* (Rudow, 1869), and *C. hirsutus* Carriker, 1956; the other species found on the host genus *Buteo*. In addition to differences given in the
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keys, these closely related species can be separated by the differences illustrated in Figs. 9–16.

Key to females of North American species of Craspedorrhynchus

1. Posterior margin of pterothorax with 20 long setae  haematopus
   Posterior margin of pterothorax with 14 long setae  americanus
   Posterior margin of pterothorax with 14 or fewer long setae  2
   Abdominal tergite II with fewer than 14 long setae  5
   Abdominal tergite VIII with 8 long setae  americanus
   Abdominal sternite VI with a sparse row of setae  3
   Abdominal sternite VI with numerous scattered setae  obscurus
   Abdominal sternite III with 20 long setae  buteonis
   Posterior central margin of abdominal sternite III with 14 long setae  dilatatus
   Posterior margin of vulva with 12 medium-length setae  aquilinus
   Posterior margin of vulva with 14 medium-length setae  halieti
   Posterior margin of ptero thorax with 12 long setae  hirsutus
   Posterior margin of ptero thorax with 16 or more long setae  haematopus
   Pleural plates of abdominal segment VII each with 10 long setae  obscurus
   Pleural plates of abdominal segment VII each with 6 long setae  subhaematopus
   Posterior margin of tergite VIII with 14 long setae  americanus
   Posterior margin of tergite VIII with 12 long setae  5
   Posterior margin of tergite VIII with 8 long setae  americanus
   Posterior margin of ptero thorax with 10 long setae  4
   Posterior margin of ptero thorax with 12 long setae  3
   Posterior margin of ptero thorax with 3 long setae  2
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Abdominal tergite VIII with 10 long setae — halieti

1. Thoracic sternal plate between coxae II and III with two long setae 6

2. Pleural plates of abdominal segment VII each with 10 long setae — subhaematopus

3. Genital sternal plate with 3 long setae on each side in lateral indentations — hirsutus

4. Genital sternal plate with 4 long setae on each side in lateral indentations — dilatatus

5. Genital sternal plate with 5 long setae on each side in lateral indentations — americanus

6. Pleural plates of abdominal segment VII each with 6 long setae — obscurus

7. Posterior margin of pterothorax with 12 long setae 3

8. Abdominal tergite VIII with 14 long setae — aquilinus

9. Abdominal tergite VIII with 10 medium-length setae — halieti

10. Abdominal tergite VIII with 12 medium-length setae — americanus

11. Abdominal tergite VIII with 12 long setae 5

12. Genital sternal plate without median setae — americanus

Host list for North American species of Craspedorrhynchus

C. americanus n. sp. — Buteo jamaicensis (Gmelin), Red-tailed Hawk.

C. aquilinus (Denny, 1842) — Aquila chrysaetos (Linnaeus), Golden Eagle.

C. buteonis (Packard, 1870) — Buteo lineatus (Gmelin), Red-shouldered Hawk.

C. dilatatus (Rudow, 1869) — Buteo lagopus (Pontoppidan), Rough-legged Hawk.

C. haematopus (Scopoli, 1763) — Accipiter gentilis (Linnaeus), Goshawk.

C. halieti (Osborn, 1896) — Haliaeetus leucocephalus (Linnaeus), Bald Eagle.

C. hirsutus Carriker, 1956 — Buteo regalis (Gray), Ferruginous Hawk.

C. obscurus (Giebel, 1874) — Rostrhamus sociabilis (Vieillot), Everglade Kite.

C. subhaematopus n. sp. — Accipiter cooperii (Bonaparte), Cooper's Hawk.

Explanation of Figures

Figs. 1-4 are of C. haematopus (Scopoli, 1763). 1, dorsal-ventral view of terminal abdominal segments, female; 2, dorsal-ventral view of terminal abdominal segments, male; 3, male genitalia; 4, dorsal anterior plate of forehead, male.

Figs. 5-8 are of C. subhaematopus n. sp. 5, dorsal-ventral view of terminal abdominal segments, female; 6, dorsal-ventral view of terminal abdominal segments, male; 7, male genitalia; 8, dorsal anterior plate of forehead, male.

Figs. 1, 2, 4, 5, 6, and 8 are drawn to the same scale.

Figs. 9-12 are genital sternal plate of Craspedorrhynchus sp., male. 9. C. americanus n. sp.; 10, C. dilatatus (Rudow, 1869); 11, C. buteonis Carriker, 1956; 12, C. hirsutus Carriker, 1956.

Key to males of North American species of Craspedorrhynchus

1. Posterior margin of pterothorax with 16 or more long setae
   — haematopus

2. Posterior margin of pterothorax with 14 or fewer long setae
   — dilatatus

3. Abdominal sternite VI with a sparse row of setae
   — obscurus

4. Abdominal sternite VI with numerous scattered setae
   — americanus

5. Abdominal tergite II with more than 14 long setae
   — americanus

6. Abdominal tergite II with fewer than 14 long setae
   — obscurus

7. Abdominal tergite VIII with 8 long setae
   — americanus

8. Abdominal tergite VIII with 12 long setae
   — americanus

9. Abdominal tergite VIII with 14 long setae
   — americanus
Abdominal tergite VIII with 10 long setae .......... halieti
5. Thoracic sternal plate between coxae II and III with two
   long setae .............................................. 6
   Thoracic sternal plate between coxae II and III with four
   long setae ............................................... 7
6. Pleural plates of abdominal segment IV each with at least 7
   long setae .............................................. subhaematopous
   Pleural plates of abdominal segment IV each with no more than
   4 long setae ............................................. aquilinus
7. Genital sternal plate with 3 long setae on each side in lateral
   indentations ........................................... hirsutus
   Genital sternal plate with 4 long setae on each side in lateral
   indentations ........................................... dilatatus
   Genital sternal plate with 5 long setae on each side in lateral
   indentations ............................................. 8
8. Genital sternal plate with median setae .............. buteonis
   Genital sternal plate without median setae .............. americanus

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C. americanus n. sp.—Buteo jamaicensis (Gmelin), Red-tailed Hawk.
C. aquilinus (Denny, 1842)—Aquila chrysaetos (Linnaeus), Golden Eagle.
C. buteonis (Packard, 1870)—Buteo lineatus (Gmelin), Red-shouldered Hawk.
C. dilatatus (Rudow, 1869)—Buteo lagopus (Pontoppidan), Rough-legged Hawk.
C. haematopus (Scopoli, 1763)—Accipiter gentilis (Linnaeus), Goshawk.
C. halieti (Osborn, 1896)—Haliaeetus leucocephalus (Linnaeus), Bald Eagle.
C. hirsutus Carriker, 1956—Buteo regalis (Gray), Ferruginous Hawk.
C. obscurus (Giebel, 1874)—Rostrihamus sociabilis (Vieillot), Everglade Kite.
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EXPLANATION OF FIGURES

Figs. 1–4 are of C. haematopus (Scopoli, 1763). 1, dorsal-ventral view
of terminal abdominal segments, female; 2, dorsal-ventral view of terminal
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forehead, male.

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nal abdominal segments, female; 6, dorsal-ventral view of terminal
abdominal segments, male; 7, male genitalia; 8, dorsal anterior plate of
forehead, male.

Figs. 1, 2, 4, 5, 6, and 8 are drawn to the same scale.

Figs. 9–12 are genital sternal plate of Craspedorrhynchus sp., male.
9, C. americanus n. sp.; 10, C. dilatatus (Rudow, 1869); 11, C. buteonis
(Packard, 1870); 12, C. hirsutus Carriker, 1956.
The Large Toads of Cuba
By Albert Schwartz

The genus Bufo is represented in Cuba by five forms. The largest of the Cuban toads is Bufo peltacephalus Tschudi, which has an islandwide distribution. Under two National Science Foundation grants, collections of this large species have been made on the Isla de Pinos as well as in all the provinces of Cuba, and adequate material has now accumulated to make possible an assessment of the variation in the characteristics of the various populations involved. Over the years, my companions have aided me greatly in collecting these large amphibians, but I wish to mention especially the aid afforded me by Ronald F. Klinikowski, Peter F. Pepe, Barton L. Smith and James R. Talada in taking specimens of the new form from the northern coast of Oriente. The illustrations of dorsal views are the work of David C. Leber and the drawings of the heads are by Peter F. Pepe; both merit my gratitude for their work. I have borrowed material from the U. S. National Museum (USNM), the Museum of Comparative Zoology (MCZ) and the Illinois Natural History Survey (INHS). I wish to thank Doris M. Cochran, Ernest E. Williams and Philip W. Smith for their hearty cooperation in the current study.

Bufo peltacephalus was described by Tschudi (1838: 52) as Bufo peltocephalus, a toad whose coloration was brownish red with a pattern of hieroglyphs. Such a thumbnail description leaves much to be desired as far as allocating this name to one of the two populations of the large Cuban toad. Although it was considered likely that the original material came from the vicinity of the La Habana, use of the term "hieroglyphs" to describe the diffuse and blotched pattern of the Habana population is not tenable. Strictly speaking, I would not call the

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