

That such a large, conspicuous insect as *Cordulegaster* could have escaped my observation all these years, if it has been here continuously, seems at first sight improbable, and yet in this case I am inclined to believe, from the numbers of nymphs present in the creek, that the species is a regular resident. The adults of *Cordulegaster* are short-lived and their season of flight is probably over soon after the usual time of my arrival at Lake Simcoe in late June or early July, and my visits to their haunts, which have not been frequent, have probably all been too late.

In conclusion we may summarize the following points, which are suggested by the foregoing observations.—

1. Certain species of dragonflies are much more abundant in certain localities during warm seasons than during cold seasons.

2. This abundance is probably not due to the emergence of large numbers of individuals from their breeding-places, but to the greater activity of flight in warm weather, whereby the insects are dispersed to localities not visited in cooler seasons.

3. The Odonate fauna of a restricted locality contains a large percentage of transient resident species and stragglers from other localities, such species varying greatly from year to year.

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## THE NORTH AMERICAN SPECIES OF *HABROCYTUS* (CHALCID-FLIES).

BY A. A. GIRAULT, GLENNDALÉ, MD.

### *Generic Characters of Habrocytus.*

The scutellum bears a more or less distinct cross-carina (or indicated as such) before apex (except in *medicaginis* and *borrowi*). The spiracular sulcus is present, foveate (exceptions noted). The clypeus is finely striate. The genus differs from *Pteromalus* mainly in mandibular structure but the abdomen is less flat, longer (conical) and the neck of the propodeum not usually conspicuous, but short and variable between the species. The propodeal spiracles are long and elliptical (smaller in *canadensis*). The types of all the species have been seen. The following table is based on the females:

May, 1917



Antennæ inserted somewhat below the middle of the face. Parapsidal furrows not complete. Mandibles 3- and 4-dentate.

1. Fore-wings with a large, smoky area under the whole of the marginal vein. Propodeum with a large neck, tricarinate. Abdomen produced beneath, with a very short petiole. Pedicel shorter than funicle 1, the latter twice longer than wide. Coxæ and femora concolorous, the middle tibia infuscated, the caudal so at base. Scutellum without a cross-suture before apex (or an indicated one). Clypeus sinuate.....*borrowi*, n. sp.

2. Fore wings hyaline.

Ovipositor not extruded. Coxæ above metallic, the legs lemon yellow, the antennæ yellow-brown. Clypeus sinuate rather deeply at apex. Antennæ inserted but a little above the ventral ends of the eyes. Spiracles at the base of a broad hollow, bounded by the lateral carina and a carina laterad of the spiracle, no sulcus. Propodeum tricarinate. Pedicel and funicle 1 subequal.....*onerati* (Fitch).

Coxæ concolorous, the femora brown or washed with metallic or metallic. Scape yellow.

Clypeus distinctly concave or sinuate at distal margin.

Propodeum tricarinate and with a very short neck (irregular rugæ between the carinæ). Funicle 1 somewhat over twice longer than wide, twice the length of the pedicel, 6 a half longer than wide. Tibiæ white. Marginal vein nearly twice the length of the stigmal. Femora usually washed. Funicle and club

black.....*rhodobæini* Ashmead (= *languriæ* Ashmead).

The same but the femora usually deep metallic, the tibiæ golden yellow, the funicle joints somewhat shorter, the flagellum brown...*phycidis* Ashmead (= *piercei* Crawford).

The same as *phycidis* but the tibiæ brown, white at tip, no median carina on propodeum, the foveæ of spiracular sulcus minute.....*cerealellæ* (Ashmead)



The same, but the femora and tibiae reddish brown, the tips of the last two pairs of tibiae broadly white. Funicle joints as in *phycidis*. Propodeum with a distinct neck. Abdomen more like that of

*Pteromalus*.....*rhodobæini rosæ*, new var.

Clypeus sharply incised at meson so as to appear bidentate there. Femora metallic. Flagellum black. Propodeum without a neck, scaly, impunctate, tricarinate. Scutellum without a faint cross-carina. Stigmal vein subequal to the marginal.

Funicle 1 a little longer than pedicel, somewhat longer than wide, 6 a little wider than long. Small species.....*medicaginis* Gahan.

Clypeus truncate or subtruncate. Femora barely metallic. Tips of tibiae white, the femora and tibiae brown yellow; striae of clypeus faint; antennae yellow, funicle 1 barely longer than the pedicel, longer than wide, 6 wider than long; stigmal vein somewhat shorter than marginal. Otherwise as in *rhodobæini*, but small.....*aulacis*, n. sp.

The same, but a half larger, the tibiae and tarsi lemon-yellow, the flagellum black, the club yellowish, the spiracular sulcus absent, the median carina irregular. Clypeal striae distinct.....*arkansensis* n. sp.

Coxae and femora concolorous, scape concolorous.

Clypeus rather deeply concaved or sinuate. Propodeum tricarinate, the neck short. Pedicel and funicle 1 subequal. Caudal tibia reddish brown, pale yellow at tip. Spiracular sulcus short, complete, bifoveate. Spiracle curved.....*franciscanus* n. sp.

Ovipositor extruded for a fourth or more the length of the abdomen.

Clypeus sinuate at distal margin, striate.

Coxae and femora concolorous, the scape yellowish brown. Ovipositor extruded for a fourth the length of the abdomen.



Propodeum with a distinct neck, tricarinate. Funicle 1 twice longer than wide, much longer than the pedicel. Usual otherwise.....*dux* n. sp.

Coxæ alone concolorous, the legs white. Scape concolorous except at base. Ovipositor three-fourths the length of the abdomen.

The same as *dux* but slender (as in *Belonura singularis* Ashm.), no spiracular sulci, the spiracle oval, small, the lateral carina absent, no neck. Head subquadrate. Funicle 1 thrice longer than wide.....*canadensis* n. sp.

*Habrocytus rhodobæini rosæ* Girault.

Two pairs, Brooklyn, N. Y., February 9, 1913, from rose (A. S. Berquist). The *Habrocytus rosæ* Ashmead, in Annals Ent. Soc. of America, VIII, 1915, p. 278.

*Types*.—Catalogue No. 20414, U. S. National Museum, one male, two females on two tags.

*Habrocytus medicaginis* Gahan.

Several females reared in connection with *Bruchophagus funebris* from red clover seeds, St. Paul, Minnesota (W. Williamson).

*Habrocytus aulacis* Girault.

Two females, Wooster, Ohio, reared in connection with an *Aulax* gall.

*Types*.—Catalogue No. 20418, U. S. National Museum, two females on tags, a head and a caudal leg on a slide.

*Habrocytus quinquecarinatus* Girault.

This species has no spiracular sulcus. It differs from the other species in being varicoloured.

*Habrocytus franciscanus* Girault.

Three females, San Francisco County, California, July.

*Types*.—Catalogue No. 20416, U. S. National Museum, the females on tags, a head, the caudal legs and a fore wing on a slide.



*Habrocytus borrowi* Girault.

One female in the U. S. National Museum from Colorado. Dedicated to George Borrow.

*Type*.—Catalogue No. 20417, U. S. National Museum, the specimen on a tag, the head, caudal legs and a fore wing on a slide.

*Habrocytus arkansensis* Girault.

Males, females reared in connection with *Isosoma*, Garfield, Arkansas (T. S. Wilson).

The males have the antennæ entirely yellow, the legs (except the coxæ), golden yellow.

*Types*.—Catalogue No. 20419, U. S. National Museum, three females on tags, a head and caudal legs on a slide.

*Habrocytus dux* Girault.

One female, Canobie Lake, New Hampshire.

*Type*.—Catalogue No. 20441, U. S. National Museum, the female on a tag, the head and a caudal leg on a slide.

*Habrocytus canadensis* Girault.

Toronto, Canada (Wm. Brodie).

*Type*.—Catalogue No. 21071, U. S. National Museum, a tag and a slide.

*Habrocytus cerealellæ* (Ashmead).

Parasite of *Sitotroga cerealella*, Philadelphia, Pennsylvania.

*Types*.—Catalogue No. 6115, U. S. National Museum, tags and a slide.

*Catolaccus anthonomi* Ashmead has 3- and 4-dentate mandibles but I am not sure how many ring-joints, apparently three (but female type has lost antennæ).

The species *obscuripes* has an obscure cross-carina on the scutellum near apex, despite what I have said in the Annals of the Entomological Society of America, IX, 1916, p. 292. It does not belong here (tridentate mandibles).



Girault, Alexandre Arsène. 1917. "The North American species of  
|Habrocytus|." *The Canadian entomologist* 49, 178–182.

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