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SOME ROBBERFLIES IN THE UNIVERSITY OF
MICHIGAN MUSEUM OF ZOOLOGY, AND THE
DESCRIPTION OF A NEW SPECIES

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In a collection of Asilidae sent from the University of Michigan Museum of Zoology are a number of species of more than usual interest. I have used my specimens of some of the species also because by a combination of specimens from the two collections it is possible to form a better series of each species from which to draw conclusions.

Stichopogon argentius Say.—Numerous specimens taken at Sawyer Dunes, Berrien County, Michigan, also one from Seward County, Kansas. The species is known to be partial to sand areas and has a wide distribution, having been taken on the Pacific as well as the Atlantic coast of North America. These records add two more states to its known range.

Proctacanthus rufus Williston.—This fine, large insect was described by Williston in Volume 12, Transactions of the American Entomological Society, and reported by him as

occurring in North Carolina and Massachusetts. It has been collected in several states since and the records show that it is partial to bare, sandy areas such as are present along lakes, seas, and rivers and in semi-arid regions. I have collected numerous specimens at Cedar Point, Sandusky, Ohio, on the sandy shores of Lake Erie, and have observed it issuing from the pupa-case which was left partially protruding from the sand. Its larva, no doubt, is predaceous on subterranean animal life of its chosen habitat. Nearly a score of specimens were taken along the shore of Lake Michigan, in Berrien County, which is the first record of its occurrence in Michigan known to me.

Pupa. Three cast pupa skins of *Promachus rufus* were received with the adults. The pupae of different species of Asilidae are much alike except they vary strikingly in size, as is to be expected. The division into head, thorax, and abdomen is plainly apparent and the segmentation is clearly evident. The middle of each abdominal segment is expanded into a ridge which entirely encircles its segment and bears a row of spines which are stoutest dorsally. These rows of spines dorsally near the middle of the length of the abdomen are composed of slender, hair-like spines and short, heavy, two-pointed spines alternating with one another. The location of the eyes is easy to see. Just beneath each eye is a very prominent complex spine with three long points, and between these, but somewhat higher up, are two prominent spines with enlarged bases, while behind each eye, near the middle of the thorax, are two less prominent spines. Immediately behind each eye is a thoracic spiracle. Total length 28 to 32 millimeters. This pupa differs from those of *Asilus sericeus* and *Erax interruptus* in not having distinct spines protruding from its posterior end.

Dizonias tristis Walker.—The extreme variation in color of the members of this genus has been considered by several authors, but none of them have come to a conclusion as to the limits of the species.

In a collection of twenty specimens, twelve males and eight females, from Louisiana, Texas, Georgia, Alabama, and Florida there is much variation and the characters given for separation of the four recognized North American species do not appear to be altogether reliable. One could easily find color characters for the separation of several types that might be called species among this material, but on account of the gradual variations in the series and the results of studies that others have made, the better disposition of the problem presented seems to be to consider all these specimens as belonging to a single species.

There is general agreement in the series in that all males are predominantly black and all females are predominantly brown. The white bands or zones on the second and third segments which suggest the generic name are extremely variable, being distinctly apparent in some specimens and entirely absent in others, with various gradations, although it may be said that when specimens become old and greased, as they often do, the white color producing the zones is of such a nature that it often becomes nearly obsolete. Aside from these white zones, five males have the abdomen all black and seven have the abdomen part brown; of the latter, two have the last three segments brown and one has the abdomen all brown beyond the middle of the second segment, while the remaining four intergrade. In all males the extreme tip of the abdomen is white-haired; in nine males the hypopygium is black, in three it is brown. In total length the smallest male is 15 mm., the largest male is 22 mm.

All of the eight females have the dorsum of the mesothorax brown, the mystax bright yellowish brown, and the legs and antennae brown, but in two specimens the femora are partly fuscus and in most cases the third antennal segment is darkened somewhat apically. In all these females the wings are dark fuscus and quite uniform through the series. The abdomen is extremely variable both in coloration and markings. Two specimens have the light zones on segments two and three; two other specimens have these zones on segments two and three and an additional zone on five; one specimen has only one zone, and that on segment three; two specimens have the abdomen black without zones, but with suggestions of brown on segments two and three; and one specimen has no light zones, but the abdomen is black and brown banded, with most of the anterior part of each segment brown and the posterior part black, although the last three segments are nearly all brown. This last specimen I collected in Louisiana pairing with a male which is black with the last four abdominal segments brown. In one female with three zones the abdomen is entirely black otherwise, while in the light-zoned females with more or less brown on the abdomen black is present in variable combinations.

A male specimen of *Dizonias* from Arizona, which I have labelled *D. lucasi* Bellardi, differs from the males considered above in the appearance of the hypopygium. The superior appendages are longer and slenderer than in *tristis* and near the middle of their length on the inner dorsal border each bears a tuft of elongate, coarse, upright hairs which are bright yellow in color, as is the tip of the abdomen beyond the apex of the third segment. In *tristis* these appendages are short and conical, with quite a different arrangement of white, bristly hairs. It would seem, therefore, that the basis of sep-

aration of the species of *Dizonias* will be found in the structure of the genitalia rather than in the color of the body, which has been used by previous authors.

Townsendia niger Back.—The genus *Townsendia*, erected by Williston for a species from Tabasco, Mexico, is peculiar among North American Asilidae in having only four posterior cells. So far as I find, five specimens of the genus are mentioned in entomological literature, and these have been placed as four species. Two specimens in the collection under consideration and three specimens in my collection appear to agree best with *T. niger*, although, as Back states, the differences between *minuta* and *niger* are not pronounced. The five specimens before me extend the range of the genus and indicate a rather wide distribution, as they come from Winfield, Louisiana, Decatur County, Georgia, and Dayton, Kentucky. Williston described *minuta* from two specimens, one from Tabasco and one from New Mexico. Back described *pulcherrima* from Travis County, Texas, and *niger* from South Amboy, New Jersey, each from a single specimen. And Bezzi has described *fiebrigii* from one specimen from Paraguay in *Annals of the Hungarian National Museum*, 1909.

Proctacanthus mystaceus Macquart.—Several specimens of this South American species from Riohacha, Magdalena, Colombia, were collected by F. M. Gaige. They correspond closely in size and somewhat in appearance to specimens of *Proctacanthus brevipennis* Wiedemann, but are easily known by the elongate second submarginal cell with its base plainly before the base of the second posterior cell or nearly opposite the middle of the length of the section of the fourth vein, which reaches from the anterior cross-vein to the base of the second posterior cell. None of the North American species

known to me have the second submarginal cell so long as in *mystaceus*. Usually this cell has its base almost exactly opposite the base of the second posterior cell. Total length 25 to 27 millimeters. Macquart figures a wing of *mystaceus* in *Dipteres Exotiques*, Supplement 1, Plate 8, figure 10.

GENUS ASILUS

Asilus may be divided into two groups by the presence or absence of a transverse row of bristles just before the apex of each abdominal segment, clearly larger than the hairs commonly present on the abdomen. The group characterized by the absence of these bristles is smaller than the other and the species included from North America hardly can be said to fall together naturally. Loew and others used this means of grouping old world species and American students have adopted it in this country, presumably because nothing better has been suggested. Six North American species have been included in the group and an undescribed species collected by F. M. Gage at Lake Cushman, Washington, is before me. The following key is offered for separating these seven species:

1. Large, bright-colored species, wings distinctly colored all over.. 2
Smaller, modest-colored species, wings nearly hyaline..... 3
2. Body and legs black, wings uniformly rich yellow....*midas* Brauer
Body brown, legs pale brown, wings brown with the veins
margined with paler.....*sericeus* Say
3. Scutellum with numerous upright, mostly white bristles on
its posterior part, female genitalia with a circllet of strong
spines at the tip..... 4
Scutellum with a row of black bristles on its margin, female
genitalia without a circllet of spines at the tip..... 5
4. Upper forceps of the male genitalia protruding half their
length beyond the other parts.....*leucopogon* Williston
Upper forceps of the male genitalia not protruding beyond
the other parts.....*cacopilogus* Hine
5. Third antennal segments wide, widest at middle of its
length, body with abundance of fine pile.....*platyceras* Hine
Third antennal segments slender, nearly the same width
throughout, body with normal amount of pile..... 6

6. Body black, face just beneath the antennae shining black.
nitidifacies Hine
Body pale, face entirely yellowish pollinose.....*astutus* Williston

***Asilus platyceras* n. sp.**

Total length 14 to 16 millimeters. Dark-colored all over without color markings. Mystax black above, pale straw-color beneath. Bristles of the mesothoracic dorsum and the scutellum black.

Antenna black, third segment rather short, widest at middle of its length, arista shorter than its segment, beard white, occipito-orbital bristles black; mesothoracic dorsum black-haired, posteriorly with numerous long, black hairs and bristles; scutellum with numerous short, black hairs on its disc and a row of long, black bristles and hairs on its margin; wings gray-hyaline, extreme base and region of the basal cells nearly transparent; legs black with gray pilosity and black bristles; inner sides of the tibiae and tarsi furnished in most specimens with glistening reddish pile, more evident from some views than others. Abdomen dark, nearly uniformly gray pollinose and quite thickly gray pilose. Male genitalia shining black from side view, superior appendages slightly longer than abdominal segments six and seven, slender, of uniform width and directed nearly straight backward. From dorsal view, slightly narrowed to apical third and from thence more rapidly narrowed to apex. Ovipositor shining black, conical and about equal in length to abdominal segments six and seven.

Male type and allotype collected at Lake Cushman, Mason County, Washington, August 6, 1919, by F. M. Gaige. In the University of Michigan Museum of Zoology. Four paratypes in the same museum were collected at the same place between July 4 and August 6, 1919. Two paratypes in my collection from the same locality were taken August 8, 1919.

