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Ecological and Behavior Notes on Missouri Insects

Phil Rau

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ECOLOGICAL AND BEHAVIOR NOTES
ON MISSOURI INSECTS

PHIL RAU

Issued June, 1922

Scolioidea
Scolia
Elio

Tiphinidae
Tiphia
Bremesia
Mutillidae

Dasyneutilla

Pompilidae

Proctemias

Cryptacheilus

Episyron

Pompiloides

Arachnophredonius

Anoplius

Pepsis

Planiceps

Notiochares

Aganoides

Vespididae

Ancistrocenus

Eumenes

Odynerus

Zethus

Nortonia

Stenodynerus

Sphecoidea

Alyson

Myrson

Paranebellinus

Heplosoides

Mimesa

Philanthus

Crossocerus

Cerceris

Xylocelia

Prionomyx

Ammobla

Ammophila

Notogomidea

Tachytes

Bicyrtes

Ephialtes

Microgaster

Bembex

Malictridae

Halictus

Augochlora

Paratritus

Andrenidae

Calliopsis

Andrena

Anthophorinae

Nomada

Melissodes

Anthophora

Colletes

Colletes

Hylaeus

Megachilidae

Megachil

Osmia

Heriades

Xylocopa

Propriety

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ECOLOGICAL AND BEHAVIOR NOTES ON MISSOURI INSECTS.

PHIL RAU.

The notes on the ecology and behavior of Missouri insects, spiders and myriapods here presented were made in the vicinity of St. Louis during the past few years. The region comprises an area of about forty miles west and thirty miles south of St. Louis. There are two exceptions, however; some dozen notes bear the locality of Wesco, Mo., which is one hundred miles south-west of St. Louis, and a few are from Lake View, Kansas. Wherever no location is mentioned, the observation was made at St. Louis or its immediate environs.

The order in which the species are generally arranged is as follows: Hymenoptera, according to Hymenoptera of Connecticut.* Coleoptera, according to Blatchley, Coleoptera of Indiana, 1910. In the orders of Diptera, Orthoptera, Lepidoptera, etc., the species observed are so few that no taxonomic arrangement is followed.

All of the material has been indentified by expert entomologists whose names appear in brackets along with the specific name of the insect. I wish here to extend to these gentlemen my thanks for their kindness in naming the material.

WASPS

Scolia bicincta Fab. [S. A. Rohwer]. This wasp was seen at Wickes, Mo., feeding on the flowers of smartweed and buck-brush in late August, and on goldenrod on September 15.

Scolia dubia Say. We record in Wasp Studies Afield having found *Scolia dubia* for two successive seasons, flying about the manure heaps near a barn, and really conspicuous by their absence elsewhere in the large field

*State Geol. and Nat. Hist. Surv. Bull. 22, 1916.

ave, Mo., on April 7, was open and sur-
ts resembling an ant
it was evidently in

rawford]. This bee
below the surface of
ril 28, 1915.

Rohwer]. One feed-

Rohwer]. Many of
from iron-weed at

ord]. A hill of loose
r was found on the
The burrow was in
nale bee was at the
eep, and went down-
l bee was taken near
his mother had made
clay bank.

C. Crawford]. One
ver July 30, 1917.

awford]. One speci-
te snakeroot at Lake
and at St. Louis on
een to begin digging

On another occasion
from the grasp of a
R. Shoemaker], to

Crawford]. A male
heads of white snake-
[o., and on September
e was removed from
aleatoria Htz. [C. R.
ider was hidden in the

yellow corolla of a pumpkin blossom where its high de-
gree of protective coloration made it invisible to me; I
captured the bee with the forceps, and was surprised to
pull out the spider clinging to it.

Anthophora abrupta Say. [J. C. Crawford]. A num-
ber of mud cells containing larvae of this species were
unearthed at the base of a tree at Creve Coeur Lake on
Jan. 15, 1910. A number of these were parasitized by the
Chalcid wasp, *Monodontomerus montivagus* [J. C. Craw-
ford] which emerged between the 10th and 15th of the
following May. The great preponderance of female
parasites that emerged led me to tabulate the count of
ten cells. The figures showed a large predominance of
females in every cell; out of the 218 insects in the ten
cells, the males numbered 31 and the females 187. The
number of these parasites supported by a single bee
varied from 13 to 29. Some of these lived up to 22 days
in confinement, probably feeding on the sugar water
in their cage. In another lot of cells, taken from Cliff
Cave during the winter of 1915-16, the adult bees
emerged between May 8th and 12th. None of these were
parasitized by the Chalcids, but by about a dozen speci-
mens of a Dipterous insect, *Mycophaga* sp. (identified by
C. H. T. Townsend, who writes that "this genus has not
been recorded for America.")

These burrowing, turret-building bees were at work
in the disintegrating mortar of an old stone chimney at
Manchester, Mo. None of the turrets of the last year's
group had survived the winter weather, but I kept close
and frequent watch on the chimney because of other in-
sects which I was studying there. The chimney was ex-
amined on June 3, 1919, and no *A. abrupta* were there.
The next visit, June 7, revealed an abundance of these
bees, and since their numbers never increased I concluded
that the entire population emerged simultaneously. By
July 5 they had so decreased in numbers that only about

a half dozen were at work, and by July 15 all had disappeared. This is a water-carrying bee. They came to a puddle in a wagon-rut about a hundred feet away for water; when this dried up they readily filled their crops from a dish of water placed on the ground with floating sticks in it for them to alight on.

On the first of May 1921 a lot of cells containing maturing *Anthophora abrupta* bees were brought into the laboratory, and the sex and date of emergence noted. The males emerged over a period of sixteen days, May 10 to May 25, and the females over a period of only three days, May 23 to 25, or the time coincident with the last three days of male emergence. With one male emerging on May 10, the number on each day following was 1, 2, 4, 1, 2, 4, 5, 9, 84, 54, 30, 64, 8, 3 and 1, totaling 273 males. The females first appeared thirteen days later than the first males, but 28 strong; 53 emerged on the next day, and 20 on the last, or 101 in all. Hence the priority of male emergence is here quite unmistakable. This fact is frequently met in the insect world; it seems to be an ingenious device of nature to eliminate a waste of the time of the busy females when every summer day is precious.

In Saturniids a similar condition exists. In recording the sex of nearly 3600 giant silk-worm moths as they emerged from their cocoons, we found the ratio of the sexes to be 111 males to 100 females, and the mean date of emergence of the males was from one to five days earlier than that of the females.

Prosopis pyganeus Cress. [S. A. Rohwer]. Found in a sumac twig in the park, in winter of 1919.

Prosopis sayi Robt. [J. C. Crawford]. Two males taken from a tunnel in a sumac stem at 7:30 p. m. on July 4, 1918. The burrow was only one-half inch deep, and the insect had evidently crept in there to sleep.

Prosopis cressoni [J. C. Crawford]. An elder twig taken at Wickes, Mo., on June 28, gave forth three adults

of this species about of this twig gave even having been, the prop not discover whether on *Ceratina*, or mere dwelling.

Colletes compactus described the courtship on a bright September again to meet this species, 1917, on a sandbar. They were abundant on a field of alfalfa. A collection by Mr. J. C. Crawford contained several. Associated with the bees was the beetle *Cicindela rapanda* De Geer. The ship behavior witnessed as the sun-dance observed. The fact that the weather seems that the courtship light, since a more sun be imagined than the light upon which their action is moist. Hundreds came to places to dance over an area. All were in a great state of excitement. Out in the air, in the limit of two or three inches from the ground, they stopped to rest, others appeared from their size to be of mating. Once a drop of water to alight in their midst alighted on her back, and the *Cicindela* beetles with skirts of the dance area.

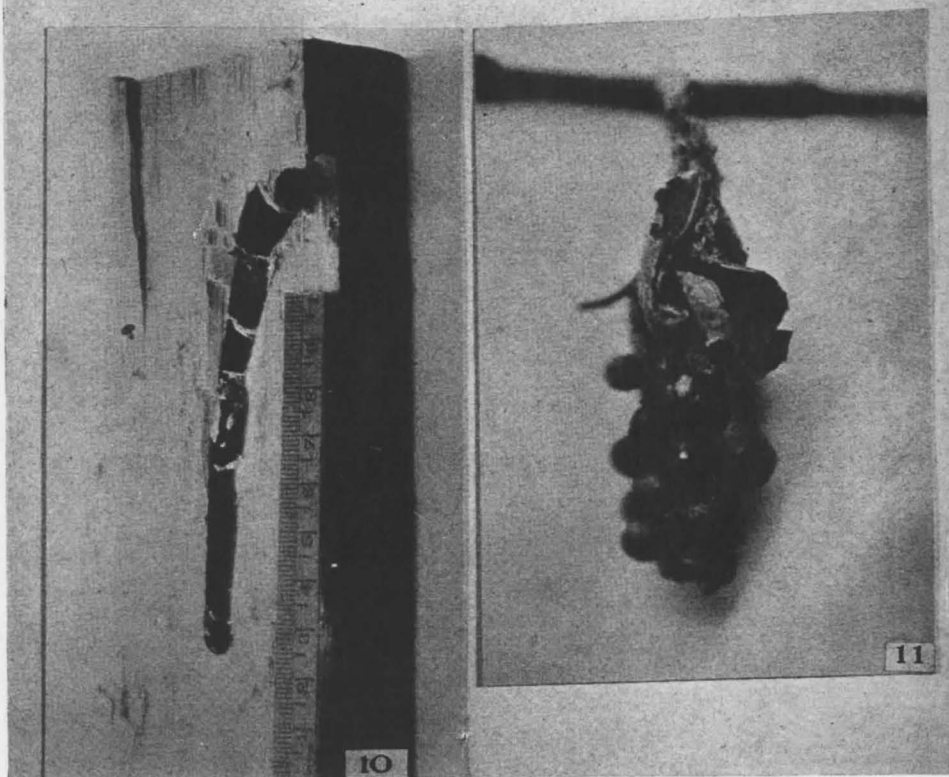
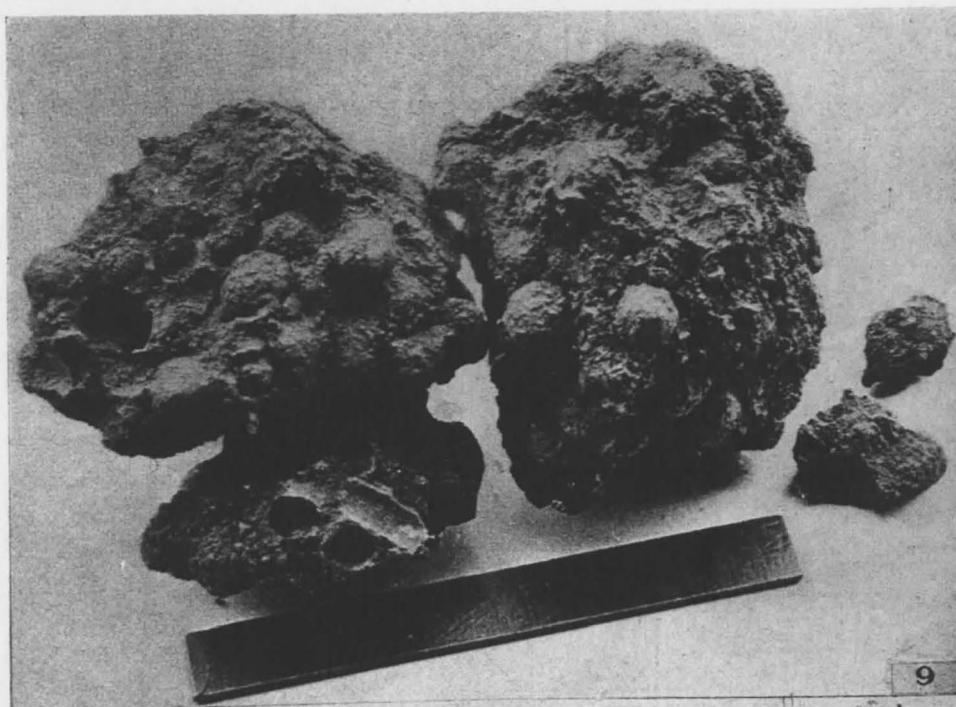


PLATE VII