

of which the first example matured late in November; but further, the closest attention failed of detecting any male examples.

AGRICULTURAL EXPERIMENT STATION, BATON ROUGE, LA.

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DETERMINATIONS AND RECORDS OF INSECTS COLLECTED AT PLANO, TEX.

By E. S. TUCKER.

DURING the time extending from the first week in May to the end of December, 1907, which the writer spent in an investigation at study of the green bug (Toxoptera graminum Rond.) at Plano, Collin county, Texas, a fairly representative collection of insects was personally made in the locality. Although circumstances have since caused much unavoidable delay in the work of determining the species taken, yet the results of study of a considerable number of the specimens have been published from year to year. Some examples still remain unidentified, but as the names of most species obtained in the collection are now known, the further determinations and records can be presented herewith.

This paper is the sixth one treating of the collection, and the papers all together give a nearly complete report.¹

In the present lists, the number of forms reported is 416, belonging in the different orders, as follows:

Diptera.....	184	Hemiptera.....	155
Siphonaptera.....	1	Thysanoptera	1
Hymenoptera.....	73	Corrodentia.....	1
		Chilopoda (Myriapoda).....	1

Adding the 398 forms, as have been previously reported, to the number now cited makes a grand total of 814 species and varieties.

As many as sixteen new species and one new subspecies have been named from examples studied by myself or sub-

1. (a) Incidental Captures of Neuropterous Insects at Plano, Texas. (Psyche, v. 15, Oct., 1908, pp. 97-100.) Number of forms cited, 34.
- (b) Incidental Captures of Lepidoptera at Plano, Tex. (Psyche, v. 16, June, 1909, pp. 58-64.) Number of forms cited, 130.
- (c) Incidental Captures of Apterous and Orthopterous Insects at Plano, Tex. (Ent. News, v. 20, July, 1909, pp. 294-297.) [For "Plana," in heading, read "Plano."] Number of forms cited, 40.
- (d) Incidental Captures of Cleoptera at Plano, Tex. Can. Ent., v. 42, July, 1910, pp. 229-237.) Number of forms cited, 178.
- (e) Local Records of Arachnids Personally Collected in Kansas and Texas. (Trans. Kan. Acad. Sci., v. 23/24, 1911, p. 240 and 241.) Number of forms cited for Plano, Tex., 16.

mitted to the following authorities: Prof. O. A. Johannsen, one in the Mycetophilidæ; Dr. E. P. Felt, six in the Cecidomyiidæ; Mr. C. H. T. Townsend, one in the Tachinidæ; the author, two in the Oscinidæ, Prof. T. D. A. Cockerell, one in the Anthophoridæ; Mr. S. A. Rohwer, one in the Trypoxylidæ; Dr. B. Poppius, one in the Capsidæ; Mr. E. P. Van Duzee, one in the Fulgoridæ; Prof. H. Osborn, two in the Jassidæ, and Mr. D. L. Crawford, one in the Psyllidæ. References are given to the descriptions so far as they have been published.

To Dr. L. O. Howard, chief of the Bureau of Entomology, and to Dr. W. D. Hunter, in charge of Southern Field Crop Insect Investigations, United States Department of Agriculture, my thanks are due for their kindness in affording me numerous accommodations. Through the courtesy of Dr. Howard, the services of experts under his direction have been promptly granted. Where credit for determinations is not individually stated in my list, the specific citations are given on my own responsibility. Most of these species were identified through comparison with authentically named examples in the collection of the United States entomological laboratory at Dallas, Tex., and the remaining specimens were studied in the United States National Museum, Washington, D. C.

Order DIPTERA.

Arrangement follows Aldrich's catalogue, except where otherwise stated.

SUMMARY OF FAMILIES AND SPECIES, INCLUDING VARIETIES.

Tipulidæ	6	Tachinidæ	23
Chironomidæ	22	Dexiidæ	2
Culicidæ	10	Sarcophagidæ	5
Mycetophilidæ	3	Muscidæ	8
Cecidomyiidæ	8	Anthomyidæ	8
Bibionidæ	2	Helomyzidæ	1
Stratiomyidæ	3	Sciomyzidæ	2
Tabanidæ	3	Sapromyzidæ	2
Bombyliidæ	3	Ortalidæ	2
Scenopinidæ	2	Trypetidæ	5
Mydaidæ	1	Sepsidæ	1
Asilidæ	6	Ephydridæ	3
Dolichopodidæ	8	Oscinidæ	19
Empididæ	2	Drosophilidæ	3
Pipunculidæ	1	Geomyzidæ	1
Syrphidæ	12	Agromyzidæ	7

Families represented, 32; total number of forms, 184.

Family TIPULIDÆ.

- Geranomyia canadensis* Westw. October.
Goniomyia cinerea Doane. August, at night, taken at trap light.
Goniomyia sulphurella O. S. May.
Helobia hybrida Meig. October, in window of house.
Pachyrhina ferruginea Fab. May.
Tipula bella Lw. May. (Det. by R. W. Doane.)

Family CHIRONOMIDÆ.

The generic names in this family are arranged according to the rank given them by Prof. O. A. Johannsen.² All determinations not accredited to Professor Johannsen were made by D. W. Coquillett.

- Ceratopogon bimaculatus* Lw. July.
longipennis Lw. July, at night, taken at trap light.
squamipes Coq. May, September, at night, taken at trap light; November at random, and in field cage with oats seedlings.
varrisipennis Coq. July, at night, taken at trap light. § Sp., undescribed, fide Johannsen. June. Professor Johannsen stated that, "Without more material I should not care to undertake describing it."
Procladius nubifer Coq.³ July to September, at night, taken at trap light; October, at night, by sweeping; and November.
Tanytus bellus Lw. August, at night, taken at trap light.
culiciformis L.⁴ September, at night, taken at trap light.
monilis L. July and September, at night, taken at trap light.
pallens Coq. September, twilight, all males; and September at night, taken at trap light, both sexes.
scapularis Lw. September, at night, taken at trap light.
stellatus Coq. August and September, at night, taken at trap light.
tricolor Lw. August, at night, taken at trap light.
Chironomus cristatus Fab. July to September, at night, taken at trap light.
decorus Joh.⁵ May, August and September, all at night, taken at trap light; October, at night, by sweeping; and November. (Det. by O. A. Johannsen.)
modestus Say. August, at night, taken at trap light. (Det. by O. A. Johannsen.)
redeuns Wk. July to September, at night, taken at trap light. (Det. by O. A. Johannsen.)
tanionotus Say. July to September, at night, taken at trap light.
sp. August, at night, taken at trap light; October, at night, by sweeping. (Defective specimen, Det. by O. A. Johannsen.)
Orthocladius nivoriundus Fitch. May, at dusk, in oats field. Also taken in Dallas, Tex., February 24, 1908. (Det. by O. A. Johannsen.)

2. New York State Museum Bulletin No. 86.

3. See Johannsen, N. Y. St. Mus. Bul. 124, p. 270.

4. See Johannsen, N. Y. St. Mus. Bul. 86, p. 158.

5. See Johannsen, N. Y. St. Mus. Bul. 86, p. 289.

Family GEOMYZIDÆ.

Anthomyza nigrimanus Coq. June, in cage, in oats field.

Family AGROMYZIDÆ.

Agromyza æneiventris Fal. July.

parvicornis Lw. July, in alfalfa field.

platyptera Thom. (= *jucunda* V. d. W.) May; August.

pusilla Meig. (= ? *diminuta* Wk.); July, in cage in oats field. A
bred from cotton leaves, July, 1910.

simplex Lw. October, twilight.

viridula Coq. June, July.¹⁷

Milichiella (Ophthalmomyia) lacteipennis Lw. July, in oats-stub
field; September, and transported on squash bug; October
oats field.

Order SIPHONAPTERA.

Family PULICIDÆ.

Pulex irritans L. June to September, a troublesome pest in house.

Order HYMENOPTERA.

The work of specific determinations in the order Hymenoptera is not quite finished, but no promise can be made at this time for its fulfillment. Although Ashmead's classification has been greatly modified, and the latest arrangement of lists of Hymenoptera practically reverses the old method, yet the former system will serve in a general way for present purposes.

SUMMARY OF FAMILIES AND SPECIES, INCLUDING VARIETIES.

Apidæ	1	Sphecidae	1
Bombidae	2	Vespidæ	2
Xylocopidae	1	Eumenidae	1
Anthophoridae	7	Poneridae	1
Nomadidae	2	Dorylidae	1
Megachilidae	5	Myrmicidae	1
Stelidae	1	Dolichoderidae	1
Colletidae	2	Camponotidae	1
Andrenidae	7	Chalcididae	1
Psenidae	2	Eurytomidae	1
Bembecidae	1	Pteromalidae	1
Larridae	3	Mymaridae	1
Philanthidae	3	Ichneumonidae	1
Trypoxylidae	3	Braconidae	1

Families represented, 28; total number of forms, 73.

17. See J. R. Malloch, An. Ent. Soc. Amer., v. 6, No. 3, Sept., 1913, p. 313.

Family APIDÆ.

Apis mellifera L. Frequently observed during the summer, from hives.

Family BOMBIDÆ.

Bombus americanum Fab. July, in oats field, female; August and October, a male.

pennsylvanicus De G. October.

Family XYLOCPIDÆ.

Xylocopa virginica Dru. May, hovering at board fence.

Family ANTHOPHORIDÆ.

Florilegus condigna Cr. August, a male. (Det. by T. D. A. Cockerell, who remarked: "A typical humid-region insect.")

Melissodes agilis semiagilis Ckll. October.

atripes Cr. July.

aurigena Cr. July. (Prof. T. D. A. Cockerell considered a variety of *M. agilis* Cr.)

hitei Ckll. August, a female. (Det. by T. D. A. Cockerell, who wrote about it as follows: "Described as *M. martini* a single example taken at Pueblo, Colo., and this is known. As the characters exactly agree, and the shown to have a wide range, I doubt not that it is: There are others much like it in Texas, but they have black hairs on the thorax above, and differ otherwise. You could find out something about the habits of the female and if possible discover the male.")

obliqua Say. August.

tuckeri Ckll.¹⁸ October, two females. (Type and

Family NOMADIDÆ.

Epeolus bifasciatus Cr. July and August. (Det. by T. D. A. Cockerell.)

occidentalis Cr. October.

Nomada texana Cr. July and August. (Det. by T. D. A. Cockerell.)

Family MEGACHILIDÆ.

Osmia subfasciata Cr. June. (Det. by T. D. A. Cockerell, who following remark: "This does not agree well with the description, but it appears to be identical with other types, which I examined in Mus. Comp. Zoölogy.")

Megachile brevis Say. July, a female specimen. (Det. by T. D. A. Cockerell.)

kallstræmiæ Ckll. October, a female specimen. (Det. by T. D. A. Cockerell, who remarked as follows: "*M. kallstræmiæ* are characteristic arid-region bees. A Bailey's map, Plano is in the humid part of Texas, and the esting work might be done on the transition of the humid belts, as shown by the bees.")

sexdentata Robt. August. (Det. by T. D. A. Cockerell, who following remarks: "This is close to *M. pru*

18. Can. Ent., v. 41, April, 1909, p. 129.