

Early Spring Syrphidae in California and a new *Pipiza* (Dip.).

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The writer has been collecting Syrphidae in the coastal districts of central California the past six years and has therefrom secured considerable data on the appearance of these flies in spring. This paper aims to discuss those species which in the adult stage reach their maximum numbers before April and to briefly note others which have been taken in flight during the first three months of the year. The writer is aware of the arbitrariness of fixed dates in connection with the habits of insects and hopes exception will not be taken to his use of them here.

The average daily mean temperature of February is about 50 F. and of March about 54 F. in the region above cited. Frosts are comparatively unusual after February 15 and in March the temperature rarely drops below 35 F., while frequently arising to over 70 F., yet there is probably greater annual variation in the March meteorological conditions than in those of any other month.

Syrphidae in this locality are most abundant on the wing in the months in which most of the wild flowering plants bloom—April and May—and thereafter are on the wane during the dry summer until September and October, when a "revival" occurs and the autumn blossoms such as *Baccharis pilularis* Roe. and *Aster chamissonis* Gray yield good collecting. The writer has taken thirty-two species of Syrphidae in March as against fifty-eight in April and May combined. It is probable that several of the species collected in April but not in March are occasionally abroad in the earlier month.

In normal seasons five species have been observed to reach their maximum numbers in the adult stage before April. These are *Crioprora cyanella* O. S., *Cr. alopex* O. S., *Cheilosia occidentalis* Will., *Sphegina* sp. (near *rufiventris*), and *Syrphus*

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arcuatus Fallen. The first two may be considered together in a single group: These flies appear first about February 20 and may be found visiting the blossoms of almond and Myrobalan plum for about three weeks. Thereafter they are very scarce and do not occur beyond April. Osten Sacken reared the former species from pupae found under oak bark and the writer has reared *alopez* from pupae found in a similar location. The flies move rapidly and are not easy to capture while feeding, as they prefer to alight on the higher branches of trees. They occur both in the valley floors and in the hills and are typical early spring species.

Cheilosia occidentalis, which is very similar in general appearance to the European *Ch. variabilis* Panzer, appears towards the end of February, reaches its maximum about March 25 and during April rapidly declines in numbers. After April it is rarely to be found. This species is rare in the valleys but abundant in the hills near water. The males are greatly attracted to plum and other blossoms and the females are more often seen resting on low herbage. Both sexes are easily captured. The metamorphoses are not known, but presumably occur in plant tissues.

The *Sphegina* appears in flight about March 15, reaches its maximum abundance about the end of March and then gradually decreases in numbers through April, May and June. Males are much more commonly observed than females, the former greatly resembling some of the small ichneumonid wasps as they hover and dart among flowers. They may be taken in March about Toothwort (*Dentaria*) and fruit trees, and later about bridal wreath (*Physocarpus capitatus* Pursh.). Females occur mostly on low vegetation near water. Metamorphoses unknown. A common species in hilly localities, rare in valleys.

Syrphus arcuatus reaches its greatest abundance earlier than any other predaceous form. Adults appear occasionally in January on willow catkins, *Laurustinus* and *Brassica*, are to be found in fair abundance on warm days in February, and are most numerous in the latter half of March. Thereafter

they may be taken up to November, but never in such abundance as in March. The writer has collected larvae from aphids on conifers in early March, indicating oviposition in February. The larvae serve as a check upon *Chermes* and *Lachnus*, especially the former. The flies inhabit both valleys and hilly places, visiting flowers and aphid infestations.

Earliest collection dates are as follows:—*Crioprora cyanella*, February 27, 1914 (San José) and February 27, 1915 (Walnut Creek); *Crioprora alopex*, February 27, 1914 (San José); *Cheilosisia occidentalis*, February 12, 1913 (Walnut Creek); *Sphegina* sp., March 23, 1914, and March 23, 1915 (Walnut Creek); *Syrphus arcuatus*, January 12, 1913 (Walnut Creek).

Twenty-seven other species have been collected by the writer before April. In January small numbers of *Melanostoma obscurum* Say (?), uniformly the earliest syrphid abroad, *Eristalis tenax* Linn. and the two economic *Catabomba pyrastris* Linn. and *Syrphus opinator* O. S., are on the wing. In February these become more abundant and here and there a few examples of *Eristalis hirtus* Loew, *E. aeneus* Scopoli, *Mesograpta geminata* Say, *Eupeodes volucris* O. S., *Sphaerophoria sulphuripes* Thompson, and *Syrphus americanus* Wied. are observable. These six species later become abundant and with the exception of *Eristalis aeneus*, pre-eminently a garden species, have a wide range of habitat. Up to the middle of March four additional species appear. These are *Paragus tibialis* Fallen, *Syrphus intrudens* O. S., *Eristalis occidentalis* Will. and *Helophilus mexicanus* Macq. *Syrphus intrudens*, unlike the other common members of the genus, is quite rare in the valleys though abundant in the hills. In the last half of March there is a very pronounced increase both in the number of species and of individuals abroad. In the valleys appear *Pipiza californica* sp. nov., *Syrphus protritus* O. S., *Chrysogaster sinuosa* Bigot, and *Syrpitta pipiens* Linn.; in the coast range hills, besides these four, *Volucella facialis* Will., *Cheilosisia townsendi* Hunter, *Ch. willistoni* Snow, *Chrysochlamys croesus* O. S., *Xylota nemorum* Fabr., *X. barbata* Loew, *Crior-*

hina humeralis Will., *Chrysotoxum integre* Will., and *Baccha obscuricornis* Loew.

The writer is indebted to Mr. F. Knab, U. S. National Museum, for the identification of many of the species listed above.

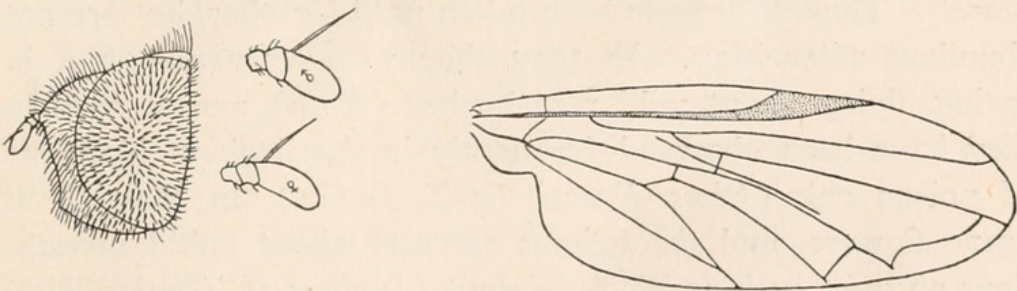
***Pipiza californica* sp. nov.**

Length 6.25 mm. to 7.75 mm., average about 7.30 mm.

♀.—Oval, shining black without yellow abdominal markings. Face and front: Width almost equal throughout, at ocelli four-fifths that at base of antennae, from antennae to mouth constant; profile straight, gently receding from antennal tubercle to mouth; ground color shining black, covered below antennae with white, above antennae with white and light yellow pile; on vertex there is a tuft of long white pile; in middle of front a shallow transverse groove and an interrupted transverse stripe of white pollen which is prolonged shortly down anterior orbits, its extremities briefly separated from the upper limits of the narrow pollen band which follows the orbits around the eyes to the vertex; occiput fringed with white pile; cheek shining black, clothed with pale yellow pile. Eyes covered with rather long white pile.

Antennae: Black, under side of third, and sometimes of second, joint reddish-yellow or reddish-brown; basal joints black pilose; terminal joint elongate oval, somewhat exceeding in length the combined basal joints; arista bare, brownish-black, basally reddish-yellow but sometimes all brownish-black, in length slightly exceeding the third joint; third joint almost twice as long as broad.

Thorax black, shining, the anterior half more brightly than the posterior; pile white or light-colored. Scutellum black, obscurely shining, with rather long light-colored pile.



Pipiza californica sp. nov. Head and wing of male, antennae of male and of female.

Wings hyaline, stigma light amber; last section of fourth longitudinal vein rectangular and petiolate near base, angulated before middle into first posterior cell, the re-entrant angle thus formed sometimes petiolate; outer angle of discal and first posterior cells acute to rectangular; halteres light yellow, knob brown in centre.

Legs black with white pile; knees, base of tibiae, two basal joints of anterior four tarsi reddish-yellow or reddish-brown; pile on inferior surface of tarsi and tibiae golden yellow; hind metatarsi slightly thickened.

Abdomen wholly shining black with white pile, more abundant on sides than on disc; abdomen oval, equal in length to head and thorax combined; maximum width slightly exceeding that of thorax.

♂.—Body narrower than in female, general character similar. Head: Vertical triangle shining black with more or less black pile in region of ocelli; frontal triangle shining black, on sides with black pile, in center and above with light-colored pile (some specimens have the pile all black except for a few hairs just above antennae). Eyes contiguous for about 10 facets.

Antennae: Length somewhat variable, in general shorter than in female, shape of third joint more orbicular, coloration similar.

Thorax black shining, clothed with light yellow pile, which is longer than in the female.

Legs colored as in female, in some specimens the apical and basal fourth of tibiae and the first three tarsal joints of anterior four legs are yellow.

Abdomen with broad, ill-defined dull black bands at the bases of segments, elsewhere shining metallic; pile light yellow and white, abundant along the sides and much longer than in the female.

Described from 6 females and 14 males.

Type ♀ and allotype ♂ in the collection of the U. S. National Museum.

Type locality, Walnut Creek, Calif.

A common valley species appearing towards the end of March. The adults have been taken until October, but are not abundant after May. In 1913 they were very abundant in spring, flying about wild rose bushes (*Rosa*) and since then they have been observed frequently in April about blossoms of poison oak (*Rhus diversiloba* T. & Gr.), in May about grape flowers, and throughout summer about aphid infestations on trees such as Black Walnut (*Juglans californica* Watson). The larvae is aphidophagous, a male fly having been reared in May, 1914, from a larva found feeding upon the sexes of *Pemphigus populicaulis* Fitch (Aphid.) underneath detritus about poplar bark.

The author had previously considered this species *P. pisticoides* Will., and has twice referred it to that species (Jour-

nal Econ. Ent., Aug. '15, p. 421; Oct. '16, p. 456), but Mr. F. Knab, U. S. National Museum, has pronounced the species new. It is evidently closely allied to *P. pisticoides* Will. and to *P. pistica* Will. *P. californica* is recognizable in the female through the wholly shining abdomen clothed with white and light colored pile; in the male, through the dull bands at the base of the segments and in the longer pile.

The author is indebted to Mr. F. Knab for helpful suggestions in drawing up the description.

Preliminary List of North Dakota Wasps exclusive of Eumenidae (Hym.).

By O. A. STEVENS, Agricultural College, North Dakota.

While collecting flower-visiting insects in the State the past seven years, the writer has taken a considerable number of wasps, although giving special attention to bees. It has been possible to have nearly all of these identified, and especially as very little has been published concerning the insects of the State, it seems worth while to present the list at this time. Many additional species will doubtless be found by more thorough collecting, especially in the region of the Missouri River.

From the wasps thus far collected, five new species have been described as follows:

Cerceris dakotensis Banks—Can. Ent., vol. 47, p. 402, 1915.

Cerceris stigmatosalis Banks—Ent. News, vol. 27, p. 64, 1916.

Xylocelia striata Mickel—Ann. Ent. Soc. Am., vol. 9, p. 350, 1916.

Thyreopus knoxensis Mickel—Trans. Am. Ent. Soc., vol. 42, p. 424, 1916.

Crabro proletarius Mickel—Trans. Am. Ent. Soc., vol. 42, p. 426, 1916.

The identifications of the Sphecidae are by Dr. H. T. Fernald, the Psammocharidae and Philanthidae by Mr. Nathan Banks, the Bembecidae in part by Dr. J. B. Parker; all others by Mr. C. E. Mickel, excepting the Vespidae, for which the writer is responsible, and the genus *Mimesa*. I am also greatly indebted to Mr. Mickel for revising the arrangement and nomenclature of the list.



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