

## A Hover Fly, *Allograpta obliqua* (Say) (Insecta: Diptera: Syrphidae)<sup>1</sup>

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### Introduction

One of the colorful and common little flies in Florida which is most often mistaken for a harmful fruit fly is *Allograpta obliqua* (Say), a hover fly, flower fly, or syrphid fly. These flies are expert fliers and can hover or fly backward, an ability possessed by few insects other than syrphid flies. Adults often visit flowers for nectar or may be seen around aphid colonies where they feed on honeydew secreted by the aphids and lay their eggs. The adults are considered to be important agents in the cross pollination of some plants. The larvae are important predators, feeding primarily on aphids that attack citrus, subtropical fruit trees, grains, corn, alfalfa, cotton, grapes, lettuce and other vegetables, ornamentals, and many wild host plants of the aphids. When larval populations are high they may affect 70 to 100% control of aphid populations.

### Synonymy

*Scaeva obliqua* Say, 1823

*Syrphus securiferus* Macquart, 1942



**Figure 1.** An adult female hover fly, *Allograpta obliqua* (Say). Credits: Roy Frye

*Sphaerophoria bacchides* Walker, 1849

*Syrphus dimensus* Walker, 1852

*Syrphus signatus* Wulp, 1867

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## Distribution

Almost all of the continental United States from Washington to Maine and into Quebec, Canada, southward to California and Florida; also Hawaii, Bermuda, Mexico, and parts of the neotropical Americas, including the West Indies.

## Identification

The egg is creamy white, microscopically sculptured, elongate oval, about .84 mm in length and .25 mm in diameter. The full-grown larva is 8 to 9 mm in length, 2 mm wide, and about 1.2 mm in height; elongate oval, somewhat flattened on dorsum, the anterior end drawn out to a point when the insect extends itself; integument finely papillose, transversely wrinkled. The fleshy conical elevations are surmounted with pale spines, colored green, with two narrow whitish longitudinal stripes flanking the dorsal vessel. Posterior respiratory tubes fused mesad .5 mm long, the combined base about 27 mm wide. Larvae of *A. obliqua* are almost indistinguishable from those of *A. exotica* (Wiedemann), which occurs uncommonly in Florida. The puparium is green; the two whitish larval stripes apparent for a day or two. As the true pupa inside takes on the black and yellow color of the adult, the color of the puparium changes until all of the green disappears. The puparium length averages 5.25 mm, width 2.5 mm and height 2.3 mm. Posterior elevation is very gradual. The adult is 6 to 7 mm long. This species may be recognized by the generic characters -- yellow thoracic stripes and abdominal crossbands; on the fourth and fifth segments, four longitudinal, oblique, yellow stripes or spots; and yellow face lacking a complete median stripe. Eyes of the male are holoptic, those of the female dichoptic.

## Life History and Habits

Adults of *A. obliqua* occur throughout the year in northern Florida and have been taken in long series in Gainesville in mid-February, but they become much more abundant during spring and summer. In southern Florida they often are abundant even during the winter months. The life cycle varies from as little as three weeks in summer to nine weeks in winter.



**Figure 2.** Hover fly egg. Credits: James F. Price, University of Florida

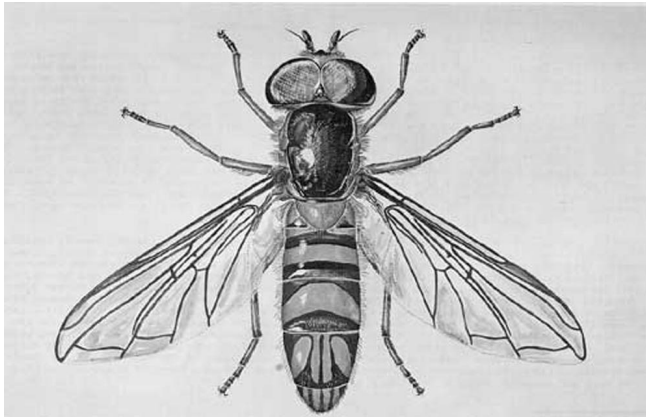


**Figure 3.** Egg shell of an emerged hover fly. Credits: James F. Price, University of Florida



**Figure 4.** Hover fly larva. Credits: James F. Price, University of Florida

The eggs are laid singly on the surface of a leaf or twig which bears aphids. They hatch in two to three



**Figure 5.** An adult male hover fly, *Allograpta obliqua* (Say). Credits: James F. Price, University of Florida

days during the summer and within eight days in the winter in southern California (Campbell and Davidson 1924). Wadley (1931) found that the larval stage took five days, with one larva consuming 242 *Toxoptera* and another 270. Jones (1922) found that larvae took nine days to develop. Miller (1929) reported a larval stage of 10 to 14 days and that the larvae ate an average of 34 aphids per day. Curran (1920) gave the length of the larval stage as 12 to 20 days and recorded one larva as having eaten 265 aphids, an average of 17 per day. The larva fastens itself to a leaf or twig when it is ready to pupate. The pupal stage takes eight to ten days in summer and 18 to 33 days in winter, according to Campbell and Davidson (1924). Wadley (1931) reported a range of six to 11 days with an average of 8.3 days, Miller (1929) six to eight days, Jones (1922) and Curran (1920) five to 17.

## Hosts

Many species of aphids have been reported to be hosts of *A. obliqua*. Species of major economic importance listed by Campbell and Davidson (1924), Curran (1920), Davidson (1916), Heiss (1938), Metcalf (1912, 1916) and Thompson (1928) include: *Acythosiphon pisum* (Harris), *Aphis craccivora* Koch, *Aphis gossypii* Glover, *Aphis pomi* De Geer, *Aphis spiraecola* Patch, *Brevicoryne brassicae* (Linnaeus), *Chromaphis juglandicola* (Kaltenback), *Macrosiphum rosae* (Linnaeus), *Myzus cerasi* (Fabricius), *Myzus persicae* (Sulzer), *Rhopalosiphum maidis* (Fitch), *Schizaphis graminum* (Rondani) and *Toxoptera aurantii* (Fonscolombe).

Other aphid hosts reported by the above workers are: *Amphorophora sonchi* (Oestlund), *Aphis cardui* Linnaeus, *Aphis lutescens* Monell, *Aphis rumicis* Linnaeus, *Aphis viburnicola* Gillette, *Capitophorus braggii* (Gillette), *Capitophorus fragaefolii* (Cockerell), *Hyalopterus artiplicis* (Linnaeus), *Macrosiphoniella sanborni* (Gillette), *Macrosiphum euphorbiae* (Thomas), *Myzocallis alhambra* Davidson, *Rhopalosiphum fitchii* (Sanderson) and *Theriothis bella* (Walsh). In addition to aphids, Aleyrodidae (whiteflies) have been reported to serve as hosts for the larvae of this syrphid.

## Parasites

*A. obliqua* larvae, and occasionally also pupae, are heavily parasitized, even exceeding 50% some years. The hymenopterous parasites which attack *A. obliqua* as listed in Muesebeck et al. (1951, 1958, 1967) include the following species of Ichneumonidae: *Diplazon laetatorius* (Fabricius), *Diplazon scutellaris* (Cresson), *Ethelurgus syrphicola* (Ashmead), *Homotropus pacificus* (Cresson), *Syrphoctonus flavolineatus* (Gravenhorst) and *Syrphoctonus fuscitarsus* (Provancher); one species of Pteromalidae: *Pachyneuron allograptae* Ashmead; and one species of Ceraphronidae: *Conostigmus timberlakei* Kamal.

## Selected References

Bhatia, Madan Lal. 1939. Biology, morphology and anatomy of aphidophagous syrphid larvae. *Parasitology* 31: 78-129.

Butler, G.D., Jr., and F.G. Werner. 1957. The syrphid flies associated with Arizona crops. Arizona Agricultural Experiment Station Technical Bulletin 132: 1-12.

Campbell, R.E., and W.M. Davidson. 1924. Notes on aphidophagous Syrphidae of southern California. *Bulletin of the Southern California Academy of Science* 23: 3-9; 59-71.

Curran, C. Howard. 1920. Observations on the more common aphidophagous syrphid flies (Dipt.). *Canadian Entomologist* 53: 53-55.

Davidson, W.M. 1916. Economic Syrphidae in California. *Journal of Economic Entomology* 9: 454-457.

Davidson, W.M. 1919. Notes on *Allograpta fracta* O.S. (Diptera: Syrphidae). *Canadian Entomologist* 51: 235-239.

Fluke, C.L. 1929. The known predacious and parasitic enemies of the pea aphid in North America. *Wisconsin Agricultural Experiment Station Research Bulletin* 93: 1-47.

Heiss, Elizabeth M. 1938. A classification of the larvae and puparia of the Syrphidae of Illinois exclusive of aquatic forms. *University of Illinois Bulletin* 36: 1-142.

Jones, Chas. R. 1922. A contribution to our knowledge of the Syrphidae of Colorado. *Colorado Agricultural Experiment Station Bulletin* 269.

Kamal, M. 1939. Biological studies on some hymenopterous parasites of aphidophagous Syrphidae. *Egyptian Ministry of Agriculture Technical Service Bulletin* 207.

Knowlton, G.F., C.F. Smith, and F.C. Harmston. 1938. Pea aphid investigations. *Utah Academy of Science Proceedings* 15: 73-75.

Krombein, K.V. et al. 1958. Hymenoptera of America north of Mexico -- Synoptic Catalog. USDA Agricultural Monograph No. 2, First Supplement. 305 p.

Krombein, K.V., B.D. Burks et al. 1967. Hymenoptera of America north of Mexico -- Synoptic Catalog. USDA Agricultural Monograph No. 2, Second Supplement. 584 p.

Metcalf, C.L. 1912. Life-histories of Syrphidae IV. *Ohio Naturalist* 12: 533-541.

Metcalf, C.L. 1916. Syrphidae of Maine. *Maine Agricultural Experiment Station Bulletin* 253: 1-264.

Miller, Ralph L. 1929. A contribution to the biology and control of the green citrus aphid, *Aphis spiraecola* Patch. *Florida Agricultural Experiment Station Technical Bulletin* 203: 431-476.

Muesebeck, C.F.W., K.V. Krombein, H.K. Townes et al. 1951. Hymenoptera of America north of Mexico -- Synoptic Catalog. USDA Agricultural Monograph No. 2. 1420 p.

Say, T. 1823. Descriptions of dipterous insects of the United States. *Academy of the Natural Sciences of Philadelphia Journal* 1: 45-48.

Smith, R. H. 1923. The clover aphid: biology, economic relationships and control. *Idaho Agricultural Experiment Station Research Bulletin* 3: 1-75.

Stone, Alan et al. 1965. A catalogue of the Diptera of America north of Mexico. USDA Agricultural Handbook No. 276. 1696 p.

Thompson, W.L. 1928. The seasonal and ecological distribution of the common aphid predators of central Florida. *Florida Entomologist* 11: 49-52

Tilden, J.W. 1952. Observations on the habits of certain syrphids. (Diptera). *Entomological News* 63: 39-43.

Wadley, F.M. 1931. Ecology of *Toxoptera graminum*, especially as to factors affecting importance in the northern United States. *Annals of the Entomological Society of America* 24: 325-395.

Weems, Howard V., Jr. 1951. Check list of the syrphid flies (Diptera: Syrphidae) of Florida. *Florida Entomologist* 34: 89-113

Weems, Howard V., Jr. 1954. Natural enemies and insecticides that are detrimental to beneficial Syrphidae. *Ohio Journal of Science* 54: 45-54.

Williston, S.W. 1886. Synopsis of the North American Syrphidae. *U.S. Natural History Museum Bulletin* 31: 1-335.