

Waterlily Leafcutter, *Synclita oblitalis* (Walker) (Insecta: Lepidoptera: Crambidae: Acentropinae)¹

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Introduction

Hygrophila polysperma (Roxb.) T. Anderson (Polemoniales: Acanthaceae) is a rooted submersed or emersed aquatic plant in shallow water areas and saturated shorelines throughout Florida. This invasive aquatic plant also is known as hygrophila, hygro, East Indian hygro, green hygro, Miramar weed, oriental ludwigia, and Indian swampweed (hereafter referred to as hygrophila).

Hygrophila is a federal listed noxious weed (USDA 1983), a Florida state listed Category II prohibited plant (FLDEP 1993), and a Florida Exotic Pest Plant Council Category I invasive species (FLEPPC 2007). The submersed growth habit displaces native vegetation in many canals and drainage ditches in south Florida. The plant forms dense stands that occupy the entire water column, clogging irrigation and flood-control systems (Schmitz and Nall 1984, Sutton 1995) and interfering with navigation (Woolfe 1995). Hygrophila also creates problems as an emergent plant in some shoreline areas, including rice fields (Krombholz 1996).

In October 2007, we received a report from researchers at the UF/IFAS Center for Aquatic and Invasive Plants of an insect feeding on hygrophila. Samples of the insect were collected and it was identified as the waterlily leafcutter *Synclita oblitalis* (Walker). Of the more than twenty

Acentropinae species occurring in Florida, *Synclita oblitalis* (Walker) is the most common. Although its common name implies that it is a pest of waterlilies, it actually has a wide host range. Most of the damage caused by the larvae usually is superficial and rarely endangers the plant, but the damage observed on the hygrophila plants was severe.



Figure 1. Hygrophila showing feeding damage caused by the waterlily leafcutter, *Synclita oblitalis* (Walker).

Credits: J.P. Cuda, University of Florida

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Figure 2. Caterpillar of the waterlily leafcutter, *Synclita oblitalis* (Walker), attacking hygrophylla.
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Distribution

This common moth occurs throughout Florida, westward to Texas and northward to western Nova Scotia and southern Manitoba (Munroe 1972). It also has been introduced into Hawaii (Williams 1944), England (Shaffer 1968), and British Columbia (Munroe 1972).

Description

Eggs: The eggs are whitish in color, and appear domelike (oval and flattened). They are deposited singly or in overlapping, ribbon-like masses near the edges of submersed leaf surfaces.

Larvae: Most members of the crambid subfamily Acentropinae have aquatic larvae with tracheal gills. However, the larva of this moth lacks gills, and is sometimes referred to as “the sandwich man” due to its habit of living between two pieces of leaf (leaf case) it cuts from its host plant.

The epidermis (skin) is covered with minute papillae (bumps), with body creamy-white, but increasingly brownish from abdominal segment four forward to the prothorax. The prothoracic coxae (proximal leg segments) are touching while the mesothoracic coxae are nearly touching. The head is yellowish-brown with a faint brown genal (cheek) stripe. The prothoracic spiracle (respiratory opening) is vestigial



Figure 3. Waterlily leafcutter, *Synclita oblitalis* (Walker), leaf case.
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while spiracles on abdominal segments three and four are distinctly larger than others. The crochets (gripping hooks) are arranged in two biordinal (sometimes partially triordinal) transverse bands, with the anterior band distinctly larger than the posterior band.



Figure 4. Larva of the waterlily leafcutter, *Synclita oblitalis* (Walker), with opened leaf case.
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Pupae: No information is available about the pupae except that pupation occurs within the leaf cases.

Adults: Adults are sexually dimorphic and readily distinguishable. Females have a 15 to 19 mm wingspan, and the female's wings are paler in color appearing grayish-brown with orange-brown markings. The wingspan of the male is only about 11 to 13 mm, and the male's wings are grayish-brown interspersed with brownish and white markings.

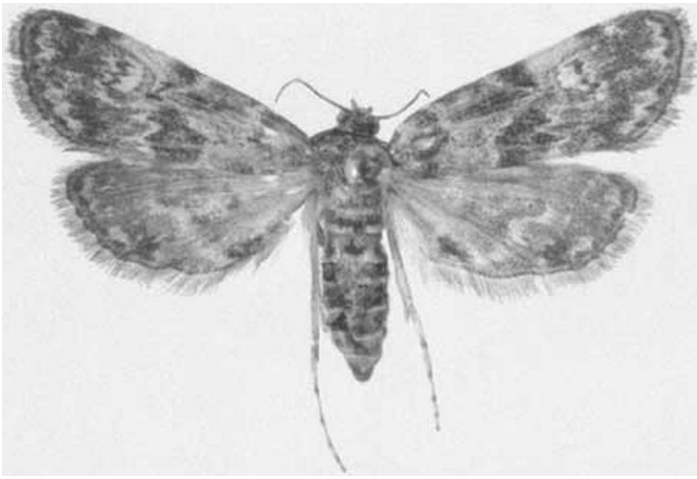


Figure 5. Adult female waterlily leafcutter, *Synclita oblitalis* (Walker). Credits: J. Lotz, Division of Plant Industry



Figure 7. Adult male waterlily leafcutter, *Synclita oblitalis* (Walker). Credits: Lyle J. Buss, University of Florida



Figure 6. Adult male waterlily leafcutter, *Synclita oblitalis* (Walker). Wingspan of this specimen is 11 mm. Credits: L. J. Buss, University of Florida

Life Cycle and Biology

Upon hatching, the larvae enclose themselves inside cut leaf pieces. Cases made by young larvae are water-filled and oxygen uptake occurs cutaneously (presumably via the epidermal papillae) whereas cases of older larvae are air filled. Larvae abandon smaller cases as they mature and construct larger cases from new leaves. The case may consist of two entire leaves, parts of leaves, or of parts of many plants tied together with silk. Prior to pupation, the larvae attach their cases to petioles or leaf blades of their

host plants above or below the water surface, and spin their cocoons inside their cases.

Hosts

Synclita oblitalis has a wide host range and is known to feed on nearly 60 plant species. The following plants arranged by families and genera are known to be hosts. The number of species, if more than one within each genus, is in parenthesis.

Acanthaceae: *Hygrophila*, *Nomophila*, *Synema*;

Alismataceae: *Enchinodorus* (3), *Sagittaria*;

Amaranthaceae: *Amaranthus*;

Apiaceae: *Hydrocotyle* (3);

Aponogetonaceae: *Aponogeton* (3);

Araceae: *Orontium*, *Pistia*;

Brassicaceae: *Cardamine*, *Nasturtium*;

Cyperaceae: *Eleocharis*;

Gentianaceae: *Nymphoides* (2);

Haloragaceae: *Myriophyllum* (2);

Hydrocharitaceae: *Egeria*, *Elodea*, *Hydrilla*, *Limnobium*;

Lemnaceae: *Lemna*, *Spirodela*; Lythraceae: *Rotala*;

Marsileaceae: *Marsilea*;

Nymphaeaceae: *Brasenia*, *Nelumbo*, *Nuphar*, *Nymphaea* (7);

Onagraceae: *Ludwigia* (2);

Poaceae: *Hydrochloa*;

Polygonaceae: *Polygonum* (3);

Pontederiaceae: *Eichhornia*, *Pontederia*;

Potamogetonaceae: *Potamogeton* (3);

Salicaceae: *Salix*;

Salviniaceae: *Azolla*, *Salvinia*;

Scrophulariaceae: *Ambulia*, *Bacopa*, *Lindernia*, *Micranthemum*.

Economic Importance

This insect frequently is a pest in aquatic plant nurseries, especially on waterlilies, *Nymphaea* spp.

Related Species

Three other species of *Synclita* occur in the United States with one, *S. tinealis* Munroe, in Florida. The adult of *S. tinealis* is much smaller than that of the waterlily leafcutter and has longer, narrower and darker wings. The larvae of *S. tinealis* are not well known, but seem to feed on and most often make their cases of duckweed, *Lemna* sp.

The larvae of *Munroessa gyralis* (Hulst) and *M. icciusalis* (Walker) are similar to those of the waterlily leafcutter, but the anterior and posterior transverse bands of crochets are the same size. *Munroessa* adults are more brightly colored than *Synclita* and are yellowish-orange and white or brownish in color. Although *Munroessa* larvae may make portable cases, they usually cut only one leaf piece and attach it to a whole leaf and live between.

Selected References

[FLDEP] Florida Department of Environmental Protection. (1993). Aquatic plant permit rules: Aquatic plant importation, transportation, non-nursery cultivation, possession

and collection. <http://myfwc.com/license/aquatic-plants/permit-rules/> (7 September 2011).

[FLEPPC] Florida Exotic Pest Plant Council. (2007). List of Florida's Invasive Species. Florida Exotic Pest Plant Council. <http://www.fleppc.org/list/list.htm> (19 December 2007).

Krombholz P. 1996. *Hygrophila polysperma*: an indicator plant. The Aquatic Gardener: Journal of the Aquatic Gardeners Association 9: 135-137.

Munroe E. 1972. In Dominick RB et al. (editors). The Moths of America north of Mexico, fasc. 13.1A Pyraloidea (in part).

Schmitz DC, Nall LE. 1984. Status of *Hygrophila polysperma* in Florida. Aquatics 6: 11-14.

Schmitz DC, Nelson BV, Nall JE, Schardt JD. 1991. Exotic aquatic plants in Florida: a historical perspective and review of the present aquatic plant regulation program. pp. 303-326. In Center TC, Doren RF, Hofstetter RL, Myers RL, Whiteaker LD (editors), Proceedings of a symposium on exotic pest plants. Technical Report NPS/NREVER/NRTR-91/06. U. S. Department of Interior, National Park Service, Denver, CO.

Shaffer M. 1968. Illustrated notes on *Synclita oblitalis* (Walker) and *Euzophora bigella* (Zeller), two species new to the British List (Lepidoptera: Pyralidae). Entomologist's Gazette 19: 155-158.

Sutton DL. 1995. *Hygrophila* is replacing hydrilla in south Florida. Aquatics 17: 4, 6, 8, 10.

Williams FX. 1944. Biological studies in Hawaiian water-loving insects. Part IV. Lepidoptera or moths and butterflies. Proceedings of the Hawaiian Entomological Society 12: 180-185.

Woolfe T. 1995. Water weed is latest menace. Tallahassee Democrat, 4C, 3 August.

[USDA] U.S. Department of Agriculture. 1983. Noxious weeds. Federal Register. 48: 20037-20047.