



# BUG BIZ

Pest Management and Insect Identification Series



## Water Lettuce Moth

Scientific name: *Samea multiplicalis* (Guenée) (Lepidoptera: Pyralidae: Pyraustinae)

### Introduction

Water lettuce moth, *Samea multiplicalis* (Guenée) (Lepidoptera: Pyralidae: Pyraustinae), is a small moth widely distributed in the warmer regions of North and South America (Center *et al.*, 1982). The larvae feed on several floating aquatic plants, including water lettuce, *Pistia stratiotes* L. (Araceae), mosquito fern, *Azolla caroliniana* Willd. (Azollaceae), common salvinia *Salvinia minima* Baker and giant salvinia *Salvinia molesta* D.S. Mitchell (Salviniaceae) (Center *et al.*, 1982; Walsh and Maestro, 2016). *Samea multiplicalis* is often found attacking giant salvinia, which is a serious aquatic invasive plant in Texas and Louisiana (Fig. 1). *Samea multiplicalis* was released as a potential control agent in Queensland, Australia in 1981; however, it has not contributed to the control of giant salvinia (Center *et al.*, 1982).



Figure 1. Giant salvinia damaged by water lettuce moth larvae. Photograph by Rodrigo Diaz, LSU AgCenter.

### Description and Life Cycle

The adults measure about 17 mm (0.70 in) in width and are light brown with dark markings on the wings (Fig. 2). Females may live for 4 to 7 days (Center *et al.*, 1982).

The pupae are about 10 mm (0.40 in) in length and are yellow. Pupation occurs within a silken cocoon; on giant salvinia, this cocoon is usually constructed among old leaves (Fig. 3). The duration of the pupa stage has been reported to be 4 to 7 days on water lettuce and 8 to 9 days on giant salvinia (Center *et al.*, 1982).

The larval stage has 5 to 7 instars and is completed in 15 days when fed on water lettuce or common salvinia, and in 21 to 35 days when



Figure 2. Water lettuce moth standing on giant salvinia. Photograph by Rodrigo Diaz, LSU AgCenter.

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Figure 3. Pupae of the water lettuce moth with cocoon (left) and without cocoon (right) on giant salvinia. Photograph by Rodrigo Diaz, LSU AgCenter.

fed on giant salvinia (Center et al., 1982). The late instars are ca. 11 mm (0.43 in) in length, but the first instars are as small as 1 mm (0.04 in). The color of the larvae varies from white to light yellow (Fig. 4).

Eggs are deposited usually singly among hairs on the upper surface of leaves. One female can lay in average of 93 and up to 291 eggs. The eggs hatch in 5 to 6 days. The life cycle from egg to adult and then egg again is 56 days (Sands and Kassulke, 1984).

## Host Plants

*Salvinia molesta*, *S. minima*, *A. caroliniana* and *P. stratiotes* are four main hosts of water lettuce moth. In a choice experiment, oviposition was higher on *P. stratiotes* over *S. minima* and *A. caroliniana*. The larvae could feed *Lemna* sp. and *E. crassipes*, but they could not complete development on these two plants. Although not a preferred host plant, larvae of the water lettuce moth can be found feeding on *E. crassipes* (Bennett, 1966).

## Natural Enemies

Five parasitoids and three pathogens were found attacking the water lettuce moth in Australia (Semple and Forno, 1987). In United States, a report from Florida demonstrated that 52% of *S. multiplicalis* larvae were parasitized by one Braconid and two Ichneumonid wasps (Knopf and Habeck, 1976). In Trinidad and Argentina larvae are heavily parasitized and preyed on by many natural enemies (Bennett, 1966). Sharkey et al. (2011) reported a new species, *Neothlipsis parysae* (Hymenoptera: Braconidae), parasitic on the first instar of *S. multiplicalis* in southern Louisiana.



Figure 4. Larvae of the water lettuce moth on giant salvinia leaves. Photograph by Rodrigo Diaz, LSU AgCenter.

## Effects on Salvinia Weevil Rearing Ponds

Field observations in Louisiana suggest that the water lettuce moth could damage giant salvinia at some locations (Fig. 5). Julien and Bourne (1988) reported that water lettuce moth could destroy giant salvinia even at low densities (0.8 to 1.6 larvae per plant).

This moth is considered a pest in giant salvinia ponds used to rear the salvinia weevil (*Cyrtobagous salviniae* Calder and Sands, Coleoptera: Curculionidae). Severe damage, by caterpillars, fragments the plant which eventually sinks (Fig. 6).

To control the water lettuce moth in rearing ponds, LSU AgCenter personnel spray *Bacillus thuringiensis* (Bt, Thuricide<sup>®</sup>, 1 tablespoon per gallon of water) in a regular basis. Monitoring rearing ponds for water lettuce moth involves the collection of plant material and extraction using Berlese funnels.



Figure 5. Water lettuce moth damage giant salvinia in Louisiana. Photograph by Rodrigo Diaz, LSU AgCenter.

## Selected References

Bennett, F.D. 1966. Investigations on the insects attacking the aquatic ferns, *Salvinia* spp. In Trinidad and northern South America. Proceeding of the Southern Weed Conference 19:497-504.

Center, T.D., J.K. Balciunas, and D.H. Habeck. 1982. Descriptions of *Sameodes albigitallis* (Lepidoptera: Pyralidae) life stages with key to Lepidoptera larvae on waterhyacinth. Annals of the Entomological Society of America 75:471-479.

Julien, M.H. and Bourne, A.S. 1988. Effects of leaf-feeding by larvae of the moth *Samea multiplicalis* Guen. (Lep., Pyralidae) on the floating weed *Salvinia molesta*. Journal of Applied Entomology 106:518-526.

Knopf, K.W. and D.H. Habeck. 1976. Life history and biology of *Samea multiplicalis*. Environmental Entomology 5:539-542.

Sands, D.P.A. and R.C. Kassulke. 1984. *Samea multiplicalis* (Lep.: Pyralidae), for biological control of two water weeds, *Salvinia molesta* and *Pistia stratiotes* in Australian Entomophaga 29:267-273.

Semple, J.L. and Forno, I.W. 1987. Native parasitoids and pathogens attacking *Samea multiplicalis* Guenee (Lepidoptera: Pyralidae) in Queensland. Journal of the Australian Entomological Society 26:365-366.

Sharkey, M.J., Parys, K.A. and Clutts, S. 2011. A new genus of Agathidinae with the description of a new species parasitic on *Samea multiplicalis* (Guenee). Journal of Hymenoptera Research 23:43-53.

Walsh, G.C. and Maestro, M. 2016. Impact of introduced native herbivores on a *Pistia stratiotes* infestation close to the Parana Delta in Argentina. Biocontrol Science and Technology 26:35-46.



Figure 6. Giant salvinia sinking due to severe damage of water lettuce moth. Photograph by Rodrigo Diaz, LSU AgCenter.

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