



BUG BIZ

Pest Management and Insect Identification Series



Neothlipsis parysae, Water Lettuce Moth Braconid (Hymenoptera: Braconidae)

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Description

Neothlipsis parysae is a small parasitoid wasp discovered in Louisiana during 2006. It was discovered during water lettuce moth (*Samea multiplicalis*) surveys conducted by researchers in the LSU AgCenter Department of Entomology. The wasps were reared from caterpillars of the water lettuce moth. This wasp was a new species to science and was named after a graduate student, Dr. Katherine Parys, who discovered it.

The adult members of the wasp species are about one-seventh of an inch (3.5 mm) in length, with a black head and thorax. The abdomen is mostly black, with an orange patch around the midpoint. Adult wasps have slightly yellow-tinged, clear wings. Males and females are similar except for leg coloration. Compared to males, females have more orange on the legs. In addition, the females have a long egg-laying organ (ovipositor) that looks like a stinger. The length of the egg-laying organ is slightly shorter than the female's body. The wasps are not capable of stinging humans.

Life History

The water lettuce moth braconid wasp is active mainly from May to September in Louisiana. Members of the species possess a narrow host range, similar to other members of the subfamily Agathidinae, and only parasitize water lettuce moths. The female wasp deposits a single egg into a first-stage water lettuce moth caterpillar. After hatching, the wasp larva feeds on the internal organs of the caterpillar and grows. When the caterpillar reaches maturity during its final growth stage, the wasp larva exits the body of the caterpillar in the pre-pupal stage (a nonfeeding stage immediately prior to pupation), and the caterpillar dies. The wasp larva spins a cocoon that can be seen outside of the caterpillar. After a period of time that depends on temperature, an adult wasp emerges from the pupa.

Distribution of Host and Wasp

The water lettuce moth was discovered and described in Brazil during 1864. The current distribution of the moth includes the southeastern U.S. and extends to Argentina in South America. The water lettuce moth braconid wasp was initially documented in Ascension Parish, Louisiana, and Hopkins County, Kentucky. Other members of the genus *Neothlipsis*, are found in North America and South America.

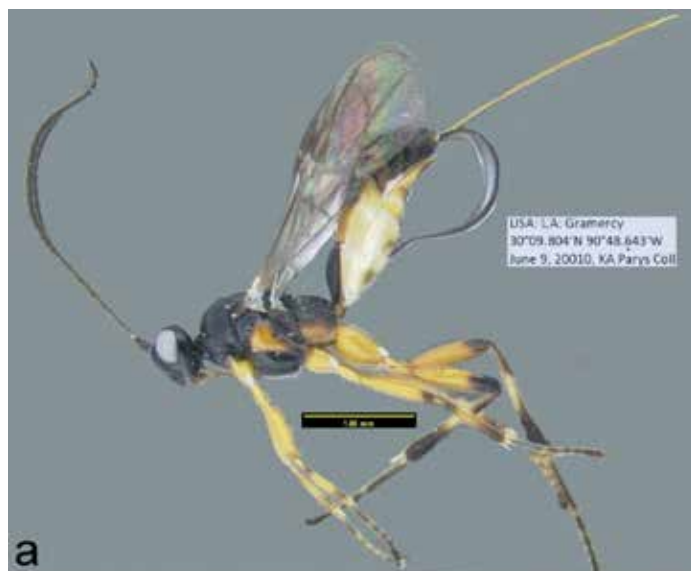


Figure 1a: Lateral view of the *Neothlipsis parysae*, adult female, Sharkey et al. 2011.



Figure 1b: Dorsal view of the *Neothlipsis parysae*, adult female, Sharkey et al. 2011.



Figure 2a: Transparent cocoon spun by the water lettuce moth caterpillar.



Figure 2b: Pupa of the water lettuce moth not covered by a cocoon.



Figure 2c: Adult water lettuce moth.



Figure 3: Giant salvinia damaged by water lettuce moth.

Ecological Significance

Moth caterpillars and their wasp parasitoids may be considered beneficial or harmful insects, depending on human perspectives. Many moth caterpillars are insect pests in agriculture, and their wasp parasitoids are beneficial natural control agents. However, water lettuce moth caterpillars are considered natural enemies of water lettuce, giant salvinia and water hyacinth, all of which are invasive aquatic weeds in ponds and lakes in Louisiana. Based on previous research and field observations by researchers at LSU, the moth caterpillars can be effective in managing local stands of water lettuce and giant salvinia. In this scenario, this wasp can be considered a pest if they reduce the density of caterpillars enough to promote excessive growth of these aquatic weeds.

From another perspective, the wasp can be beneficial if the water lettuce moth caterpillars are considered pests. For example, salvinia weevils (*Cyrtobagous salviniae*) are effective biological control agents of giant salvinia in many tropical and subtropical regions of the world. Because of its effectiveness against this weed, the weevils are mass-reared in ponds in Louisiana. In these ponds, damage by the water lettuce moth caterpillars may be detrimental because of the reduction of plant biomass available to the salvinia weevils. In fact, pond managers sometimes spray biological insecticides specific to caterpillars (*Bacillus thuringiensis*). In this situation, the water lettuce moth braconid may be considered a beneficial insect species. Further studies are needed to understand the effectiveness of the braconid to control the caterpillars and assess their impacts in artificial culture situations.

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For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage:

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