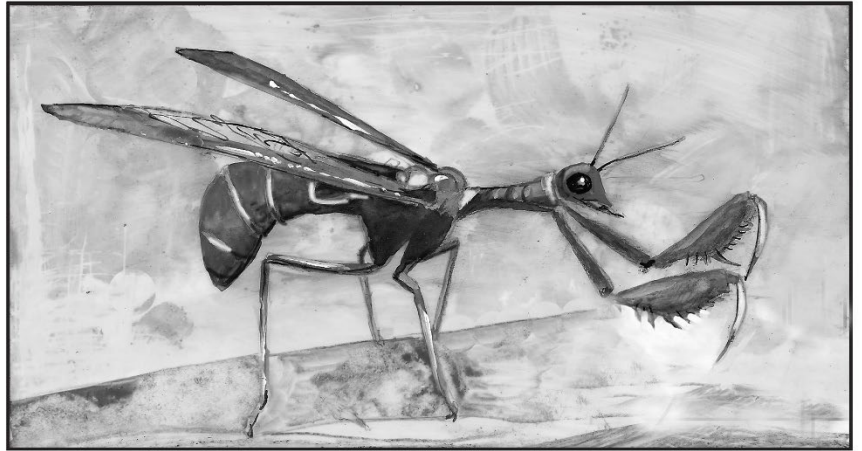


The Outside Story

The Patchwork Life of the Brown Wasp Mantidfly

By Rachel Sargent Mirus

Last July, I crossed paths with an insect that looked like the living embodiment of my favorite drawing game. Using folded paper, players add to a communal image without seeing previous contributions, such that the finished work is a surprise to everyone: the head of an eagle, on the body of a pig, with crab legs!



My mystery insect was about an inch long and had the body of a wasp, the face and forelegs of a praying mantis, and the wings of a fly. This was a brown wasp mantidfly (*Climaciella brunnea*), which is closely related to the lacewings. Eric Eaton, entomologist and one of the authors of the “Kaufman Field Guide to Insects of North America,” describes insects in the mantidfly family as looking like as “a science experiment gone horribly wrong.”

The brown wasp mantidfly’s lifestyle is as patchwork as its appearance. In its larval form, it hitchhikes on an unassuming spider and ultimately eats the spider’s eggs. As an adult, the mantidfly is a dangerous predator and incognito wasp mimic.

Brown wasp mantidflies have a range that extends from southern Canada to Central America and includes most of the United States. Their bizarre appearance makes finding one a noteworthy experience for insect fans. “Maybe I am simply excitable in general,” Eaton wrote on his blog after spotting a brown wasp mantidfly on a sunflower. “But I was ecstatic to find a truly astonishing insect species earlier this week.”

While this mantidfly species is widespread and probably common, it frequently escapes human notice, possibly because it wears wasp disguises. The one I spotted was dark brown and decorated with thin yellow stripes, mimicking the northern paper wasp (*Polistes fuscatus*). Mantidfly species living in other regions have other color morphs, to better match the locally abundant paper wasp species.

Brown wasp mantidflies are skilled Batesian mimics – harmless themselves, but masquerading as something more dangerous for their own protection. To complete the disguise, these mantidflies may adopt the posture of a wasp threatening to sting by curling their abdomens and splaying their wings, although they don’t actually have stingers. They may also raise their abdomens vertically, showing off their wasp coloration.

Adult brown wasp mantidflies may look like wasps, but they hunt like praying mantises. Both insects have large, spiky grabbing forelegs that they keep folded until the moment they strike. A mantidfly will hang out on flowers or other vegetation, ready to snatch hapless prey.

Adult females are active for a month during the summer after emerging any time between May and October, but males live for only one week. To assist their mating efforts during this limited timeframe, they use a pheromone to attract females. Mantidflies sometimes gather on plants, as Eaton has observed. “I encountered *Climaciella brunnea* only on sunflower plants, usually blooming ones, and there were several individual mantidflies in a small area,” he wrote to me. Males perform a courtship dance, raising and lowering their wings while simultaneously opening and closing their large forelegs.

Brown wasp mantidflies lay eggs suspended on a filament, like miniscule lollipops, usually on the underside of a leaf. A single female can lay thousands of eggs. The larvae that hatch are tiny, flat, and have long legs. They drop to the ground, raise the front of their bodies, and wave their legs in hopes of grabbing a ride on a roaming spider – a hitchhiking behavior known as phoresy. Wolf spiders and occasionally crab spiders are common targets. The mantidfly larva piggybacks on its unwilling host, feeding on its haemolymph (the spider equivalent of blood).

If a larval brown wasp mantidfly first attaches to a male spider, it will move to the female as the spiders mate. Once on a female, the larva bides its time until she lays her eggs and wraps them up in the tough silk that should protect them until they hatch. Except, in this case, the mantidfly larva sneaks inside before she finishes her wrapping, and snacks its way through her brood. Eventually, instead of a batch of spiderlings, a single adult mantidfly emerges from the egg sac.

While brown wasp mantidflies travel incognito most of the time, if you keep an eye out this summer, you may get lucky and meet this oddball insect yourself.

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