

Sample Study 4: Bella Moth and *Crotalaria Retusa*



Background Info: Taming an invasive plant that's 8 feet tall and poisonous is no small feat, especially if you're a tiny moth. The bella moth does just that, says Andrei Sourakov, a University of Florida lepidopterist who studies how the moths are evolving to feed on the seeds of exotic rattlebox plants. The tall, yellow-flowered plants in the genus *Crotalaria* were likely introduced by plant explorer David Fairchild about 100 years ago as a cover crop. They add nitrogen to the soil, suppress weeds and nematodes and reduce erosion, but can also poison livestock and overrun native plants. The plant is also known as rattlebox. Some species of rattlebox have been documented growing among crops, which could contaminate food products like cereal and tea.

About the Bella: Bellas generally breed the year-round in Florida. Host plants are believed to be limited to members of the *Crotalaria* (Rattlebox) family of plants, the larva stores the alkaloids it receives from these plants making it toxic to potential predators, a trait that carries over to the adult moth.
Habit and habitat - Adult Bella moths concentrate around Rattlebox

plants, there are two native species of Rattlebox, one is Avon Park rattlebox - *C. avonensis* the other is Rabbitbells - *C. rotundifolia*. This moth has several broods year-round in Florida and the caterpillar occurs in numbers large enough to defoliate the Oak trees they infest.

What are benefits: In 2011, Sourakov stumbled upon one of Florida's 10 exotic species of rattlebox growing near the edge of a wooded area in northwest Gainesville. A year later, he noticed the plant had dwindled more than 90 percent. The bella moth was eating the plant's poisonous seeds, which help it produce chemical defenses that make the moths and their eggs unpalatable to would-be predators. "The moth has always fed on native species of *Crotalaria*," said Sourakov, showing a drawer with hundreds of bella moth specimens that he reared in the lab. "Now they've switched from the native to the invasive species. It is clear that moths are able to feed on the invasive and I am studying how these new host plants effect moth biology."