A Small Victory for a Rare Butterfly and its Habitat

By Cathy Smith

On a couple of isolated limestone outcroppings in western Connecticut a diminutive butterfly struggles for survival – threatened by invasive plants, development, habitat fragmentation, and pesticide spraying. The Northern Metalmark (*Calephelis borealis*) is very, very particular about its habitat, only taking up residence on these limestone ledges that are remnants of a time when continents collided and an ancient coastline cut deep into the present-day Northeast.

There are only two known Northern Metalmark populations in Connecticut, both in the western part of the state. One of these is located within the Norwalk River watershed in Fairfield County. Because this site is on private property and this butterfly population is so precarious, the exact location is kept secret. But a crew of dedicated volunteers and scientists has been at work here to restore and protect the habitat and – it is hoped – help to save the Northern Metalmark.

While this species' range is quite broad - from Connecticut into New Jersey, Pennsylvania, and West Virginia and westward to Ohio and Indiana – they exist only in very small, vulnerable groups of fewer than 20 individuals. These are referred to as *metapopulations* – groups of the same species which may interact with each other but are separated geographically. In the case of the Northern Metalmark, however, group interactions are severely limited by its disinclination to travel far, especially over uncongenial habitats. It is likely that these local butterflies don't disperse as far as the only other Connecticut population, near Kent.

At this Fairfield County site, like other Northern Metalmark locales, the limestone bedrock creates alkaline soil conditions very different from the acidic soils that dominate most of Connecticut. And on this little limestone island a rare plant community has arisen. These are the plants the Northern Metalmark evolved to feed on and where it can reliably find the one plant that is known to play host to its eggs and caterpillars – Roundleaf Ragwort (Packera *obovata, photo right*).

Over the years the rare plant life on this spot has been infiltrated by other native plants and threatened by invasive species like Asiatic Bittersweet, Russian Olive, Phragmites and Winged Euonymus. Since the site was identified several decades ago, volunteers have been removing the invasives and replacing them with the nectar and host plants so critical to the Northern Metalmark's survival.

One key nectar source, Black-eyed Susan (Rudbeckia *hirta, photo left*), had been reduced to only six plants in 2016. “But thanks to a great effort to plant local ecotype Black-eyed Susans by Highstead,” says Redding lepidopterist Victor DeMasi, “there are about 175 flowering plants on the site now. It is probable that abundant nectar is the driving force behind a mini Northern Metalmark population boom here.”

Over the past three decades the Northern Metalmark population numbers at this location have been relatively consistent, averaging between 6 to 8, but this year they more than doubled with 20 individuals putting in an appearance. While that’s great news, this population remains imperiled. Scientists describe a species population that’s under 60 individuals as on the brink.

To help sustain these Northern Metalmarks, volunteers have been planting other nectar plants such as Butterfly Weed and Yarrow in addition to Black-eyed Susans. Staff from Redding-based Highstead collect seeds and grow them before planting them back into the site. While these plants are regionally native they may not be native to this exact location, according to Highstead Executive Director Geordie Elkins; however, they all do well in the site’s alkaline soil conditions and are serving a vital role by supplying the Northern Metalmark with nectar until scientists can determine which plant species might have been the butterfly’s original food sources. Once these are identified, scientists will attempt to reconstruct the original limestone-loving plant community.

Habitat restoration specialist Faith Novella is eager to point out that all of this effort isn’t just about the Northern Metalmark. This little butterfly serves as an umbrella species for the entire community here. “This site is unique and it is critical to protect it all,” says Faith. “By protecting this site we are helping to preserve the biodiversity of the region. And by protecting this plant community, we are protecting the Northern Metalmark too.”

Long-time local conservationist Bob Eckenrode had this to say, “The joy of looking after the Metalmarks has been a 30-plus-year project for me with many people joining in over the years. It’s just an honor to work along with all the other people who have a passion for taking care of this special place and home to this little butterfly. It's wonderful to see our combined efforts are having a positive effect on the colony.”

Thanks to the organizations, volunteers and scientists who have worked over the years to preserve and restore this unique Northern Metalmark habitat, including Highstead, the Connecticut Butterfly Association, the Connecticut Botanical Society and David Wagner, Professor of Ecology and Evolutionary Biology at the University of Connecticut.