THREATENED & ENDANGERED SPECIES

Mitchell's Satyr in Alabama

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New discoveries of one sort or another are constantly being made. We see and hear of recent innovations and findings repeatedly over news and medical reports. Unfortunately, many discoveries taking place in our natural world are often overlooked and receive little attention. One such finding was made right here in Alabama that few are aware of. It's not an earthshaking, societal-changing event, but rather, this new discovery in Alabama is of a medium-sized butterfly belonging to a very rare group known as the Mitchell's satyr.

Mitchell's satyr *(Neonympha mitchellii)* has been referred to as one of the most restricted and critically endangered butterflies in eastern North America. Historically, the species was known from Michigan, Indiana, northeastern Ohio, northern New Jersey, and perhaps Maryland. In June 1983, a small colony of the Mitchell's satyr was discovered at Fort Bragg Military Reservation in south-central North Carolina. This discovery led researchers to separate the butterfly into two distinct subspecies. Following this separation, the northern subspecies is now referred to as the Mitchell's satyr *(Neonympha mitchellii* subspecies *mitchellii)* and the North Carolina subspecies (including one small population in Virginia) as the St. Francis satyr *(Neonympha mitchellii* subspecies *francisci)*.

Until recently, the Mitchell's and St. Francis satyrs were known only from those localities supporting the two subspecies. On 24 June, 2000, a startling discovery was made in west-central Alabama when Dr. Jeffrey Glassberg, author of several butterfly field guides and President of the North American

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Butterfly Association, photographed a single male Mitchell's satyr. Several search attempts were made during late summer 2000 to locate the colony from which this lone individual may have originated, but all attempts failed during those excursions. Additional searches ensued the following spring, and on 5 June, 2001, the first colony for Alabama was located and documented by a team of biologists and butterfly enthusiasts led by Dr. Glassberg.

The newly discovered colony was regularly visited throughout the species' flight period in June to initiate study of this local group. Because North Carolina's St. Francis satyr has a second brood in late July to mid August, Alabama's colony was carefully followed during this period as well to determine if a similar second emergence and flight period occurred. It was determined on 16 August, 2001, that a second brood does occur in the Alabama population(s). Subsequent searches in late August and early September led to the species being discovered in eight different localities. It must be noted, however, that not all of these "sightings" represent valid colonies. Much fieldwork lies ahead before the "colony" label can be accurately applied to local observations. Furthermore, this discovery is so fresh that very little is known about this newest find of the Mitchell's satyr group of butterflies. All that we have to go on is what little has been discovered for the two described subspecies.

Both the Mitchell's satyr and the St. Francis satyr are highly specialized and selective in their habitats. The northern (Mitchell's) subspecies is most often encountered along the edges of open sedge meadows and dense stands of deciduous and coniferous shrubs of "calcareous fens" (neutral to highly alkaline wetlands or "bogs" fed by carbonate-rich water from seeps and streams; found primarily in the glaciated regions of North America). The St. Francis satyr is found primarily in acidic wet meadows dominated by an assortment of sedges and wetland grasses; often relicts of beaver activity. (Incidentally, the latter point is a feature common to each locality where the satyr has been discovered in Alabama. Based on several observations, the apparent habitat preference for Alabama's form of the Mitchell's satyr is the edge of lowland shrub — sedge marshes and forested swamps that have been influenced or created by beaver activity.)

The life cycle of this poorly documented butterfly varies between the northern and southern forms. Mitchell's satyr in Michigan and Indiana are single brooded, and the adults emerge in late June and fly through mid July. During the flight period, generally lasting only two weeks, the butterflies mate, lay eggs, and die. Eggs are laid on a specific plant (thought to be tussock sedge, *Carex stricta)* and upon hatching (potentially

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after 7 to 11 days), caterpillars feed upon the "host plant" until cooler temperatures and low sunlight levels induce the caterpillars into diapause (a period of suspended growth and dormancy). The caterpillars resume feeding the following spring and eventually metamorphose into adults in late June. A notable difference in the life cycle of the St. Francis satyr is that there are two broods per year. The adults of the first brood emerge in early to mid May and typically disappear by the end of the first week in June. The second flight period or brood runs from late July through mid August. The host plant has yet to be determined for the St. Francis satyr but it is very likely to be one or more species of *Carex* (sedge). St. Francis caterpillars that developed from the second brood probably over-winter in a similar fashion as in the northern subspecies. Pupation is generally two weeks in duration and ends with the emergence of the adult.

Due to such high habitat specificity, both subspecies have experienced alarming declines and extirpations from former localities throughout their respective ranges. The primary cause of these declines is centered upon wetland alteration, degradation, and destruction through the draining and conversion of these habitats to other forms of land use such as agriculture, roadways, and development. Secondary factors adversely affecting this species complex can be attributed to the removal and elimination of the elements that help to create suitable wetland habitat for the satyr such as widespread beaver eradication and control programs and the disruption of natural fire regimes. A third factor implicated as the cause for some localized extinctions (as reported for the New Jersey populations) is over-collection. The collective impacts from these factors have left the northern Mitchell's satyr with only about 13 populations in southern Michigan, and two in northern Indiana. In North Carolina, the St. Francis satyr likely exists as a single population consisting of a few small, localized colonies or subpopulations. Virginia also supports a single population of the St. Francis satyr. Such alarming losses throughout the butterflies' range resulted in the eventual listing of both subspecies as Federally Endangered.

From a natural history perspective, the enormity of finding a population of the Mitchell's satyr group in Alabama cannot be overstated as this discovery provides critical clues and additional insights to the plausible origin and historical distribution of this complex of butterflies. From a conservation perspective, these new discoveries are cause for great concern due to the endangerment of the Mitchell's and St. Francis satyrs. Unfortunately, the taxonomic identity of Alabama's population(s) has not been determined. Until this critical next step is completed, biologists and butterfly enthusiasts await in great anticipation to accurately put a name on a butterfly that has managed to escape discovery for so many years.

The discovery of Alabama's form of the Mitchell's satyr has provided yet another reminder of how amazingly diverse this great state is. It also tells us that many more secrets lie hidden among the varied habitats and natural communities of this gem of the Southeast.

References

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Taxes and Trees

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year 2010. However, the tax bill has a sunset provision, so that on January 1, 2011, the law is repealed and estate tax rules and rates go back to the 2001 regulations.

Abolishing the estate tax in 2010 will also remove the ability to step-up the basis of the property to its value at time of inheritance. The IRS has some proposed rules for adjusting some bases up to $1.3 million. However, it is predicted that Congress will change everything prior to 2010, so don't worry about it yet.

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