

POSSIBLE RELICT POPULATIONS OF *CHLOSYNE NYCTEIS* IN THE FLORIDA PANHANDLE (LEPIDOPTERA: NYMPHALIDAE)

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ABSTRACT.— *Chlosyne nycteis* was recently rediscovered in Florida at two sites within the Apalachicola River system of Jackson and Gadsden counties. These populations may be disjunct relicts, located far from other known populations to the north and west. Conversely, the species may continuously occur from Florida into northern Georgia along the Chattahoochee and Flint rivers which form the headwaters of the Apalachicola River.

KEY WORDS: Alabama, *Amblyscirtes*, *Anthocharis*, Compositae, distribution, Georgia, Hesperidae, hostplants, Lycaenidae, Pieridae, *Satyrium*.

On 23 and 25 May 1963, S. V. Fuller collected two male specimens of *Chlosyne nycteis* (Doubleday & Hewitson) at Marianna, Jackson County, Florida (deposited in the Florida State Collection of Arthropods, Gainesville). Although precise locality information is not included on the data labels, the specimens may have originated in or near Florida Caverns State Park, an extremely diverse oasis of forested habitats located along the Chipola River at Marianna. Continued collecting activity in the Florida Panhandle by numerous individuals during the following three decades failed to yield additional *C. nycteis*. Due to this paucity of records, the Florida Committee on Rare and Endangered Plants and Animals categorized *C. nycteis* as a poorly understood "rare" species (Minno, 1994e).

In 1994, I initiated an informal survey of the butterfly fauna of the Florida Panhandle. As part of this continuing study, bottomland hardwood forests along the Chipola River of Jackson County are being sampled. The Chipola River is a major tributary of the Apalachicola River which is the largest river in Florida in terms of flow rate (Livingston, 1977). Several sites have been repeatedly visited, including a section of rich mesic forest along the west bank of the Chipola River near Florida Caverns State Park. Here, on the morning of 16 June 1996, a male *C. nycteis* was collected in a forest clearing on a midslope terrace. A mating pair of *C. nycteis* was also found in a small clearing not far from the original capture. Later that same day, I encountered two more *C. nycteis* (male and female) basking in similar clearings within a bottomland hydric forest bordering the Apalachicola River in western Gadsden County. This site is located approximately 32 km southeast of Marianna (Fig. 1). At both locations, *C. nycteis* was encountered in sunlit clearings that support lush, low-growing vegetation within mixed bottomland hardwood forests. These re-

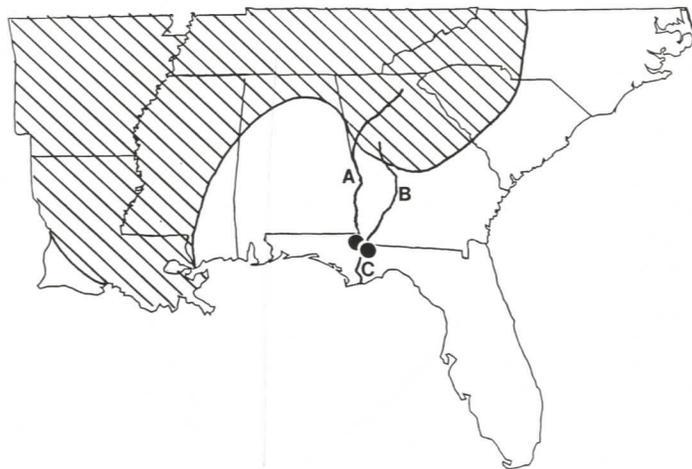


Fig. 1. Distribution of *C. nycteis* in the southeastern United States (based on Opler, 1983), location of known Floridian populations (black dots), and rivers that may serve as a distributional link (A, Chattahoochee River; B, Flint River; C, Apalachicola River).

ords provide further evidence that populations of *C. nycteis* are established in the region and the historical Marianna captures were not merely strays.

The hostplant of *C. nycteis* in Florida remains unknown, although I have observed several potential composite hosts growing along the Chipola River, including starry rosinweed (*Silphium asteriscus* L.) (Asteraceae) and frost weed (*Verbesina virginica* L.) (Asteraceae). Frost weed is a close relative of wingstem (*Verbesina alternifolia* (L.) Britt.) which is a commonly reported host of *C. nycteis* in the eastern United States (Opler and Krizek, 1984) and has been recorded in Florida only on the floodplains and bluffs of the Apalachicola River (Clewell, 1977). A known sunflower host, *Helianthus divaricatus* L. (Asteraceae), has been recorded along the Chipola River in Florida Caverns State Park (Mitchell, 1963).

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Floridian populations of *C. nycteis* are known only from the Apalachicola River system and seem to be disjunct, occurring at least 200 km further south than known populations in central Georgia and 400 km to the east of those in the lower Mississippi River Basin (Harris, 1972; Opler, 1983) (Fig. 1). The species is largely absent from the remainder of the southeastern coastal plain (Opler and Krizek, 1984) (Fig. 1). The Apalachicola River system is renowned for its northern affinities, supporting over 70 species of plants that are known in Florida only from this river drainage (Mitchell, 1963; Clewell, 1977). Among these are several species which appear to represent northern disjuncts that maintain populations far to the south of those in Georgia and Alabama (Kurz, 1933; Mitchell, 1963). The Apalachicola River system is also noted for its relatively large assemblage of endemic species of plants, insects, fishes, and freshwater molluscs (Heard, 1977; Yerger, 1977; Ward, 1979; Deyrup and Franz, 1994).

Global cooling trends and subsequent glacial advances probably forced many northern plant species southward into Florida where they occupied a once widespread mesic hardwood forest (Mitchell, 1963; Ward, 1979). Climatic, geological and ecological influences may subsequently have isolated populations of some species within portions of the Apalachicola River system, creating relict outposts at the southern extremes of their ranges (Mitchell, 1963). It is plausible that Floridian populations of *C. nycteis* became established and isolated in the region in a similar manner and may currently persist as disjunct relicts. These populations may be limited to corridors of suitable habitat flanking only a few panhandle streams, especially within the Apalachicola River system. An Appalachian species of jumping spider (Salticidae) occurs in a similar disjunct population on the Apalachicola River bluffs of Liberty County (Edwards, 1994). Despite its apparent disjunction in Florida, *C. nycteis* actually may enjoy a more continuous distribution.

The Apalachicola River is the only river in Florida with headwaters that reach the Appalachian Mountains, while all other rivers in the state originate on the coastal plain (Clewell, 1977, 1981). Several plants formerly thought to be northern disjuncts in the Florida Panhandle were later found to occur more continuously into the mountains of Georgia within the Chattahoochee-Flint River system which forms the headwaters of the Apalachicola River (Mitchell, 1963; Clewell, 1981). The coral hairstreak butterfly, *Satyrrium titus mopsus* (Hübner) (Lycaenidae), has been recorded in southwestern Georgia only within the Flint River drainage (Harris, 1972) and in Florida only within the panhandle counties of Liberty and Wakulla (Mather, 1973; Baggett, 1991; Minno, 1994d), suggesting a similar distributional link exists. Moreover, there are a number of other insect species, most notably scarab beetles (Scarabaeidae) and dragonflies, that also appear to exhibit this type of distribution pattern (Deyrup, 1994; Dunkle, 1994). Populations of *C. nycteis* may likewise be continuously distributed from Georgia into Florida along the forested floodplains of these river drainages (Fig. 1).

Four other butterfly species, *Anthocharis midea* Hübner (Pieridae), *Amblyscirtes vialis* (Edwards) (Hesperiidae), *Amblyscirtes hegon* (Scudder), and *Amblyscirtes belli* (Freeman), are also categorized as "rare" in Florida where they have been validly

recorded only in extreme northern counties of the state, chiefly in the panhandle (Mather, 1976; Baggett, 1982, 1984, 1988; Adair, 1987; Minno, 1994a, b, c; J. V. Calhoun, unpublished). Like *C. nycteis*, these species appear to represent disjuncts in Florida, far removed from other known populations (Opler and Krizek, 1984). Additional field work in northern Florida, as well as southern Georgia and southern Alabama, is necessary to verify the disjunction of Floridian populations of these species.

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