NOTES ON THE OCCURRENCE OF
SATYRIUM TITUS
IN NORTHWEST FLORIDA
(LEPIDOPTERA: LYCAENIDAE)

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ABSTRACT.—Additional information on the ecology of Satyrium titus in Florida is provided, including habitat, hostplants, nectar sources, and flight period. Adult variation and the biogeography of the species in Florida are also briefly discussed.

KEY WORDS: Alabama, Asclepiadaceae, biogeography, distribution, ecology, Fabaceae, flight period, Georgia, habitat, Hemiptera, Hesperiidae, hostplants, immatures, larvae, Nearctic, nectar sources, North America, Nymphalidae, Rhamnaceae, Rosaceae, USA.

The coral hairstreak, Satyrium titus (Fabricius), is distributed over a large portion of southern Canada and the United States (Scott, 1986). It is generally considered uncommon throughout its range (e.g., Ferris and Brown, 1980; Harris, 1972; Heitzman and Heitzman, 1987; Itiner et al., 1992). The recognized southeastern subspecies is S. t. mopsus (Hübner). In the original description, Hübner (1818) attributed S. t. mopsus to "Georgien in Florida," prompting Grossbeck (1917) to include the subspecies on the first list of Florida Lepidoptera. Kimball (1965) stated that Holland (1931) had also attributed S. titus to Florida on the authority of Hübner, but Holland made no such reference. Nonetheless, Clark (1951) argued that such notations by Hübner refer only to Georgia ("Florida" in Hübner's time included Georgia). Without substantiation, Clemen (1961) later inferred that S. titus is distributed over most of Florida when he defined its range as "most of North America from southern Canada southward, except southern Florida." Even the range map of S. titus in the popular guide by Mitchell and Zim (1962) included nearly all of Florida. Despite these references, Kimball (1965) failed to locate valid Florida records of S. titus and did not retain it on his state list of Lepidoptera. The status of S. titus in Florida remained uncertain.

The presence of S. titus in Florida was confirmed on 15 May 1964 when Howard V. Weems collected a single male in northwest Florida (the Florida Panhandle), at Torreya State Park, Liberty Co. This specimen (in FSCA) was apparently obtained too late for inclusion in Kimball (1965). On 1 June 1969, Leon Neel captured two adults at Shadville, in southern Wakulla Co. (specimens in the Carnegie Museum of Natural History, Pittsburgh, Pa) (L. Neel, pers. comm.). Additional S. titus individuals were subsequently found at Torreya State Park, including a record by Stephen J. Roman in May, 1972, which was incorrectly reported as a Florida state record by Mather (1973). On the ad-
Satyrium titus in Florida

Fig. 1. Known populations of Satyrium titus in Florida: 1. Torreya State Park, Liberty Co.; 2. Shadeville, Wakulla Co. (dark areas on large map depict extent of mixed hardwood forests in the Panhandle region) (adapted from Davis (1967). Inset map shows location of northwest Florida (panhandle) (solid black).

Fig. 2-4. 2. Hardwood forest habitat of S. titus at Shadeville, Wakulla Co., Florida (1997). 3. Adult female S. titus taking nectar from A. tuberosa. 4. 5th instar larva of S. titus reared in 1993, resting on leaf of hostplant, P. angustifolia.

HOSTPLANTS

Hostplants of S. titus are various species of tree Rosaceae, including black cherry, P. serotina, American plum, Prunus americana Marsh, and chickasaw plum, Prunus angustifolia Marsh. (Scott, 1986). Prunus serotina is widely distributed throughout much of northern and central Florida in wooded and semi-wooded habitats and is a characteristic overstory tree of mesic hardwood forests in the panhandle (Clewell, 1981; Nelson, 1994; Wunderlin et al., 1995). Prunus americana and P. angustifolia occur in forests and along forest edges and fencerows, chiefly in northern Florida (Nelson, 1994, Wunderlin et al., 1995). A single larva was found in April at Torreya State Park on P. angustifolia (given in error as southern crabapple, Malus angustifolia (Ait.) Michx. (Rosaceae) by Minno, 1994) (R. M. Minno, 1994).
Gillmore, pers. comm.). Slotten successfully reared larvae of *S. titus* (Fig. 4) on *P. angustifolia* from ova obtained by confining two females acquired at Shadeville in 1992 in a small screened cage with cuttings of the hostplant. The ova overwintered and the larvae emerged the following spring. It is likely that *S. titus* utilizes more than one host in Florida.

**NECTAR SOURCES**

Adults of *S. titus* are extremely rapid flyers, but are easily approached, and even touched, when feeding. The adults collected by L. Neel were feeding at the flowers of chinquapin, *Castanea pumila* (L.) Mill. (Fagaceae) (L. Neel, pers. comm.). All the adults encountered by Slotten and three individuals (one male and two females) found by Calhoun were visiting butterfly-weed, *Asclepias tuberosa* L. (Asclepiadaceae) (Fig. 3), which is scattered throughout the area along forest margins. The brilliantly colored *A. tuberosa* is a highly attractive nectar source to *S. titus* throughout its eastern range. The remaining adults encountered in 1997 (except one perching female) were visiting New Jersey Tea, *Ceanothus americanus* L. (Rhamnaceae) that grows along many of the sandy roads traversing the area (Fig. 2). Nearly twice as many females than males were observed feeding by Calhoun and Slotten, suggesting that males may linger near the host plant and/or feed for shorter intervals. Two females collected in 1997 exhibit severe damage to the outer margin of one hindwing. This damage was probably inflicted by a species of wheel bug (*Arilus* sp.) (Reduviidae) that was observed inhabiting numerous trees in the area along the不要河道.

**ADULT SIZE AND PHENOLOGY**

As noted by Minno (1984) adults of *S. titus* in Florida tend to be relatively large. A male collected at Shadeville in 1997 possesses a forewing length (base to apex) of 18mm and a female measures 20mm. Measurements derived from populations outside Florida provided by Opler and Krizek (1984) do not exceed 16mm for males and 18mm for females. However, throughout its range, adults are highly variable in size. A small female captured at Shadeville in 1997 has a forewing length of only 15mm, which is equal to the smallest female measured by Opler and Krizek (1984).

Extreme dates of capture for known records of *S. titus* in Florida are 15 May and 1 June. Although adults can probably be expected (on average) from about 10 May to 10 June, some females may emerge later and still be present into late June or even early July. A 4-6 week flight period is generally consistent throughout the species' eastern range (Opler and Krizek, 1984).

**DISCUSSION**

In Florida, *S. titus* may be limited to the Panhandle where populations are far removed from those in Georgia and Alabama, representing possible relics similar to those of *Chlosyne nycteis* (Doubleday and Hewitson) (Nymphalidae) (Calhoun, 1996). Alternatively, the species may continuously distributed from central Georgia into Florida, utilizing the forested Apalachicola-Chattahoochee-Flint river system as a dispersal corridor (Calhoun, 1996). This scenario is more plausible, given that *S. titus* has been recorded in south-central Georgia only within the Flint river basin and hardwood forests of the Florida panhandle were once primarily restricted to riverine habitats (Clewel, 1981; Opler, 1995). Although *S. titus* has not been reported from southern Georgia or southern Alabama (Harris, 1972; Opler, 1995; L. Finkelstein, pers. comm.), it may actually be a widespread but extremely localized resident throughout the region southward into northern Florida. Adults of *S. titus* are present only for several weeks each year, greatly increasing the probability that populations are overlooked. Moreover, they may inhabit tree crowns, descending only to feed. Populations of *S. titus* are perhaps most easily located by searching for the triangular shapes of adults resting on the conspicuous orange flowers of *A. tuberosa*. The species should continue to be searched for in northern Florida, especially in areas that support abundant stands of *A. tuberosa* and *C. americanus* in proximity to mixed hardwood forests containing potential host plants.

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