"sockets" or are articulated, as are the primary D or SD setae.

While tribal placement of *Cosmoclostis* in Pterophorini can be supported, additional species need to be examined, to ascertain larval and pupal characters entirely unique to the genus *Cosmoclostis*. Continuing studies of larval and pupal structure will provide additional insight into the relationships between and within tribes and subfamilies of this group.

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ADDITIONAL RECORDS OF *CYCLARGUS AMMON* (LYCAENIDAE: LYCAENINAE) IN THE FLORIDA KEYS

Additional key words: *Caesalpinia*, colonization, Fabaceae, *Cyclargus thomasi bethunebakeri*, oviposition

Cyclargus ammon Lucas (Lycaenidae) is a small blue of the Bahamas, Cuba, and the Isle of Pines (Smith *et al.* 1994). Although historically reported from Florida, Calhoun *et al.* (2000) concluded with reasonable certainty that all such records actually represented those of the superficially similar *Cyclargus thomasi* Clench (Lycaenidae). In recent years, scattered anecdotal reports of *C. ammon* from south Florida continued to circulate but were not verified until 1997 and 1998 when several adults were photographed on Big Pine Key (Calhoun *et al.* 2000; Krizek 1998, 1999; Glassberg 1999). Since its initial discovery, regular additional sightings have persisted along with evidence of regular breeding colonies, indicating that the species has become firmly established. *C. ammon* has continued to increase in abundance and can now be found in many suitable habitat areas across Big Pine Key, but it has not been documented off the large island. We have found it to be locally common near patches of pineland *Acacia pinetorum* F. J. Herm. (Fabaceae) in open pine rockland habitat within the boundaries of Key Deer National Wildlife Refuge as well as along disturbed roadside areas on nearby private lands harboring sweet acacia, *Acacia farnesiana* (L.) Willd. (Fabaceae).

In June 2002, the U. S. Fish and Wildlife Service contracted the McGuire Center for Lepidoptera and Biodiversity to conduct a comprehensive one-year status monitoring survey of the now state-endangered Miami blue, *Cyclargus thomasi bethunebakeri* (Comstock & Huntington) (Lycaenidae) throughout its historic range and to gather detailed biological and ecological information on the remaining Bahia Honda State Park population. Concurrently, surveys were undertaken for the presence of *C. ammon* adults or active colonies on

FIG. 1. Female *Cyclargus ammon* collected in Bahia Honda State Park

the various islands surrounding Big Pine Key including Sugarloaf Key, Cujoe Key, Summerland Key, Ramrod Key, Big Torch Key, Middle Torch Key, Little Torch Key, No Name Key, West Summerland Key, Ohio Key, Missouri Key, and Little Duck Key. The survey did not include any of the backcountry islands. Despite ten visits between 19 July 2002 and 25 August 2003, no adults or immature stages were recorded. The resulting lack of sightings was not unexpected, owing to the species' close association with pine rockland forests, as only four of the islands (Little Pine Key, No Name Key, Sugarloaf Key and Cudjoe Key) support substantial remaining pockets of appropriate habitat.

Surprisingly, on 12 October 2002, a single adult female *C. ammon* was observed within Bahia Honda State Park. The individual was in relatively fresh condition and was encountered alongside *Leptotes cassius theonus* (Lucas) (Lycaenidae) and *C. thomasi bethunebakeri* on the far western portion of the island adjacent to a service drive at the base of a large artificial embankment. This embankment was originally constructed for the Henry Flagler East Coast Railway (now called the Old Bahia Honda Bridge). It is considered to be the primary visual landmark of the park and is a popular tourist attraction. Although this male was believed at the time to be merely an isolated vagrant, a second specimen, an adult female was encountered in the same general vicinity on March 21, 2003. The relatively fresh individual was captured and photographed (Fig 1) following several minutes of detailed observation during which it repeatedly oviposited on *Caesalpinia bonduc* (L.) Roxb. (Fabaceae).

This section of the island supports the largest remaining portion of the Miami blue population. It is comprised of beach dune and adjacent transition zone coastal strand with a resulting plant species composition that includes *Uniola paniculata* L. (Poaceae), *Ipomoea pes-camrae* (L.) R. Brown (Convolvulaceae), *Canavalia rosea* (Sw.) DC (Fabaceae), *Coccoloba uvifera* (L.) L. (Polygonaceae), *Lantana involucrata* L. (Verbenaceae), and *Pithecellobium keyense* Britt. ex Britt. & Rose (Fabaceae) along with several more typical hardwood hammock representatives such as *Heliotropium angiospermum* Murr. (Boraginaceae), *Conocarpus erectus* L. (Combretaceae), and *Metopium toxiferum* (L.) Krug & Urban (Anacardiaceae). The habitat was severely altered by the impact of Hurricane Georges on 25 September 1998, resulting in extensive disturbance and the introduction of *Caesalpinia bonduc*. This relatively aggressive, sprawling species, also known as gray nickerbean, now dominates much of the remaining community and serves as the only larval host for *C. thomasi bethunebackeri* on the island.

The two isolated sightings of *C. ammon* on Bahia Honda were clearly unexpected as the small state park does not harbor remnant tracts of pine rockland forest. Calhoun *et al.* (2000), in their description of the life history, list *Acacia pinetorum, Acacia farnesiana*, and *Caesalpinia pauciflora* (Griseb.) C. Wright ex Sauvalle (Fabaceae) as larval hosts utilized by the Big Pine Key population. To our knowledge, none of these plant species is known from Bahia Honda and they clearly do not occur on the western portion of the island where the two individuals were recorded. Although oviposition was observed on *Caesalpinia bonduc*, it is not known if this plant reliably serves as a viable larval host despite its suitability under laboratory conditions (Fine 2003). Nonetheless, the use of *Caesalpinia pauciflora* in Florida and the earlier record of *C. bahamenis* Lam. from Cuba (Alayo and Hernández 1987) suggest the likelihood that other members of the genus may also be utilized. If verified, it could influence the future range expansion of *C. ammon* throughout south Florida by enabling the colonization of many habitat areas previously unavailable due to a lack of suitable hosts. Additionally the use of *C. bonduc* would potentially place *C. ammon* in competition with *C. thomasi bethunebakeri* for available host resources at sites where the two species overlap.

While it seems unlikely that *C. ammon* has a regular presence on Bahia Honda, individual vagrants or even a small temporary breeding colony could easily be overlooked due to the species extremely close resemblance to *C. thomasi bethunebakeri*. Further research is needed on the ecological requirements and larval host range of *C. ammon* in south Florida, and its potential influence on the ongoing conservation efforts surrounding the endangered Miami blue.

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NOTES ON THE OVIPOSITIONAL BEHAVIOR OF *LEPTOTES CASSIUS THEONUS* (LYCANIDAE: LYCAENINAE) IN THE LOWER FLORIDA KEYS

Additional key words: *Caesalpinia bonduc, Canavalia rosea, Dactyloctenium aegyptium,* polyphagous

Leptotes cassius theonus Lucas is a small, sexually dimorphic lycaenid found throughout Florida, the Bahamas, and the Greater Antilles (Smith et al. 1994). It is one of the most widely distributed butterflies in the Florida Keys, and frequents subtropical open to semi-open, sunlit habitats including beach dunes, coastal scrub, tropical pinelands, and tropical hardwood hammock margins, as well as urban gardens or parks (Minno and Emmel 1993). In many of these situations, the species seems to benefit from natural disturbance and anthropogenic activities that enhance the growth of pioneer vegetation or incorporate the introduction of ornamental plantings.

Within Florida, *L. cassius theonus* utilizes a variety of herbaceous and woody larval hosts in the Fabaceae and Plumbaginaceae; scattered representatives of the Malpighiaceae are also used by *L. cassius striatus* (Edwards) (Lycaenidae) in southern Texas. The developing larvae feed on the flowers and developing fruits of *Abrus precatorius* L., *Crotalaria incana* L. (Fabaceae), *Desmodium* Desv. (Fabaceae), *Lysiloma latisiliquum* (L.) Benth. (Fabaceae), *Galactia regularis* (L.) B.S.P. (Fabaceae), *Galactia striata* (Jacq.) Urban (Fabaceae), *Galactia volubilis* (L.) Britt. (Fabaceae), *Indigofera* L. (Fabaceae), *Macroptilium lathyroides* (L.) Urban (Fabaceae), *Phaseolus lunatus* L. (=*P. limensis*) (Fabaceae), *Piscidia piscipula* (L.) Sarg. (Fabaceae), *Pithecellobium keyense* Britt. ex Britt. & Rose (Fabaceae), *Pithecellobium unguis-cati* (L.) Benth. (Fabaceae), *Plumbago auriculata* Lam. (Plumbaginaceae), and *Plumbago scandens* L. (Plumbaginaceae) (Howe 1975, Minno and Emmel 1993, Scott 1986).

Detailed observations of the oviposition behavior of *L. cassius theonus* were conducted within Bahia Honda State Park in the Lower Florida Keys between July 2002 and August 2003. During much of the year, it is the most abundant blue encountered on the 524-acre island and regularly flies alongside *Hemiargus* (*Cyclargus*) *thomasi bethunebakeri* (Comstock & Huntington) (Lycaenidae) and *Hemiargus ceraunus antibubastus* Hübner (Lycaenidae) in many locations. In all but three instances, females exclusively elected to lay eggs on *Galactia volubilis* and *Pithecellobium keyense*. Both plants are common on the island, with *Galactia volubilis* being particularly prolific in open, disturbed sites alongside trails, service drives and roadways. Isolated oviposition events were documented on *Canavalia rosea* (Sw.) DC. (Fabaceae), *Caesalpinia bonduc* (L.) Roxb. (Fabaceae), and *Dactyloctenium aegyptium* (L.) Willd.(Poaceae) and represent new records for *L. cassius theonus*. In each case, a female landed on the plant, walked slowly over the vegetation while repeatedly probing it with her abdomen, and deposited a single egg before flying off. It is not known if *L. cassius theonus* larvae are able to successfully complete development on *C. rosea* or *C. bonduc*, although the likelihood of survival appears plausible due to the number of other similar fabaceous hosts utilized. By contrast, the choice of *D. aegyptium* clearly appears to