

Notes on *Erynnis baptisiae* in Florida, documenting its widespread occurrence in northern peninsular counties, and a new larval foodplant (Lepidoptera: HesperIIDae: Pyrginae)

Andrew D. Warren¹, John V. Calhoun² and Bill Berthet³

¹McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, SW 34th St. and Hull Rd., P. O. Box 112710, Gainesville, FL 32611-2710 hesperioidea@yahoo.com

²977 Wicks Dr., Palm Harbor, FL 34684 bretcall1@verizon.net

³12885 Julington Rd., Jacksonville, FL 32258 bergems@comcast.net

Erynnis baptisiae has been poorly documented from Florida. While it was reported from "Florida" in its original description (Forbes 1936), specific details on Florida records have remained sparse, and widespread confusion with other *Erynnis* species has made it difficult or impossible to interpret and verify historical records. Evans (1953) cited 14 males and 2 females of *E. baptisiae* from Florida in the Natural History Museum, London. Burns (1964) reported *E. baptisiae* from "St. Augustine [St. Johns Co.] and Tampa [Hillsborough Co.]", with no additional details. Kimball (1965) listed the species from Florida, referring to the specimens cited by Evans (1953) as the "entire local record," but also reported two localities for *E. persius* Scudder, noting that they "undoubtedly" refer to *E. baptisiae*: "Dunedin [Pinellas Co.], April" and "Osprey [Sarasota Co.], March." Seemingly far out of range, and without known specimens to back them up, none of the latter records were repeated by subsequent authors.

At our request, John Chainey of the Natural History Museum, London, examined the 16 specimens that Evans (1953) reported from Florida. Only seven males actually possess locality labels and they read simply "Floride" with no additional data. They are from the collection of the French entomologist Charles Oberthür (1845-1924), whose HesperIIDae were purchased by the museum in 1931 from his brother René Oberthür (1952-1944). The remaining nine specimens are unlabeled and it is unknown why Evans included them within the series from "Floride." We received photographs of those labeled "Floride" and they do represent *E. baptisiae*. Although these specimens were once accepted as the only evidence of the presence of *E. baptisiae* in Florida, their lack of additional data and unknown provenance bring their validity into question.

The Butterflies and Moths of North America (BAMONA) website records *E. baptisiae* from eight counties in the Florida panhandle: Okaloosa, Washington, Jackson, Gadsden, Liberty, Leon, Jefferson, and Madison, as well as Duval County in the northeastern corner of the peninsula (Lotts & Naberhaus 2015). Records from Gadsden and Madison counties were entered during the creation of the website, and specific details are unavailable; misdeterminations cannot be ruled out. The record from

Liberty County is based on a photograph of a male (ID'd by JVC) taken by Jeff Ward at Torreya State Park on 8 March 2015 (see below for additional records from Liberty Co.). The report from Leon County is untraceable and cannot be verified. The record from Jefferson County was reported by Mather (1975), from "Monticello, 31-VII-1974, R. Leuschner"; we've been unable to verify this record. The record from Jackson County is based on its inclusion on a list of the fauna and flora of Florida Caverns State Park (Anonymous 2006), although the source of their data is unknown. The Washington County record is based on three adults observed and a photograph (ID'd by JVC) taken by MaryAnn Friedman on 6 June 2009, and there are multiple valid records from Okaloosa County (see below). The peninsular record, from Duval County, was included on a distribution map formerly maintained by H. David Baggett (photocopy in possession of JVC), but no specific details were included. This species was also listed by FFWCC (2004) from the Blue Springs Longleaf Tract of Twin Rivers State Forest, Hamilton County, but the source and validity of this report are also unknown.

While curating the genus *Erynnis* in the collections of the McGuire Center for Lepidoptera and Biodiversity (Florida Museum of Natural History, University of Florida), ADW found four male specimens of *E. baptisiae* labeled from Florida (identities confirmed by genitalic examination). Two of these are from Okaloosa County in the western panhandle: Shalimar, 13-IV-1963, H. O. Hilton; Eglin AFB, 3-IV-1963, H. O. Hilton. The third male is from "nr. Bristol, Liberty Co., 1-X-1983, W. L. Adair." The fourth male is labeled from "orange grove at N end of town, Umatilla, Lake Co., 18-VII-1993," collected by R. F. Hirzel. This last record, possibly mislabeled, is discussed below.

Minno et al. (2006) reported finding *E. baptisiae* in Okaloosa County (Kepner Pond, within Eglin Air Force Base, ca. 5 mi N Niceville) on 21 June 2005. Several *Erynnis* larvae were found feeding on *Baptisia calycosa* var. *villosa* Canby. Two were successfully lab-reared on that plant and produced adults of *E. baptisiae*. MaryAnn Friedman observed and photographed adults of *E. baptisiae* at several localities in proximity to *Baptisia calycosa* within Eglin Air Force Base in Okaloosa and Santa Rosa counties. The dates and



Figs. 1-12. *Erynnis baptisiae* in northern peninsular Florida. 1) Female, 16.iv.2011, Ralph E. Simmons Memorial SF, Nassau Co. (BB). 2) Female, 23.v.2015, Jennings SF, Clay Co. (ADW). 3) Male, 23.v.2015, Jennings SF, Clay Co. (ADW). 4) Male, 24.v.2015, Jennings SF, Clay Co. (BB). 5) Ovum, 24.v.2015, Jennings SF, Clay Co. (BB). 6) Male, 24.v.2015, Jennings SF, Clay Co. (BB). 7) Male, 25.v.2015, Jennings SF, Clay Co., showing characteristic dangling nectaring posture on *B. lecontei* (BB). 8) Male, 27.v.2015, Jennings SF, Clay Co. (JVC). 9) Male, 30.v.2015, Ichetucknee Springs SP, Columbia Co. (ADW). 10) Female, 31.v.2015, Ichetucknee Springs SP, Suwannee Co. (ADW). 11) Female ovipositing on *B. lecontei*, 31.v.2015, Ichetucknee Springs SP, Suwannee Co. (ADW). 12) Female, 31.v.2015, Fort White Mitigation Park, Gilchrist Co. (ADW).

number of adults seen are 23 July 2005 (1), 10 August 2008 (1-2), 13 August 2008 (1), 15 August 2008 (7), 22 August 2008 (4), and 22 July 2009 (2). On several occasions she observed oviposition and presumed early stages of *E. baptisiae* on *B. calycosa*. No adults were seen, but a larva was also found on *B. calycosa* on 30 August 2008.

In 2005, *E. baptisiae* was encountered in Liberty County (nr. Cotton Landing, Apalachicola National Forest), where larvae were found feeding on *Baptisia lanceolata* (Walter) Elliott, and a female was seen attempting to oviposit on *Baptisia simplicifolia* Croom (Minno et al. 2006). Several observers, including Dean and Sally Jue, reported adult *E.*

baptisiae at this and three nearby sites, on 28 May 2005 (1), 12 June 2005 (4), 8 September 2007 (4-5), 24 August 2008 (2), and 29 March 2009 (2-3). On 13 August 2009, the Jues recorded 4 or 5 adults and two larvae of *E. baptisiae* on *B. lanceolata* at another locality in Liberty County, also within Apalachicola National Forest. On 28 September 2013, Virginia Craig photographed *E. baptisiae* in proximity to a species of *Baptisia* within Apalachicola National Forest in western Wakulla County. These records, mapped in Figure 19, confirm the continued presence of *E. baptisiae* in the Florida panhandle, including in the vicinity of Eglin AFB, where specimens were collected in 1963. Most of the records between 2005 and 2013 are databased by the Florida Natural Areas Inventory (FNAI). We recently examined the photographic records from the Florida panhandle and confirmed their identities as *E. baptisiae*.

On 16 April 2011, BB photographed a single fresh female of *E. baptisiae* (Fig. 1) at Ralph E. Simmons Memorial State Forest, in far northern Nassau County, representing the first known record of the species from that county and the first verified record from the peninsula. This photo, however, wasn't identified as *E. baptisiae* until April 2015 (ID confirmed by JVC and ADW).

On 23 May 2015, ADW located a large population of *E. baptisiae* at Jennings State Forest in Clay County, in the northeastern corner of peninsular Florida, nearly 46 air miles south of the Nassau County locality (Fig. 19). About 20 individuals were observed and photographed (Figs. 2, 3) between 12:30 – 17:30 hrs., all of which were closely associated with *Baptisia lecontei* Torr. & A. Gray (Fig. 13), the only apparently suitable larval foodplant in the area. Hundreds of *B. lecontei* plants were present (Fig. 14), and one attempted oviposition by *E. baptisiae* on *B. lecontei* was observed. Adults of both sexes fed at flowers of *B. lecontei* (Fig. 3), as well as at flowers of *Pedimelum canescens* (Michx.) Rydb., and an unidentified low-growing white-flowered legume. On 24 and 25 May, BB returned to Jennings to observe and photograph *E. baptisiae*, where he documented ovipositions on *B. lecontei* (Figs. 4-7), thus confirming this as a larval foodplant for *E. baptisiae*. On 27 May, JVC explored Jennings State Forest and found *E. baptisiae* at a second location within the forest (Fig. 15), where *B. lecontei* is abundant. Here, about 20 adults were observed between 15:00 and 17:00 hrs. (Fig. 8), with at least one oviposition on *B. lecontei*. Two days later, on 29 May, ADW returned to Jennings for additional exploration of habitats for *E. baptisiae*, and documented the species at a third site within the forest, where ovipositions on *B. lecontei* were also observed, demonstrating that *E. baptisiae* is quite widespread within Jennings State Forest, apparently wherever *B. lecontei* is common.

The realization that *E. baptisiae* is utilizing *Baptisia lecontei* as a larval foodplant – an apparently new foodplant record for the species – suggested that searches in other areas where *B. lecontei* is common might reveal additional peninsular Florida populations of *E. baptisiae*. Kartesz

(2015) indicates records of *B. lecontei* from the following peninsular counties: Alachua, Baker, Citrus, Clay, Columbia, DeSoto, Dixie, Duval, Gilchrist, Hamilton, Hernando, Highlands, Hillsborough, Lafayette, Lake, Levy, Marion, Orange, Pasco, Pinellas, Polk, Sumter, and Suwannee.

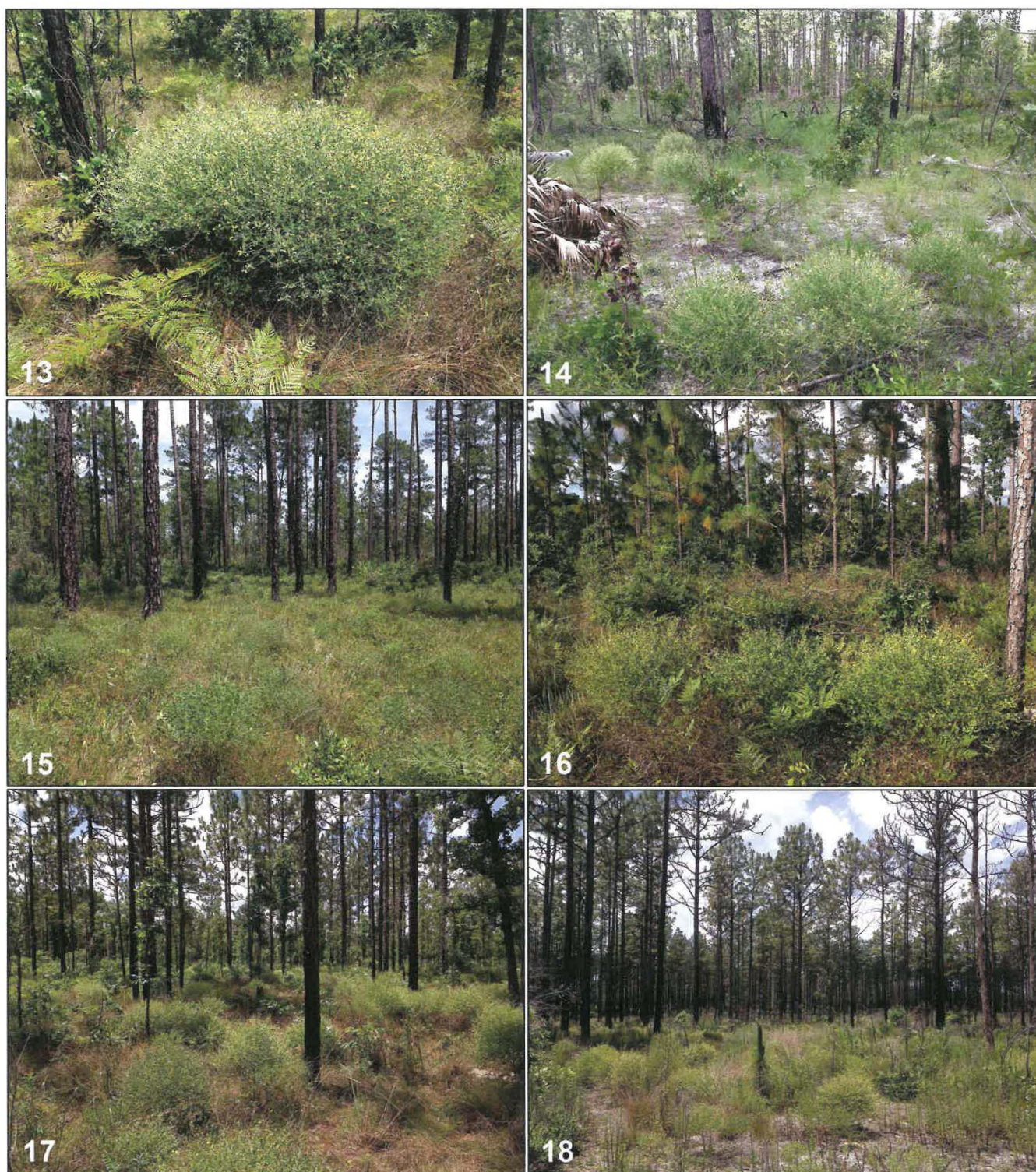
Herbarium records for *B. lecontei* from Florida were accessed online (Wunderlin & Hansen, 2008), and locality details from thirteen peninsular counties were recorded. On 30 May, ADW searched sites reported for *B. lecontei* in Dixie, Lafayette and Columbia counties. No *B. lecontei* plants were located in Dixie County. Numerous *B. lecontei* were located in Lafayette County, at and adjacent to the Grady Conservation Area, yet no *E. baptisiae* were found. Late in the day, at 18:00 hrs., the pine flatwoods at the south entrance to Ichetucknee Spring State Park, Columbia County, were searched, revealing a large population of *B. lecontei* with many hundreds of plants (Fig. 16). Two male *E. baptisiae* were found and photographed at this locality (Fig. 9).

The following day (31 May), ADW searched the sandhill habitats SW of the north entrance to Ichetucknee Springs State Park, Suwannee County, and located a massive stand of *B. lecontei* comprised of many thousands of plants (Fig. 17). Here, *E. baptisiae* was found to be relatively common. About 20 individuals were observed and photographed between 11:30 and 12:30 hrs., and several ovipositions on *B. lecontei* were recorded and photographed (Figs. 10, 11). Most adults observed were females, and they were mainly in rather worn condition.

During the afternoon of 31 May, ADW explored areas in northern Gilchrist County, where another very large stand of *B. lecontei* was located, comprised of several thousand plants, at Fort White Mitigation Park (Fig. 18). Again, about 20 adults of *E. baptisiae* were found between 13:30 and 15:00 hrs., mostly females that were in rather worn condition. One female was photographed (Fig. 12) and ovipositions on *B. lecontei* were observed.

During the spring of 2015, adults of *E. baptisiae* were observed during most of the day, from about 09:30 to 18:30 hrs. They were mainly active under sunny conditions, when most feeding and ovipositions were observed. The butterflies were most lively during early afternoon, when they were very difficult to approach or photograph; males rarely stopped as they patrolled for females around *B. lecontei* plants. Although adults were only found in direct association with the foodplant, they probably stray into surrounding habitats to reach additional nectar sources. The authors have observed this behavior in association with populations outside of Florida.

All peninsular populations of *E. baptisiae* discovered during the spring of 2015 occur in fire-maintained pine flatwood or sandhill habitats, which appear to have been burned in the past two to five years. *Baptisia lecontei* responds very well to burns and was the dominant ground cover at a few recently burned sites where *E. baptisiae* was found



Figs. 13-18. Foodplant and habitats of *E. baptisiae* in northern peninsular Florida. 13) Large specimen of *B. lecontei*, Jennings SF, Clay Co., 27.v.2015 (JVC). 14) Locality 1, Jennings SF, Clay Co., 23.v.2015 (ADW). 15) Locality 2, Jennings SF, Clay Co., 27.v.2015 (JVC). 16) Ichetucknee Springs SP, Columbia Co., 30.v.2015 (ADW). 17) Ichetucknee Springs SP, Suwannee Co., 31.v.2015 (ADW). 18) Fort White Mitigation Park, Gilchrist Co., 31.v.2015 (ADW).

(Ichetucknee State Park, Suwannee County; Fort White Mitigation Park, Gilchrist Co.); the plant apparently becomes scarce as the understory matures, crowding it out within a few years after a fire. We therefore believe

that management of pine flatwoods and sandhill habitats through controlled burns (provided that adjacent sites support *B. lecontei* and *E. baptisiae*) may be the best way to maintain, and even expand, suitable habitats. Under ideal

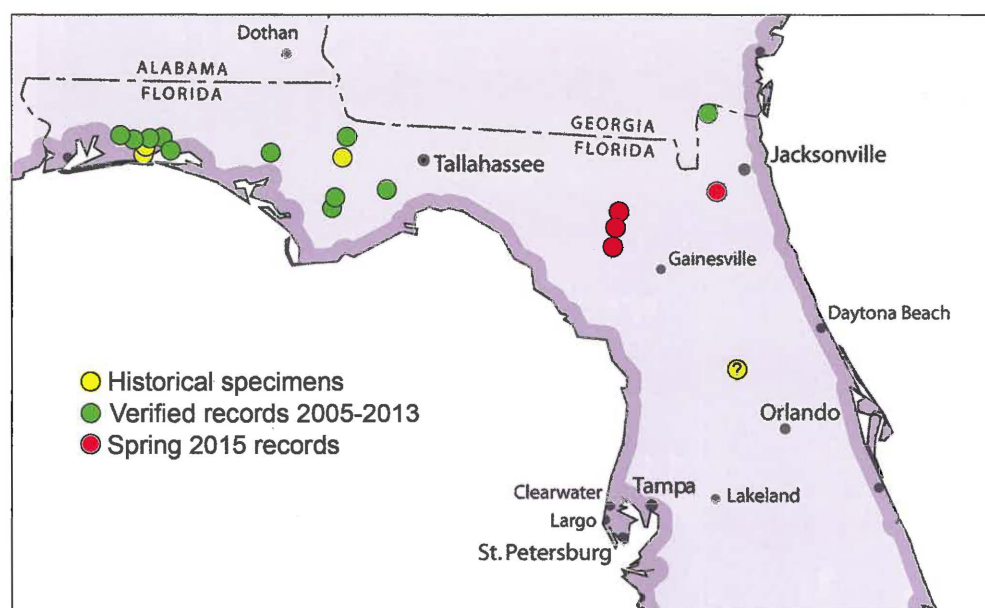


Fig. 19. Map of northern and central Florida showing verified records of *E. baptisiae*.

conditions, such as following a fire, the foodplant erupts to become locally common, resulting in an associated abundance of the butterfly. It is likely that *E. baptisiae* is naturally fire-dependent, particularly in the southeastern states, where pine flatwoods habitats are rejuvenated by such disturbances. In fact, fire may be an important factor in the germination of *Baptisia* species (Young et al. 2006). This butterfly was found in similar habitats in the Florida panhandle, though it is unknown if those localities were previously burned, or if so, when (FNAI data). One site in Liberty County was described as a fairly pristine longleaf pine/wiregrass community (FNAI data).

The documentation of *B. lecontei* as a larval foodplant for *E. baptisiae* has allowed us to conduct targeted searches for the skipper in peninsular Florida, where it is likely to be the primary larval foodplant. However, other *Baptisia* species are surely used where they grow in abundance, especially in the Florida panhandle (as detailed above) and in northern peninsular counties. A search for *B. lecontei* at Ralph E Simmons Memorial State Forest by BB on May 27 was unsuccessful, although *B. lanceolata* was found in abundance, suggesting that it may serve as the primary, or only, larval foodplant for *E. baptisiae* there.

The southern distributional limits of *E. baptisiae* in peninsular Florida remain to be determined. A cursory search through the central portion of the Citrus Tract of the Withlacoochee State Forest by JVC on 30 May revealed only a single plant of *B. lecontei*, although more exploration in the various tracts of this large forest is needed. A site with many thousands of *B. lecontei* plants was located within Goethe State Forest in Levy County by ADW on 6 June, but no *E. baptisiae* were found. However, given the mostly worn condition of *E. baptisiae* adults a week earlier, about 40 air miles to the north, the search may

have been conducted a week or two too late to detect *E. baptisiae* adults. The 2015 spring season was generally advanced, with many butterfly species peaking two or three weeks earlier than normal. Previous records from the panhandle suggest that the peak flight of the second brood of *E. baptisiae* in northern Florida is typically during the first week of June. Based on available data from Florida and surrounding states, we estimate that at least three broods of *E. baptisiae* are produced in Florida, with adults flying from mid-March to early October. The first individual of the third brood in 2015, a fresh male, was photographed by BB at Jennings State Forest on 14 July.

Given our discoveries during the spring of 2015, searches for sites with abundant *B. lecontei* should be conducted in all counties where the plant has been reported. We do not expect *E. baptisiae* to be found in all counties where *B. lecontei* is known, but believe that additional populations of the butterfly are likely to be found wherever the plant is abundant. Given the known distribution of *B. lecontei*, the presence of *E. baptisiae* in central peninsular Florida cannot be ruled out. However, even if the old, southernmost reports of *E. baptisiae* from Pinellas, Hillsborough and Lake counties are valid, habitat destruction and fragmentation in these areas has likely restricted its occurrence to very isolated, localized populations. The report of *E. baptisiae* from Sarasota County (Kimball 1965) is almost certainly based on a misidentification, as no species of *Baptisia* is known from that county (Kartesz 2015).

Historically, *E. baptisiae* was considered to be a rare species throughout its range, but its relatively recent acceptance of exotic crownvetch (*Securigera varia* (L.) Lassen) as a foodplant has resulted in its rapid expansion and increased abundance in many areas of eastern North America. Throughout its range, *E. baptisiae* is still relatively rarely encountered within natural habitats. This species possibly occurs in low numbers throughout pine flatwoods and sandhills habitats in Florida where suitable foodplants are found.

The results presented herein demonstrate that *E. baptisiae* is far more widespread in Florida, particularly in the northern peninsular counties, than previously believed. In addition, the total number of adults observed at some localities in northeastern Florida greatly surpasses that documented in the panhandle. The Florida Natural Areas Inventory currently ranks *E. baptisiae* an S1 species (critically imperiled in Florida because of extreme rarity

– 5 or fewer occurrences or less than 1000 individuals – or because of extreme vulnerability to extinction due to some natural or man-made factor) (FNAI 2015). This status was supported by Jue and Jue (2010). Based on our recent discoveries, however, we recommend that a ranking of S3 (either very rare and local in Florida – 21-100 occurrences or less than 10,000 individuals – or found locally in a restricted range or vulnerable to extinction from other factors) is more appropriate for *E. baptisiae*.

Additional surveys are required to more fully understand the distribution of *E. baptisiae* in Florida, both in the panhandle and the peninsula. However, great care must be taken due to its superficial similarity to *E. horatius* (Scudder & Burgess) and *E. zarucco* (Lucas). *Erynnis horatius* was found at all sites where *E. baptisiae* was located in 2015, and *E. zarucco* was present at most of them. While *E. baptisiae* can usually be distinguished from *E. horatius* based on its smaller average size, and more mottled appearance of males, individuals of the spring generations of *E. zarucco* and *E. baptisiae* may be extremely similar in size and markings. Adults of *E. baptisiae* have shorter, broader forewings than *E. zarucco*, and they generally have a greater amount of gray scaling in the apical and marginal regions of the dorsal forewing, imparting a more mottled appearance. When in doubt, males of *E. baptisiae* are easily separated from males of *E. zarucco* by examination of the male genitalia; the right valve of *E. baptisiae* is long and lanceolate (similar to the left valve), while it is much shorter and blunt in *E. zarucco*. This difference is so pronounced that it is easily observed in living individuals with the naked eye or a small hand lens. Specimens or detailed photographs should be taken whenever a suspected new population of *E. baptisiae* is found. If possible, records should be confirmed genitally. In addition, close attention should be paid to plant associations, especially if *Baptisia* species are present.

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Jeff Pippen (camera) and Nick Grishin investigating *Thorybes* eggs/larvae at Shades State Park, Indiana during Lep Soc 2015. (Photo by Ranger Steve Mueller)