

## NOTE

**The historical occurrence of *Hesperia attalus* (Lepidoptera: Hesperidae) in New England**

Determining historical range limits of species often relies on eyewitness accounts and, in the best possible cases, location data from historical collections. *Hesperia attalus* (W. H. Edwards, 1871), the dotted skipper, is a rare butterfly with a disjunct distribution in small pockets from New Jersey south to Florida and west to Oklahoma, prompting Cech and Tudor (2005) to remark that its “dotted” name better describes its range than its appearance. The species is restricted to open grassy areas, commonly in sand or pine barrens, in eastern states (Schweitzer *et al.*, 2011). Several historical records from New England inform speculation about this species’ former range; we reviewed these records in the literature and, when possible, located associated specimens for verification.

Samuel Scudder (1889) was the first to report *Hesperia attalus* occurring in New England, noting that several individuals were collected by R. Thaxter in Belmont, near Boston, Massachusetts. At least nine specimens of *H. attalus* from Scudder’s collection survive in the Museum of Comparative Zoology (MCZ) at Harvard University (Table 1). Two specimens are clearly labeled May 12, [18]71 and May 11, [18]71 without a location. The time of year is far too early for adults in any northeastern population, so they are most likely from a more southern, double-brooded population. Two ‘type’ specimens of *Ocytes seminole* Scudder, 1872 have no collection data on the labels but Scudder (1889) states they are from ‘Texas’. These specimens bear the numbers “73” and “74” respectively, while an additional specimen in the MCZ collection has no collection data but bears the number “75”, suggesting it may have been in the original series examined. Three specimens collected by Morrison are labeled “Florida”. Two of these bear Scudder Coll.

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labels, but it is likely that all three were in Scudder’s collection. A specimen from New Jersey may be one of those referred to in Scudder (1889) when he states he “has seen specimens from New Jersey”.

The final specimen in Scudder’s collection is labeled “Mass! Thaxter” and presumably is one of the ‘several’ specimens Scudder refers to as having been collected at Belmont, near Boston, MA. Collection date of the Belmont specimen is not recorded. This late 19<sup>th</sup> century specimen (Fig. 1: A, C, E) has been examined by AW and found to be consistent with phenotypes from northeastern populations of *H. attalus*. While no geographic variation has been reported in populations of *H. attalus slossonae* (Skinner, 1890), the subspecies of dotted skipper occurring in the eastern United States from New Jersey to Florida, we have noticed subtle but consistent differences between northern and southern populations of the taxon. Adults from univoltine populations in New Jersey average slightly larger than those from bivoltine populations to the south, and both sexes tend to have smaller ventral hindwing spots. Some males from New Jersey completely lack ventral hindwing spots, a trait not seen in adults from further south. Differences between far northern and more southerly populations are pronounced enough that adults from New Jersey are usually identifiable even when locality data are not examined.

Scudder remarked that he knew “nothing concerning ... the seasons of this butterfly”, even though he had collection dates from elsewhere in the range. Thus we infer he was referring specifically to northeastern populations – the focus of his book. Scudder also wrote “There is, indeed, no other butterfly of our fauna of which so little is known.” These two statements from the regional expert underscore the rarity of *H. attalus* in New England at that time. Extant populations are known today in only one northeastern state (NJ) and only eight states nationally (FL, GA, KS, NC, NJ, OK, SC, TX: Schweitzer *et al.*, 2011; McGuire Center collection). Arthur Shapiro collected a specimen in 1971 on Staten Island, NY; this population (if it was not a wayward stray) almost certainly did not persist, as four decades have passed without another Staten Island or even New York State record despite some directed

**Table 1.** Specimens of *H. attalus* in the Scudder collection at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

Catalog Number	Collector	Date	Location	Notes
MCZ-ENT00190769		May 12, [18]71		
MCZ-ENT00190771		May 11, [18]71		ill. Plate 17, figure 12 Scudder (1889)
MCZ-ENT00191301			Texas <sup>1</sup>	Syntype of <i>Ocytes seminole</i> Scudder, 1872
MCZ-ENT00008971			Texas <sup>1</sup>	Syntype of <i>Ocytes seminole</i> Scudder, 1872
MCZ-ENT00190770				
MCZ-ENT00190761	Morrison		Florida	
MCZ-ENT00190763	Morrison		Florida	
MCZ-ENT00190764	Morrison		Florida	No Scudder coll. label <sup>2</sup>
MCZ-ENT00190766			New Jersey	
MCZ-ENT00190768	Thaxter		"Mass!"	

<sup>1</sup> From Scudder (1889), no loc. on label; <sup>2</sup> two preceding Morrison specimens are labeled "73" & "74", and this one "75" so likely a series

searching (Shapiro & Shapiro, 1973; Gochfeld & Burger, 1997; H. Zirlin, pers. comm.; A. Shapiro, pers. comm.). A historical southeastern PA record adjacent to the NJ border also has not been repeated in decades since (Schweitzer *et al.*, 2011).

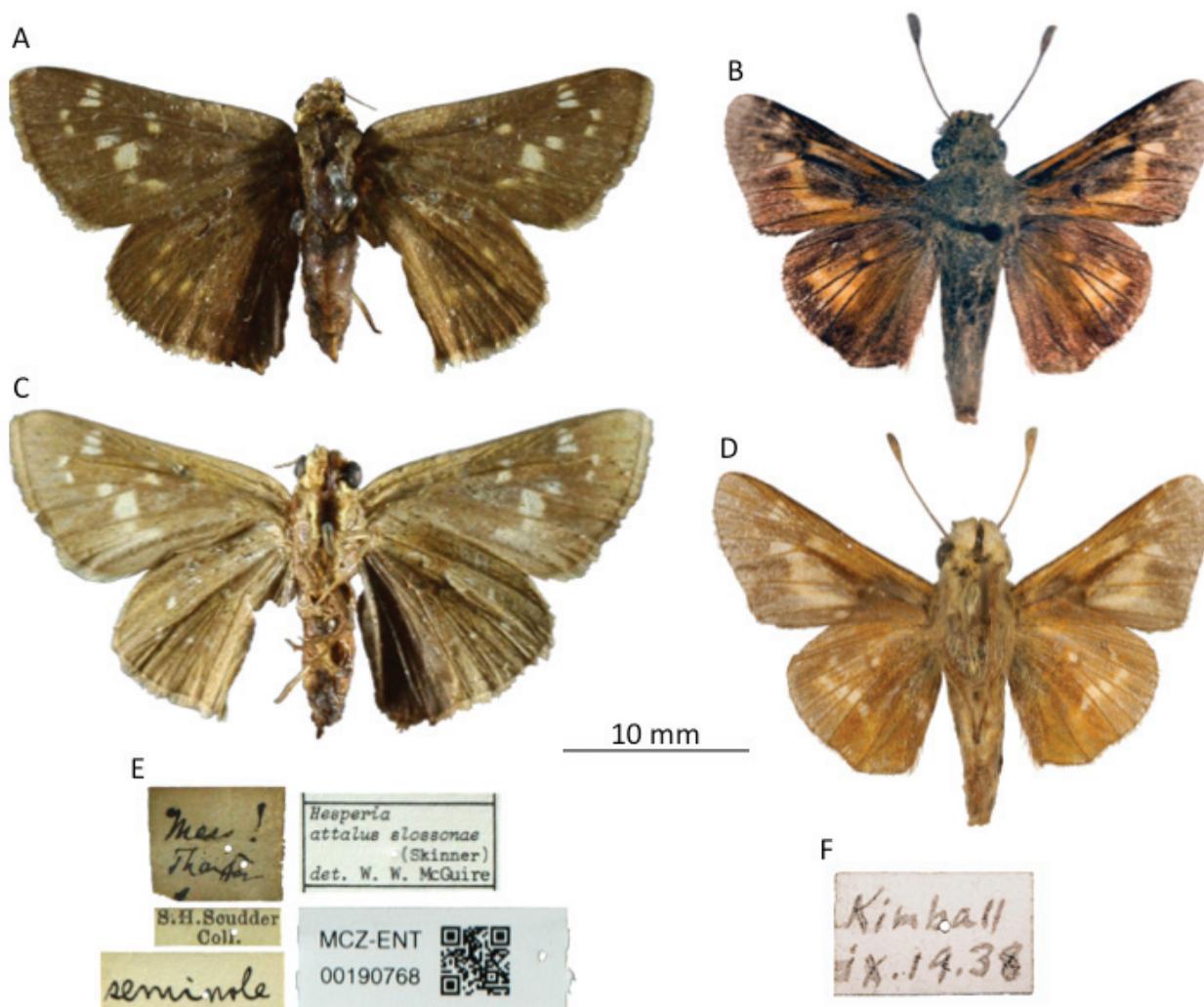
Farquhar (1934) stated that W.T.M. Forbes collected the Dotted Skipper in Massachusetts; and Forbes (1960) mentioned *H. attalus seminole* (Scudder, 1872) specimens in the collections at Cornell, Harvard, including the Scudder collection, and the British Museum (Natural History; now Natural History Museum, London). An examination of material in the Cornell University Insect Collection revealed no *H. attalus* specimens collected in New England. However, two specimens of the closely related *H. leonardus* (T. Harris, 1862), collected by Forbes in Paxton and Princeton, MA, and possibly a third from Princeton without collector's name, are in the Cornell collection. All the *H. attalus* specimens located in The Natural History Museum, London are from Florida although the hesperiid collection is not completely indexed (B. Huertas, pers. comm.). Thus we were unable to confirm any *H. attalus* records for New England as cited by Farquhar (1934) or Forbes (1960).

The only other, and most widely cited record from New England is a specimen taken by Charles P. Kimball in September 1938 on Nantucket Island, Massachusetts (Jones & Kimball, 1943). This record has persisted in most butterfly guides since that time, either for inclusion in MA, RI and CT as part of the species range (Howe, 1975; Pyle, 1981, Opler & Malikul, 1992) or as a stray (Opler & Krizek, 1984 [location of record on map is incorrect];

Glassberg, 1999; Cech & Tudor, 2005; Schweitzer *et al.*, 2011). The specimen resides in the Nantucket Maria Mitchell Association's insect collection, in somewhat poor condition (Fig. 1: B, D, F). A close examination of the specimen by AW revealed that it is an atypical *H. leonardus*, a common species on the island, and not *H. attalus*.

This worn male specimen shows an enlarged dark area around the dorsal forewing stigma and a largely orangish hindwing consistent with *H. leonardus*, rather than the dorsal hindwing macules appearing dot-like as in eastern *H. attalus*. Ventral spotting on the specimen is somewhat reduced for a typical *H. leonardus* on the east coast and subterminal spots on the hind-wing underside form a continuous band without much spacing between them as *H. attalus* would show. The front angle of the forewings is less acute than in *H. attalus*, especially in a normal male specimen. Overall size is quite small for either species. The date of capture, the 19<sup>th</sup> of September, is also atypical for *H. attalus*, which has a late July-August flight period in New Jersey, but typical of *H. leonardus*, a common skipper in September on Nantucket (LoPresti, pers. obs.).

Only one of the five *H. attalus* records from New England (all from Massachusetts) could be confirmed in our investigation. None of Forbes' *H. attalus* specimens could be located, perhaps due to misidentifications of the closely related *H. leonardus*. The specimen taken by Charles P. Kimball in 1938 on Nantucket Island, Massachusetts, is now regarded as a somewhat aberrant *H. leonardus*. Thus the only valid record appears to be Roland Thaxter's specimen from Belmont, MA, as reported by Scudder (1889).



**Figure 1.** Dorsal and ventral views and pin labels of R. Thaxter's *H. attalus* (A, C, E) (copyright President and Fellows of Harvard College) and C.P. Kimball's *H. leonardus* (B, D, F) (Maria Mitchell Association).

Thaxter's upstanding character supports the validity of this record, which is further supported by Scudder's acceptance of the record. Thaxter attended school in West Newton (close to Belmont) and Cambridge before graduating from Harvard with both an A.B. magna cum laude and a PhD. He was a well-respected botanist and mycologist as well as an experienced collector and naturalist with a high regard for scientific accuracy (Clinton, 1935). Between 1875 and 1884, he was actively collecting Lepidoptera in New England and published 10 papers on his observations, mostly in *Psyche* and *The Canadian Entomologist*. Although employed as a botanist, he continued working on Lepidoptera, in 1891 publishing a paper on food plants of moths in the families Bombycidae and Noctuidae (Thaxter, 1891). He spent most of

his life in New England and published 90 papers and monographs; it seems unlikely that he would allow an inaccurate collecting location record attributed to him (the specimen is correctly identified), to be published or perpetuated.

Thaxter's specimen closely matches the phenotype of specimens from New Jersey, the nearest extant population, consistent with its northeastern provenance. This intriguing record suggests an ephemeral population at that time or a rare incursion of wayward individuals into New England during unusually favorable conditions in the late 1800's. Despite widespread collecting and observations in Massachusetts and elsewhere in New England during the past two centuries, this unique record suggests that *H. attalus* was never common in the region.

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