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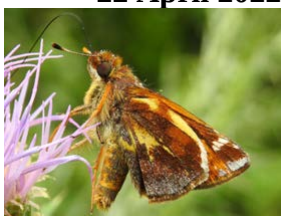

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Notes on Eastern North American Lepidoptera.

parts by

Harry Pavulaan (editor), Annette Allor

ABSTRACT. New natural history elements and distribution records of several North American butterflies are reported. While diversity and distribution of butterflies in the eastern United States is commonly believed to be fully known, the findings presented here show that much is yet to be learned of our butterfly fauna.

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Celastrina ladon and *C. neglecta* (Lycaenidae: Polyommatinae) are distinct species differentiated primarily by a diagnostic wing scale structure, voltinism, and host tolerance of *Cornus florida*.

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ABSTRACT. With continued confusion of the two species by naturalists, *Celastrina neglecta* (W. H. Edwards) is here clarified as a distinct species, not a form or subspecies of fully sympatric *C. ladon* (Cramer). Each is characterized by distinct physiological characteristics, phenology, voltinism, host tolerance, and distribution. *C. ladon* is an obligate univoltine taxon, appearing in a single springtime flight throughout its range limited to the eastern United States, while *C. neglecta* produces multiple late-winter through early-fall broods over a much broader range, and may be represented by localized ecotypes or biotypes. *C. ladon* is distinguished from all other blue *Celastrina* species primarily by the presence of a unique male forewing scale structure found in no other *Celastrina* except for dorsally-black *C. nigra*.

Additional key words: Androconia, elongated overlapping scales, voltinism.

INTRODUCTION

Celastrina ladon and *C. neglecta* were each described as separate species, but have long been misunderstood, and subsequently treated as a single species consisting of a spring flight commonly referred to as form *violacea* (“Spring Azure”) and subsequent summer flights commonly referred to as form *neglecta* (“Summer Azure”). William Henry Edwards studied and extensively documented the relationship of the North American *Celastrina,* in the process describing *L. violacea* (W. H. Edwards, 1866) (later synonymized under *C. ladon*), *L. neglecta* (W. H. Edwards, 1862), and “redescribed” *L. pseudargiolus* (W. H. Edwards, 1866, 1868-69) (what would eventually be known as *C. neglectamajor*), but ultimately confused their relationships. Edwards’ confusion arose from his misunderstanding that any univoltine *Celastrina* will readily produce subsequent annual generations when reared under artificial (lab) conditions. No doubt confused by his own rearing results, he concluded his life’s work on the genus in Vol. II of his Butterflies of North America (W. H. Edwards, 1884), exclaiming that all North American *Celastrina* comprised a single, highly variable and phenologically complex taxon: “...their history has come to be

thoroughly known, and it is found that they…constitute one polymorphic species, which has possession of the broad continent…" Virtually all subsequent taxonomic treatments through the end of the 20th century followed Edwards' faulty conclusion, with few authors actually performing necessary study to support their own assumptions.

Furthermore, several authors have treated North American *Celastrina* populations as subspecies of Eurasian *C. argiolus* (dos Passos, 1964; Howe, 1975; Eliot & Kawazoe, 1983; Scott, 1986; Ferris, 1989). The present paper clearly demonstrates that *C. ladon* is uniquely different from *C. argiolus* by the dorsal forewing scale structure of males (Ômura *et. al.*, 2015) (**Fig. 3A & 3M**). *C. neglecta* and *C. argiolus* both have typical *Celastrina* androconia (**Fig. 3A & K**), yet they differ primarily by phenotypical characters. They are also broadly allopatric, with *C. argiolus* confined to Eurasia, and *C. neglecta* confined to eastern North America.

The purpose of the present paper is to present joint findings with my research associate David M. Wright, resulting from 38 years of fieldwork, rearing, and detailed examination of specimens. Our work on the *Celastrina* set aside over a century of erroneous presumptions by authors and commenced with a fresh look.

COMPARISON OF DIAGNOSTIC PHENOTYPICAL CHARACTERS

Despite the superficial similarity of both species in their spring flight periods; their similar blue dorsal surfaces and gray ventral surfaces displaying the same general pattern of black markings; the primary difference between both species is in the structure of the male dorsal forewing scale alignment (**Figs. 1-3**). Understanding of this morphological character and recognition of this difference in both *ladon* and winter/spring brood *neglecta* is critical to proper identification of both species.

Dorsal forewing scale structure in males

C. neglecta: Males of all broods have typical *Celastrina* forewing scale structure in which the blue scales are arranged in neatly-aligned rows and underlain by androconia (**Figs. 1 black arrow & 3K**) which are also arranged in neat rows, best described as appearing like shingles on a roof. The dorsal side of the forewings of the winter/spring form has a "metallic" luster.

C. ladon: Males possess a unique forewing scale structure different from males of *C. neglecta* and all other *Celastrina* except the black *C. nigra* which also has this unique structure. A layer of clear elongated scales (**Fig. 2 black arrow & 3M**) overlays the layer of blue scales beneath, replacing the rows of androconial scales that are found in other *Celastrina* with the exception of *C. nigra*. The appearance of these overlaying scales gives a haphazard appearance under magnification. The dorsal side of the forewings has a distinct "greasy film" sheen in sunlight.

Dorsal characters of males

C. neglecta: Males of the winter/spring brood tend to be uniformly bright metallic blue dorsally (**Fig. 4**). The outer fringe of the hindwings is normally clear white. Striking white wing veins highlight the leading edge of the forewing; sometimes white veins appear in the center of the forewing. Males of the subsequent summer broods (**Fig. 4**) tend to be a lighter violet blue and the secondaries display a distinct arrangement of white coloration within the wing cells, appearing as white rays extending out from the base.

C. ladon: Males tend to be uniformly violet-blue dorsally (**Fig. 4**). The outer wing fringes are normally gray or somewhat "checkered" with alternating gray and white. The leading edge of the forewing has a subdued shade of lightened scales.

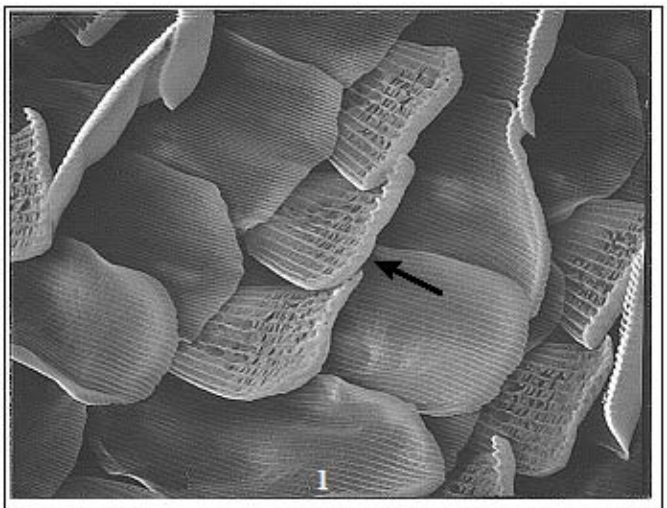


Fig. 1: *C. neglecta* wing scales and androconia.

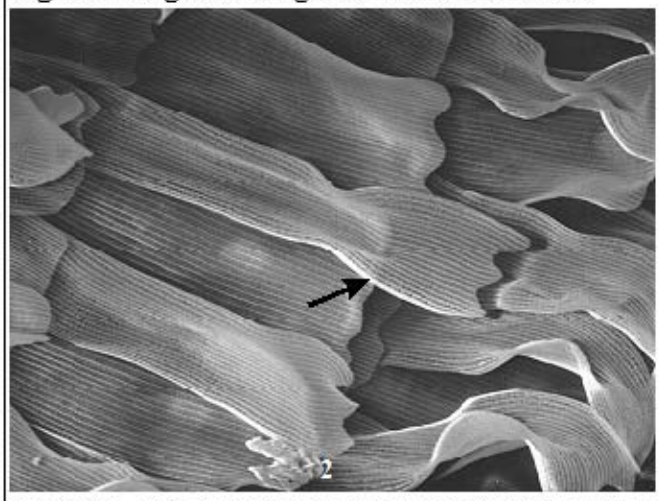


Fig. 2: *C. ladon* overlay scales, covering blue scales.

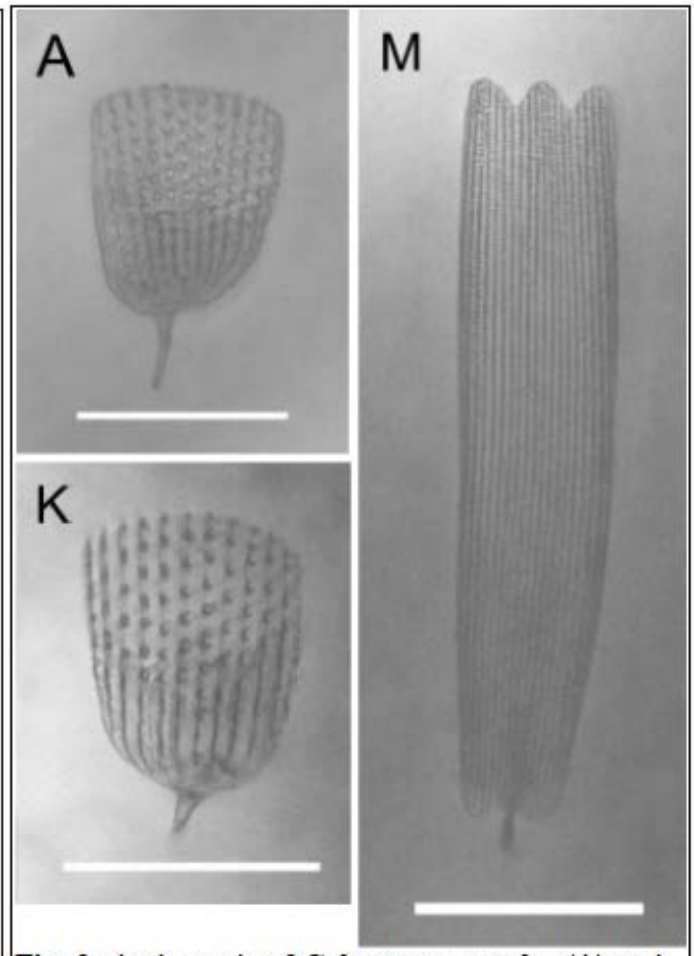


Fig. 3: Androconia of *Celastrina argiolus* (A) and *Celastrina neglecta* (K), and elongated scale of *Celastrina ladon* (M) from Ômura, *et. al.* (2015).

Figs. 1 & 2 from Wright & Pavulaan (1999).

Dorsal characters of females

C. neglecta: Females of the winter/spring brood tend to be uniformly brilliant blue dorsally with a distinct metallic sheen (**Fig. 4**). The outer wing fringes of the hindwings are normally clear white. Striking white wing veins highlight the leading edge of the forewing; sometimes white veins appear in the center of the forewing. Females of the subsequent summer broods (**Fig. 4**) tend to be a paler blue in the forewings with a cloud of gray/white scales centered in the disk. The hindwings display white coloration within the wing cells similar to the males, appearing as white rays extending out from the base, often extending over the entire wing, giving the secondaries an almost completely white appearance.

C. ladon: Females tend to be uniformly deep violet-blue dorsally (**Fig. 4**). The outer wing fringes are normally gray or somewhat "checkered" with alternating gray and white.

Ventral characters of males and females

C. neglecta: Adults of the winter/spring brood tend to be whitish-gray ventrally (**Figs. 4, 5**), and have been described as having a white or light "steel-gray" appearance. The wing outer fringes are normally clear white. The spot pattern on the hindwing can be highly variable (as variable as in *ladon*). The spots can be quite enlarged or very reduced, often appearing like the summer form beneath. Individuals with darkened margins or discal patches occur, though rarely. In neglecta, these markings are characteristically black-pigmented. The summer form is much whiter beneath, with a greatly reduced spot pattern (**Fig. 4**).

C. ladon: Adults tend to be medium gray ventrally (**Figs. 4, 6**). The outer wing fringes are normally gray or somewhat "checkered" with alternating gray and white. The spot pattern on the hindwing is variable but the spots tend to be more enlarged than in winter/spring form *neglecta*. The form with a darkened margin along the outer edge of the hindwing (form "*marginata*" of authors) (**Fig.** 7) is frequently encountered, but mainly in the northern tier and in the Appalachian Mountain region. Both spotted-venter and dark-margined forms tend to have these markings more brown-pigmented.

Fig. 4. Comparison of *Celastrina* phenotypes. Top row, left to right: *C. ladon* male female; underside. Middle row, left to right: *C. neglecta* winter/spring form male; female; underside. Bottom row, left to right: *C. neglecta* summer form male; female; underside. All specimens taken by the author in Loudoun County, VA.

Fig. 5. *C. neglecta* spring form. Photo courtesy Matt Orsie.

Fig. 6. *C. ladon*. Photo courtesy Lydia Fravel.

Fig. 7. *C. ladon*, margined form. Photo courtesy Annette Allor.

DIAPAUSE, VOLTINISM AND PRESENCE OF ECOTYPES AND BIOTYPES

C. ladon is an obligate univoltine butterfly. After 38 years of rearing *C. ladon* from both wild-collected and lab-obtained ova and larvae, it is clearly evident that *C. ladon* is strictly obligate-univoltine, and does not produce multiple annual generations. It is important to realize that larvae reared under artificial conditions (a regimen of unnatural day length and steady temperature) will almost always produce a false "summer" brood of an unnatural phenotype. This lab-reared false generation of *ladon* displays the same unique male forewing scale structure present in the natural parental adults, at a rate of 100%. The unique *ladon* forewing scale structure is not subject to variation. Only by rearing larvae in natural (outdoor) conditions of normal day length and fluctuating day/night temperatures, can one reasonably expect pupae to go into diapause, thus confirming the univoltine nature of *ladon*. Natural broods were produced from *C. ladon* females collected in Maryland, Pennsylvania, Virginia, and West Virginia. Artificially produced "second-generation" broods with the unique wing scale structure were produced from *C. ladon* females collected in Maryland, Missouri, Pennsylvania, Virginia, and West Virginia. Among thousands of *Celastrina* specimens examined from the eastern U.S., in various institutional and private collections, individuals possessing the unique wing scale structure appeared only in the spring.

C. neglecta, on the other hand, produces multiple annual generations. In northern Virginia and central Maryland, adults have been found to emerge as early as February. Larvae reared both under natural conditions of spring and early summer, and artificial (laboratory) conditions, will always produce the typical summer phenotype (**Fig. 4**). Ova and larvae collected in late-summer and early-fall and reared under natural conditions will undergo diapause and hibernate until the following year, and will produce the natural winter/spring phenotype.

An interesting topic is the highly adaptable nature of regional and localized populations of *C. neglecta*, fine-tuning their flights to coincide with and to take advantage of the pre-bloom budding period of select hostplants. Several apparent ecotypes or biotypes of *C. neglecta* have been identified (this will be addressed in greater depth in subsequent papers currently in work). Most populations in the northern Piedmont region will produce a late-winter/early spring brood of the winter/spring form, followed by multiple annual broods of the summer form which commence in mid-May. I refer to this fully multivoltine entity as ***C. neglecta* type-1** in research. Type-1 is exceptionally common along the Potomac River immediately west of Washington D.C. and at sites along the foothills of the Blue Ridge.

In some isolated sites, a population or localized colony will actually skip the winter/spring flight, and first emerge during the second generation of type-1 that flies in surrounding areas in mid-May, thus producing the summer phenotype as the first brood at that location. This has been observed annually in a marsh habitat study area in Herndon, VA for several decades. In some locations in the Appalachian Mountains, there is a delayed-emergence bivoltine *neglecta* that first emerges in June, after the May flight of *neglecta* type-1. It will produce a second brood in August. Generally, it flies between broods of type-1 and consists of only the summer form. I refer to this as ***C. neglecta* type-2** in research. The overlapping broods of types 1 and 2 give the appearance of a continually-brooded species in areas where both occur.

Whether these represent ecotypes, biotypes, consistent host races, or cryptic sibling species remains under intensive study. For the purposes of this paper, the *C. neglecta* type-1 populations are of greatest importance in comparisons to *C. ladon*, since the late-winter/early-spring brood and phenotype of *neglecta* has long been confused with *C. ladon*, prior to our discovery of the unique male wing scale structure of *ladon*.

HOSTPLANT SELECTION OF *C. ladon* AND SPRING BROOD *C. neglecta*

Due to overwhelming confusion over which names applied to the various *Celastrina* in the literature, previous hostplant listings are unreliable and inaccurate at best. Both *C. ladon* and *C. neglecta* have varied host choices during spring. For the purposes of this paper, I am primarily only concerned with hosts selected by *ladon* and the sympatric winter/spring brood of *neglecta* type-1. Rearing larvae to maturity or photographing larvae on certain hostplants is essential to our understanding of which species is present.

Hostplants only of the early winter/spring brood of *C. neglecta* are listed here to help define the distinction between the two fully sympatric taxa. *C. ladon* has been documented/confirmed on the following hosts in Virginia, West Virginia and central Maryland: *Cornus florida* (regionwide), *Prunus serotina* flower buds and eriophyid mite leaf galls (Frederick Co., VA.; Allegheny Co., MD.), *Viburnum prunifolium* (Loudoun Co., VA.), *Ilex opaca* (Westmoreland Co., VA., Anne Arundel Co., MD.). Winter/spring brood *C. neglecta* has been documented/confirmed on following hosts in Virginia and central Maryland: *Ilex opaca* (Fairfax and Westmoreland Co's., VA.; Anne Arundel Co., MD.), *Prunus serotina* flower buds and eriophyid mite leaf galls (Frederick Co., MD.; Frederick Co., VA.), and *Viburnum prunifolium* (Loudoun Co., VA.). Additional hosts are used elsewhere.

A CRITICAL FINDING OF HOSTPLANT ACCEPTANCE

In a previous study (Pavulaan, 2014), it was noted that spring *Celastrina neglecta* females will not oviposit on, and neonate *C. neglecta* larvae will refuse to eat *Cornus florida* (Flowering Dogwood) - the primary *C. ladon* host. In the 2012-2014 study, captive females of sympatric *C. ladon* and spring flight *C. neglecta* (*ex* Leesburg, VA.) were confined in containers with cuttings of *C. florida* flower buds. While *C. ladon* females readily oviposited on *C. florida*, *C. neglecta* females refused to oviposit on the same plant under identical conditions. On the other hand, *neglecta* females confined with cuttings of *Viburnum prunifolium* readily oviposited on that host, while *C. ladon* females did not. In the rearing experiment, individual flower buds containing *C. neglecta* eggs were removed and strategically placed on cuttings of *C. florida* flower buds so that newly-hatched larvae would have the direct choice of feeding on *Cornus florida*. Newly hatched larvae were also transferred from *V. prunifolium* buds to *C. florida*, thus leaving them no choice but to feed on *C. florida*. Most of the first instar *C. neglecta* larvae ignored the *C. florida*, subsequently starving. A few remaining *neglecta* larvae attempted to feed on *C. florida* --- not on the flower buds, but rather boring into the base of the underside of the white bracts or into the basal portion of the flower buds. All *C. neglecta* larvae confined on *C. florida* died. Subsequent attempts in 2016-2018 and in 2020 replicated the earlier results, with all *neglecta* larvae preferring to starve rather than to eat *C. florida*. When returned to *V. prunifolium* buds, *neglecta* larvae immediately resumed feeding. In 2018, young fourth instar larvae of *neglecta* were transferred to *C. florida*. While those larvae did initially feed on *C. florida*, they all died within 3 days of transfer, while remaining in a feeding position. It is concluded that *Cornus florida* is toxic to *C. neglecta*. Curiously, while captive *C. ladon* females would not oviposit on *V. prunifolium* buds in this study, *ladon* larvae were once found on a *V. prunifolium* shrub in nature. These larvae, when offered the same host in the laboratory, accepted it and produced adults.

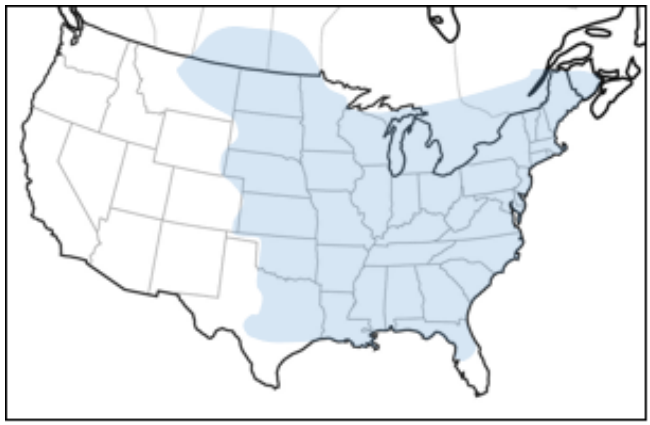
DISTRIBUTION AND RANGE

C. ladon is essentially an Appalachian-Ozarkian endemic, and the range of *C. ladon* (**Map 1**) coincides very precisely with the historic range of *Cornus florida*, considered the primary host. Due to the regional demise of *C. florida* beginning around 1983 and maximizing around 1998, due to *Discula destructiva* (Dogwood Anthracnose) fungal blight, *C. ladon* populations have gone into a dramatic decline in areas where Anthracnose has had greatest impact on *C. florida*. For example, in study areas throughout

northern Virginia and central Maryland, the primary "Spring Azure" since around 1990 is *C. neglecta*, which has essentially replaced *C. ladon* in many areas, and has become noticeably very common in late winter and early spring. *C. ladon*, on the other hand, with relatively few surviving (fungal resistant?) *C. florida* trees in the same areas, now hangs on as a relatively rare species. In some areas where *C. ladon* successfully utilizes alternate hosts, the species remains fairly stable, such as in the Appalachian Mountains (on *Prunus serotina*) and the Chesapeake Bay Region (on *Ilex opaca*) in Maryland and Virginia.

The range of *C. neglecta* extends considerably beyond the range of *C. ladon*, completely encompassing the range of the latter. *C. neglecta* ranges from southeastern Canada, south to the Gulf Coast, and west through the Great Plains region into southcentral Canada (**Map 2**). All over its range, *C. neglecta* has been documented on an extensive range of hosts and its populations appear to be stable.

Map 1. Documented range of *C. ladon*. Map courtesy of David M. Wright.



Map 2. Documented range of *C. neglecta*. Map courtesy of David M. Wright.

TAXONOMIC CONSIDERATIONS

Clench & Miller (1980) designated a neotype for *Papilio ladon* Cramer [1780] and differentiated it from Eurasian *C. argiolus*. They selected a specimen with a type locality stated as: "Anne Arundel Co.: Patuxent River, 19.iv.1964", which was later found to possess the unique *ladon* male forewing scale structure. The authors noted association with the name *pseudargiolus* (Boisduval & Le Conte, [1835], and considered the latter name a synonym of *ladon*. Clench & Miller did not recognize the unique elongated scale of the *C. ladon* neotype and thus assumed "specimens from later broods…" were broods of *C. ladon*. Ironically, the authors stated of North American *Celastrina*: "the androconial scales differed between New and most Old World *argiolus*-group butterflies. It is not clear what the authors intended to convey in regard to differences in androconia, as this was not illustrated in their paper. Ômura, *et al.* (2015) studied the androconia of Eurasian and North American *Celastrina* and illustrated differences in the androconia of the studied species (*C. argiolus argiolus, C. a. iynteana, C. a. ladonides, C. filipjevi, C. lavendularis himilcon, C. oreas arisana, C. sugitanii kyushuensis, C. echo cinerea, C. neglecta, C. idella, C. lucia* and *C. neglectamajor)*, but most significant in their study was a clear demonstration of the absence of androconia and presence of the long overlay scale in *ladon* which replaces androconia typically found in *Celastrina* (**Fig. 3**). Clench & L. D. Miller also illustrated differences in male genitalia between European *C. argiolus* and *C. ladon*, but it is not known which species, *ladon* or *neglecta*, were examined under their concept of *ladon*. *C. argiolus* also differs phenotypically from both *ladon* and *neglecta* by the deep violet coloration of the dorsal side of the wings. On the ventral side of *C. argiolus*, the ground color is a pearly white and there is an area of greenish blue clouding at the base of the hindwings. Current mtDNA studies (in progress) show significant divergence of all North American *Celastrina* from Eurasian *C. argiolus*.

CONCLUSIONS

(1) The two taxonomic entities *Celastrina ladon* and *C. neglecta* are distinct sympatric species throughout the smaller range of *C. ladon*. The range of *neglecta* (**Map 2**) completely overlaps the range of *ladon* (**Map 1**) and extends considerably beyond the range of *ladon*.
(2) In much of the eastern U.S. Piedmont region, the spring brood of *C. neglecta* is persuasively our common "Spring" Azure. Since the demise of *Cornus florida*, *C. ladon* has become localized and otherwise rare throughout the Piedmont and Atlantic Coastal Plain regions, but is apparently stabilized in deciduous forest habitat containing abundant *Ilex opaca* understory in the Chesapeake Bay region, and in many locations in the Appalachian Mountains where it utilizes *Prunus serotina*.
(3) *Cornus florida*, the primary host of *C. ladon*, is toxic to *C. neglecta* larvae, though the species share other hosts in common.
(4) *Celastrina ladon*, by possessing a male forewing scale structure unique among the blue members of the genus, is separated at the species level from all other *Celastrina*.
(5) It is important to note that reliable identification and differentiation of the two species depends entirely on examination of the dorsal forewing surfaces (especially males). Though it is possible to differentiate a percentage of the two species from ventral views (generally considered unreliable), there is considerable overlap in variation and requires considerable training and experience to accurately distinguish most specimens by their venters.
(6) The following species arrangement is hereby confirmed for eastern United States *Celastrina* and Eurasian *C. argiolus* (historically treated as representing the North American species):

Celastrina argiolus (Linnaeus, 1758) [extralimital (Eurasia)]
Celastrina ladon (Cramer, 1780)
=***pseudargiolus*** (Boisduval & Le Conte, [1835])
=***violacea*** (W. H. Edwards, 1866)
Celastrina lucia (W. Kirby, 1837)
Celastrina neglecta (W. H. Edwards, 1862)
Celastrina nigra (W. Forbes, 1960)
Celastrina neglectamajor Opler & Krizek, 1984
Celastrina idella D. Wright & Pavulaan, 1999
Celastrina serotina Pavulaan & D. Wright, 2005

ACKNOWLEDGMENTS

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ADDENDUM

North American *Celastrina* butterflies form a complex grouping of very closely related (recently-evolved) species, ecotypes, biotypes and host-associated populations. Over 30 years of attempts at crossbreeding some of the eastern taxa has proven fruitless, as the males and females seem to be able to identify and respond only to their own kind, certainly by the scent of lactone compounds in the male androconia, and in the case of *ladon* – the lack thereof. Evidence of hybridization between different *Celastrina* has not been documented. Our present knowledge depends heavily on morphological comparison of specimens, field observations, and hostplant acceptance experiments. Microscopic evaluation of the genitalia of correctly-identified *neglecta* and *ladon* awaits future study, since any past examination of genitalia of eastern North American *Celastrina* was based on outdated taxonomy and not clearly identified to species by current definitions. Presently, in collaboration with Dr. David Wright and myself, a team of geneticists at the University of Texas Southwestern Medical Center is conducting intensive genomic sequencing of all North American members of the *Celastrina*. Results will be forthcoming but preliminary analysis clearly shows distinctive differences between *neglecta* and *ladon.*

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A rare case of mosaic gynandromorphism in the Zabulon Skipper (*Lon zabulon*) (Boisduval & Le Conte[1837]) (Hesperiidae).

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On August 15, 2021, I found an odd, yet beautiful example of a Zabulon Skipper (**Figs. 1-6**) in Elkridge, Howard Co., MD (off the Morning Choice Trail), not far from the Rockburn Branch stream. The habitat was at the edge of a forest clearing, typical for the butterfly. A few patches of thistles in peak bloom were covered with Zabulon Skippers. It took me a few seconds to figure out that this particular butterfly was, in fact, a Zabulon Skipper. But what a skipper it was! It had both male and female characteristics. I

have seen gynandromorph photographs of butterflies with one side female and the other male, but this skipper showed a blending of traits throughout. The underside of a normal Zabulon male skipper is yellow orange with several small reddish-brown spots, while the female is dark brown and purple gray with frosting on the outer margins. This skipper showed the dark brown color and frosting of the female along with the yellow orange markings of the male (**Figs. 1-2**). I have never seen anything quite like it. The typical Zabulon males that also appear in the frame were perfect for comparison purposes.

After later investigations and subsequent emails, it turns out that this Zabulon Skipper may be the only North American Skipper ever documented with mosaic gynandromorphism. Gynandromorphism is usually only noticed in Swallowtails and species where males and females look quite different. However, mosaic gynandromorphism is much rarer.

Fig. 1. *Lon zabulon* mosaic gynandromorph (left ventral view) showing mainly female characteristics. All photos courtesy Annette Allor.

Fig. 2. *Lon zabulon* mosaic gynandromorph (right ventral view) showing mainly male characteristics.

Fig. 3. *Lon zabulon* mosaic gynandromorph (right FW ventral view) showing mainly female characteristics.

Fig. 4. *Lon zabulon* mosaic gynandromorph (HW dorsal view) showing mainly male characteristics.

Fig. 5. *Lon zabulon* comparison of mosaic gynandromorph individual with two normal males.

Fig. 6. *Lon zabulon* comparison of mosaic gynandromorph individual with a normal male.

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Rhode Island, USA Fall Lepidoptera Survey 2021

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ABSTRACT: The first TILS-sponsored survey to document lepidoptera near season's end in Rhode Island was conducted Sept. 18 to Oct. 10. The goal was to document southward migrants as well as northward migrants, and also the presence and abundance of resident late season broods in the Ocean State. Unfortunately, due to the COVID-19 pandemic, participation was dampened, but several participants provided a good window to what was flying.

INTRODUCTION

Near the southern New England coast, cool evenings around the beginning of fall generally signal the start of the Monarch (*Danaus plexippus*) migration westward through Rhode Island and Connecticut, then south to the overwintering grounds in Mexico. While this migration is well documented, several other species have been observed to migrate with them. Past observations by the coordinator in 1983 and 1984 confirmed a steady movement of Question Marks (*Polygonia interrogationis*) along the same route, but in considerably smaller numbers. This movement may be more akin to a localized movement of individuals to more hospitable overwintering conditions, perhaps along the coast southward, rather than a true migration. Reports from nearby Massachusetts indicate a similar movement among Mourning Cloak (*Nymphalis antiopa*) butterflies, but not yet observed in Rhode Island. The Painted Lady (*Vanessa cardui*) and Common Buckeye (*Junonia coenia*) have been anecdotally reported to migrate southward in fall along the Atlantic coast but this has not yet been studied in detail. Observations indicate that these two species do congregate in large numbers along the coast in early fall, but no actual movement has yet been observed in Rhode Island. Likely most of these will perish with the onset of winter.

Rhode Island, as well as the rest of the southern New England coastal region, is known for its comparatively moderated temperate climate, compared to inland areas. Rhode Island winters are often tempered by proximity to the Atlantic Ocean and Narragansett Bay, though extreme cold spells are not uncommon. The progression of spring is delayed by several days or weeks, due to the fact that the ocean remains cold for several months into seasonal warmup. Summers are generally cooler overall than interior New England regions, and afternoon sea breezes are a welcome relief on summer days, often many miles inland. Fall sees the reverse of spring, with frosts and freezes delayed several weeks due to proximity to the ocean, which retains its warmth for several weeks into the fall. This extended mild, frost-free period allows continued migration of northbound migrants such as *Phoebis sennae* (Cloudless Sulphur), *Panoquina ocola* (Ocola Skipper) and *Hylephila phyleus* (Fiery Skipper) annually, as well as infrequent migrants such as *Danaus gilippus* (Queen) and *Dione vanillae* (Gulf Fritillary). It also provides continued safe passage for southbound migrants, among which *Danaus plexippus* (Monarch) is best known for.

The 2021 count, spanning Sept. 18 to Oct. 10, experienced a very mild period, with only a slight, steady decline in daily high temperatures. Nighttime temperatures varied considerably, but remained mild, and well above frost temperatures. The below chart (**Fig. 1**) reflects daily high and low temperatures recorded at Providence during the count period. Rain occurred infrequently during the period, mainly over the latter part of September, but most rains were light and mostly occurred during evening hours.

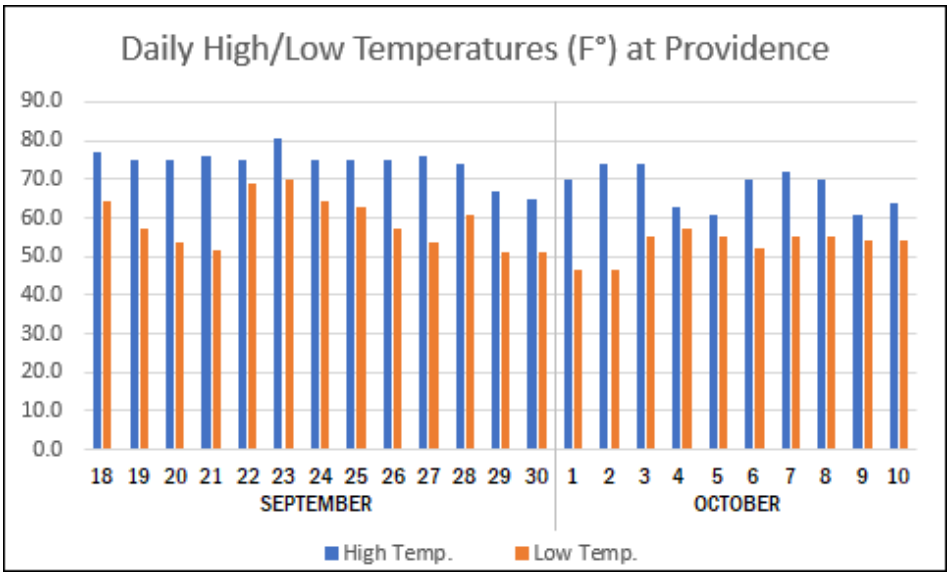

Fig. 1. High and low temperature chart for Providence, R.I., Sept. 18 – Oct. 10, 2021. Based on https://weather-forcast.nz/ and www.LocalConditions.com.

SOURCES AND METHODS

Lepidoptera were recorded primarily by cellphone camera or other photographic means. The vast majority of images were of live individuals, some pinned specimens. Reports without images were accepted from reliable sources. Records were submitted either directly to the coordinator (Harry Pavulaan) via email or Facebook Messenger, while others were sourced from internet sources: Butterfliesandmoths.org (BAMONA); iNaturalist, e-Butterfly and the Rhode Island Butterflies and Moths Facebook group. Records are attributed to the list of contributors below. Many contributors to iNaturalist use pseudonyms instead of their real names. Those not identified by real name are listed anonymously under "IN" (iNaturalist):

AH = Aaron Hunt
AK = Alan Kneidel via iNaturalist
AP = Andrea Petrullo via iNaturalist
BC = Brad Cheever via iNaturalist
BH = Bridget Holzwarth
BM = Brian Maynard via iNaturalist
BR = Bob Rutkowski via iNaturalist
BS = Betsy Staples
CE = Chris Ekholm via iNaturalist
CO = Selia Colechia via iNaturalist
CS = Clare Stone
DG = David Gregg
DM = David Mozzoni via eButterfly
EG = Emily Goyette via iNaturalist
HS = Heather Simmons via iNaturalist
IN = iNaturalist – anonymous
JA = James Michielini via iNaturalist
JM = Jeff Maletski
JN = Jim Natale via iNaturalist
JO = Joe MacIndewar via iNaturalist
JT = Julie Triedman via iNaturalist
KL = Kevin Lynch via iNaturalist
KR = Kimberly Rose
KT = Kyle Testerman via iNaturalist
LS = Laurie Sousa-Andrews
MM = Melissa Mowry via iNaturalist
MW = Martin Wencek
PH = Pamela Aaronson Hamilton
PM = Pat Molloy
RB = Robin Baranowski via iNaturalist
RE = Kelly Reiss
RN = Raphaël Nussbaumer via iNaturalist
SC = Sean Cournoyer via iNaturalist
SD = Sue Dunn
SF = Steve Forbes
SG = Sandra Gaumont
SW = Susan Wesley via iNaturalist
TI = Thomas Irvine via BAMONA, iNaturalist
TM = Todd McLeish
WJ = Walter Jimenez via iNaturalist
WM = Wendy Miller

RESULTS BY LEPIDOPTERA FAMILY

All butterflies and moths are listed under their respective Lepidopteran FAMILY (i.e. Papilionidae) rather than by superfamily. Butterflies are listed in the sequence given in the Pelham (2008) Catalogue. A comment, indicating residency or migratory status, is provided for butterflies only. Moths' residency status is yet poorly known for the most part. Moths are listed beneath each Family group in alphabetical order. Observations of larvae are listed separately, in alphabetic order by genus, regardless of Lepidopteran family group. All records are by city or town (underlined).

PAPILIONIDAE

***Papilio polyxenes* (Black Swallowtail)** – resident.

South Kingstown: 5 Oct. (IN) **1**

PIERIDAE

***Pieris rapae* (Cabbage White)** – resident.

East Providence: 26 Sept. (PM) **2**
Jamestown: 19 Sept. (DM) **7**; 2 Oct. (IN) **1** – Nectaring on *Raphanus sativus* (Cultivated Radish), and *Aster* sp. (Aster).
Johnston: 7 Oct. (MW) **1**
Little Compton: 19 Sept. (IN) **1**
Narragansett: 25 Sept. (MW, WM) **2**; 3 Oct. (CS, MW) **1**; 6 Oct. (MW) **1** – Nectaring on *Buddleia* sp. violet var. (Butterfly Bush), *Solidago* sp. (Goldenrod).
Newport: 26 Sept. (IN) **1** – Nectaring on *Taraxacum officinale* (Dandelion).
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **2** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
North Kingstown: 21 Sept. (CS) **55**; 26 Sept. (CS, MW) **68** – Nectaring on *Capsicum annuum* (Bell Pepper), *Eutrochium purpureum* (Sweet Scented Joe Pye Weed), *Hieracium* sp. (Hawkweed), *Trifolium pratense* (Red Clover).
Providence: 29 Sept. (IN, MW) **2**; 30 Sept. (MW) **1**; 7 Oct. (MW) **3**; 8 Oct. (MW) **1** – Nectaring on *Taraxacum officinale* (Dandelion).
South Kingstown: 19 Sept. (MW) **3**; 26 Sep. (SG, WM) **7**; 29 Sept. (CS) **1**; 30 Sept. (CS) **1**; 3 Oct. (MW) **1**; 10 Oct. (JT) **1**
Westerly: 26 Sept. (SG, WM) **5;** 1 Oct. (SF) **1** – Nectaring on *Buddleia* sp. red var. (Butterfly Bush).

***Colias eurytheme* (Orange Sulphur)** – resident.

Bristol: 18 Sept. (TI) **2**
Cumberland: 1 Oct. (MW) **1** – Nectaring on *Aster* sp. (Aster), *Trifolium pratense* (Red Clover).
Jamestown: 18 Sept. (KR, SD) **2;** 19 Sept. (DM) **1** – Nectaring on *Trifolium pratense* (Red Clover), *Aster* sp. (Aster), and *Solidago* sp. (Goldenrod).
North Kingstown: 21 Sept. (CS) **2**; 26 Sept. (CS, MW) **1**
Westerly: 26 Sept. (SG, WM) **8**

***Colias philodice* (Clouded Sulphur)** – resident.

Cumberland: 1 Oct. (MW) **7**; 2 Oct. (MW) **8** – Nectaring on *Aster* sp. (Aster), *Trifolium pratense* (Red Clover).
Jamestown: 19 Sept. (DM) **1** – Nectaring on *Aster* sp. (Aster).
Narragansett: 25 Sept. (MW, WM) **2** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Solidago* sp. (Goldenrod).
North Kingstown: 21 Sept. (CS) **2**; 26 Sept. (CS, MW) **6** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Eutrochium purpureum* (Sweet Scented Joe Pye Weed).
Westerly: 26 Sept. (SG, WM) **9**

LYCAENIDAE

***Lycaena phlaeas hypophlaeas* (American Copper)** – resident.

Barrington: 26 Sept. (BS) **1** – Nectaring on *Symphyotrichum novi-belgii* (New York Aster).
Bristol: 22 Sept. (IN) **1**; 26 Sept. (IN) **1**; 27 Sept. (IN) **1** – Nectaring on *Solidago* sp. (Goldenrod).
Cumberland: 1 Oct. (MW) **1**; 2 Oct. (MW) **2**
East Providence: 26 Sept. (PM) **2**

Jamestown: 19 Sept. (DM) **1** – Nectaring on *Solidago* sp. (Goldenrod).
Middletown: 30 Sept. (BR) **1**
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **2** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
North Kingstown: 26 Sept. (CS, MW) **3** – Nectaring on *Solidago* sp. (Goldenrod).
Warwick: 20 Sept. (SD) **1**; 25 Sept. (IN) **1**; 27 Sept. (IN, SD) **2** – Nectaring on *Hylotelephium telephium* (Autumn Joy Sedum), *Symphyotrichum novae-angliae* (New England Aster), *Symphyotrichum novi-belgii* (New York Aster).
Westerly: 26 Sept. (SG, WM) **1**; 5 Oct. (SF) **1**

***Parrhasius m-album* (White-M Hairstreak)** – resident.
Bristol: 26 Sept. (IN) 1 – Nectaring on *Solidago* sp. (Goldenrod)

***Calycopis cecrops* (Red Banded Hairstreak)** – resident.
Cumberland: 1 Oct. (MW) **3**
South Kingstown: 19 Sept. (MW) **1**; 20 Sept. (DG) **1** – Nectaring on *Solidago* sp. (Goldenrod), *Symphyotrichum cordifolium* (Common Blue Wood Aster).
Warwick: 3 Oct. (DM) **1** – Nectaring on *Solidago* sp. (Goldenrod).

***Strymon melinus* (Gray Hairstreak)** – resident.
East Providence: 26 Sept. (PM) **2**
Narragansett: 1 Oct. (IN) **1** – Nectaring on *Solidago* sp. (Goldenrod).

***Cupido comyntas comyntas* (Eastern Tailed Blue)** – resident.
Charlestown: 18 Sept. (RB) **1**
Cumberland: 1 Oct. (MW) **1**; 2 Oct. (MW) **2** – Nectaring on *Aster* sp. (Aster).
Jamestown: 19 Sept. (DM) **1**
South Kingstown: 19 Sept. (MW) **1** - Nectaring on *Buddleia* sp. white var. (Butterfly Bush).
Westerly: 26 Sept. (SG, WM) **2**; 8 Oct. (SF) **1** – Nectaring on *Nipponanthemum nipponicum* (Nippon or Montauk Daisy).

***Celastrina neglecta* (Summer Azure)** – resident.
Cumberland: 1 Oct. (MW) **1**

NYMPHALIDAE

***Danaus plexippus* (Monarch)** – seasonal migrant, mass southbound movement in fall.
Cumberland: 1 Oct. (MW) **3**; 2 Oct. (MW) **6** – Nectaring on *Daucus carota* (Queen Anne's Lace), *Trifolium pratense* (Red Clover).
East Providence: 26 Sept. (PM) **2**
Exeter: 3 Oct. (BH) **2**
Jamestown: 19 Sept. (DM) **3** – Nectaring on *Tanacetum coccineum* pink var. (Painted Daisy).
Johnston: 18 Sept. (CE) **1**; 26 Sept. (PH) **1**
Middletown: 30 Sept. (BR) **1** – Nectaring on *Solidago* sp. (Goldenrod)
Narragansett: 20 Sept. (BS) **2**; 25 Sept. (MW) **1**; 27 Sept. (IN) **1**; 3 Oct. (CS, MW) **21**; 6 Oct. (MW) **1** – Nectaring on *Buddleia* sp. violet var. (Butterfly Bush), *Solidago sempervirens* (Seaside Goldenrod), and other *Solidago* sp. (Goldenrod).
Newport: 29 Sept. (IN) **9** – Nectaring on *Nipponanthemum nipponicum* (Nippon or Montauk Daisy).
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **3** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
North Kingstown: 26 Sept. (CS, JA, MW) **13**; 27 Sept. (BC) **1** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Eutrochium purpureum* (Sweet Scented Joe Pye Weed), *Hieracium* sp. (Hawkweed), *Trifolium pratense* (Red Clover).
Pawtucket: 26 Sept. (IN) **1** – Nectaring on *Buddleia* sp. violet var. (Butterfly Bush).
Providence: 27 Sept. (MW) **1** – Nectaring on *Linaria vulgaris* (Butter and Eggs).
South Kingstown: 26 Sept. (CS, MW, SG, WM) **5**; 3 Oct. (MW) **4** – Nectaring on *Buddleia* sp. white var. (Butterfly Bush).
Westerly: 26 Sept. (SG, WM) **7**; 27 Sept. (MM) **1** – Nectaring on *Buddleia* sp. violet var. (Butterfly Bush); 30 Sept. (JM) **100's** – Roosting on *Rosa rugosa* (Beach Rose)

***Argynnis cybele* (Great Spangled Fritillary)** – resident.
North Scituate: 21 Sept. (IN) **1**

***Phyciodes tharos tharos* (Pearl Crescent)** – resident.
Cumberland: 2 Oct. (MW) **1** – Nectaring on *Aster* sp. (Aster).
Jamestown: 19 Sept. (DM) **1** – Nectaring on *Coreopsis* sp. (Tickseed).
Johnston: 20 Sept. (TM) **1** – Nectaring on *Aster* sp. (Aster).

***Polygonia interrogationis* (Question Mark)** – resident and evidence of seasonal migration: westbound movement in fall along south shore.
Cumberland: 2 Oct. (MW) **1** – Nectaring on *Aster* sp. (Aster).
Richmond: 25 Sept. (CO) **1**

***Junonia coenia* (Common Buckeye)** – seasonal migrant, perishing with onset of winter, though anecdotal reports along the eastern U. S. coast suggest some migratory activity southward in fall.
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
South Kingstown: 2 Oct. (IN) **1**
Westerly: 26 Sept. (SG, WM) **3**

***Vanessa virginiensis* (American Lady)** – seasonal migrant, perishing with onset of winter.
Bristol: 26 Sept. (IN) **1**
Cumberland: 2 Oct. (MW) **1** – Nectaring on *Aster* sp. (Aster).
Jamestown: 19 Sept. (DM) **2** – Nectaring on *Buddleia* sp. purple var. (Butterfly Bush).
Narragansett: 25 Sept. (WM) **2**; 3 Oct. (CS, MW) **1** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Solidago* sp. (Goldenrod).
North Kingstown: 26 Sept. (CS, MW) **7** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Eutrochium purpureum* (Sweet Scented Joe Pye Weed).
South Kingstown: 26 Sept. (CS, MW, SG, WM) **4** – Nectaring on *Rudbeckia hirta* (Black Eyed Susan), *Zinnia* sp. (Zinnia).
Westerly: 26 Sept. (SG, WM) **2**; 8 Oct. (SF) **1** – Nectaring on *Nipponanthemum nipponicum* (Nippon or Montauk Daisy).

***Vanessa atalanta* (Red Admiral)** – seasonal migrant, perishing with onset of winter.
Charlestown: 27 Sept. (JN) **1**
Jamestown: 19 Sept. (DM) **2**
New Shoreham (Block Island): 9 Oct. (IN) **1** – Nectaring on *Buddleia* sp. purple var. (Butterfly Bush).
Westerly: 8 Oct. (SF) **1** – Nectaring on *Nipponanthemum nipponicum* (Nippon or Montauk Daisy).

HESPERIIDAE

***Atalopedes campestris huron* (Sachem)** – resident.
Bristol: 26 Sept. (IN) **1** – Nectaring on *Verbena bonariensis* (Purpletop Vervain)
Jamestown: 18 Sept. (SD) **1**; 19 Sept. (DM) **4** – Nectaring on *Solidago* sp. (Goldenrod).
Narragansett: 25 Sept. (WM) **6** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Solidago* sp. (Goldenrod).
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **~50** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
North Kingstown: 26 Sept. (CS, MW) **7** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Eutrochium purpureum* (Sweet Scented Joe Pye Weed).
South Kingstown: 19 Sept. (MW) **1**; 26 Sept. (SG, WM) **5 -** Nectaring on *Buddleia* sp. violet var. (Butterfly Bush), *Symphyotrichum novae-angliae* (New England Aster).
Westerly: 26 Sept. (SG, WM) **10** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Trifolium pratense* (Red Clover).

***Hylephila phyleus phyleus* (Fiery Skipper) -** seasonal migrant, perishing with onset of winter.
North Kingstown: 26 Sept. (CS, MW) **1** – Nectaring on *Buddleia* sp. (Butterfly Bush).

***Polites peckius* (Peck's Skipper)** – resident.
Cumberland: 2 Oct. (MW) **3** – Nectaring on *Trifolium pratense* (Red Clover).
Narragansett: 25 Sept. (WM) **2** – Nectaring on *Buddleia* sp. (Butterfly Bush), *Solidago* sp. (Goldenrod).

***Lon zabulon* (Zabulon Skipper)** – resident.
Cumberland: 2 Oct. (MW) **1** – Nectaring on *Trifolium pratense* (Red Clover).
South Kingstown: 19 Sept. (MW) **1** - Nectaring on *Symphyotrichum novae-angliae* (New England Aster).

***Ancyloxypha numitor* (Least Skipper)** – resident.
Warwick: 1 Oct. (DM) **1**

***Panoquina ocola* (Ocola Skipper) –** seasonal migrant, perishing with onset of winter.
Narragansett: 3 Oct. (CS, MW) **1** – Nectaring on *Buddleia* sp. violet var. (Butterfly Bush).

GELECHIIDAE

***Chionodes arenella* (Arenella Moth)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Coelostathma discopunctana* (The Batman Moth)**
Cumberland: 1 Oct. (DG) **1**

TORTRICIDAE

***Pelochrista oraria* (no common name)**
New Shoreham (Block Island): 26 Sept. – 4 Oct. (AH) **3**

PYRALIDAE

***Phycitodes reliquellum* (White-edged Phycitodes)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **3** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

CRAMBIDAE

***Agriphila vulgivagellus* (Vagabond Crambus)**
East Providence: 26 Sept. (IN) **1**
***Crambus praefectellus* (Common Grass-veneer)**
East Providence: 26 Sept. (IN) **1**
***Crambus leachellus* (Leach's Grass-veneer)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **3** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod) and other *Solidago* sp. (Goldenrod).
***Diacme adipaloides* (Darker Diacme)**
New Shoreham (Block Island): 8 Oct. (AH) **1**
***Duponchelia fovealis* (European Pepper Moth)**
Bristol: 22 Sept. (TI) **1**
***Pediasia trisecta* (Sod Webworm Moth)**
Cumberland: 1 Oct. (DG) **1**
East Providence: 26 Sept. (IN) **1**
***Spoladea recurvalis* (Hawaiian Beet Webworm Moth)**
Bristol: 18 Sept. (TI) **1**
Westerly: 1 Oct. (SF) **1**

SATURNIIDAE

***Hemileuca maia maia* (Coastal Barrens Buckmoth)**
Exeter: 3 Oct. (AK) **2**

SPHINGIDAE

***Hemaris diffinis* (Snowberry Clearwing)**
Newport: 25 Sept. (KT) **1** – Nectaring on *Buddleia* sp., white var. (Butterfly Bush).
***Manduca quinquemaculatus* (Five-spotted Hawkmoth)**
Westerly: 2 Oct. (SF) **1**

GEOMETRIDAE

***Costaconvexa centrostrigaria* (Bent-line Carpet Moth)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Ennomos magnaria* (Maple Spanworm Moth)**
New Shoreham (Block Island): 8 Oct. (AH) **1**

***Eupithecia miserulata* (Common Eupithecia)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **3** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Glenoides texanaria* (Texas Gray Moth)**
Bristol: 28 Sept. (TI) **1**
New Shoreham (Block Island): 30 Sept. (AH) **3** – Nectaring on *Solidago* sp. (Goldenrod).
Westerly: 20 Sept. (SF) **1**

***Idaea dimidiata* (Single-dotted Wave)**
East Providence: 26 Sept. (IN) **1**

***Orthonama obstipata* (The Gem)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **2** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Pleuroprucha insulsaria* (Common Tan Wave)**
East Providence: 18 Sept. (IN) **2**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **15** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Prochoerodes lineola lineola* (Large Maple Spanworm Moth)**
Westerly: 8 Oct. (SF) **1**

EREBIDAE

***Cisseps fulvicollis* (Yellow-collared Scape Moth)**
Cumberland: 1 – 2 Oct. (DG) **1**
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **6** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
South Kingstown: 9 Oct. (JO) **1**

***Caenurgina crassiuscula* (Clover Looper)**
Cumberland: 1 – 2 Oct. (DG) **1**

***Hypena scabra* (Green Cloverworm Moth)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Hypercompe scribonia* (Giant Leopard Moth)**
Cumberland: 1 Oct. (DG) **1**

***Idia aemula* (Common Idia)**
Smithfield: 8 Oct. (IN) **1**

***Idia americalis* (American Idia)**
Cumberland: 2 Oct. (DG) **1**

***Tetanolita mynesalis* (Smoky Tetanolita)**
New Shoreham (Block Island): 8 Oct. (AH) **1**

***Zale aeruginosa* (Green-dusted Zale)**
Narragansett: 18 Sept. (IN) **1**

NOCTUIDAE

***Abagrotis cupida* (Cupid Dart)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Agnorisma badinodis* (Pale-banded Dart)**
Barrington: 1 Oct. (RE) **1**
New Shoreham (Block Island): 26 Sept. - 8 Oct. (AH) **24** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod) and other *Solidago* sp. (Goldenrod).

***Agrotis gladiaria* (Swordsman Dart)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Agrotis ipsilon* (Ipsilon Dart)**
Cumberland: 30 Sept. – 2 Oct. (DG) **10**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **4** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Agrotis venerabilis* (Venerable Dart)**
Cumberland: 2 Oct. (DG) **1**
***Agrotis vetusta* (Old Man Dart)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **14** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Anagrapha falcifera* (Celery Looper)**
Cumberland: 1 – 2 Oct. (DG) **1**
***Anicla infecta* (Green Cutworm)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Apamea helva* (Yellow Three-spot Moth)**
Cumberland: 2 Oct. (DG) **1**
***Apamea lintneri* (Sand Wainscot)**
New Shoreham (Block Island): 20 Sept. (AH) **1**
***Autographa precationis* (Common Looper)**
Glocester: 7 Oct. (IN) **1**
Smithfield: 29 Sept. (IN) **1**
Westerly: 1 Oct. (SF) **1** – Nectaring on *Buddleia* sp. violet var. (Butterfly Bush).
***Choephora fungorum* (Bent-line Dart)**
New Shoreham (Block Island): 8 Oct. (AH) **1**
***Chrysodeixis includens* (Soybean Looper)**
New Shoreham (Block Island): 29 Sept. – 2 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Euxoa detersa* (Rubbed Dart)**
New Shoreham (Block Island): 19 Sept. – 7 Oct. (AH) **48** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Feltia herilis* (Master's Dart)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **2** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod) and other *Solidago* sp. (Goldenrod).
***Feltia jaculifera* (Dingy Cutworm)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **2** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Feltia subterranea* (Subterranean Dart)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Galgula partita* (The Wedgeling)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Helicoverpa zea* (Corn Earworm)**
New Shoreham (Block Island): 29 Sept. – 7 Oct. (AH) **5** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Lacinipolia renigera* (Bristly Cutworm)**
East Providence: 26 Sept. (IN) **1**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **10** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod) and other *Solidago* sp. (Goldenrod).
***Leucania adjuta* (Adjutant Wainscot)**
New Shoreham (Block Island): 30 Sept. (AH) **1** – Nectaring on *Solidago* sp. (Goldenrod).
***Mythimna unipuncta* (White-Speck Armyworm)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Noctua pronuba* (Large Yellow Underwing)**
East Providence: 18 Sept. (IN) **1**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Papaipema duovata* (Seaside Goldenrod Borer Moth)**
New Shoreham (Block Island): 1 Oct. – 7 Oct. (AH) **14**
***Papaipema speciosissima* (Osmunda Borer Moth)**
Westerly: 6 Oct. (SF) **1**
***Peridroma saucia* (Pearly Underwing)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).
***Spodoptera frugiperda* (Fall Armyworm Moth)**
New Shoreham (Block Island): 29 Sept. – 7 Oct. (AH) **49** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod) and other *Solidago* sp. (Goldenrod).

***Spodoptera ornithogalli* (Yellow-striped Armyworm Moth)**
Narragansett: 30 Sept. (IN) **1**
New Shoreham (Block Island): 30 Sept. – 8 Oct. (AH) **7** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Sunira bicolorago* (Bicolored Sallow)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **12** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod) and other *Solidago* sp. (Goldenrod).
Smithfield: 1 Oct. (IN) **1**; 8 Oct. (IN) **1**

***Tricholita signata* (Signate Quaker)**
New Shoreham (Block Island): 30 Sept. – 7 Oct. (AH) **1** – Nectaring on *Solidago sempervirens* (Seaside Goldenrod).

***Xestia smithii* (Smith's Dart)**
New Shoreham (Block Island): 30 Sept. (AH) **1** – Nectaring on *Solidago* sp. (Goldenrod).

LARVAE OBSERVED

BUTTERFLIES (all genera listed in alphabetic order)**:**

***Danaus plexippus* (Monarch)**
Exeter: 22 Sept. (BH) **1** – On *Asclepias incarnata* (Swamp Milkweed).
South Kingstown: 29 Sept. (BM) **1** – On *Asclepias* (=*Gomphocarpus*) *physocarpa* (Balloon Plant).

***Papilio polyxenes* (Black Swallowtail)**
South Kingstown: 28 Sept. (IN) **1** – On *Anethum graveolens* (Dill)
Tiverton: 19 Sept. (EG) **3** – On *Petroselinum crispum* (Parsley)
Westerly: 26 Sept. (SW) **1** – On *Daucus carota* (Carrot)

MOTHS (all genera listed in alphabetic order)**:**

***Acharia stimulea* (Saddleback Caterpillar)**
Charlestown: 24 Sept. (LS) **1**; 2 Oct. (HS) **1**

***Acronicta americana* (American Dagger)**
Glocester: 23 Sept. (IN) **1**

***Acronicta oblinata* (Smeared Dagger)**
New Shoreham (Block Island): 30 Sept. (IN) **1**

***Agrotis ipsilon* (Black Cutworm)**
Providence: 1 Oct. (WJ) **1**

***Arctia caja* (Great Tiger Moth)**
Middletown: 30 Sept. (BR) **1**

***Automeris io* (Io Moth)**
Middletown: 22 Sept. (KL) **1**

***Cameraria aceriella* (Maple Leafblotch Miner)**
Bristol: 10 Oct. (TI) **1** – Feeding evidence on *Acer rubrum* (Red Maple).

***Cameraria caryaefoliella* (Pecan Leaf Miner)**
Johnston: 18 Sept. (IN) – Feeding evidence on *Carya* sp. (Hickory).

***Cameraria guttifinitella* (Poison Ivy Leaf Miner)**
Johnston: 18 Sept. (IN) – Feeding evidence on *Toxicodendron radicans* (Poison Ivy).

***Chloridea virescens* (Tobacco Budworm)**
South Kingstown: 26 Sept. (SC) **1**

***Coptotriche badiiella* (White Oak Leaf Miner)**
Johnston: 18 Sept. (IN) **1** – Feeding evidence on *Quercus alba* (White Oak).

***Cameraria corylisella* (Hazel Blotch Miner)**
Johnston: 18 Sept. (IN) **1** – Feeding evidence on *Corylus cornuta* (Beaked Hazel).

***Cameraria hamameliella* (Witch Hazel Leaf Miner)**
Johnston: 18 Sept. (IN) **1** – Feeding evidence on *Hamamelis virginiana* (American Witch Hazel).

***Cucullia convexipennis* (Brown-hooded Owlet)**
South Kingstown: 26 Sept. (SG, WM) **1**

***Glaucolepis saccharella* (no common name)**
Bristol: 30 Sept. (TI) **1** – Feeding evidence on *Acer rubrum* (Red Maple).
***Lophocampa caryae* (Hickory Tussock Moth)**
Narragansett: 24 Sept. (RN) **1**
***Panthea furcilla* (Eastern Panthea)**
South Kingstown: 26 Sept. (IN) **1** – On *Pinus* sp. (Pine)
***Parectopa robiniella* (Locust Digitate Leaf Miner)**
Bristol: 18 Sept. (IN) **1** – Feeding evidence on *Robinia pseudoacacia* (Black Locust).
***Phosphila turbulenta* (Turbulent Phosphila)**
Bristol: 3 Oct. (IN) **1**
South Kingstown: 23 Sept. (AP) **1**
***Phyllocnistis liriodendronella* (Tulip Tree Leaf Miner)**
Bristol: 21 Sept. (IN) **1** - Feeding evidence on *Liriodendron tulipifera* (Tulip Tree).
***Phyllocnistis vitifoliella* (Grape Leaf Miner)**
Bristol: 26 Sept. (IN) **1** – On *Vitis cinerea* (Graybark Grape)
***Pyrrharctia isabella* (Wooly Bear Caterpillar)**
Middletown: 22 Sept. (KL) **1**
Newport: 6 Oct. (BC) **1**
New Shoreham (Block Island): 1 Oct. (AH) **1**
Smithfield: 10 Oct. (IN) **1**
***Spilosoma virginica* (Virginian Tiger Moth)**
Cumberland: 1 – 2 Oct. (DG) **2**
East Providence: 18 Sept. (IN) **1** – On *Salix nigra* (Black Willow)
***Stigmella intermedia* (Intermediate Leafminer)**
Bristol: 9 Oct. (IN) **1** – Feeding evidence.
***Stigmella multispicata* (Asian Elm Leafminer)**
New Shoreham (Block Island): 29 Sept. (AH) **12**
***Stigmella rhoifoliella* (no common name)**
Bristol: 18 Sept. (IN) – Feeding evidence on *Toxicodendron radicans* (Poison Ivy).
***Stigmella tiliella* (Basswood Leafminer)**
Bristol: 26 Sept. (TI) **1** – Feeding evidence on *Tilia americana* (American Basswood).
***Stigmella villosella* (no common name)**
Bristol: 3 Oct (IN) **1**; 9 Oct. (IN) **1** – Feeding evidence on *Rubus* sp. (Blackberry).
***Thyridopteryx ephemeraeformis* (Evergreen Bagworm Moth)**
Warwick: 29 Sept. (IN) **8** – On *Juniperus virginiana* (Eastern Red Cedar).

PUPA/COCOON OBSERVED

***Hyalophora cecropia* (Cecropia Moth)**
Warwick: 18 Sept. (IN) **1**

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The Taxonomic Report

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