A BASELINE ATLAS AND CONSERVATION ASSESSMENT OF THE BUTTERFLIES OF MAINE

August 12, 2005

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Coral Hairstreak (*Satyrium titus*)

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Executive Summary

Colorful and conspicuous, butterflies are among the few insect groups in Maine that have benefited from considerable attention by early naturalists (starting circa 1870) and recent state-sponsored surveys. This report summarizes the current state of knowledge for the butterfly species of Maine and highlights species of conservation concern. Information on the occurrence of butterflies in Maine was reviewed from a variety of sources, including Brower (1974) and numerous other publications, specimens contained in most major northeastern museums, numerous private collections, data complied during Maine Department of Inland Fisheries and Wildlife's (MDIFW) ecoregional survey project, and MDIFW's rare species tracking database.

A database (Excel) of nearly 9000 records contained in 42 fields was constructed from all records obtained from the above sources. These include both locality and date records (records with different dates from same locality) and 3904 township records. At the completion of the Maine Butterfly Survey Project this data will be shared with conservation partners and other interested parties.

Brower (1974) listed 103 species of butterflies and skippers for Maine. Following a review of the sources listed above, an additional 11 species have been added bringing the state's total list to 114 species. A few of the additions are the result of taxonomic changes that split formerly one species into two, but most result from new species discoveries. **Of special note is the relatively high proportion (13%) of Maine butterflies and skippers that are extirpated (5 species) or state-listed as endangered or special concern (10 spp.)**, a result consistent with global trends elsewhere for the group (Stein et al. 2000, Thomas et al. 2004). Much has been learned regarding butterfly species rarity and threat in Maine since the previous state-listing process in 1997 (McCollough et al. 2003), and several revisions, mainly additions to the endangered and special concern list, are recommended based on the data summarized in this study.

On average, 63 species of butterflies were found in each county in Maine. This represents about 55% of the 114 species of butterflies reported for the state. Highest species richness was recorded in Oxford Co. with 91 species (80% of all species known from Maine). Relatively high species richness was also recorded from Washington Co. (87 species) and Penobscot Co. (81 species). The least number of species was recorded from Sagadahoc Co. (37 species), Knox Co. (38), Lincoln Co. (43), and Androscoggin Co. (42). Only eight species were recorded from all counties in the state. However, collecting effort in Maine has not been uniform and the data compiled in this assessment should help to focus future sampling effort toward under-surveyed species and locales.

Color factsheets are provided (Appendix 1) for 35 breeding resident species in Maine that are considered endangered, special concern, extirpated, or rare. The factsheets include information on identification, distribution, status, ecology, and threats and are intended to stimulate further protection and study of Maine's rarest butterflies. Finally, township-scale distribution maps are provided for each of Maine's 114 butterfly species, (Appendix 2), all of which require further distributional study.

Introduction

Early Lepidopterists in Maine

Among the first people to make significant collections of butterflies in Maine was **Professor S. I. Smith** who collected from around 1864 to 1870, mostly near Norway, ME. He collected the only specimens of *Callophrys irus* (Godart), *Plebejus melissa samuelis* Nabokov and *Phyciodes batesii* (Reakirt) known from Maine. His *Pieris rapae* (Linnaeus) records are probably the first records for this introduced species in the United States. Between 1868 and 1878, **H. H. Lyman** collected in the Cape Elizabeth area and published a list of 46 butterfly species (Lyman 1880) entitled "List of diurnal Lepidoptera taken in the vicinity of Portland, Maine". While many later publications give Portland as the locality for these records, most were actually collected in Cape Elizabeth. In the 1870's and 1880's, **C. H. Fernald** made important collections of Lepidoptera in Orono. **Roland Thaxter** (Harvard University) collected a number of significant butterfly records near his summer home in Kittery Point, starting around 1884. Among his notable finds is the only record of *Phoebis agarithe* Boisduval from Maine (September 3, 1930) (Brower, 1974). **Frank Morton Jones** collected many northern species of butterflies in Katahdin Iron Works Twp in 1905 and 1912. Between 1904 and 1917**, Charles B. Hamilton** collected 37 species of butterflies in Norway. **Manton Copeland** made a significant collection of butterflies from Brunswick in 1920**. Charles W. Johnson** made collections of butterflies on Mount Desert Island between 1918 and 1927 (Johnson, 1927), followed by **William Proctor** in the 1930's and early 1940's (Proctor, 1938, 1946). **John C. Parlin** reported butterfly species from Albion, Canton and other areas of central Maine during the early 1920's (Parlin 1922, 1923a, 1923b). Unfortunately this collection was destroyed by a flood (Brower 1974). **L. Paul Grey** collected extensively in Maine, especially near Lincoln from the 1930's to the mid 1980's. Other notable early collectors were **Walter Clayton** (Lincoln) and **Cyril F**. and **Viola H. dos Passos** (Rangeley, Eustis).

Auburn E. Brower made extensive collections of Lepidoptera throughout Maine starting in the early 1930's. He also obtained collection records of Maine Lepidoptera from all the major museums and private collections in the Northeast. This work culminated in his publication in 1974 of "A List of the Lepidoptera of Maine – Part 1 The Macrolepidoptera" (Brower 1974). This annotated checklist includes the only recent checklist of Maine butterflies. Brower continued to collect specimens until the early 1980's.

Sources of Data

Data on the occurrence of Maine butterfly species in Brower's annotated checklist were based on voucher specimens and literature records. For most species, Brower gave only the number of township records, a general distribution in Maine, and a range of collection dates. For some rare species he listed all the township records and in only a few cases did he give full dates. Unfortunately, his card files with collection data were lost prior to the

transfer of his collection to the Smithsonian Institute. As a result, a significant amount of the collection data used for his checklist was lost. Thus, instead of attempting to build on Brower's checklist, we have started anew.

Five major data sources were consulted during the course of this study including a) major museum collections from throughout the Northeast, b) large private specimen collections, c) MDIFW ecoregional survey data, d) MDIFW Natural Heritage database records, and e) published literature. A summary of these data sources and individual contributors follows.

Museum Collections

The following museums were checked for Maine butterfly specimens. Important collections of Maine butterflies housed in these museums are mentioned under each respective institution. The names of the curator and/or collection manager who made the collections available for study follow the name of their institution and its acronym.

Acadia National Park Collection, Bar Harbor, ME. (ANPC); Brooke Childrey. This collection houses the William Proctor collection and additional material from Charles W. Johnson and Auburn E. Brower. Nearly all of this material is from Mount Desert Island and was collected from the 1920's to 1950's.

American Museum of Natural History, New York, NY (AMNH); Eric Quinter. Many specimens collected by L. Paul Grey of the Lincoln-Enfield area are housed in this collection, as well as material from A. E. Brower, Cyril F. dos Passos (Rangeley), and other collectors.

Carnegie Museum of Natural History, Pittsburg, PA (CMNH); John Rawlins. A significant collection of butterflies from Aroostook Co., collected by Ronald F. Rockwell during 1995 is in this collection. Some material in the Carnegie Museum Collection may have been missed, as some specimens were being frozen as part of their program to control museum pests during our visit.

Canadian National Collection of Insects, Ottawa, Ontario (CNC); J. Donald Lafontaine. Only a few specimens from Maine are housed in this collection with most collected by L. P. Grey and A. E. Brower.

Cornell University Collection, Cornell University, Ithaca, NY (CUIC); E. Richard Hoebeke. Only a few specimens from Maine are housed in this collection; most collected by L. P. Grey and A. E. Brower.

Maine Department of Inland Fisheries & Wildlife Collection, Bangor, ME (MDIFWC); Phillip deMaynadier. This collection contains the John J. Albright collection and material from MDIFW field surveys (mainly R. Webster, P. deMaynadier, and B. Swartz) and various volunteers.

Maine Forest Service Insect Collection, Augusta, ME (MFSIC); **Richard Dearborn.** Material from A. E. Brower, forest insect surveys, and voucher specimens from various surveys done at some of The Nature Conservancy properties are housed in this collection.

Museum of Comparative Zoology, Harvard University, Cambridge, MA (MCZ); Phillip Perkins. This collection contains the William D. Winter, Jr. collection.

Peabody Museum of Natural History, Yale University-Entomology Division, New Haven, CT (YPM); Raymond J. Pupedis. This collection houses the S. I. Smith collection and specimens collected by L. P. Grey, A. E. Brower, and Frank Morton Jones.

Smithsonian Institute, National Museum of Natural History, Washington, DC (USNM); Robert Robbins and Michael Pogue. Much of the A. E. Brower collection is housed in this collection, as well as material from L. P. Grey and several other collectors. The museum was in the process of moving into new facilities when it was visited, and consequently the swallowtails were unavailable for review.

University of Connecticut Collection, Storrs, CT (UCS); Jane O'Donnell. This collection contained a small number of specimens of Steven Sibley from the Orono area.

University of Maine Collection, Orono, ME (UMC); Steve Woods. The collections of Manton Copeland (Brunswick), Charles B. Hamilton (Norway) and C. H. Fernald (Orono) are contained in this collection.

University of New Hampshire Collection, Durham, NH (NHDE); John Burger and Donald S. Chandler. The D. J. Lennox collection and additional material collected by L. P. Grey, A. E. Brower, and Cyril F. dos Passos are housed in this collection.

Notably, Boston College and the Pennsylvania Academy of Sciences were not visited during this museum survey. Both institutions are reported to have specimens from Maine and should be reviewed in the future.

Private Collections

John J. Albright, Brunswick, Maine collected many specimens for MDIFW during the 1980's and early 1990's. His collection is now housed in the MDIFW collection.

Richard Boscoe, Lafayette Hill, Pennsylvania supplied voucher records and data on a number of species of butterflies that he reared from Maine over the past 20 years.

Kevin Byron, Kennebunk, Maine supplied photographs of several species of butterflies from Wells, Maine.

Robert Dirig, Ithaca, New York supplied field notes on his sight records of Maine butterflies.

Gail Everett, South Portland, Maine provided many records from southern and central Maine.

Richard W. Folsom, Pittston, Maine supplied data on all the specimens he has collected in Maine.

Alex Grkovich, Boston, Massachusetts supplied data on all the specimens he had collected in Maine.

Richard W. Hildreth, Holliston, Massachusetts supplied copious sight records and photo records of his observations of butterflies in eastern Maine (mostly Washington and Hancock Co.'s).

Chris Livesay, Brunswick, Maine supplied numerous voucher records from Brunswick and vicinity, and from many areas in northern, western and eastern Maine. Most are recent records from the 1990's and early 2000's.

Michael A. Roberts, Steuben, Maine supplied records on many specimens from Steuben, and vicinity.

Robert R. Muller, Milford, Connecticut supplied records of specimens contained in his collection from Piscataquis Co., Maine.

Dale Schweitzer, Port Norris, New Jersey provided many records from Shapleigh, Newfield and Camden, Maine as well as invaluable advice on the taxonomy of some difficult taxa (*Celastrina*), and on how to treat various record types obtained during this project.

Kristine Wallstrom, New York, supplied photographs of butterflies from the Kennebunk Plains and near North Whitefield, Maine.

MDIFW Eco-regional Surveys

The Maine Department of Inland Fisheries and Wildlife (MDIFW), in collaboration with the Maine Natural Areas Program (Dept. of Conservation), has undertaken a comprehensive assessment of Maine's biodiversity through intensive statewide field surveys of rare plants, animals, and natural communities. To date, eight of the state's 15 ecoregions (McMahon 1990) have been surveyed, including six ecoregions in which surveys were conducted for selected rare butterflies (Weik et al. 2001, Givens et al. 2002, Herrmann et al. 2003). As a result of these surveys, numerous records of both target species and other incidental species were added to the Maine butterfly database.

MDIFW Rare Species Database

MDIFW is part of an international network of Natural Heritage Programs and conservation data centers. At the heart of every Natural Heritage Program is a data management system designed to track information on the status, life history, conservation

needs, and occurrences of rare species and natural communities. As a partner in the Natural Heritage network (NatureServe), MDIFW is responsible for maintaining the zoological portion of this database for Maine. MDIFW's zoological database currently contains information on more than 2,500 existing and historical occurrences of rare species in Maine, ranging from bald eagle nest sites to rare butterfly colonies. Records for 10 rare butterfly species were taken from MDIFW's zoological database and included in the Maine butterfly database project.

Published Literature

An attempt was made to consult all published references containing records of Maine butterflies. These references are listed in the Literature Cited section (p. 19) and full citations are given for each literature record in the Maine butterfly database.

Data Verification and Management

Identification

Most voucher specimens examined in the various collections were verified or identified by Reginald Webster. The nomenclature used follows that given in Opler and Warren (2003). The names used in Opler and Warren (2003) are based on the latest taxonomic studies and may differ from those used in some of the recent popular field guides.

Types of Records

Confirmable Records: These are records based on a specimen (voucher) or a photograph. Only records of a species with a photograph that clearly show all the characters required to identify the individual to species were used in this study. Confirmable records include both recent and historical (prior to 1974; see below) material.

Photographic records of species that require examination of genitalia or close examination of color patterns of the upper and lower surfaces for proper identification to species were not included in this study (e.g. *Papilio glaucus*, *Phyciodes tharos*, and many skippers).

Unconfirmable Records: These are records for which no specimens exist or the location of specimens is not known. Included in this category are the following types of records:

<u>Sight Records</u>. This represents an observation of a species by a qualified observer. Only species where field identification to species is clearly possible and where all important field characters were visible to the observer are included.

Species that require examination of genitalia or close examination of color patterns of upper and lower surfaces, and or antennae for identification to species were not used as sight records in this study (e.g. *Papilio glaucus*, *Phyciodes tharos*, and many skippers).

Handled Records. This represents an observation of a species by a qualified observer where the specimen was collected, examined to properly determine it to species, and then released. Species that require examination of genitalia for determination to species (some *Erynnis* species) were not included as handled records in this study.

Literature Records. These are records published in the literature where the location of the specimens is not known.

Correspondence Records. These are records based on correspondence, such as letters to the Lepidopterists Society Zone Coordinators giving data for inclusion in the Season Field Summary (often only a fraction of the data included in many correspondences is actually published in the field summaries).

Historical Records: These include both confirmable and unconfirmable records of species occurrences prior to 1974. This is the date of the most recent and comprehensive annotated checklist of the butterflies of Maine by Brower (1974). As defined, all records that are over 30 years old are thus considered historical.

Recent Records: These include all records (confirmable or unconfirmable) of species occurrences from 1974 to 2004.

Database

An Excel database containing nearly 9000 records was constructed from all records obtained during this study. These include both locality and date records (records with different dates from same locality). The database consists of 42 fields that are listed and defined below. At the completion of the Maine Butterfly Atlas Project this data will be shared with conservation partners and other interested parties. Construction of a permanent database is critical, especially in view of the significant loss of A. E. Brower's card files that contained all the collection data used to produce his 1974 checklist.

MBS No. This is the Maine Butterfly Survey number, a unique 4-digit number assigned to each voucher specimen or photograph, that will appear on data cards used during future butterfly surveys (including some 2003 and most 2004 records).

Site No. This is a number that refers to a specific collection site and observer. Generally, this number is generated by the observer for purposes of associating a specific record to one's collection notes. The number consists of the individual's initials, a site number, and year (e.g. PGD01-04, or first collection site of P.G. deMaynadier in 2004).

Checklist No. This is the checklist number of Lepidoptera given in Hodges et al. (1983).

Family. This is the currently recognized name of the family of the species as given in Opler and Warren (2003).

Genus. This is the currently recognized name of the genus of the species as given in Opler and Warren (2003).

Species. This is the currently recognized species name listed in Opler and Warren (2003).

Subspecies. This refers to a recognized subspecies that occurs in Maine.

Common Name. This is the common name of the species or subspecies.

State Status. This is the current official status of the species in Maine, such as Endangered, Threatened, or Special Concern.

G-Rank. This is the Natural Heritage (NatureServe 2005) global rank of the species, including G1 (critically imperiled), G2 (imperiled), G3 (vulnerable), G4 (apparently secure), and G5 (secure).

S-Rank. This is the Natural Heritage (NatureServe 2005) state rank of the species including S1 (critically imperiled), S2 (imperiled), S3 (vulnerable), S4 (apparently secure), and S5 (secure).

County. This is the county where the record originated.

Township. This is the township where the record originated.

Latitude.

Longitude.

Delorme. This refers to the map number and section number in DeLorme's "The Maine Atlas and Gazetteer" where the record originated. 05B1 refers to map 5, section B1.

Site Name. This is the name of the site where a record originated. Site names given in the Maine DeLorme Gazetteer are used when available. However, when none is available, site names are generated and placed between quotations in the database.

Locality. This includes the most precise available data on the location of the site. The intent is to provide sufficient information to allow others to find the site in the future. However, many records (especially earlier records) included only the township name.

Site Description. This field includes a brief description of the habitat. Often this includes plant species and natural community descriptions that characterize the habitat where the species was found.

Month. This field includes data from records of adults only.

Day. This field includes data from records of adults only.

Year. This field includes the year of all records. In cases where only a publication date was available, the year of publication was given. Many of the records prior to 1920 did not include year. In these cases a reasonable year for the record was given based on information of when the collector may have collected the specimens. This field is used to distinguish between historical and recent records.

Full Date. This field is often used to provide additional information on data deficient records. Full dates are given only for records of adults with data on the month, day, and year. In cases where data were missing, this is indicated in this field in ( ). Some examples follow: 12 July, (no year), denotes a record where the year was not given on the specimen; 18 June (1927), denotes a published record where the year was not given but where 1927 is the publication date; (no day, no month), 1942 denotes a record where only the year of capture was given. Data from larval and adult emergent records are not listed in this field. Data from this field can be used to generate information on adult flight periods of each species.

Larval Collection Date. This field includes the date when larvae of a given species were collected.

Emergence Date. Lepidoptera reared under artificial conditions often do not emerge at times during the season normal for the species. For this reason, the date when reared adults emerged from pupae is given in a separate field.

Larval Host Plant. The species of plant that larvae were observed feeding on or reared on are given in this field.

Collector(s). This field includes data on the person(s) who collected or observed the specimen(s).

Determiner. This is the person who originally determined the identity of the specimen.

Confirmer. This field includes the name of the person who confirmed the original determination.

Reference. This field is used for published and correspondence records. The full reference is given for each of these records.

Collection. This field includes the name of the collection where the specimen resides.

Project. The name of the project is given in cases where the record was generated by a specific, often state-sponsored, project.

Record type. The type of record is given in this field, including Voucher, Handled, Sight, Published, Photograph, and Correspondence records.

Males. The number of male voucher specimens that were examined or collected is included in this field.

Females. The number of female voucher specimens that were examined or collected is included in this field.

Undetermined Sex. This field is used for voucher specimens that were not sexed (or could not easily be sexed)

Abundance. This field is used to indicate the total number of individuals that were observed.

Observations. This field includes information on behavior of individuals observed or collected.

Observation Time. This field includes data on the period of time when the species was observed and or collected.

Condition. This field includes data on the wing wear of specimens. Five categories are used: Very Fresh (an individual that has no wing wear; either has not flown or only briefly), Fresh (individuals that show almost no scale loss on the wings; may have flown only one day or two), Slightly Worn (individuals that have a small amount of wing wear; may have flown for several days), Worn (individuals with a significant amount of scale loss and often portions of the wings; likely have flown for more than 5 days), Very Worn (individuals that have lost most of the scales and often significant portions of the wings; likely have flown many days or weeks).

Feeding Substrate. This field includes data on substrates upon which adults were observed feeding (or presumed to be feeding). Examples include flowers, sap flows, carrion, scat, moist soil, etc.

Form (Phenotype). This field is used for information on color forms or phenotypes that typically occur in some species. Examples include summer and fall phenotypes that occur in some species of *Polygonia*, yellow and white forms of some *Colias* species, and the various phenotypes that occur in the *Celastrina*.

Maine Butterfly Checklist

The following is a complete checklist of the butterfly species currently known from Maine (Table 1). Accompanying the scientific and common names of each species is its breeding status and state conservation status. Information on the occurrence of these species comes from a variety of sources, including Brower (1974) and other publications, specimens contained in all major northeastern museums and many private collections, the Maine Department of Inland Fisheries and Wildlife (MDIFW) ecoregional survey project, and MDIFW's rare species tracking database. A detailed list of contributing data sources is provided above.

Brower (1974) listed 103 species of butterflies and skippers for the state. Following a review of the sources listed above, an additional 11 species have been added bringing the state's total list to 114 species. A few of the additions are the result of taxonomic changes that split formerly one species into two, but most result from new species discoveries. Five of the 114 species are believed extirpated from Maine and ten have been listed as state endangered or special concern by MDIFW. Much has been learned regarding butterfly species rarity and threat in Maine since the previous state-listing process in 1997 (McCollough et al. 2003), and several revisions, mainly additions to the endangered and special concern list, are anticipated.

The nomenclature followed in this list follows Opler and Warren (2003) and includes all recent changes in nomenclature since the Miller and Brown (1981) *Catalogue/Checklist of the Butterflies of America North of Mexico* and the supplement by Ferris (1989).

Table 1. Checklist and Breeding Status of Maine Butterflies.

Scientific Name	Subspecies	Common Name	Status[1]
Family Hesperiidae		**Skippers**	
Epargyreus clarus (Cramer)		Silver-spotted Skipper	BR
Thorybes pylades (Scudder)		Northern Cloudywing	BR
Thorybes bathyllus (J. E. Smith)		Southern Cloudywing	BR or RS
Erynnis icelus (Scudder & Burgess)		Dreamy Duskywing	BR
Erynnis brizo (Boisduval & LeConte)		Sleepy Duskywing	BR
Erynnis juvenalis (Fabricius)		Juvenal's Duskywing	BR
Erynnis persius (Scudder)		Persius Duskywing	EX
Pholisora catullus (Fabricius)		Common Sootywing	BR or RS
Carterocephalus palaemon (Pallas)	*mandon* (W. H. Edwards)	Arctic Skipper	BR
Ancyloxypha numitor (Fabricius)		Least Skipper	BR
Thymelicus lineola (Ochsenheimer)		European Skipper	BR
Hesperia comma (Linnaeus)	*laurentina (*Lyman)	Laurentian Skipper	BR
Hesperia leonardus Harris		Leonard's Skipper	BR
Hesperia metea Scudder		Cobweb Skipper	BR
Hesperia sassacus Harris		Indian Skipper	BR
Polites peckius (W. Kirby)		Peck's Skipper	BR
Polites themistocles (Latreille)		Tawny-edged Skipper	BR
Polites origines (Fabricius)		Crossline Skipper	BR
Polites mystic (W. H. Edwards)		Long Dash Skipper	BR
Wallengrenia egeremet (Scudder)		Northern Broken Dash	BR

Pompeius verna (W. H. Edwards)		Little Glassywing Skipper	BR
Anatrytone logan (W. H. Edwards)		Delaware Skipper	BR
Poanes hobomok (Harris)		Hobomok Skipper	BR
Poanes viator (W. H. Edwards)	*zizaniae* (Shapiro)	Broadwinged Skipper	BR
Euphyes bimacula (Grote & Robinson)		Two-spotted Skipper	BR
Euphyes vestris (Boisduval)	*metacomet* (Harris)	Dun Skipper	BR
Amblyscirtes hegon (Scudder)		Pepper & Salt Skipper	BR
Amblyscirtes vialis (W. H. Edwards)		Common Roadside Skipper	BR
Family Papilionidae		**Swallowtails**	
Battus philenor (Linnaeus)		Pipevine Swallowtail	RS
Papilio polyxenes Fabricius	*asterius* (Stoll)	Black Swallowtail	BR
Papilio glaucus Linnaeus		Eastern Tiger Swallowtail	RS
Papilio canadensis Rothschild & Jordan		Canadian Tiger Swallowtail	BR
Papilio troilus Linnaeus		Spicebush Swallowtail	RS or RC; SC
Papilio cresphontes Cramer		Giant Swallowtail	RS
Family Pieridae		**Sulphurs and Whites**	
Pontia protodice (Boisduval & LeConte)		Checkered White	RC
Pieris rapae (Linnaeus)		Cabbage Butterfly	BR
Pieris oleracea Harris		Mustard White	BR
Colias philodice Godart		Clouded Sulphur	BR
Colias eurytheme (Boisduval)		Alfalfa Butterfly	BR
Colias interior Scudder		Pink-edged Sulphur	BR
Phoebis sennae (Linnaeus)		Cloudless Sulphur	RS
Phoebis philea (Linnaeus)		Orange-barred Sulphur	RS
Phoebis agarithe Boisduval		Large Sulphur	RS
Pyrisitia lisa (Boisduval & LeConte)		Little Sulphur	FS
Family Lycaenidae		**Hairstreaks, Blues, Coppers, and Harvesters**	
Subfamily Miletinae		**Harvesters**	
Feniseca tarquinius (Fabricius)		Harvester	BR
Subfamily Lycaeninae		**Hairstreaks, Blues, and Coppers**	
Lycaena phlaeas (Linnaeus)	*hypophlaeas* Boisduval; not *americana* Harris (See Emmel & Pratt 1998)	American Copper	BR
Lycaena hyllus (Cramer)		Bronze Copper	BR
Lycaena epixanthe (Boisduval & LeConte)		Bog Copper	BR
Lycaena dorcas (W. Kirby)	*claytoni* Brower	Clayton's Copper	BR; EN
Callophrys hesseli (Rawson & Ziegler)		Hessel's Hairstreak	BR: EN
Callophrys gryneus (Hübner)		Olive Hairstreak	BR; SC
Callophrys augustinus (Westwood)		Brown Elfin	BR
Callophrys polios (Cook & Watson)		Hoary Elfin	BR
Callophrys irus (Godart)		Frosted Elfin	EX
Callophrys henrici (Grote & Robinson)		Henry's Elfin	BR
Callophrys lanoraieensis (Sheppard)		Bog Elfin	BR; SC
Callophrys niphon (Hübner)	*clarki* (T. N. Freeman)	Eastern Pine Elfin	BR
Callophrys eryphon (Boisduval)		Western Pine Elfin	BR; SC
Satyrium titus (Fabricius)		Coral Hairstreak	BR
Satyrium acadica (W. H. Edwards)		Acadian Hairstreak	BR
Satyrium edwardsii (Grote & Robinson)		Edwards' Hairstreak	BR; EN
Satyrium calanus (Hübner)	*falacer* (Godart)	Banded Hairstreak	BR
Satyrium liparops (LeConte)	*strigosum* (Harris)	Striped Hairstreak	BR

Strymon melinus (Hübner)		Grey Hairstreak	BR
Erora laeta (W. H. Edwards)		Early Hairstreak	BR
Cupido comyntas (Godart)		Eastern Tailed Blue	BR
Cupido amyntula (Boisduval)	*maritima* (LeBlanc)	Western Tailed Blue	BR
Celastrina lucia (W. Kirby)	Populations from northern black spruce bogs may represent another species. *C. ladon* (Cramer) applies to another species that has not yet been found in Maine but could occur in southern parts of the state.	Spring Azure (and what is often referred to as the Cherry Gall Azure)	BR
Celastrina neglecta (W. H. Edwards)		Summer Azure	BR
Glaucopsyche lygdamus (Doubleday)	*couperi* Grote	Silvery Blue	BR
Plebejus idas (Linnaeus)	*empetri* (T. N. Freeman)	Crowberry Blue	BR; SC
Plebejus melissa (W. H. Edwards)	*samuelis* Nabokov	Karner Blue	EX[2]
Plebejus saepiolus (Boisduval)	*amica* (W. H. Edwards)	Greenish Blue	BR
Family Nymphalidae		**Brushfoots, Monarchs, Satyrs**	
Subfamily Libytheinae		**Snouts**	
Libytheana carinenta (Cramer)	*bachmanii* (Kirtland)	Eastern Snout	RS
Subfamily Danainae		**Monarchs or Milkweed Butterflies**	
Danaus plexippus (Linnaeus)		Monarch	TC
Subfamily Heliconiinae		**Fritillaries**	
Euptoieta claudia (Cramer)		Variegated Fritillary	RC
Speyeria cybele (Fabricius)		Great Spangled Fritillary	BR
Speyeria aphrodite (Fabricius)		Aphrodite Fritillary	BR
Speyeria idalia (Drury)		Regal Fritillary	EX
Speyeria atlantis (W. H. Edwards)		Atlantis Fritillary	BR
Boloria eunomia (Esper)	*dawsoni* (Barnes & McDunnough)	Bog Fritillary	BR; SC
Boloria selene (Denis & Schiffermüller)	Two poorly differentiated subspecies occur in Maine; *myrina* (Cramer) in the southwest, and *atrocostalis* (Huard) in the north. A broad blend zone occurs across central Maine.	Silver-bordered Fritillary	BR
Boloria bellona (Fabricius)		Meadow Fritillary	BR
Boloria frigga (Thunberg)	*saga* (Staudinger)	Frigga Fritillary	BR
Boloria chariclea (Schneider)	*grandis* (Barnes & McDunnough)	Purple Lesser Fritillary	BR
Subfamily Nymphalinae		**Checkerspots, Tortoiseshells, Commas, and Ladies**	
Chlosyne nycteis (Doubleday)		Silvery Checkerspot	BR
Chlosyne harrisii (Scudder)		Harris's Checkerspot	BR
Phyciodes tharos (Drury)		Pearl Crescent	BR
Phyciodes cocyta (Cramer)		Northern Pearl Crescent	BR
Phyciodes batesii (Reakirt)		Tawny Crescent	EX
Euphydryas phaeton (Drury)		Baltimore Checkerspot	BR
Junonia coenia Hübner		Common Buckeye	RS
Polygonia interrogationis (Fabricius)		Question Mark	TC
Polygonia comma (Harris)		Eastern Comma	BR
Polygonia satyrus (W. H. Edwards)		Satyr Comma	BR
Polygonia faunus (W. H. Edwards)		Green Comma	BR
Polygonia gracilis (Grote & Robinson)		Hoary Comma	BR
Polygonia progne (Cramer)		Grey Comma	BR
Roddia vaualbum (Dennis &		Compton Tortoiseshell	BR

Schiffermüller)			
Aglais milberti (Godart)		Milbert's Tortoiseshell	BR
Nymphalis antiopa (Linnaeus)		Mourning Cloak	BR
Vanessa atalanta (Linnaeus)		Red Admiral	BR
Vanessa cardui (Linnaeus)		Painted Lady	TC
Vanessa virginiensis (Drury)		American Lady	BR
Limenitis arthemis (Drury)	The northern limit of the blend zone between the subspecies *L.a. astyanax* (Fabricius) (Red Spotted Purple) and *L. arthemis* occurs in southwestern Maine where some individuals may show reduced white banding on the wings and rare individuals may closely resemble the Red Spotted Purple phenotype.	White Admiral	BR
Limenitis archippus (Cramer)		Viceroy	BR
Subfamily Satyrinae		**Satyrs and Arctics**	
Enodia anthedon A. H. Clark		Northern Pearly-Eye	BR
Satyrodes eurydice (Linnaeus)		Eyed Brown	BR
Satyrodes appalachia (R. L. Chermock)		Appalachian Brown	BR
Megisto cymela (Cramer)		Little Wood Satyr	BR
Coenonympha tullia (Hübner)	*inornata* W. H. Edwards	Inornate Ringlet	BR
Cercyonis pegala (Fabricius)	In southwestern Maine is subspecies *alope* (Fabricius), which has a well-developed yellowish to orange patch on the forewing. In northern Maine is subspecies *nephele* (Kirby), which lacks the forewing patch. A broad blend zone occurs between these two subspecies in southern and coastal Maine as far east as Calais producing phenotypes of intermediate appearance.	Common Wood Nymph	BR
Oeneis jutta (Hübner)	*ascerta* (Masters & Sorensen)	Jutta Arctic	BR
Oeneis polixenes (Fabricius)	*katahdin* (Newcomb)	Katahdin Arctic	BR; EN

1: BR = Breeding resident; TC = Frequent to common temporary colonist; RC = Rare temporary colonist; FS = Frequent stray; RS = Rare Stray; EX = Extirpated; EN = State Endangered; SC = State Special Concern

2: *Plebejus melissa samuelis* (Karner Blue) is the only federally endangered butterfly in Maine; It is now extirpated.

County and Township Records

A list of the Maine counties and number of townships in which each butterfly species (or subspecies) is known is summarized in Table 2 below, entitled Maine Collection Records. These data demonstrate that collecting effort in Maine has not been uniform. Collecting effort appears to have been concentrated in certain locales, often in and near areas where resident collectors lived (Lincoln, Augusta, Portland) or areas where rare species are known to occur (Baxter State Park). More remote counties have received relatively little sampling. Data from this table should help focus sampling effort for future butterfly surveys in Maine.

On average, 63 species of butterflies were found in each county in Maine. This represents about 55% of the 114 species of butterflies reported for Maine. Highest species richness was recorded in Oxford Co. with 91 species (80% of all species known from Maine). Relatively high species richness was also recorded from Washington Co. (87 species) and Penobscot Co. (81 species). The least number of species was recorded from Sagadahoc Co. (37 species), Knox Co. (38), Lincoln Co. (43 species), and Androscoggin Co. (42 species). Only eight species [*P. hobomok*, *Papilio canadensis* Rothschild & Jordan, *Celastrina* sp. (Cherry Gall Azure), *Boloria selene* (Denis & Schiffermüller), *Chlosyne harrisii* (Scudder), *Phyciodes coctya* (Cramer), *Limenitis arthemis* (Drury), and *Cercyonis pegala* (Fabricius)] have been recorded from every county in Maine. Several other species have been recorded from all but one or two counties.

A total of 3904 township records were obtained during this study. This represents an average of 244 township records per county. Washington Co. and Hancock Co. had the greatest number of records, with 573 and 470 records, respectively. The least number of records were obtained from Sagadahoc Co. (54), Knox Co. (60), and Androscoggin Co. (77). These are among the smallest counties in the state, and thus lower numbers of township records are expected.

Table 2. A List of Counties and the Number of Townships from which Maine Butterfly Records are Known.

Maine Collection Records																	
	Number of township records per county																
Species	Androscoggin	Aroostook	Cumberland	Franklin	Hancock	Kennebec	Knox	Lincoln	Oxford	Penobscot	Piscataquis	Sagadahoc	Somerset	Waldo	Washington	York	State of Maine
Family HESPERIIDAE																	
Epargyreus clarus (Cramer)	1		2		2	6		1	4	1		2		2		4	25
Thorybes pylades (Scudder)	1	3	3	4	3	5	1	1	2	7	2		2		1	2	37
Thorybes bathyllus (J. E. Smith)									1							1	2
Erynnis icelus (Scudder & Burgess)	1	7	2	5	10	5		3	6	10	8	1	7	4	11	7	87
Erynnis brizo (Boisduval & LeConte)						1										6	7
Erynnis juvenalis (Fabricius)			4		8	1	1		2			1			4	11	32
Erynnis persius (Scudder)									1								1
Pholisora catullus (Fabricius)									1							1	2
Carterocephalus palaemon (Pallas)	2	1	2	5	5	5		2	4	8	3		4	1	8	3	53
Ancyloxypha numitor (Fabricius)	2		2	1	4	6		2	2	5	1	2	1		7	2	37
Thymelicus lineola (Ochsenheimer)		2	2	1	2	1	1		2	5		1		2	2	2	23
Hesperia comma (Linnaeus)		1		1	3					3				1	6		15
Hesperia leonardus Harris			1	1	1	3		1		2			1		1	3	14
Hesperia metea Scudder									1							2	3
Hesperia sassacus Harris	1		2	3	5	9			3	3	1				3	2	32
Polites peckius (W. Kirby)	1	1	4	2	5	3		3	3	6	2		1	2	6	2	41
Polites themistocles (Latreille)	1	1	3	4	9	4		1	4	7	1		1	2	9	3	50
Polites origines (Fabricius)	1		4		1	1			2	3		1	1		1	2	17
Polites mystic (W. H. Edwards)	1	1	3	4	9	8	1	2	5	8	3			3	8	4	60
Wallengrenia egeremet (Scudder)			3		1				4		1					3	12
Pompeius verna (W. H. Edwards)			2													1	3
Anatrytone logan (W. H. Edwards)	1		4	1		1			2					2		4	15
Poanes hobomok (Harris)	2	2	5	3	12	8	2	3	6	10	5	1	2	1	13	7	82
Poanes viator (W. H. Edwards)																1	1
Euphyes bimacula (Grote & Robinson)			1	2	2	2			2	4		1			2	2	18
Euphyes vestris (Boisduval)	2	1	4	2	7	4	1		4	7	4	1	1	3	9	7	57
Amblyscirtes hegon (Scudder)	1	1	1	2	3	3	1	1	2	4	2	1	1		8	4	35
Amblyscirtes vialis (W. H. Edwards)	1	2	1	3	11	5	1	1	3	9			4		8	1	50
Family PAPILIONIDAE																	
Battus philenor (Linnaeus)					1												
Papilio polyxenes Fabricius		1	6	3	2	4	1	1	4	3				1	2	3	31
Papilio glaucus Linnaeus				1												2	3
Papilio canadensis Rothschild & Jordan	4	10	6	5	16	8	1	1	11	13	5	2	9	4	20	8	123
Papilio troilus Linnaeus					1											1	2
Papilio cresphontes Cramer						1									1		2
Family PIERIDAE																	
Pontia protodice (Boisduval & LeConte)						1											1
Pieris rapae (Linnaeus.)		4	4	5	11	5			3	8	2	1	4		18	7	72

Species	Number of township records per county																
	Androscoggin	Aroostook	Cumberland	Franklin	Hancock	Kennebec	Knox	Lincoln	Oxford	Penobscot	Piscataquis	Sagadahoc	Somerset	Waldo	Washington	York	State of Maine
Pieris oleracea Harris		4	3	5	1				6	5	4		4		1		33
Colias philodice Godart	2	6	6	5	13	6	2		6	9	5	2	5	2	14	8	91
Colias eurytheme Boisduval		1	5	4	7	1			5	6				2	13	8	52
Colias interior Scudder		2	2	3	11	2	3		5	6	8		1	1	23	2	69
Phoebis sennae (Linnaeus)								1	1								2
Phoebis philea (Linnaeus)																	0
Phoebis agarithe Boisduval																1	1
Pyrisitia lisa (Boisduval & LeConte)				1	1				1	1	4					3	11
Family LYCAENIDAE																	
Feniseca tarquinius (Fabricius)		2	3	5	6	2			7	6	4		1	1	6	3	46
Lycaena phlaeas (Linnaues)	1		4	3	9	4		3	2	7	2	3	1	2	7	9	57
Lycaena hyllus (Cramer)	1		3			4		1		3		1				3	16
Lycaena epixanthe (Boisduval & LeConte)		4	3		8	2	1		2	8	1		1		10	9	49
Lycaena dorcas W. Kirby		1								3	3						7
Callophrys hesseli Rawson & Ziegler																3	3
Callophrys gryneus (Hübner)									1							2	3
Callophrys augustinus (Westwood)		3	2	1	11				5	8	3	1	4	1	17	7	63
Callophrys polios (Cook & Watson)		2		1	3				1	4	3		1		4	1	20
Callophrys irus (Godart)									1								1
Callophrys henrici (Grote & Robinson)					1	2			2	6			1		2	2	16
Callophrys lanoraieensis (Sheppard)		1	1		6				1	5	2				12	3	31
Callophrys niphon (Hübner)	3	2	4	3	10	10	1		9	5	3	2	2	2	11	11	78
Callophrys eryphon (Boisduval)				2					2		3		1				8
Satyrium titus (Fabricius)			2						1	1		1				2	7
Satyrium acadica (W. H. Edwards)			1			3	1	1		3		1	1	2		1	14
Satyrium edwardsii (Grote & Robinson)						2			1							3	6
Satyrium calanus (Hübner)			2		3	5	1	2	3				1	3		8	28
Satyrium liparops (LeConte)		1	2	2	1	3		1	3	1		1			1	5	21
Strymon melinus Hübner			2		3	4		1	1	2				1	2	3	19
Erora laeta (W. H. Edwards)				1	1				1	2	1						6
Cupido comyntas (Godart)	1		3	1	5	2		2	4	1	1	1	1	1	4	5	32
Cupido amyntula (Boisduval)		1															1
Celastrina sp. 1 (Bog Associate)		2			7		1		3	6	4		2		13	1	39
Celastrina sp. 2 (Cherry Gall Azure)	2	3	5	3	10	4	2	3	5	10	7	2	4	3	7	7	77
Celastrina neglecta (W. H. Edwards)			4	1	8	2		2	4	1				2	6	8	38
Glaucopsyche lygdamus (Doubleday)	2	7	2	1	5	3			4	5	4	2	1	2	9	2	49
Plebejus idas (Linnaeus)															9		9
Plebejus melissa (W. H. Edwards)									1								1
Plebejus saepiolus (Boisduval)				1	1				2	4	1		1		1		11
Family NYMPHALIDAE																	
Libytheana carinenta (Cramer)								1									1
Danaus plexippus (Linnaeus)		1	2	2	5	4	1	2	7	2		1			6	3	36
Euptoieta claudia (Cramer)			3		1			1	1			1	1	1	3	2	14

Species	Number of township records per county																
	Androscoggin	Aroostook	Cumberland	Franklin	Hancock	Kennebec	Knox	Lincoln	Oxford	Penobscot	Piscataquis	Sagadahoc	Somerset	Waldo	Washington	York	State of Maine
Speyeria cybele (Fabricius)	2	6	6	5	11	5	4	4	8	12	5		1	2	15	7	93
Speyeria aphrodite (Fabricius)	1	2	3	8	2	2	1	1	11	6	2		3	1	5	5	53
Speyeria idalia (Drury)	1		3		1	3			1				1			1	11
Speyeria atlantis (W. H. Edwards)		6	4	8	12	4	2	1	14	12	11		3	2	21	4	104
Boloria eunomia (Esper)		2		1					3	3	5		5				19
Boloria selene (Denis & Schiffermüller)	4	10	9	4	8	5	2	3	9	14	8	1	6	2	13	7	105
Boloria bellona (Fabricius)	2	1	4	2	2	6			2	7	1	2		2	2	3	36
Boloria frigga (Thunberg)											1						1
Boloria chariclea (Schneider)		2															2
Chlosyne nycteis (Doubleday)	1	1	1		5				1	2	1				4	1	17
Chlosyne harrisii (Scudder)	3	4	4	4	7	4	2	4	8	9	5	1	8	4	12	7	86
Phyciodes tharos (Drury)			1	1		1		1	1	2						2	9
Phyciodes cocyta (Cramer)	2	3	8	6	11	6	1	4	6	13	5	2	7	5	18	5	102
Phyciodes batesii (Reakirt)									1								1
Euphydryas phaeton (Drury)		2	2	2	1	6			4	6	1		1		1	4	30
Junonia coenia Hübner			2		1		1	3		1					1	2	11
Polygonia interrogationis (Fabricius)			6	1	4	5	1		2	3		1	1	1	4	3	32
Polygonia comma (Harris)	1	4	2	1	3	5	1		2	4			1	1	4	3	32
Polygonia satyrus (W. H. Edwards)		1								1							2
Polygonia faunus (W. H. Edwards)		13	2	6	8	2	1		7	5	8		7	1	1		61
Polygonia gracilis (Grote & Robinson)		8		6					1	2	5		4				26
Polygonia progne (Cramer)		4	1	5	2	4			3	7	6		2	1	3	2	40
Roddia vaualbum (Denis & Schiffermüller)			2	4	3	4	1		6	4	3		3	1	3	1	35
Aglais milberti (Godart)	1	6	3	6	3	3			2	2	2		3	1	3		35
Nymphalis antiopa (Linnaeus)	1	1	3	2	13	4	2	1	6	4	2		1	1	14	6	61
Vanessa virginiensis (Drury)	2		4	4	12	5	3	1	5	4	2	1	5	4	12	9	73
Vanessa cardui (Linnaeus)			4	1	4	2	1	1	3	3	1		1	2	5	3	31
Vanessa atalanta (Linnaeus)	2		2	1	12	4	1	1	6	1	1		2	1	11	2	47
Limenitis arthemis (Drury)	3	3	3	7	12	8	2	2	9	10	10	1	6	2	17	8	103
Limenitis arthemis/astyanax intermediate			2	2	2			1	1	1		1	1		1	4	16
Limenitis arthemis (*astyanax* phenotype)			3						2			1				7	13
Limenitis archippus (Cramer)	2	4	6	6	11	9	1		5	7	2	1	2	1	20	9	86
Enodia anthedon A. H. Clark		3	6	5	8	4	2		8	10	8		1	3	6	4	68
Satyrodes eurydice (Linnaeus)	2		4	6	7	4	1		5	7	4	1		3	6	7	57
Satyrodes appalachia (R. Chermock)									1	1							2
Megisto cymela (Cramer)	5	3	5	1	5	6		1	2	6	2	2		1	5	8	52
Coenonympha tullia (Müller)	3	1	5	7	12	8		2	5	4	5	1	4	1	16	7	81
Cercyonis pegala (Fabricius) (*alope* phenotype)	1		9		3	1	1	1	6	1		2			3	9	37
Cercyonis pegala / nephele intermediate			6	1	5	1	3	1	4	2		1		2	6	2	34
Cercyonis pegala (Fabricius) (nephele phenotype)	3	3	4	2	5	6	2	2	7	8	3	1	1	2	6		55
Oeneis jutta (Hübner)		5			4				2	9	4		3		6		33
Oeneis polixenes (Fabricius)											1						1
No. of township records/county	77	179	264	218	470	292	60	79	351	439	217	54	156	101	573	375	3904
No. of species/county	**42**	**53**	**75**	**68**	**79**	**71**	**39**	**43**	**91**	**81**	**62**	**37**	**49**	**52**	**73**	**87**	**114**

Rare Species Narratives

A brief narrative is given in Appendix 1 for 35 breeding resident species in Maine that are considered endangered, threatened, special concern, extirpated, or rare. Distribution maps depicting all township records and pictures of mounted adults are given for each species. Comments are given regarding the identification, ecology, threats, and current status of these species in view of the data obtained in this study.

Questionable Records

There are few species that have been reported from Maine that are unlikely to occur in the state. These records are described briefly below.

Satyrium favonias ontario **Edwards (Northern Hairstreak):** C. A. Frost reported this species from Monmouth (Kennebec Co.) (Brower, 1974). This species is usually found in areas with white oak, *Quercus alba* L., and has been reported as far north as eastern Massachusetts. There is a remote possibility that this hairstreak occurs in Maine in the extreme southwestern portion of the state. Adults are usually rare in southern New England and are active somewhat earlier than other *Satyrium* species (mid to late June)

Plebejus optilete **(Knoch) (Arctic Blue):** This species (as *Plebejus aquilo* Boisduval), typically occurs in tundra habitats and was reported by Frank Chermock from the top of Mount Katahdin on July 1, 1941 (Brower, 1974). Many collectors, including A. E. Brower, have collected on Mount Katahdin over the years and none has reported this species, thus we consider the record as questionable.

Potential New Species

Several butterfly species occur in neighboring jurisdictions, close to the Maine border (i.e. New Hampshire, Massachusetts, and Quebec). These species merit targeted survey effort to evaluate their potential presence in Maine.

Erynnis horatius **(Scudder & Burgess) (Horace's Duskywing):** *E. horatius* occurs as far north as eastern Massachusetts and could occur in Maine. This skipper is very similar to the relatively common *Erynnis juvenalis* (Fabricius), but it lacks the two round pale spots near the apex of the hindwing on the underside. Both species occur in oak woodlands. However, unlike *E. juvenalis*, which has one generation of adults per year, *E. horatius* has two. The second generation occurs in late July and August. Any large *Erynnis* species observed during this period will likely be *E. horatius*.

Erynnis lucilius **(Scudder & Burgess) (Columbine Duskywing)**: *E. lucilius* occurs nearby in Durham, New Hampshire (recent specimens are contained in the collection at UNH) and should occur in adjacent parts of Maine. This forest butterfly, which uses wild

columbine (*Aquilegia canadensis*) as a host plant, should occur in areas where this plant is common, such as on rocky hilltops. Adults are active during May and early June, and again during July to mid August. This skipper resembles a diminutive *E. juvenalis* (wingspan of only 21-29 mm).

***Erynnis baptisae* (Forbes) (Wild Indigo Duskywing):** The native host plant of *E. baptisae* is wild indigo, *Baptisia tinctoria*. However in recent years this species has started using the introduced crown vetch, *Coronilla varia* L. This plant is often planted along roadsides and other sites to control erosion, but is becoming an aggressive weed (Hinds 1999). Since the host plant switch, *E. baptisae* has been expanding its range and may eventually be found in Maine. Populations using the native host plant occur nearby in eastern Massachusetts. This butterfly is very similar to *E. lucilius*, but is larger (Wingspan 29-34 mm). *E. baptisae* is double brooded with adults active during mid May to late June and again from late July to mid August. Look for this species along roadsides and waste areas where crown vetch occurs.

***Poanes massasoit* (Scudder) (Mulberry Wing):** *P. massasoit* occurs as far north as eastern Massachusetts and could occur in Maine in suitable habitats. Look for this species along small streams, marshy areas, and roadside drainage ditches with an abundance of its caterpillar host, narrow-leafed sedge, *Carex stricta* Lam. Adults, which are active from mid July to mid-August, are often observed on swamp milkweed, flowers, *Asclepias incarnata* L. or patrolling among patches of sedges. The underside of this species is similar to that of the Hobomok Skipper, *Poanes hobomok* (Harris). However, the upperside of *P. massasoit* is dark purple (colored like mulberries) with a few yellow spots on some individuals. Wingspan: 22-29 mm.

***Euphyes conspicua* (W. H. Edwards) (Black Dash):** *E. conspicua* occurs as far north as eastern Massachusetts and could occur in Maine in suitable habitats. Look for this species along small streams, marshy areas, and roadside drainage ditches with an abundance of its caterpillar host, narrow-leafed sedge, *Carex stricta* Lam. Adults, which are active from mid July to mid-August, are often observed on swamp milkweed, flowers, *Asclepias incarnata* L. or patrolling among patches of sedges. This species is often found with *P. massasoit*. *E. conspicua* has a crescent band of pale spots on a light brown background, and thus can not be confused with any other skippers in Maine that would be active in late July or August. Wingspan: 26-32 mm.

***Atryonopsis hianna* (Scudder) (Dusted Skipper):** *A. hianna* occurs nearby in Durham, New Hampshire and should occur in Maine. *A. hianna* occurs in dry open habitats with blue stem grasses (*Andropogon* sp.). Frequently, these sites include, or are in close proximity to, stands of scrub oak, *Quercus ilicifolia* Wang . Adults of this single brooded species fly from mid to late May to mid June. Wingspan: 25-35 mm.

***Boloria frieja* (Thunberg) (Freija Fritillary):** *B. frieja* has been reported from the Quebec City area (Layberry et. al, 1998) and could occur in northwestern Maine, especially in view of the recent discovery of *B. frigga saga* in Maine. *B. frieja* live in

and near dry bogs with bearberry, *Arctostaphylos uva-ursi*, and would likely fly from mid May to early June in Maine. Wingspan: 28-38 mm.

***Lycaeides idas scudderii* (W. H. Edwards) (Northern Blue subspecies):** *L. idas scudderii* has been reported from southeastern Quebec, east of the St. Lawrence river (Layberry et. al, 1998) and should be looked for in northwestern Maine. Potential food plants for this subspecies of the Northern Blue are reported to include dwarf bilberry (*Vaccinium caespitosum*), labrador tea (*Ledum groenlandicum*), and sheep laurel (*Kalmia angustifolia*). *L. idas scudderii* is likely to fly in Maine from late June to mid-July, in upland boreal woodland-heath habitat similar to that used by *Boloria chariclea grandis* (Purple Lesser Fritillary). Wingspan: 17-28 mm. *[Note: Shortly upon completion of this report Chris Livesay reported the probable collection of this subspecies from a single locale in extreme northwest Maine.]*

Acknowledgements

This project was supported by a grant from the Maine Outdoor Heritage Fund. Further support for the project was provided by the Maine Chapter of The Nature Conservancy, the Maine Department of Conservation (Maine Forest Service), and proceeds from MDIFW's Nongame and Endangered Wildlife Fund (conservation license plate and state income tax Chickadee Check-off). We thank Don Katnik (MDIFW) for constructing the township distribution maps and Tony Thomas for generously contributing digital images of most of the butterflies. The report's cover image (Coral Hairstreak) was provided by Tom Murray. Finally, we are thankful for editorial review of the report by Beth Swartz (MDIFW) and Suzanne Nash and formatting assistance by Diana Harper (MDIFW) and Marie-Andrée Giguère.

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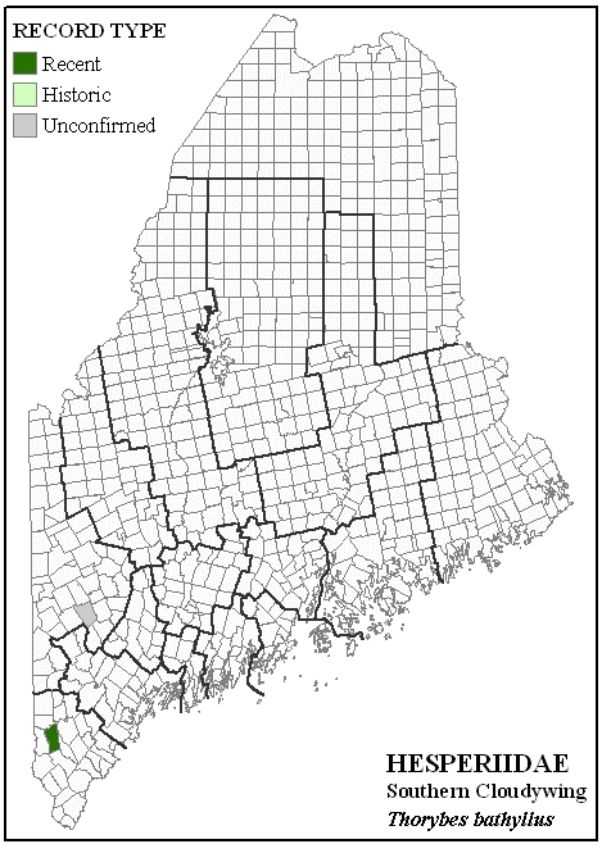
Appendix 1. Rare Butterfly Narratives

A brief narrative is provided for 35 breeding resident butterflies in Maine (listed below) that are considered endangered, threatened, special concern, extirpated, or rare. Rare species believed to be temporary colonists or strays (see Table 1) are not treated here. Distribution maps depicting all township records and color images of mounted adults are provided for each species. Comments are given regarding the identification, ecology, threats, and current status of each species in light of data reviewed in this study.

Scientific Name	Common Name	Maine Status [1]	Global Status [2]
Thorybes bathyllus	Southern Cloudywing		G5
Erynnis brizo	Sleepy Duskywing		G5
Erynnis persius	Persius Duskywing	EX	G5T2T3
Pholisora catullus	Common Sootywing		G5
Hesperia leonardus	Leonard's Skipper		G4
Hesperia metea	Cobweb Skipper		G4G5
Wallengrenia egeremet	Northern Broken-Dash		G5
Anatrytone logan	Delaware Skipper		G5
Pompeius verna	Little Glassywing		G5
Poanes viator zizaniae	Broad-winged Skipper		G5T5
Papilio troilus	Spicebush Swallowtail	SC	G5
Lycaena hyllus	Bronze Copper		G5
Lycaena dorcas claytoni	Clayton's Copper	EN	G5T1
Callophrys hesseli	Hessel's Hairstreak	EN	G3G4
Callophrys gryneus	Olive Hairstreak	SC	G5
Callophrys irus	Frosted Elfin	EX	G3
Callophrys henrici	Henry's Elfin		G5
Callophrys lanoraieensis	Bog Elfin	SC	G3G4
Callophrys eryphon	Western Pine Elfin	SC	G5
Satyrium titus	Coral Hairstreak		G5
Satyrium edwardsii	Edwards' Hairstreak	EN	G4
Erora laeta	Early Hairstreak		G3G4
Cupido amyntula maritime	Western Tailed Blue		G5T3T4
Plebejus idas empetri	Crowberry Blue	SC	G5T3T4
Plebejus melissa samuelis	Karner Blue	EX	G5T2
Plebejus saepiolus amica	Greenish Blue		G5
Speyeria idalia	Regal Fritillary	EX	G3
Boloria eunomia dawsoni	Bog Fritillary	SC	G3G4
Boloria frigga saga	Frigga Fritillary		G5
Boloria chariclea grandis	Purple Lesser Fritillary		G5T5
Phyciodes tharos	Pearl Crescent		G5
Phyciodes batesii	Tawny Crescent	EX	G4T1
Polygonia satyrus	Satyr Comma		G5
Satyrodes appalachia	Appalachian Brown		G4
Oeneis polixenes katahdin	Katahdin Arctic	EN	G5T1

1: EX = Extirpated; SC = Special Concern; EN = Endangered.

2: NatureServe Global Status: G1= ~1-5 populations; generally local endemic, G2= ~ 6-20 populations; generally state or regional endemic, G3= ~ 21-100 populations; considered globally rare, G4= >100 populations; apparently globally secure, G5= globally secure, T= Sub-specific global rank.



Top Right: Male upperside

Southern Cloudywing
Thorybes bathyllus (J. E. Smith)

Diagnosis: This is a medium sized dark brown skipper with a diagonal band of small somewhat rectangular whitish spots across the center of the forewing. There is a second shorter band of spots near the tip of the forewing. The male lacks a costal fold on the forewing. The similar and much more common northern cloudywing [*Thorybes pylades* (Scudder)] lacks the costal fold in the male and has smaller and more or less triangular shaped whitish spots on the forewing. Adults perch with the wings open and horizontal. Wingspan: 32-38 mm.

Range: *T. bathyllus* occurs throughout much of the eastern United States northward to southern Wisconsin, southern Ontario and southern Maine (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *T. bathyllus* is known from two localities (2 counties, 2 townships) in the extreme southwestern portion of the state. The specimen from Norway was collected around 1865 by S. I. Smith. However a specimen of *T. bathyllus* was collected in the

Shapleigh Barrens (York Co.) in 1981 by D. MacDonald and Dale Schweitzer, suggesting the species may still occur in Maine, or it is an occasional colonist.

Habitat and Larval Hosts: In southern New England *T. bathyllus* is usually associated with open areas within scrub oak and pitch pine barrens. Host plants are legumes, such as milk vetch (*Astragalus* sp.), bush clover (*Lespedeza* sp.), and wild bean (*Strophostyles* sp.).

Life Cycle: The larvae live in folded leaf-nests on the food plants and overwinter as mature larvae in the nests. There are usually two generations per year. The first brood flies in June and early July, the second in August.

Nectar Sources and Behavior: Adults frequent open areas and often perch with wings open on small shrubs and branches. Adults feed on a variety of flowers, such as dogbane (*Apocynum* sp.), common milkweed (*Asclepias syriaca*) and red clover (*Trifolium pretense*) (Allen 1997).

Threats and Conservation Concerns: Development and ecological succession, due mainly to fire prevention, are major threats to all species associated with dry, early successional habitats, including scrub oak-pitch pine barrens in Maine. Aerial pesticide spraying for gypsy moths (or other pests) also poses a potential risk to this and other barren lepidoptera species. The continued loss and degradation of barren habitats could result in the eventual extirpation of this species from Maine.

Additional survey work should be done to establish whether resident populations of this skipper occur in Maine.

Status in Maine: *T. bathyllus* currently has no legal protection in Maine.

Top Right: Male upperside

Sleepy Duskywing
Erynnis brizo (Boisduval & LeConte)

Diagnosis: This is a medium sized brown skipper with two distinct dark-edged purple grey bands of connected spots (giving the appearance of a chain) across the forewing. This and the very similar and much more common *Erynnis icelus* (Scudder & Burgess) are the only duskywing skippers without hyaline spots on the forewing. *E. icelus* is smaller (23-30 mm) and often lacks the inner band of spots or the band is poorly defined. Both these species perch with the wings open and horizontal. Wingspan: 28-35 mm.

Range: *E. brizo* ranges across much of the United States northward to southeastern Saskatchewan, southern Manitoba, extreme southern Ontario, and southwestern Maine (Layberry et al. 1998).

Abundance: *E. brizo* is known from eight localities (2 counties, 7 townships) mostly in the extreme southwestern portion of the state in York Co. This species is usually found in low numbers at most sites.

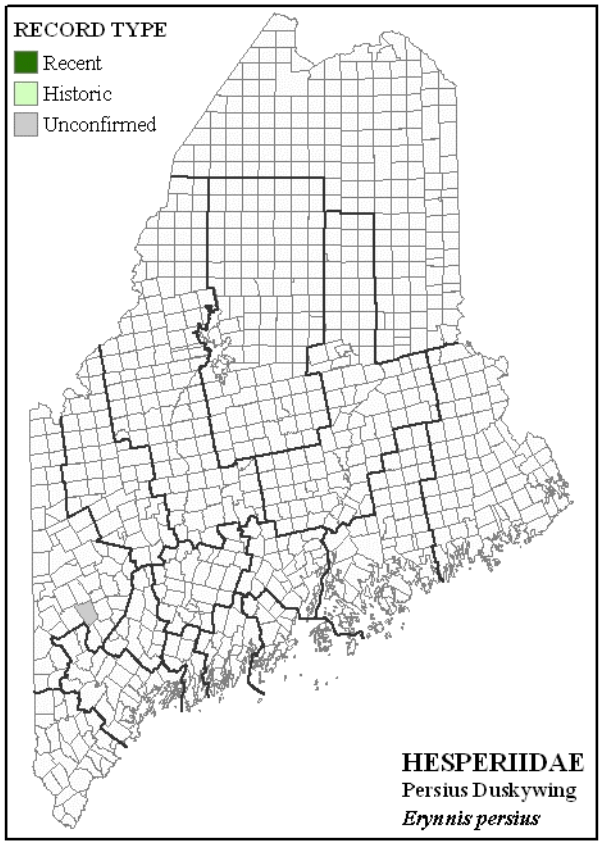
Habitat and Larval Hosts: In the Northeast, scrub oak (*Quercus ilicifolia*) is the only known larval host plant. *E. brizo* occurs in scrub oak barrens in sand barrens and on rocky outcrops on hill tops.

Life Cycle: Eggs are laid singly on the host plant in May. After the eggs hatch the larvae construct leaf shelters and live in these shelters throughout the season (Allen 1997). *E. brizo* overwinter as mature caterpillars within the shelter, pupate in the shelters during the following spring, and then emerge as adults starting in early to mid May. There is only one generation of adults per year.

Nectar Sources and Behavior: Adults are most often observed on damp soil along trails through scrub oak-pitch pine barrens, or perching on twigs in sunny openings within the forest. *E. brizo* nectar on blueberry (especially lowbush blueberry) (Vaccinium sp.), blackberry (*Rubus* sp.) and dandelions (*Taraxacum* sp.).

Threats and Conservation Concerns: *E. brizo* appears to be a relatively rare species in Maine. Development and ecological succession, due mainly to fire prevention, are major threats to all species associated with dry, early successional habitats, including scrub oak-pitch pine barrens in Maine. Aerial pesticide spraying for gypsy moths (or other pests) also poses a potential risk to this and other barren lepidoptera species. The continued loss and degradation of barren habitats could result in the eventual extirpation of this species from Maine.

Status in Maine: *E. brizo* currently has no legal protection in Maine. The status of this species should be re-evaluated if further populations cannot be documented in the near future.



Top Right: Male upperside

Persius Duskywing
Erynnis persius (Scudder)

Diagnosis: This is a small to medium sized dark brown skipper. Males possess elevated whitish hair-like scales that give it a soft appearance. Both sexes have a short row of four whitish hyaline spots near the outer margin of the forewings. These spots are usually in a straight row rather than offset, as in the larger (32-44 mm wingspan) and relatively common *Erynnis juvenalis* (F.). This species perches with the wings open and horizontal. Wingspan: 25-35 mm.

Range: This rare species is found in isolated populations from southern New England west to southern Wisconsin and south along the Appalachian mountains to Virginia (Opler & Krizek 1984).

Abundance: *E. persius* was collected in Norway (Oxford Co.) around 1865 by S.I. Smith. No other specimens are known from Maine and the species is now considered extirpated.

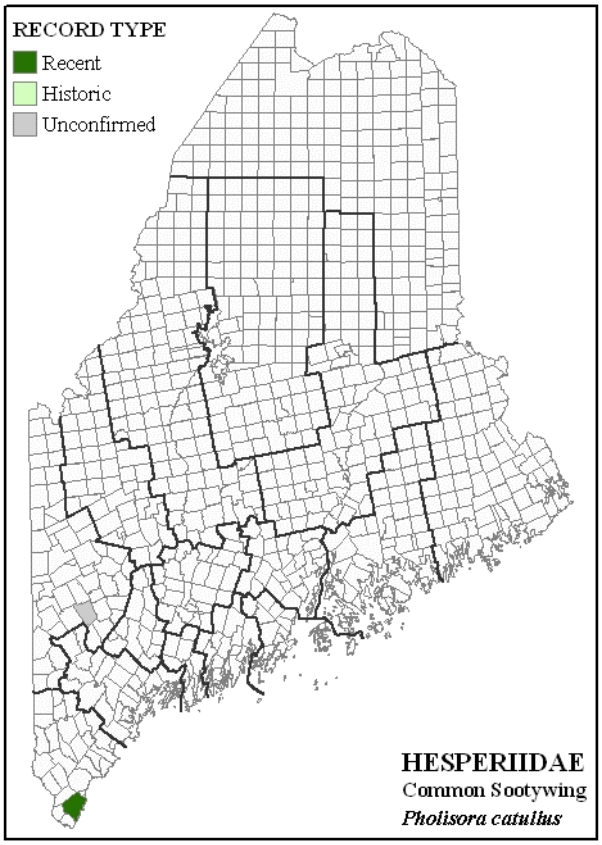
Habitat and Larval Hosts: In southern New England *E. persius* uses wild lupine (*Lupinus perennis*) and more rarely false indigo (*Baptisia tinctoria*). This duskywing is usually associated with pitch pine and scrub oak barrens with good stands of the host plant. Typically adults occur in openings within the forest where host plants are most plentiful. Both host plants are believed extirpated in Maine, or nearly so.

Life Cycle: Eggs are deposited singly on the host leaves. Like the other *Erynnis* species, *E. persius* larvae live in leaf shelters constructed by tying leaves together with silk (Allen 1997). *E. persius* overwinter in the shelters and pupate the following spring. There is only one generation of adults per year, in late May to mid June.

Nectar Sources and Behavior: In Rhode Island adults have been observed nectaring on lowbush blueberry (*Vaccinium* sp.) (Webster, unpublished). *E. persius* is often observed resting on moist soil along unpaved trails throughout its preferred habitat.

Threats and Conservation Concerns: This species is likely extirpated from Maine. Currently, wild lupine is extirpated from the state and only one small population of false indigo remains that is not large enough to support a population of this skipper.

Status in Maine: Extirpated.



Top Right: Male upperside

Common Sootywing
Pholisora catullus (Fabricius)

Diagnosis: This is a small black skipper with rounded wings and one or two curved rows of tiny white spots on the outer portion of the forewing. The *Erynnis* species are larger and more mottled. *P. catullus* perches with its wings open and horizontal. Wingspan: 22-32 mm.

Range: *P. catullus* occurs throughout most of the United States to southwestern Ontario and as a stray or temporary colonist northward to southern Quebec (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *P. catullus* is known from two localities (2 counties, 2 townships) in the southwestern portion of the state. The specimen reported from Norway by Scudder (1889) was collected by S. I. Smith, probably around 1865. A recent specimen of *P. catullus* was collected near York, Maine in 1988 by Richard Folsom, suggesting the species may still occur in Maine or that it is a temporary colonist.

Habitat and Larval Hosts: The preferred host plant of this skipper is lamb's quarters (*Chenopodium* sp.). This plant often grows in disturbed sites such as gardens and

farmyards, but also along river margins and coastal salt marshes. *P. catullus* could potentially be found in any of these habitats.

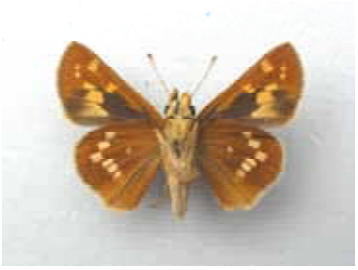
Life Cycle: This skipper is bivoltine in much of its northern range with adults present during May and June and again in August. Larvae live in shelters made from the host leaves. The mature larvae overwinter in the shelters and pupate the following spring.

Nectar Sources and Behavior: Males patrol close to the ground in open areas or perch on plants or bare spots on moist soil. *C. catullus* nectars on a variety of flowers, including dogbane (*Apocynum* sp.), common milkweed (*Asclepias syriaca*) and clover (*Trifolium* sp.) (Allen 1997).

Threats and Conservation Concerns: There are no known significant threats to this species as it is probably a species of disturbed habitats. It is likely that this species is only a temporary colonist in Maine.

Further surveys are needed to determine the status and distribution of this species in Maine.

Status in Maine: *C. catullus* currently has no legal protection in Maine.



Top Right: Male upperside**. Middle Right**: Female upperside. **Bottom Right**: Female underside

Leonard's Skipper
Hesperia leonardus Harris

Diagnosis: *H. leonardus* is tawny orange above with wide dark brown borders. The male has a well-developed black elongate stigma (contains androconial scales) on the forewing. The underside of both sexes is red brown to rust with a row of well–marked contrasting whitish to yellow spots on the hindwing. *Hesperia comma laurentina* (Lyman) is similar, but the ground color of the underside is yellowish orange with a greenish tint to almost olive green and the spots are pearly white and usually more extensive. This species perches with the wings closed above the body or with the hindwing slightly opened. Wingspan: 28-35 mm.

Range: This skipper ranges from Georgia west to Missouri northward to Minnesota, Ontario, Quebec and Maine (Opler & Krizek 1984, Layberry et. al 1998). A prairie subspecies occurs in the plains states and provinces.

Abundance: *H. leonardus* is known from 14 localities (9 counties, 14 townships) in southwestern Maine and as far east as Lincoln and Bar Harbor. However, there is only one recent record of this species in Maine. Kristine Wallstrom and Tom Fiore photographed an individual in the Kennebunk Plains, York Co. in 2002.

Habitat and Larval Hosts: The larvae feed on perennial grasses, such as bluestem and beard grasses (*Andropogon* sp.), *Boutelous* sp., and panic grass (*Panicum* sp.) (Layberry et. al 1998). This species is often associated with open areas, such as old fields in pitch pine barrens, oak forests and mixed forests.

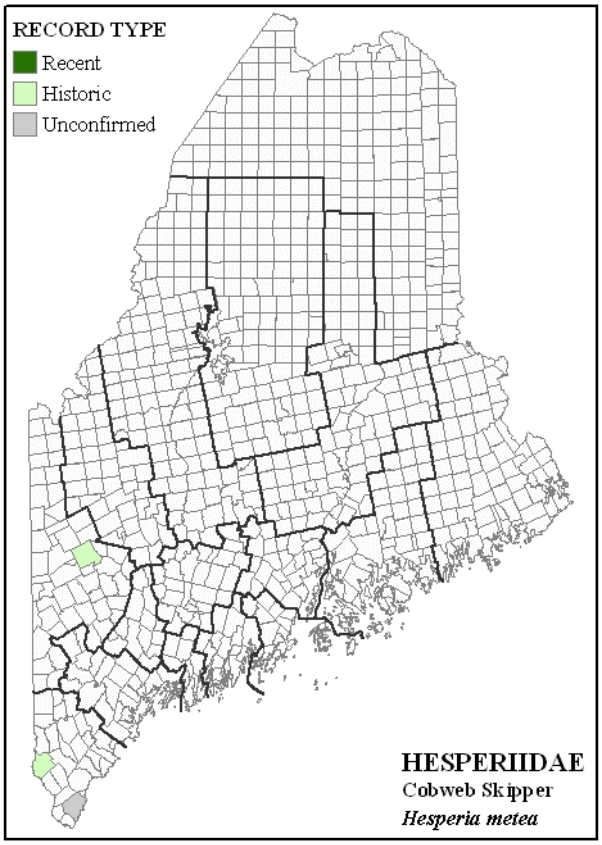
Life Cycle: There is only one generation of adults per year with adults present from mid to late August to mid September. Adults are most common during the last week of August. The larvae live in shelters constructed from the host grasses. This species overwinters as a first or second instar caterpillar.

Nectar Sources and Behavior: *H. leonardus* prefers purple, blue or pink flowers. In Rhode Island one of the favorite nectar flowers are the blue fall blooming asters (*Aster* sp.). Other nectar flowers include Joe-pye weed (*Eupatorium* sp. and thistles (*Cirsium* sp.). Territorial males perch in openings within forests or old fields.

Threats and Conservation Concerns: There is only one recent record for *H. leonardus* in Maine. Its preferred habitat is old dry fields or other open habitats with perennial grasses. Many of these habitats are rapidly disappearing in Maine, due to a combination of succession and development.

Additional survey work should be done to determine the current status and distribution of this species in Maine.

Status in Maine: *H. leonardus* currently has no legal protection in Maine. The status of this species should be re-evaluated if further populations cannot be documented in the near future.



Top Right: Male upperside. **Bottom Right:** Male underside

Cobweb Skipper
Hesperia metea Scudder

Diagnosis: The upper side of males is medium brown with tawny orange patches surrounding the elongate blackish narrow stigma on the male forewing. Females are generally darker brown with a band of small pale yellow to whitish spots of the forewing. The underside of the hindwing is brown with a V-shaped band of white spots pointed toward the outer margin of the wing. The white scales usually extend along the wing veins giving the species a webbed appearance. No other skippers in Maine look like this species. This species perches with the wings closed above the body or with the hindwing slightly opened. Wingspan: 25-35 mm.

Range: *H. metea* ranges in scattered populations from Texas and Georgia northward to Minnesota and southwestern Maine (Opler & Krizek 1984).

Abundance: *H. metea* is known from three localities (2 counties, 3 townships) in southwestern Maine. The most recent record of *H. metea* from Maine is three specimens collected in 1953 by A. E. Brower in Lebanon (York Co.).

Habitat and Larval Hosts: The primary host plants of this skipper are blue stem or beard grasses (*Andropogon* sp.), such as little bluestem (*A. scoparius*) and big bluestem (*A. gerardii*) (Allen 1997). *H. metea* is associated with scrub oak-pitch pine barrens and occurs in open sites with abundant beard grasses, such as old fields or previously burned or cleared areas.

Life Cycle: This is the first *Hesperia* on the wing in Maine. Adults are most common during the last two weeks of May. The flight season is short and most individuals are gone by the end of the first week of June. The larvae presumably build shelters on the host plant like other *Hesperia* species, and then overwinter as mature larvae and pupate early the following spring. Allen (1997) suggested that this species overwinters in the pupal stage.

Nectar Sources and Behavior: *H. metea* usually nectars on flowers close to the ground, such as violets (*Viola* sp.), wild strawberry (*Fragaria* sp.), and clovers (*Trifolium* sp.). Adults typically perch on the bare patches of soil in open areas. The cryptic coloration of this fast flying species makes it difficult to follow and observe and it is therefore easily overlooked.

Threats and Conservation Concerns: There are no recent records of *H. metea* in Maine and it is not clear if this species still occurs in the state. Surveys should be done in appropriate habitats in southwestern Maine to determine the current status of *H. metea.*

Development and ecological succession, due mainly to fire prevention, are major threats to all species associated with dry, early successional habitats, including scrub oak-pitch pine barrens in Maine. Aerial pesticide spraying for gypsy moths (or other pests) also poses a potential risk to this and other barren lepidoptera species. The continued loss and degradation of barren habitats could result in the eventual extirpation of this species from Maine.

Status in Maine: *H. metea* currently has no legal protection in Maine. The status of *H. metea* should be re-evaluated if additional surveys confirm resident populations.

Top Right: Male upperside. **Bottom Right**: Male underside

Northern Broken-Dash
Wallengrenia egeremet (Scudder)

Diagnosis: *W. egeremet* is a uniformly brown skipper with a divided stigma in the male. No other species of branded skippers in Maine have a divided stigma. On the upper side of the forewing is an apricot-colored dash extending from the outer portion of the stigma. The female, which lacks the stigma, has a few apricot-colored dashes on the forewing. The underside of the hindwing is plain brown and has a semicircular band of indistinct yellowish spots. This skipper can easily be confused with the much more common dun skipper, *Euphyes vestris* (Boisduval) and the rare little glassywing, *Pompeius verna* (W. H. Edwards) in the field. However, the underside of *E. vestris* is uniform brown without the yellowish band of spots. The spots in *P. verna* are clear and transparent and the underside lacks the yellowish overscalling of *W. egeremet.* These three species must be examined closely for positive determination. *P. egeremet* perches with the wings closed above the body or with the hindwing slightly opened. Wingspan: 25-32 mm.

Range: This skipper occurs throughout much of the eastern United States northward to southern Ontario, southern Quebec and Maine (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *W. egeremet* is known from 14 localities (5 counties, 12 townships) in southwestern Maine, with isolated records from Mount Desert Island and Piscataquis Co. (Golden Rd.). Brower (1974) considered the record of S.I. Smith from Norway as being the only trustworthy record for Maine. However, 11 of the 14 records of *W. egeremet* from Maine are recent. Either this species is expanding its range, or it has been overlooked in the past and confused with the more abundant Dun skipper. This skipper is usually found in low numbers where it occurs in Maine.

Habitat and Larval Hosts: The preferred host plants of *W. egeremet* are panic grasses (*Panicum* sp.) (Allen 1997). This skipper is most frequently found in open areas, such as old fields, abandoned farmland, and power-line cuts, usually near wooded areas. Many of the localities for this species in Maine were near oak dominated forests with pitch pine.

Life Cycle: *W. egeremet* has one generation of adults in Maine from mid July to early August. This species overwinters as newly hatched larvae and completes development the following spring and early summer (Allen 1997).

Nectar Sources and Behavior: This skipper visits many summer flowers, especially common milkweed (*Asclepias syriaca*) and dogbane (*Apocynum* sp.). It is often observed on flowers in company with the much more abundant Dun skipper. Allen (1997) reports that this species often perches on low shrubs and vegetation a few feet above the ground.

Threats and Conservation Concerns: *W. egeremet*'s preferred habitat are old fields and other open areas. Many of these habitats are disappearing in Maine, due to a combination of ecological succession and development.

Additional survey work should be done to determine the current status and distribution of this species in Maine.

Status in Maine: *W. egeremet* currently has no legal protection in Maine.

Top Right: Male upperside. **Middle Right:** Female upperside**.** **Bottom Right:** Female underside

Delaware Skipper
Anatrytone logan (W. H. Edwards)

Diagnosis: Males of *A. logan* are bright tawny orange above with a narrow brown border and brown veins. Females are similar, but have a wider dark brown to almost black border and dark areas at the base of the wings. The underside of both sexes is bright golden yellow. *A. logan* could be confused with the European skipper, *Thymelicus lineola* (Ochsenheimer). *T. lineola* is smaller and has pale orange forewings and grayish yellow to grayish orange hindwings below. Males of *T. lineola* have a very narrow dark stigma on the upper side of the forewing and have narrower dark borders. *A. logan* perches with the wings closed above the body or with the hindwing slightly opened. Wingspan: 25-35 mm.

Range: *A. logan* occurs throughout much of the eastern United States northward to the prairie provinces of Canada, southern Ontario, southern Quebec and southwestern Maine (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *A. logan* is known from 18 localities (6 counties, 12 townships) in the southwestern portion of the state. All but two of these records are after 1985, suggesting

that this species has been overlooked or is expanding its range. This skipper is usually found in low numbers.

Habitat and Larval Hosts: Host plants include beard or bluestem grasses (*Andropogon* sp., including *A. gerardii*) and switch grass (*Panicum virgatum*) (Allen 1997). In Maine, *A. logan* appears to be associated with scrub oak-pitch pine barrens where it occurs in open areas with *Andropogon* sp. Other potential habitats for this skipper include old fields, power-line cuts, and marsh edges.

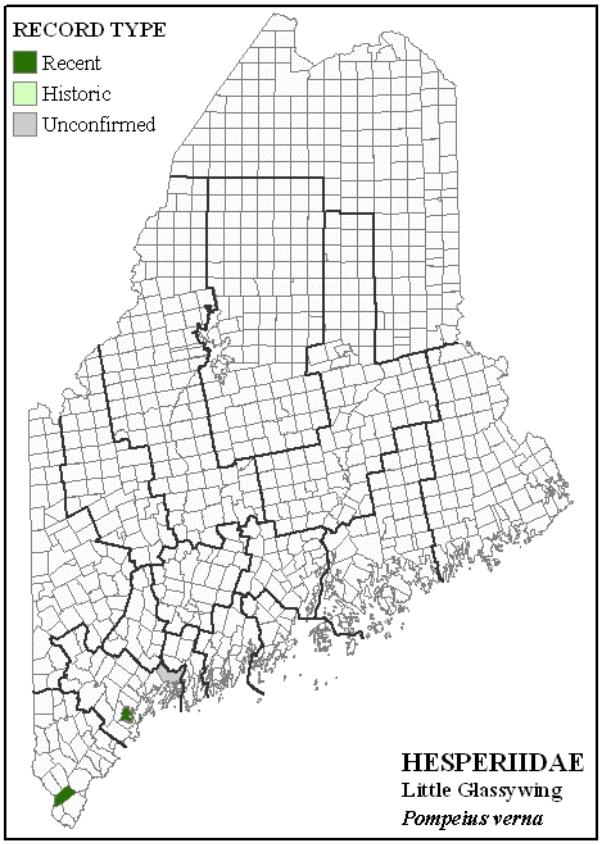
Life Cycle: There is only one generation of adults in Maine. Adults are active from late June to late July and early August. Presumably this species overwinters as a partly grown caterpillar.

Nectar Sources and Behavior: Adults are often observed feeding on common milkweed (*Asclepias syriaca*), dogbane (*Apocynum* sp.), thistles (*Cirsium* sp.), and marsh plants, such as pickerel weed (*Pontederia cordata*). *A. logan* also frequent moist soil or sand along trails, especially after a rain. Territorial males often perch on grasses in low areas in fields. Adults are rapid flyers and are difficult to approach unless they are on flowers.

Threats and Conservation Concerns: More information is required on the habitat association of this species in Maine. Current data suggests that this species is associated with early successional habitats in scrub oak-pitch pine barrens.

Development and ecological succession, due mainly to fire prevention, are major threats to all species associated with dry, early successional habitats, including scrub oak-pitch pine barrens in Maine. Aerial pesticide spraying for gypsy moths (or other pests) also poses a potential risk to this and other barren lepidoptera species. The continued loss and degradation of barren habitats could result in the eventual extirpation of this species from Maine.

Status in Maine: *A. logan* currently has no legal protection in Maine. The status of this species should be re-evaluated if further populations cannot be documented in the near future.



Top Right: Male upperside**. Bottom Right:** Male underside

Little Glassywing
Pompeius verna (W. H. Edwards)

Diagnosis: Males of *P. verna* are very dark brown with several clear transparent spots on the wing near the stigma. The largest spot behind the stigma is elongate. Females are similarly marked but the largest transparent spot is square. *P. verna* is similar in appearance to the northern broken-dash, *Wallengrenia egeremet* (Scudder) and the dun skipper, *Euphyes vestris* (Boisduval). However, the latter two species have smaller spots that are opaque. These three species must be examined closely to positively determine them to species. *P. verna* perches with the wings closed above the body or with the hindwing slightly opened. Wingspan: 25-32 mm.

Range: *P. verna* occurs throughout much of the eastern United States northward to southern Ontario, southern Quebec and southwestern Maine (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *P. verna* is known from three localities (2 counties, 3 townships) in the southwestern portion of the state. All of these records are after 1996, suggesting that this species has been overlooked or is expanding its range. This skipper is usually found in low numbers.

Habitat and Larval Hosts: The preferred host plants of *P. verna* are grasses, such as *Tridens* sp., and *Triodia* sp. (Allen 1997, Opler and Malikul, 1992). *P. verna* is most frequently found in open areas, such as wet old fields, wet meadows, powerlines, and roadsides, usually near wooded areas.

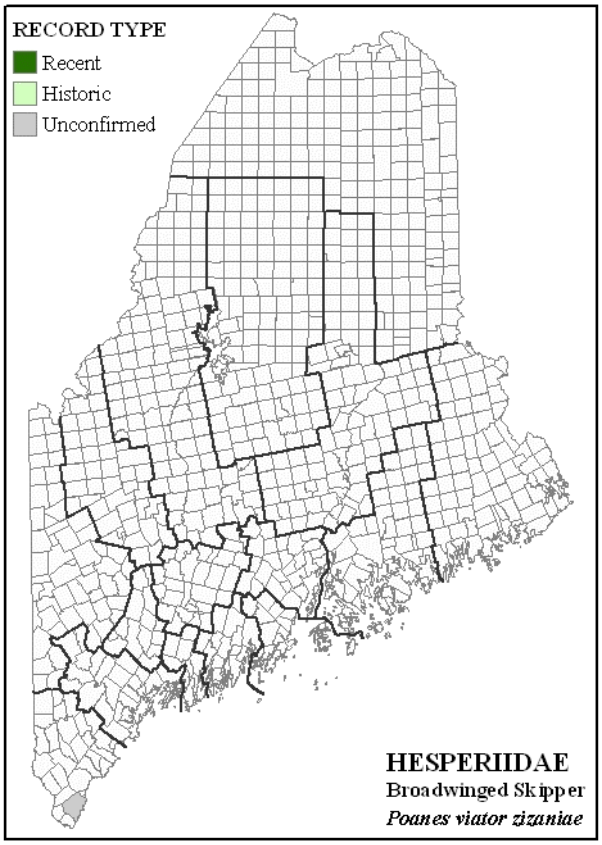
Life Cycle: There is only one generation of adults in Maine. Adults are active during July. Presumably this species overwinters as a partly grown caterpillar.

Nectar Sources and Behavior: Adults are often observed on the flowers of common milkweed (*Asclepias syriaca*), and dogbane (*Apocynum* sp.) (Webster, unpublished).

Threats and Conservation Concerns: More information is required on the habitat association and status of this species in Maine. *P. verna* is easily overlooked because of its close resemblance to the common and widespread Dun Skipper. All dark brown skippers in southwestern Maine should be examined closely.

Development and ecological succession pose significant threats to the open habitat required by this species.

Status in Maine: *P. verna* currently has no legal protection in Maine. The status of this species should be re-evaluated if further populations cannot be documented in the near future.



Top Right: Male upperside

Broad-winged Skipper
Poanes viator zizaniae (Shapiro)

Diagnosis: The upper side of this large skipper is brown with large orange spots on the forewing and extensive orange areas on the hindwing. The underside is yellowish brown with an ill-defined yellowish band or patch on the hindwing. This skipper cannot be confused with any other species of skipper in Maine. Wingspan: 38-56 mm.

Range: *P. v. zizaniae* occurs along the coast from the Gulf States to Maine (Opler & Krizek 1984).

Abundance: *P. v. zizaniae* was reported from York Village (York Co.) in 1991 by Robert Godefroi. This species has been expanding its range northward in recent years and will likely be found at other sites along the southern coast of Maine.

Habitat and Larval Hosts: In New England *P. v. zizaniae* uses common reed (*Phragmites australis*). This butterfly is found only in freshwater and brackish marshes with dense stands of this plant.

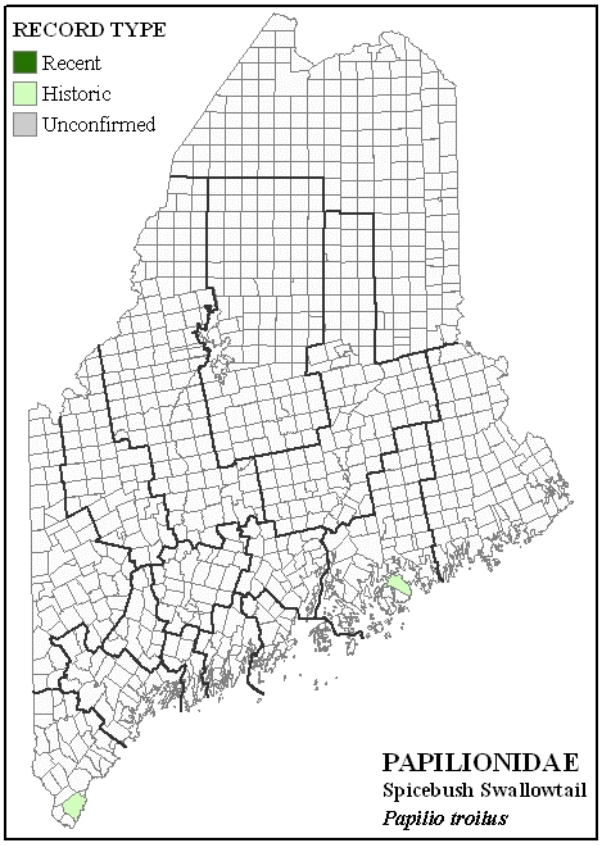
Life Cycle: Probably one brood in Maine from mid to late July into August.

Nectar Sources and Behavior: Adults are rarely observed because they spend most of their time within dense stands of *Phragmites*. Adults have a weak flight and fly slowly among the stems of the reeds. The best way to locate this species is to make trails through the dense reeds and look for adults that use these trails as flyways. Adults occasionally nectar on the flowers of marsh plants, such as pickerel weed (*Pontederia cordata*) and swamp milkweed (*Asclepias incarnata*), growing near stands of *Phragmites*.

Threats and Conservation Concerns: There are probably no significant threats to this species in Maine. *P. v. zizaniae* uses a common, invasive aquatic plant that is expanding its range. This skipper may expand its range northward along the coast of Maine.

Further survey should be done to determine the distribution and abundance of this species in the state.

Status in Maine: *P. v. zizaniae* has no legal protection in Maine.



Top Right: Male upperside

Spicebush Swallowtail
Papilio troilus Linnaeus

Diagnosis: This large black swallowtail is distinguished from the more common *Papilio polyxenes asterius* (Stoll) by the presence of a large orange spot on anterior margin of the upper side of the hindwing. The hindwing of the male is extensively dusted with blue green and there is a band of green crescents along the margin of the hindwing. The female is similar, but has blue dusting. Wingspan: 90-114 mm.

Range: *P. troilus* occurs from Texas to Florida north to southern Wisconsin, southern Ontario, and southern Maine (Opler & Krizek 1984).

Abundance: *P. troilus* is known from two localities; York (York Co.), and Bar Harbor (Hancock Co.). The latter record is questionable and may be a mislabeled specimen. The latest record is from 1934.

Habitat and Larval Hosts: Sassafras (*Sassafras albidum*) and spicebush (*Lindera benzoin*) are the two hosts commonly used in southern New England. In Rhode Island sassafras appears to be the preferred host (Webster, unpublished). In Maine the host plants occur only in rich seepage hardwood forests in a few localities in southwestern

Maine. *P. troilus* is a forest species and prefers open woodlands, field edges and woodland roads in areas where its host plant is found.

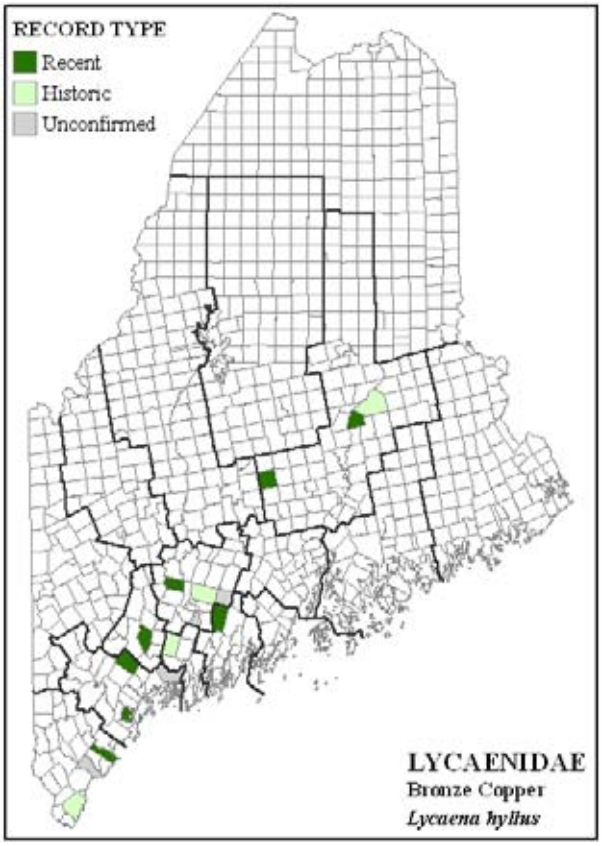
Life Cycle: In southern New England *P. troilus* has two generations of adults per year, the first from late May to late June, the second in late July into September. The nocturnal-feeding larvae rest during the day in a folded leaf nest (the top of the leaf is folded up) and are thus readily found. This species overwinters as a chrysalis attached to twigs close to the ground.

Nectar Sources and Behavior: Males are often observed at moist sand and soil along stream margins and woodland roads. Nectar species commonly visited include common milkweed (*Asclepias syriaca*), dogbane (*Apocynum* sp.), thistles (*Cirsium* sp.), and Joe-pye weed (*Eupatorium sp*.). Adults are often found on flowers in gardens.

Threats and Conservation Concerns: There are no recent records of *P. troilus* in Maine. A few small populations of the host plant occur in southwestern Maine, along the western border with New Hampshire. *P. troilus* occurs nearby in New Hampshire and it is possible that a few small resident populations remain undiscovered in Maine. However, it is also possible that *P. troilus* is only a temporary colonist or stray in Maine. Additional surveys should be done in southwestern Maine to firmly establish the status of this species in the state.

The habitats where the host plant of this species occurs in Maine are limited and threatened by development and intensive forestry.

Status in Maine: *P. troilus* is listed as special concern in Maine.



Top Right: Male upperside**. Bottom right:** Female upperside

Bronze Copper
Lycaena hyllus (Cramer)

Diagnosis: This species is sexually dimorphic and is our largest copper. Males are bronze above with an orange marginal band on the hindwing. Females have an orange forewing with black spots and a brownish margin. The underside of the hindwing of both sexes is almost white with small black spots and an orange marginal band. This species cannot be confused with any other butterflies in Maine. Wingspan: 32-45 mm.

Range: *L. hyllus* ranges from Montana and Utah east to northern Virginia and central Maine (Opler & Krizek 1984).

Abundance: *L. hyllus* is known from 17 scattered localities (7 counties, 16 townships) mostly in the southern half of the state. Only seven of these records are recent. This copper usually occurs in low numbers at any given site.

Habitat and Larval Hosts: The preferred hosts of the caterpillars of this copper are water dock (*Rumex orbiculatus*), and curly dock (*Rumex crispus*). *L. hyllus* is usually found in marshes, wet meadows and along the marshy margins of streams and rivers where *Rumex* occurs. One often has to get wet to observe this species.

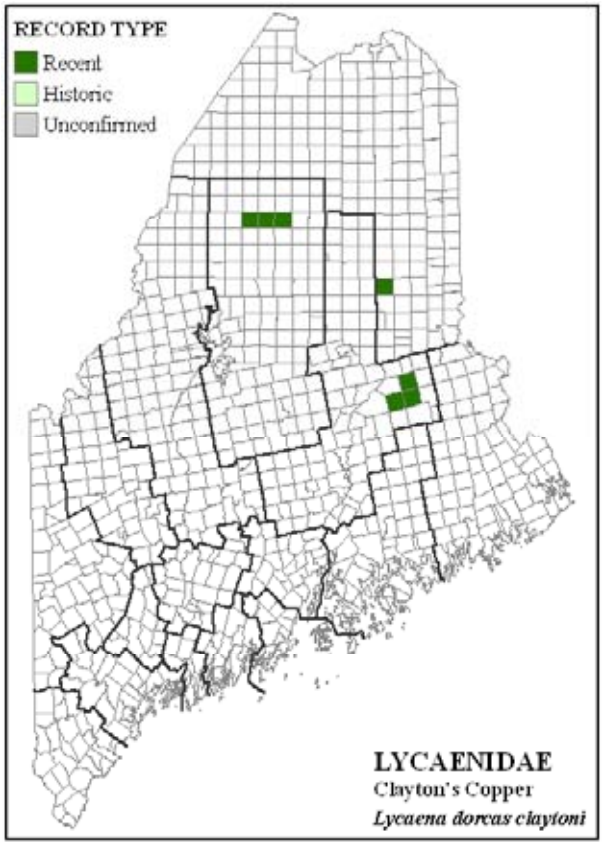
Life Cycle: There are two generations of adults in Maine, one from mid June to late July, a second from late August to mid September. This species overwinters in the egg stage. The eggs hatch in the spring and the larvae feed on the leaves and often pupate on the underside of the leaves.

Nectar Sources and Behavior: Males perch on top of tall grasses or on low vegetation. Adults are most active late in the afternoon; otherwise they are rarely observed unless flushed from vegetation or flowers. Adults will nectar on marsh flowers, dogbane (*Apocynum* sp.), common milkweed (*Asclepias syriaca*) and asters (*Aster* sp.).

Threats and Conservation Concerns: Additional surveys are needed to better understand the status, distribution and threats to this species in Maine.

Adequate riparian buffers should be maintained to protect local hydrology at all known sites.

Status in Maine: *L. hyllus* currently has no legal protection in Maine.



Top Right: Male upperside**. Middle Right:** Female upperside**. Bottom Right:** Male underside

Clayton's Copper
Lycaena dorcas claytoni Brower

Diagnosis: *L. dorcas claytoni* differs little from the widely distributed and more northern *L. dorcas dorcas* (W. Kirby) and may not be a valid subspecies. This species is sexually dimorphic. The upper side of the male has a blue-purple iridescence and a few poorly developed orange marginal spots on the hindwing. There are a few black spots within the areas of purple iridescence. Females are brown without the purple iridescence and have a few poorly developed orange spots on the forewing and on the marginal area of the hindwing. The underside of the hindwing is orange brown with indistinct black spots and a zigzag reddish orange marginal band. The similar bog copper, *Lycaena epixanthe* (Boisduval & LeConte) is smaller (wingspan: 18-22 mm) and has a whitish to light yellow underside. Wingspan: 24-28 mm.

Range: *L. dorcas claytoni* is limited to a few localities in east central and northern Maine and 3 localities in New Brunswick near the border with Maine.

Abundance: *L. d. claytoni* is known from 11 localities (3 counties, 10 townships) mostly in the east-central portion of the state. This copper is abundant at one site , but most colonies are small.

Habitat and Larval Hosts: The only host of *L. dorcas claytoni* is shrubby cinquefoil, *Pentaphylloides floribunda*. This copper is only found in fens and old fields with good stands of this shrub and is usually most common in relatively drier areas with larger *P. floribunda*.

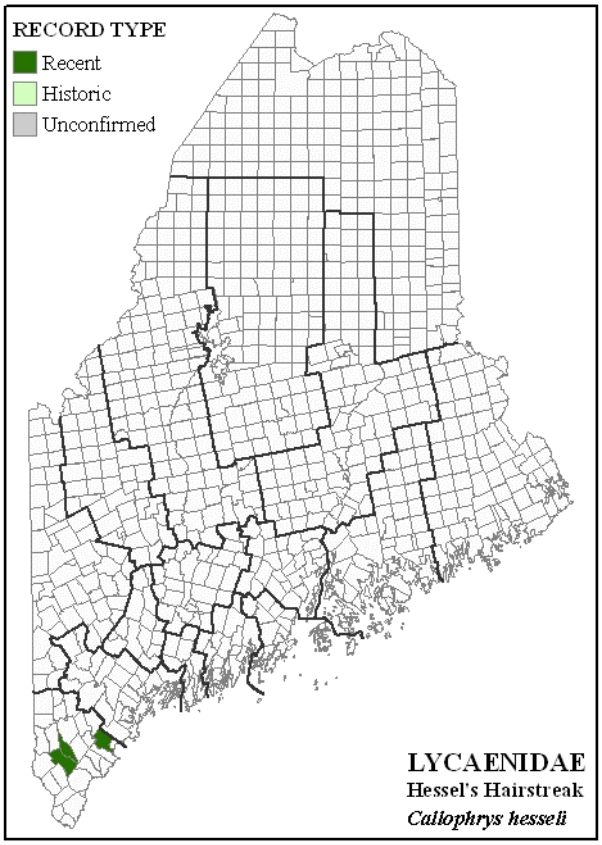
Life Cycle: There is one generation of adults per year from late July to mid September. Peak number of adults is usually during the first two weeks of August. Newcomb (1911) described in detail the life history of *L. dorcas*. Females lay eggs singly on the foliage and stems of the host. The eggs overwinter and hatch the following spring. The neonate larvae initially feed on the epidermis of the leaves while later instars feed on the entire leaf. The larvae pupate on the underside of the leaves and the adults begin to emerge during the latter half of July.

Nectar Sources and Behavior: Adults nectar on the flowers of the larval host, *P. floribunda. L. dorcas claytoni* is a patrolling species with males spending much of the day flying a short distance above the canopy of the shrubby cinquefoil or nectaring on its flowers. Females are less active and are most often flushed from the foliage or are observed nectaring on flowers of the host plant.

Threats and Conservation Concerns: Additional surveys should be done in eastern Maine to locate new populations of this butterfly, especially as additional sites have recently been located in New Brunswick close to the border.

Cinquefoil stands at the Dwinal Pond Wildlife Management Area, home to the largest known colony of this butterfly in Maine, may be threatened from competition by encroaching eastern white cedar, *Thuja occidentalis*. A proposal to re-build a dam below this site for waterfowl enhancement is currently under scrutiny for potential impacts to the resident population of Clayton's copper. Other sites with *L. dorcas claytoni* appear to be relatively secure at this time. However, as most occurrences are on private land, they could benefit from permanent protection and cooperative management agreements. Adequate riparian buffers should be maintained to protect local hydrology at all known sites.

Status in Maine: Currently *L. dorcas claytoni* is listed as endangered in Maine.



Top Right: Male upperside**. Bottom Right:** Male underside

Hessel's Hairstreak
Callophrys hesseli Rawson & Ziegler

Diagnosis: Upper side is brown with areas of light overscaling of light orange scales. The male has a well-defined oblong patch of androconial scales (stigma) on the forewing. The underside is blue-green with patches of red-brown surrounding a submarginal band of white spots. There is often a small white spot in the discal area of the under side of the forewing. The similar *Callophrys gryneus* lacks this spot and is apple green rather than blue green. Wingspan: 20-25 mm.

Range: This hairstreak is found in a narrow band along the coastal plain from northern Florida to southern Maine (Opler & Krizek 1984). *C. hesseli* was first detected in Maine in 1987 by John Albright at Saco Heath (York Co.).

Abundance: *C. hesseli* is known from four localities (1 county, 3 townships) in the extreme southwestern portion of the state. This hairstreak is uncommon to possibly locally common at the few sites where it exists.

Habitat and Larval Hosts: The only larval host plant of *C. hesseli* is Atlantic white cedar (*Chamaecyparis thyoides*). Atlantic white cedar usually occurs in bogs or swamps

near the coast. Adults are most frequently found on smaller, open grown cedars near the margin of openings within the bogs, and are rarely found far from the host trees. In North Carolina *C. hesseli* was often observed nectaring on flowering shrubs within Atlantic white cedar forested bogs with open grown trees (Webster, unpublished).

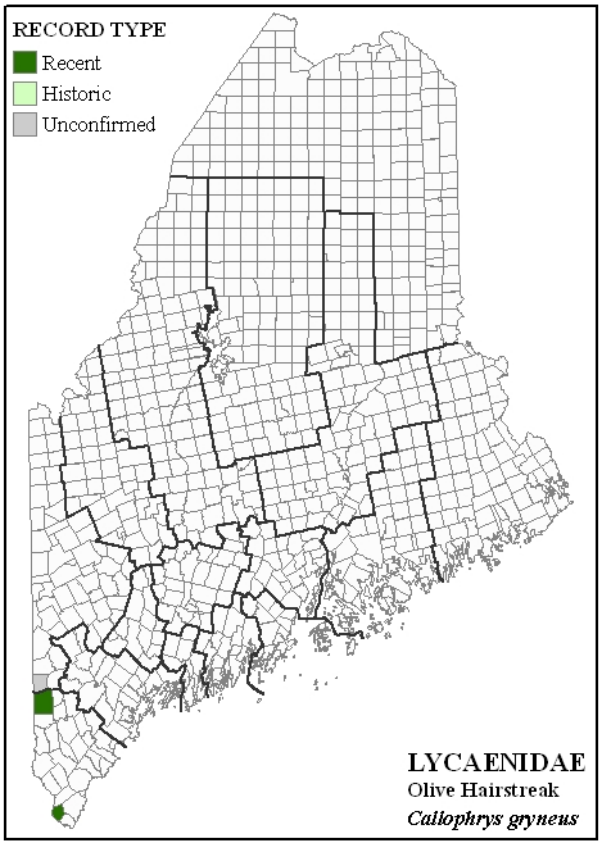
Life Cycle: Females lay their eggs near the tips of developing needles of Atlantic white cedar during May and early June (Rawson et al. 1951; Webster, unpublished). The larvae initially mine the leaves before feeding on the entire developing shoots near the tips of the branches. Pupation takes place in the leaf litter near the base of the trees from late June into July and the pupae overwinter. In Maine, *C. hesseli* has one generation of adults that are active from mid to late May to mid June.

Nectar Sources and Behavior: Adults will often nectar on flowers of highbush blueberry (*Vaccinium corymbosum*), leatherleaf (*Chamaedaphne calyculata*), mountain holly (*Nemopanthus mucronata*), and huckleberry (*Gaylussacia* sp.) near stands of Atlantic white cedar. When not feeding, adults typically perch on the foliage of Atlantic white cedar trees in openings within the bog. The best way to locate this species is to locate open-grown, smaller host trees near the margin of open areas in the bog and then to tap the trees to flush the perching adults. Typically flushed butterflies will either return to the same tree or fly to an adjacent tree.

Threats and Conservation Concerns: Some locales where this species occurs appear to be relatively secure due to mostly undevelopable soils. However, continued urbanization proximate to all of the known occurrences threatens to degrade riparian buffers needed to maintain suitable hydrological conditions for the host tree community. While partial harvesting of Atlantic white cedar trees may facilitate host regeneration, intensive or poorly timed harvest activity could pose a threat to this butterfly. Aerial pesticide drift, from adjacent pitch pine-scrub oak forests targeted for gypsy moth control, could be an additional threat.

Further survey work may result in the discovery of only one or two additional populations of this butterfly in Maine.

Status in Maine: *C. hesseli* is listed as endangered in Maine.



Top Right: Male upperside**. Middle Right:** Female upperside**. Bottom Right:** Female underside

Olive Hairstreak
Callophrys gryneus (Hübner)

Diagnosis: Upper side of the male is brown with patches of yellowish scales between the veins in medial areas of the forewing and posterior areas of hindwing. The male has a well-defined oblong patch of androconial scales (stigma) on the forewing. In the female the patches of scales are orange and more extensive on both wings than in the male. The underside is apple-green with a narrow band of brown on the inner side of the submarginal band of white spots. The similar *Callophrys hesseli* is blue green rather than apple green, and often has a small white spot in the discal area of the underside of the forewing. Wingspan: 20-25 mm.

Range: *C. gryneus* occurs throughout much of the eastern United States and ranges northward to southern Ontario, Quebec, and southwestern Maine (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *C. gryneus* is known from three localities (one historical) (2 counties, 3 townships) in the extreme southwestern portion of the state. This hairstreak is rare (only a few individuals observed) at the two sites where it is currently known to occur.

Habitat and Larval Hosts: The larval host plant of *C. gryneus* in Maine is eastern red cedar (*Juniperus virginiana*). Typically this species is found near or on red cedar trees in old field habitats, coastal areas adjacent to inland bays, and south-facing rocky escarpments on the tops of hills. *C. gryneus* is rarely found far from red cedar trees. The natural habitat of this species in Maine prior to the arrival of Europeans was likely rocky outcrops and hill-top escarpments.

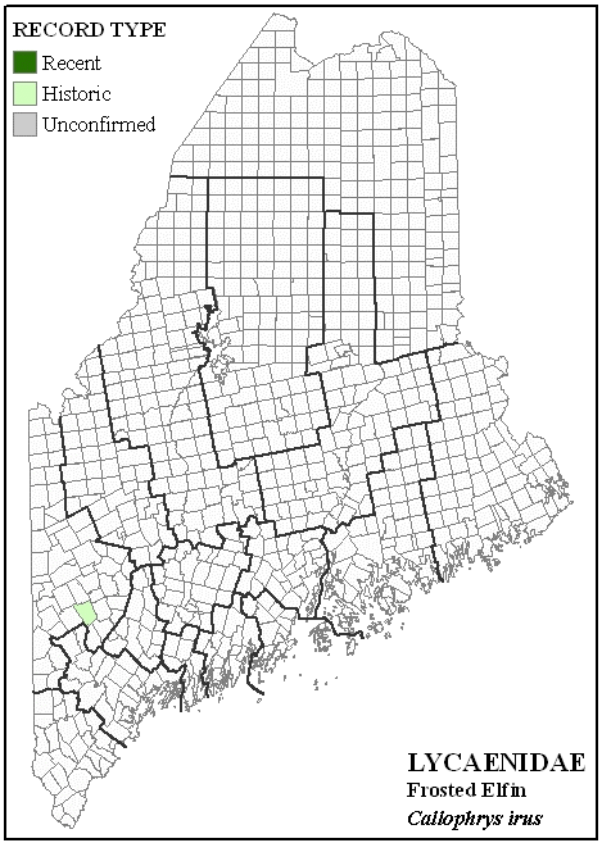
Life Cycle: Ova are laid near the tips of developing needles during May and early June. The larvae initially mine the leaves before feeding on the entire developing shoots near the tips of the branches (Webster, unpublished). Pupation takes place in the leaf litter near the base of the trees during late June into July. This species overwinters in the pupal stage. In most of its range *C. gryneus* has two or more generations. However, at the northern limit of its distribution there may be only one generation or a partial second generation of adults during July. In Maine all records are from mid to late May.

Nectar Sources and Behavior: In the spring adults will nectar on any flowering shrubs that occur near red cedar trees. In Maine, most adults were observed at lowbush and highbush blueberry (*Vaccinium* sp.). Summer generation adults often nectar on common milkweed. Adults typically perch on the foliage of red cedar trees, especially isolated trees among larger groups of cedars. Males are often observed engaging in aerial "combat" with other males near the tops of trees during the afternoon. The best way to locate this species is to tap red cedar trees to flush the perching adults, which typically return to the same tree or fly to an adjacent tree.

Threats and Conservation Concerns: Populations of the eastern red cedar appear to be declining rapidly in Maine. Reduction in populations of eastern red cedar will undoubtedly result in the decline and possible extirpation of *C. gryneus* from Maine. At the Parsonsfield locale, regeneration of the forest has made much of the summit unsuitable for red cedar as evidenced by the large number of recently dead cedar stems and lack of cedar seedlings. The cause for their absence is less clear, but could be related to overgrazing by deer. Cedar seedlings were also not observed at a colony in a powerline right-of-way near Eliot. Periodic mowing of the vegetation to maintain the right-of-way appeared to be removing seedlings at this site. Steps must be undertaken to insure natural regeneration of eastern red cedar at all sites where this species occurs.

Additional surveys should be done to try to locate additional populations of this rare hairstreak.

Status in Maine: *C. gryneus* is listed as special concern in Maine. In view of the rapid decline in numbers of its host, eastern red cedar, and the small number of populations of this butterfly currently known from Maine, the status of *C. gryneus* should be re-evaluated.



Top Right: Male upperside**. Bottom Right:** Male underside

Frosted Elfin
Callophrys irus (Godart)

Diagnosis: The upper side is brownish grey in the male with an oblong patch of androconial scales on the forewing. The female is brown with patches of orange scales on both wings. The underside is reddish brown with extensive light grey over-scaling on the outer portion of the hindwing giving it a frosted look. There is a blunt tail on the hindwing. The similar *Callophyrs henrici* differs in having the discal area of the hindwing underside dark brown, strongly contrasting with the outer area of the wing. In *C. irus* the discal area is reddish brown. *C. henrici* males lack the patch of androconial scales on the forewing. The similar *Callophyrs polios* lack the blunt tails and have a narrow band of hoary scales on the outer margin of the underside of the forewing. Wingspan: 22-30 mm.

Range: The frosted elfin occurs from Texas eastward to Georgia and north to Wisconsin, southern Ontario and New Hampshire (Opler & Krizek 1984).

Abundance: *C. irus* was collected in Norway (Oxford Co.) around 1865 by S.I. Smith. No other specimens are known from Maine and the species is now considered extirpated.

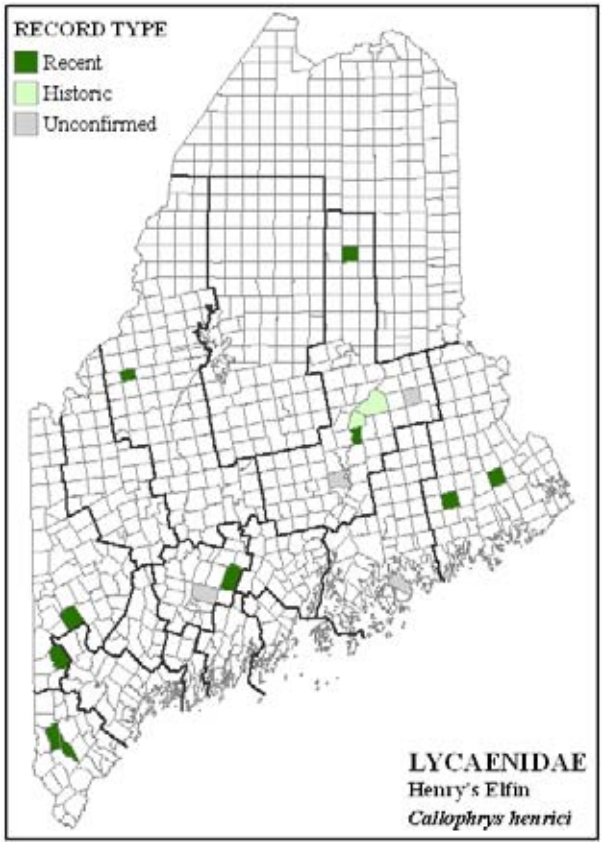
Habitat and Larval Hosts: In New England *C. irus* uses false indigo (*Baptisia tinctoria*) and wild lupine (*Lupinus perennis*). In southern New England this hairstreak is usually associated with pitch pine-scrub oak barrens. Typically adults occur in open areas with beard grass (*Andropogon* sp.) and one of the two above host plants. Both host plants are believed extirpated, or nearly so, in Maine.

Life Cycle: Eggs are laid on the leaves and flower buds of the host during May and early June. The larvae initially mine the leaves and flower buds before feeding on the entire leaf or flower bud (Webster, unpublished). Pupation takes place in the leaf litter near the base of the hosts during late June into July and the pupae overwinter. In southern New England *C. irus* has one generation of adults that are active from mid to late May to mid June, depending on the season.

Nectar Sources and Behavior: No data is available on nectar flowers used in Maine. Males perch on their host plants and will often return to the same perch after being disturbed. Males often engage in aerial "combat" within openings in the forest or margins of old fields.

Threats and Conservation Concerns: This species is extirpated from Maine. Currently, only one small population of false indigo is known to exist in the state that is not large enough to support a population of *C. irus*.

Status in Maine: Extirpated



Top Right : Male upperside.

Henry's Elfin
Callophrys henrici (Grote & Robinson)

Diagnosis: The upper side of the male is brown. This is the only elfin without the male stigma. The female is brown with patches of orange scales on both wings. The underside is brown with light grey over scaling on the outer portion of the hindwing. The discal area of the hindwing underside is dark brown, strongly contrasting with the outer area of the wing. There is a blunt tail on the hindwing. The similar *Callophyrs irus* differs in having the discal area as reddish brown and the male has a stigma. The similar *Callophyrs polios* lacks the blunt tails and has a narrow band of hoary scales on the outer margin of the underside of the forewing. Wingspan: 20-25 mm.

Range: *C. henrici* ranges from Texas to Florida northward to Manitoba, Ontario and Maine and the Maritime provinces of Canada (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *C. henrici* is known from 18 scattered localities (7 counties, 16 townships) throughout southern and central Maine. This elfin is usually encountered as single individuals at most sites.

Habitat and Larval Hosts: In Maine the most likely host plant of *C. henrici* is mountain holly (*Nemopanthus mucronata*), though *Viburnum* sp. may also be used. *C. henrici* are most often found in or near black spruce bogs, Atlantic white cedar bogs and forested bogs with good stands of mountain holly. Adults are often encountered in the open portion of the bogs at flowers, but males are also frequently observed perching on smaller trees within clearings within the lag zone surrounding the bogs.

Life Cycle: Eggs are laid on the leaves of mountain holly during May and early June. The larvae initially mine the leaves before feeding on the entire leaf (Webster, unpublished). Pupation takes place in the leaf litter near the base of the hosts during late June into July and the pupae overwinter. *C. henrici* has one generation of adults that are active from early May to early June, depending on the season.

Nectar Sources and Behavior: *C. henrici* adults will nectar on a variety of flowering shrubs, including highbush blueberry (*Vaccinium corymbosum*), lowbush blueberry (*Vaccinium* sp.) leatherleaf (*Chamaedaphne calyculata*), huckleberry (*Gaylussacia* sp.), rhodora (*Rhododendron canadense*), Labrador tea (*Rhododendron groenlandicum*) and mountain holly (*Nemopanthus mucronata*). Adults are also frequently observed resting on wet sand or gravel along unpaved forest roads through forested bogs or other forested areas with mountain holly.

Threats and Conservation Concerns: *C. henrici* usually occurs in low numbers and is probably often overlooked. The host plant is widespread in the state and the species will likely be found in most locations where the host occurs in good numbers. This hairstreak is undoubtedly more widespread than current records indicate.

There appear to be no current significant threats to *C. henrici*, however additional survey work should be done to determine the current status and distribution of this species in Maine.

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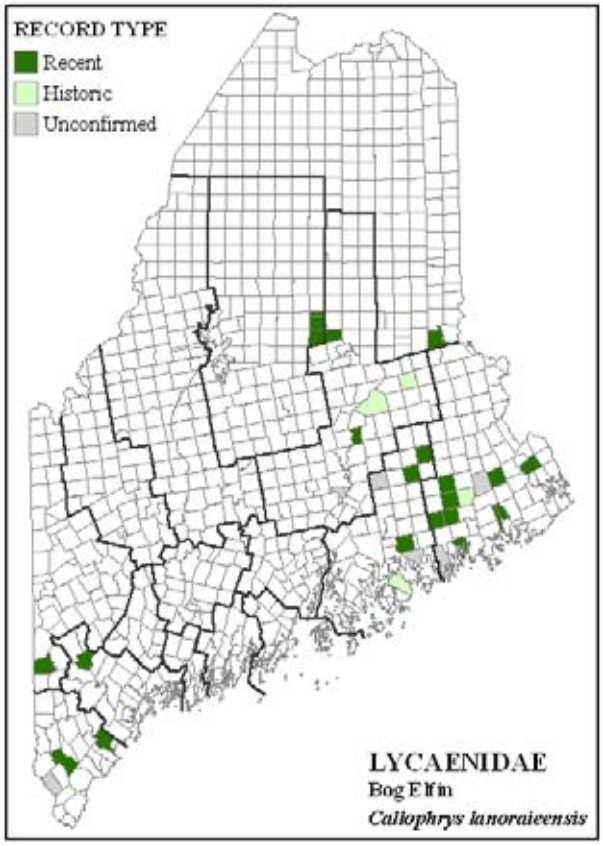
Status in Maine: *C. henrici* currently has no legal protection in Maine.



Top Right: Male upperside**. Bottom Right:** Male underside.

Bog Elfin
Callophrys lanoraieensis (Sheppard)

Diagnosis: Males and females are chocolate brown above. Males have a small oblong patch of androconial scales on the upper side of the forewing. This patch ranges from chocolate brown to light grey and can contrast sharply from the ground color of the wings. The pattern on the under side is similar to that of *Callophrys niphon* (Hübner), but is less contrasty, appears more smudged, and the ground color is a darker brown. This is the smallest of our elfins. Wingspan: 16-19 mm.

Range: This butterfly occurs from eastern Ontario, southern Quebec to the Canadian Maritimes southward to Maine, New Hampshire and New York (Opler & Krizek 1984, Layberry et. al, 1998). *C. lanoraieensis* is widespread in the southern two thirds of Maine.

Abundance: *C. lanoraieensis* is known from 44 localities (8 counties, 32 townships) in the southern two thirds of the state. This species is usually found in low numbers at most sites, but can be locally common to abundant.

Habitat and Larval Hosts: The larval host plant of *C. lanoraieensis* is black spruce (*Picea mariana*). Adults are typically found in black spruce bogs, but are not restricted to this habitat and can be found in any forested area where black spruce is present, including upland black spruce plantations and Atlantic white cedar bogs. In Maine, *C. lanoraieensis* is most often found in the vicinity of larger (20-40 ft.) open grown black spruce along the perimeter of bogs. Adults can be abundant in drier forested black spruce bogs with widely spaced open grown trees and taller (2-3 ft.) dwarf shrub plant communities of leatherleaf (*Chamaedaphne calyculata*), rhodora (*Rhododendron canadense*), Labrador tea (*Rhododendron groenlandicum*), and sheep laurel (*Kalmia angustifolia*) in *Sphagnum* and reindeer moss. *C. lanoraieensis* is generally less common or even absent in the wetter black spruce bogs, especially where the trees are stunted.

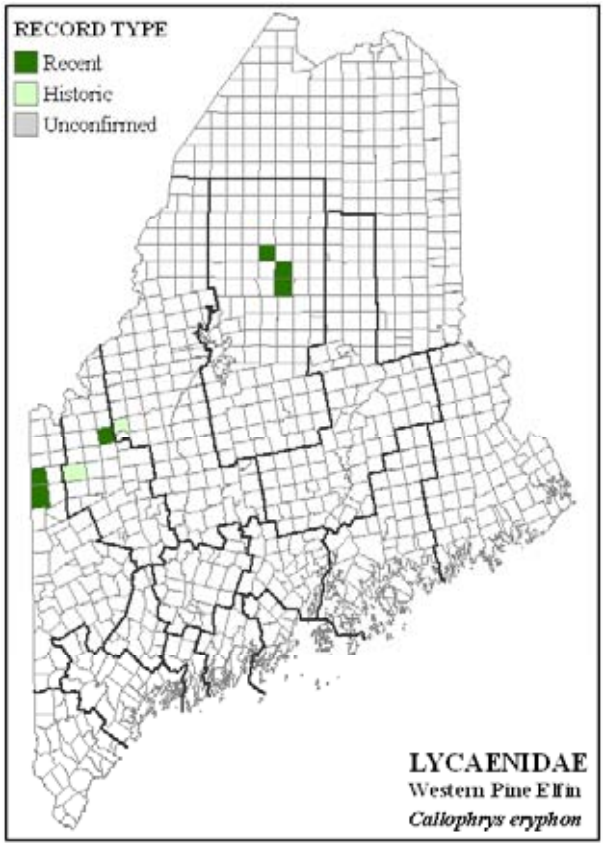
Life Cycle: Eggs are laid on the buds of black spruce during May and early June. The larvae initially mine the needles, but later instar larvae feed on the entire needle. Pupation takes place in the leaf litter near the base of the trees during July and the pupae overwinter. Adults are active from early May to early June depending on the season.

Nectar Sources and Behavior: Adults nectar on leatherleaf, rhodora, blueberry (*Vaccinium* sp.) and pin cherry (*Prunus pensylvanica*) and are sometimes observed resting on wet sand or gravel along unpaved forest roads through forest communities with black spruce. From late morning to late afternoon *C. lanoraieensis* adults (mostly males) are often observed perching on isolated or relatively isolated groups of larger black spruce trees along the perimeter of the bog. Perching sites are typically on the south to southwestern facing side of open-grown trees. Most adults are observed nectaring on flowers within openings among the larger trees, rather than in the large open sections of the bog.

Threats and Conservation Concerns: This early-flying, cryptic butterfly has probably been previously overlooked throughout much of its range in Maine. While considered globally rare (NatureServe 2005) due to its restricted northeastern distribution, there appear to be no major threats to this species in Maine.

Further survey work will undoubtedly result in the discovery of additional populations of this butterfly in Maine.

Status in Maine: Currently, *C. lanoraieensis* is listed as special concern in Maine. The status of this species should be re-evaluated.



Top Right: Male upperside**. Middle Right:** Female upperside**. Bottom Right:** Male underside.

Western Pine Elfin
Callophrys eryphon (Boisduval)

Diagnosis: Males are uniform chocolate brown above versus orange brown in females. The male has an indistinct small oblong patch of androconial scales on the upper side of the forewing. The hindwing underside, which is reddish-brown, has a well developed zigzag row of dark and whitish chevron marks. The zigzag pattern is better developed than in the closely related *C. niphon*. Wingspan: 22-28 mm.

Range: This is mainly a western North American species with scattered populations across southern Canada and the northern tier of states to Maine and northern New Brunswick (Opler & Krizek 1984, Layberry et. al, 1998). *C. eryphon* was first reported in Maine from the Wilsons Mills Bog by Warren Kiel (1976). Until recently, the Wilsons Mills locality was thought to be the only known site for this species in Maine. However, additional specimens of *C. eryphon* (determined as *C. niphon*) were recently found in museum collections. Some of these had been collected by C. F. dos Passos in the 1930's in the Rangeley and Eustis area. Additional localities of this species were found during recent MDIFW ecoregional surveys.

Abundance: *C. eryphon* is known from 11 scattered localities (4 counties, 8 townships) in the northwestern third of the state. This species is usually found in low numbers at any given site.

Habitat and Larval Hosts: The most likely larval host plant of *C. eryphon* in Maine is white pine (*Pinus strobus*). Females have been observed ovipositing on this species in New Brunswick (Webster, unpublished). Although this elfin occurs in a variety of habitats (mixed forests, black spruce bogs) in Maine, it has only been found in localities where white pine is present and relatively common. *C. eryphon* appears to be most common in areas where small (2-3 meter tall) trees are common, such as in young regenerating forests.

Life Cycle: *C. eryphon* is often one of the earliest *Callophrys* to emerge in the spring. In northwestern Maine adults appear as early as mid-May (sometimes before the snow has completely melted from the forest floor) and may be present into the second week of June. Peak flight is usually in late May. Females lay eggs at the base of developing needles of the current year's buds (Webster, unpublished). The neonate larvae initially tunnel into the developing needles before feeding on the entire needle during later instars. Pupation occurs in leaf litter during July, and the pupae overwinter.

Nectar Sources and Behavior: Adults are often observed resting on wet sand or gravel along unpaved forest roads through forest communities in areas where white pine is present. Females are occasionally flushed from white pine, and males are often observed perching on small white pine saplings along the margin of forest roads. Occasionally males will perch on small black spruce trees in black spruce bogs. Adults nectar on leatherleaf (*Chamaedaphne calyculata*) and blueberry (*Vaccinium* sp).

Threats and Conservation Concerns: This species does not appear to be associated with a specialized type of habitat and uses a host plant that is common and widespread in Maine. *C. eryphon*'s apparent preference for young white pine trees, suggests that intensive silviculture may actually benefit this butterfly.

Additional survey work in northwestern Maine will undoubtedly result in the discovery of additional populations of this butterfly and possible reconsideration of its status.

Status in Maine: Currently, *C. eryphon* is listed as special concern in Maine.

Top Right: Male upperside. **Bottom Right:** Male underside**.**

Coral Hairstreak
Satyrium titus (Fabricius)

Diagnosis: This is the only tailless *Satyrium* species in Maine. It has a dark brown upper side and females sometimes have an ill-defined row of marginal orange spots on the hindwing. Males have a well-defined stigma on the forewing. On the pale brown underside there is a band of round white-rimmed black spots on each wing and a well-defined long marginal row of bright orange spots on the hindwing. Wingspan: 23-33 mm.

Range: This species occurs throughout much of the United States and southern Canada eastward to southern Maine (Opler & Krizek 1984, Layberry et. al. 1998).

Abundance: *S. titus* is known from eight localities (5 counties, 7 townships) mostly in the southwestern portion of the state. There are currently only two known modern populations in Maine. This hairstreak is usually uncommon at the locations where it occurs.

Habitat and Larval Hosts: The larvae feed on young leaves, flowers and fruit of choke cherry (*Prunus virginiana*) and black cherry (*Prunus serotina*). *S. titus* may also use

Amelanchier sp. (Layberry et al. 1998). In Michigan, the larvae of this species were found during the day in small byres constructed by ants at the base of host shrubs and saplings (Webster, unpublished). *S. titus* prefers old fields near woodland edges and brushy woodland openings. In Maine this species may be most common near forests with scrub oak and pitch pine, although more studies are required to determine the preferred habitat for this hairstreak in the state.

Life Cycle: There is one generation of adults from mid July to early August. This species overwinters as eggs that are laid in cracks and grooves on the bark of small host trees.

Nectar Sources and Behavior: Milkweeds are used most frequently, especially butterfly weed (*Asclepias tuberosa*). Adults will also nectar on dogbane (*Apocynum* sp.) and yarrow (*Achillea* sp.). Territorial males perch on leaves of trees and shrubs close to the ground. They have a very rapid and erratic flight and confrontations with other males are frequent. Occasionally males are observed on patches of bare soil on trails through old fields.

Threats and Conservation Concerns: The preferred habitat of *S. titus* is old fields or other open habitats with small cherries, especially near scrub oak barrens. Many of these habitats are rapidly disappearing in Maine, due to a combination of ecological succession and development. One of only three modern known sites for this species in Maine was recently destroyed by a housing development. A second site was also recently threatened by development. Aerial pesticide drift, from adjacent pitch pine-scrub oak forests targeted for gypsy moth control, may be an additional threat to this insect.

Additional survey work should be done to determine the current status and distribution of this species in Maine.

Status in Maine: *S. titus* currently has no legal protection in Maine. This species is at risk of extirpation and its status should be re-evaluated.

Top Right: Male upperside**. Bottom Right:** Male underside

Edwards' Hairstreak
Satyrium edwardsii (Grote & Robinson)

Diagnosis: This tailed hairstreak is dark brown above, often with an orange spot above the tail on the hindwing, especially in females. Males have an elongate patch of androconial scales on the forewing. *S. edwardsii* is distinguished from the similar *Satyrium calanus falacer* (Godart) by a band of white-rimmed circular to oval spots on the underside. These spots are usually square shaped in *S. c. falacer*. *Satyrium acadicum* (W. H. Edwards) also has a band of white-rimmed circular spots on the underside, but the blue spot on the hindwing underside is capped with orange. The ground color of the underside of *S. edwardsii* is light brownish grey, but grey in *S. acadicum*. Wingspan: 19-31 mm.

Range: The Edwards' hairstreak ranges throughout much of the eastern United States northward to southern Maine, southern Ontario, and southern Manitoba (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *S. edwardsii* is known from sevenlocalities (3 counties, 6 townships), mostly in extreme southwestern Maine. This species can be locally common, but is often extremely localized.

Habitat and Larval Hosts: In most of the Northeast, scrub oak (*Quercus ilicifolia*) is the primary larval host plant. However, in the Midwest, black oak (*Q. velutina*) and scarlet oak (*Q. coccinea*) are used (Webster & Nielsen 1984). *S. edwardsii* is usually found in scrub oak barrens on sand barrens, shale barrens, and occasionally on rocky ridge tops. In Maine, *S. edwardsii* is closely associated with areas with many small open-grown young or regenerative growth scrub oaks adjacent to roads, powerline cuts or margins of fields.

Life Cycle: Females lay their eggs during July and early August in crevices and other small depressions on smaller branches of their host. The eggs overwinter, hatch during the spring, and the neonate larvae initially bore into the developing buds, but later instar larvae feed on the entire bud and developing leaves. Pupation usually takes place in the leaf litter at the base of the host during late June and July (Webster & Nielsen 1984). Adults are on the wing from mid July to early August; with peak flight in Maine from 20 to 28 July.

Nectar Sources and Behavior: In Maine, most adults of *S. edwardsii* have been observed nectaring on milkweed and dogbane. Potential nectar sources were often uncommon at localities where this species occurs. Adults (often males) typically perch on small (1-2 meter) scrub oaks adjacent to roads and clearings during the afternoon.

Studies in Michigan have revealed a strong myrmecophilous relationship between the larvae of this butterfly and the mound-building ant, *Formica integra* Nylander (Webster & Nielsen, 1984). The third and fourth instar larvae aggregate during the day in groups of up to 100 individuals or more at the base of their host trees within conical structures of detritus (byres) constructed by the ants. During the evening the larvae leave these structures, feed nocturnally, and then return to the byres near dawn. The larvae are always surrounded by attending ants that feed on honeydew secreted from special glands on the seventh abdominal segment. The ants readily defend the larvae and presumably protect them from predators and parasitoids. Few late instar larvae or pupae from the byres were ever parasitized. However, late instar larvae found on the foliage were almost always parasitized. *S. edwardsii* was often very abundant in areas where the mound building *Formica* ants were common, but uncommon where these ants were scarce. In addition, the larvae of *S. edwardsii* and associated ants were rarely found associated with larger saplings (> 10.0 cm dia.) of their host, and adults were usually uncommon in areas where young oak saplings were scarce (Webster & Nielsen, 1984).

A myrmecophilous relationship has not yet been established for populations of S. *edwardsii* in Maine. However, as in Michigan, S. *edwardsii* was almost exclusively found in areas with small, open-grown young scrub oaks.

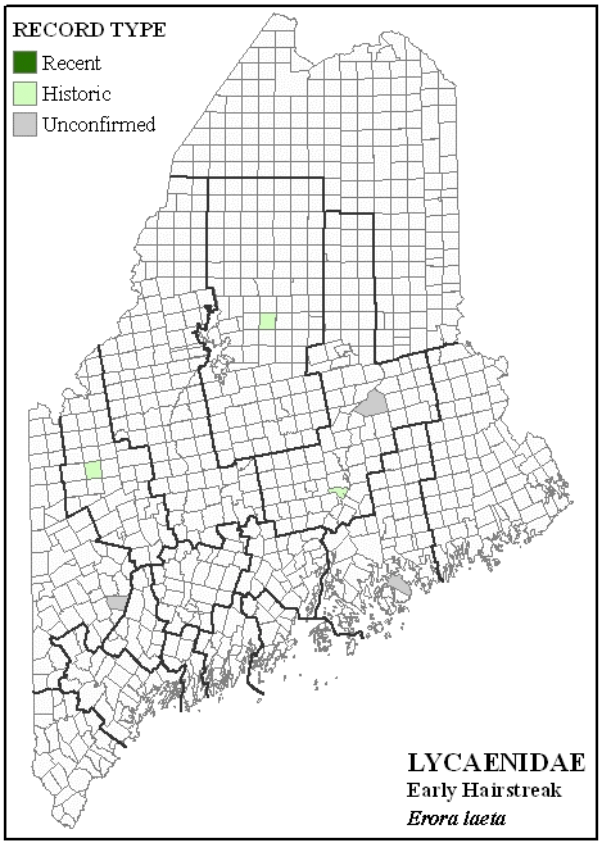
Threats and Conservation Concerns: Development and ecological succession are likely the most important threats to this species.

It is not completely clear why *S. edwardsii* is so strongly associated with areas of smaller, young open-grown scrub oak trees in Maine. It is possible that later instar larvae, which feed nocturnally, may have less time to feed on larger trees and may be more prone to attack by predators and parasitoids, due to the amount of time spent traveling up and down the trees at dusk and dawn, especially if ants are not present. The presence of small, young or regenerative growth scrub oak may therefore be critical for the long-term survivorship of *S. edwardsii.* If true, controlled burns or cutting of patches of pitch pine and mature scrub oak may be a critical management tool for preventing the extirpation of this species from Maine.

Gypsy moth (*Lymantria dispar*) larvae have been defoliating large areas of scrub oak in the Fryeburg Barrens and Shapleigh Barrens in recent years. It is not known what impact this may have on populations of *S. edwardsii*. The larvae of both species feed at approximately the same time period during the spring, so the impact is likely to be negative. Aerial pesticide applications against the gypsy moth could be devastating to *S. edwardsii*.

Additional survey work in Maine is likely to result in the discovery of only a few additional populations of this butterfly.

Status in Maine: Currently, *S. edwardsii* is listed as endangered in Maine.



Top Right: Female upperside**. Bottom Right:** Female underside

Early Hairstreak
Erora laeta (W. H. Edwards)

Diagnosis: The female has extensive dark blue with black borders on the upperside. The male is dark grey with the blue limited to a small band near the margin of the hindwing. The underside is jade green with an irregular orange line in the medial area of each wing and an orange margin. This species can be confused with no other species in Maine. Wingspan: 21 to 24 mm.

Range: *E. laeta* occurs from Georgia northward through the Appalachian Mountains to Michigan, Quebec and the Maritime Provinces in Canada (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *E. laeta* is known from six scattered localities (5 counties, 6 townships) in the central portion of the state, however there are no records of this species from Maine after 1954. The early hairstreak is rarely encountered, but can be locally abundant during some years.

Habitat and Larval Hosts: The larval host of this species is American beech (*Fagus grandifolia*). Hazelnut (*Corylus* sp.) may also be used, but females from New Brunswick refused to oviposit on either the leaves or developing nuts of this species (Webster, unpublished). This butterfly occurs in mature hardwood and mixed forests with American beech and hazelnut.

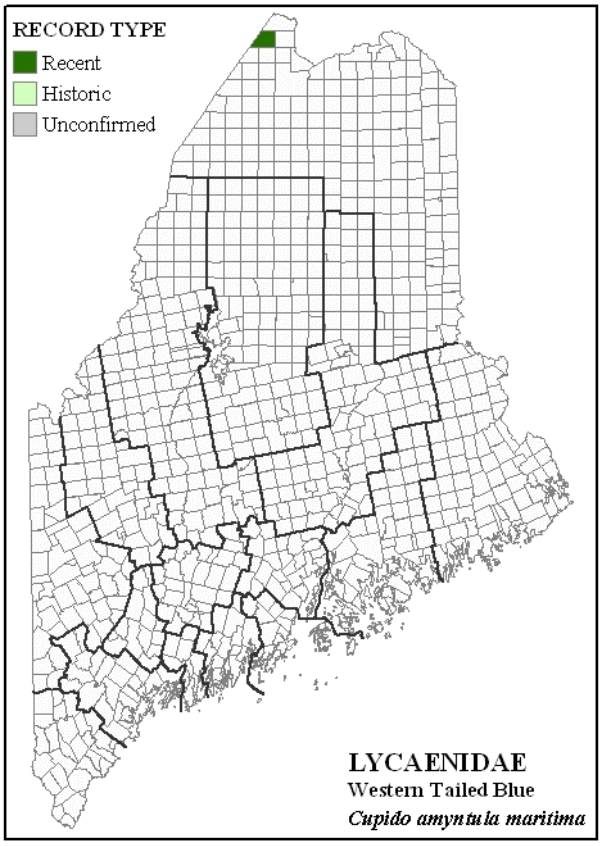
Life Cycle: Eggs are laid almost exclusively on the developing nuts of American beech (Webster, unpublished). The larvae initially feed on the surface of the husk, but the last two instars bore through the husk and feed on the developing nut. More than one nut is usually fed on by a larva. Fully mature larvae pupate in leaf litter at the base of the trees where they overwinter. *E. laeta* adults are active from mid to late May to mid June. There is probably only one generation of adults in Maine, although a partial second generation may occur in late July or August in some years.

Nectar Sources and Behavior: Females are typically observed resting on moist soil on gravel forest roads through forests with American beech on warm sunny days. Males are rarely observed at moisture and are more likely to be observed perching on leaves near the tops of hills. Usually this species is rarely observed. However, on unusually warm days females can be quite common along forest roads during some years. Adults presumably spend most of the time at the tops of the trees. In New Brunswick adults have been observed nectaring on pin cherry (*Prunus pensylvanica*) and leatherleaf (*Chamaedaphne calyculata*).

Threats and Conservation Concerns: Beech canker (*Nectria* sp.) is a significant threat to American beech throughout its range. The continued loss of mature beech trees will undoubtedly reduce population numbers of *E. laeta*. Intensive forest harvesting and conversion of mature beech forests to other commercial stand types also pose a threat to this species.

Additional survey work should be done to determine the current status and distribution of this species in Maine.

Status in Maine: *E. laeta* currently has no legal protection in Maine.



Top Right: Male upperside**. Bottom Right:** Male underside

Western Tailed Blue
Cupido amyntula maritima Leblanc

Diagnosis: The upperside of males is purplish blue with dark margins and a white fringe. Females are dark brown with blue near the bases of the wings. The underside of both sexes is whitish with small indistinct black dots. On the hindwing is a single orange capped black spot adjacent to a small tail. This species is very similar to *Cupido comyntas* (Godart). However, *C. comyntas* usually has two orange-capped black spots adjacent to the tail and is pale grey rather than whitish grey on the underside. Wingspan: 17-27 mm.

Range: This species occurs throughout western North America eastward to western Quebec. A disjunct population (*maritima*) occurs in Quebec on the Gaspé Peninsula, the northern half of New Brunswick and extreme northwestern Maine (Layberry et. al, 1998).

Abundance: *C. amyntula maritima* is known from one specimen collected on June 20, 1995 by Ronald Rockwell in extreme northwestern Maine (Aroostook Co.). In New Brunswick this species is usually uncommon to moderately common at most known sites.

Habitat and Larval Hosts: Wild pea (*Lathyrus palustris*) is probably the native host for *C. amyntula maritima*. This plant (and the butterfly) is often common along the coast of New Brunswick on dunes and margins of salt marshes. However, *C. amyntula maritima* also uses cow vetch (*Vicia cracca*) and is often found along roadsides and in old fields. This butterfly appears to be expanding its range in New Brunswick.

Life Cycle: Eggs are laid on the flowers and seed pods of the host. The larvae initially feed on the flowers before boring inside the more mature pods where they feed on the developing seeds. Mature larvae overwinter in the seed pods. This subspecies has only one generation per year (western populations have two or more generations) with adults present from mid June to mid July.

Nectar Sources and Behavior: Adults typically nectar on the host flowers and usually are found close to the hosts. Males will often sip moisture at moist spots along dirt roads.

Threats and Conservation Concerns: There are no known significant threats to this butterfly, which may actually be expanding its range in Maine by occupying disturbed areas seeded by cow vetch.

Further surveys are needed in northern Maine to better determine the distribution and status of this butterfly.

Status in Maine: *C. amyntula maritima* currently has no legal protection in Maine.

Top Right: Male upperside**. Middle Right:** Female upperside**. Bottom Right:** Male underside

Crowberry Blue
Plebejus idas empetri (Freeman)

Diagnosis: Males are bright purplish blue above with a very narrow black border. Females are dark brownish grey above with varying degrees of blue scaling on the basal areas of the wings. Most females have a trace of marginal orange spots on the hindwing, distinguishing this species from other blues in Maine (but see *Plebejus melissa samuelis* Nabokov). Both sexes are pale grey beneath with black spots. On the hindwing the marginal row of spots has metallic blue centers capped with orange, which is unlike any of the other blues that currently occur in Maine. Wingspan: 17-23 mm.

Range: This butterfly is restricted to New Brunswick, Prince Edward Island, Nova Scotia and Maine (Layberry et. al, 1998). The only populations of *P. i. empetri* in the United States occur within a narrow strip along the coastal fog belt from Harrington to West Quoddy Head (Washington Co.).

Abundance: *P. idas. empetri* is known from 17 localities (1 county, 9 townships). This species can be locally common in its preferred habitat.

Habitat and Larval Hosts: *P. idas empetri* occurs only in coastal plateau and raised bogs and coastal headlands with black crowberry (*Empetrum nigrum*), the caterpillar host plant. Adults are most common in bogs with dense carpets of black crowberry.

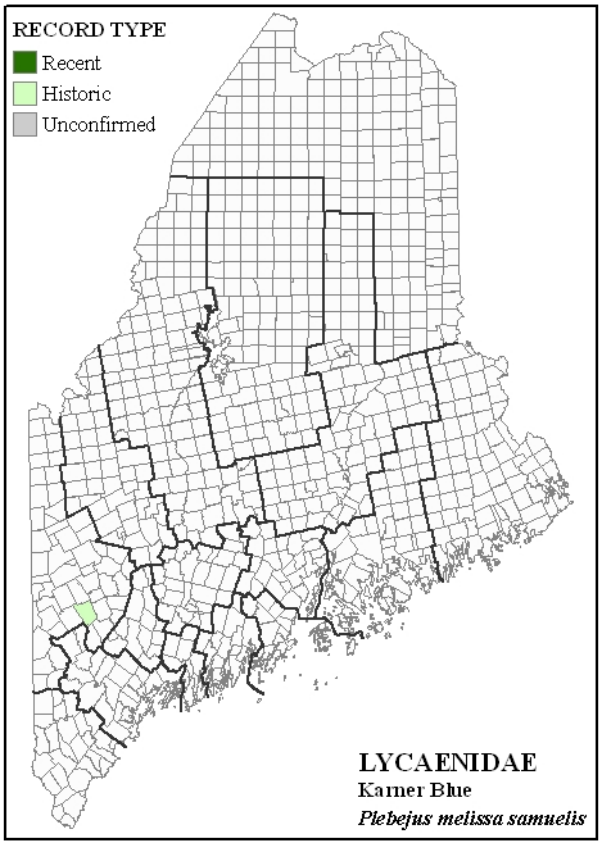
Life Cycle: Eggs, which are laid on the underside of leaves of black crowberry, overwinter and then hatch the following spring. Larvae feed on the developing leaves and buds, and pupate in June and early July (Richard Boscoe, pers. comm.). The adult flight season is from late June to late July. In most years adults are most common during mid July, but they often have a relatively extended flight season.

Nectar Sources and Behavior: Adults have been observed nectaring on *Kalmia* sp., but potential nectar sources are generally uncommon when this species is flying. Males fly rapidly a few inches above the foliage and females are sometimes observed perching on foliage. Adults rarely fly on cloudy cool days or in dense fog, but often take flight if approached, and thus it is possible to detect this species under less than ideal conditions.

Threats and Conservation Concerns: Most of the sites where this species occurs are either in conservation ownership or appear to be relatively secure due to the nature of the habitat. However, potential threats include peat mining and conversion to blueberry fields as has occurred in sections of the Greenwood Heaths and some of the Jonesport peatlands. All the sites where this species occurs should be periodically monitored to assess the health of the plant community and unique insect fauna. Adequate riparian buffers should be maintained to protect peatland hydrology at all known sites.

Additional surveys of the state's coastal peatlands may result in the discovery of few additional populations of this butterfly.

Status in Maine: Currently, *P. idas empetri* is listed as special concern in Maine.



Top Right: Male upperside**. Middle Right:** Female upperside**. Bottom Right:** Male underside

Karner Blue
Plebejus melissa samuelis Nabokov

Diagnosis: Males are purplish blue above with a very narrow black border. Female are dark brownish grey above with blue scaling on the basal areas of the wings. Females have a band of marginal orange spots on the hindwing. Both sexes are pale grey beneath with black spots. On the hindwing the marginal row of spots has metallic blue centers capped with orange. This species is very similar to *Plebejus idas empetri* (Freeman). However, *P. idas empetri* lives in a completely different habitat (coastal bogs). Wingspan: 20-28 mm.

Range: *P. melissa samuelis* occurs in a series of isolated populations from Wisconsin east to New Hampshire and, formerly, Maine.

Abundance: *P. melissa samuelis* was collected in Norway (Oxford Co.) around 1865 by S.I. Smith. No other specimens are known from Maine and the species is now considered extirpated.

Habitat and Larval Hosts: The only known host of *P. melissa samuelis* is wild lupine (*Lupinus perennis*), which is believed extirpated in Maine. This subspecies occurs in open oak (scrub oak in eastern areas) forests and pine forests with good stands of the host plant.

Life Cycle: This insect overwinters as an egg laid at the base of the stem of the host or on leaf litter. The larvae feed on the leaves and flowers and are often attended by ants. There are two generations, one in late May to mid June and a second in late July into August.

Nectar Sources and Behavior: Adults nectar on the flowers of wild lupine. Males often frequent moist areas on sandy roads.

Threats and Conservation Concerns: This species is extirpated from Maine and much of its former range in the Northeast. In Maine, the butterfly's sole location was also the only known site in the state for the native wild lupine. This extensive pitch pine barren community was lost to farming, development, and sand and gravel mining in the early 1900's.

Attempts to protect and restore habitat and reintroduce populations of this butterfly are underway at several sites in New Hampshire.

Status in Maine: Extirpated. Federally endangered.

Top Right: Male upperside**. Bottom Right:** Female upperside

Greenish Blue
Plebejus saepiolus amica (W. H. Edwards)

Diagnosis: The male is pale metallic blue on the upperside, with a narrow black border, (although some individuals may have the band more expanded) and a white fringe. The underside of males is silvery grey with black dots and a small indistinct orange-capped spot on the margin of the hindwing. The upperside of the female is brown with bluish areas near the base of the wings and one or two orange spots near the margin of the hindwing. The pattern on the under side is similar, but the ground color darker grey to pale tan. Wingspan: 21-28 mm.

Range: *P. sapiolus amica* occurs throughout much of Canada eastward to Quebec and New Brunswick.

Abundance: *P. sapiolus amica* is known from 12 localities (7 counties, 11 townships) in the central portion of the state. Most records are from the 1930's, with the most recent records from Baxter State Park (1968) and Chester (1971). The greenish blue can be locally common.

Habitat and Larval Hosts: The introduced white clover (*Trifolium repens*) and alsike clover (*Trifolium hybridum*) are the hosts of this subspecies in the eastern portion of its range. These two species of clover are often planted as cover plants after road construction and often escape to waste places and other disturbed sites. *P. sapiolus amica* is often found along roadsides, near landfill sites, and other waste places where the host plants occur.

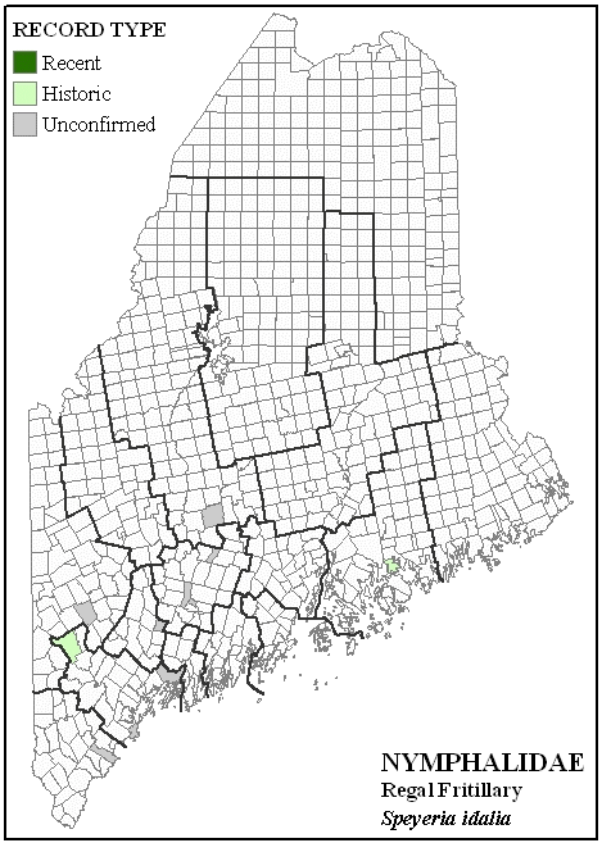
Life Cycle: Eggs are laid on the flowers of the host and the caterpillars eat the flowers and developing seed pods. The larvae overwinter. There is only one generation of adults per year, from mid to late June to mid July.

Nectar Sources and Behavior: Adults have a fast flight close to the ground and will sip nectar from clovers and cow vetch. Males often frequent moist spots along forest roads.

Threats and Conservation Concerns: *P. sapiolus amica* has not been found in Maine since the early 1970's. However, it is likely that this butterfly still occurs in the state, as it is locally common in northern New Brunswick. Surveys should be done in northern Maine to determine the current status of this species.

This species usually occurs in waste places and roadsides where white clover and alsike clover have been planted. After a few years these clovers are generally out competed by other plant species resulting in the loss of the butterfly from the site. However, this colonizing species will often establish new colonies where the host plant has become established.

Status in Maine: *P. sapiolus amica* currently has no legal protection in Maine.



Top Right: Male upperside**. Bottom Right:** Male underside

Regal Fritillary
Speyeria idalia (Drury)

Diagnosis: The upperside of the forewing is orange with black spots and a dark border with white spots. The hindwing is black with whitish spots. The hindwing underside is brown with large silver spots. Males are distinguished from females by having a marginal row of orange spots on the upperside of the hindwing. Wingspan: 66-92 mm.

Range: Most populations of this species have disappeared from the eastern portion of its range. A few small populations occur in Virginia and North Carolina. It is still relatively common on the prairies, but even here populations are declining in many areas.

Abundance: *S. idalia* was known from 11 localities (7 counties, 11 townships) mostly in the southwestern portion of the state. There are no records for this species in Maine after 1941. *S. idalia* is considered extirpated from Maine and New England.

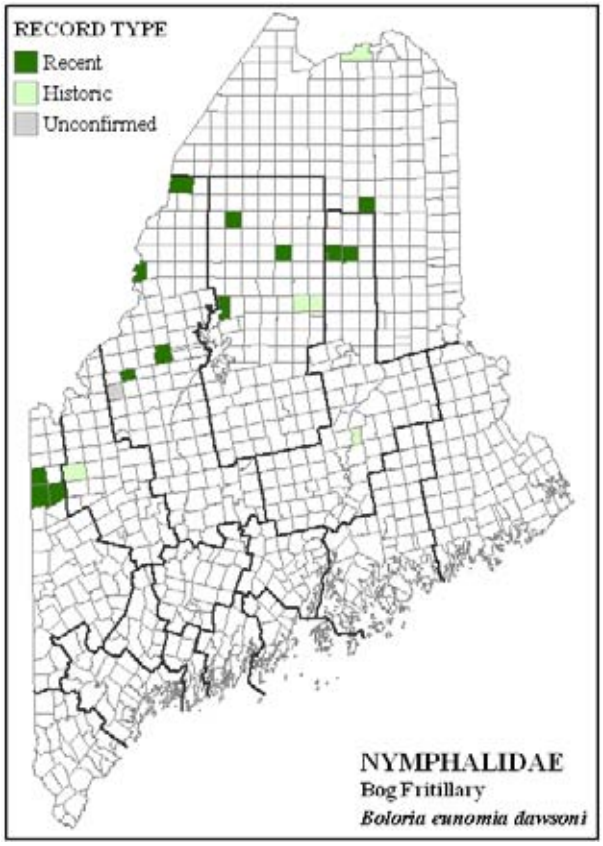
Habitat and Larval Hosts: Violets (*Viola* sp.) are the only host plants used by this species. Adults occur in pastures, damp meadows, and old fields, often near marshy areas.

Life Cycle: Eggs are laid near violets in late summer, and the newly hatched larvae pass the winter without feeding. Larvae feed on violet leaves during the following spring. The single generation of adults flies from late June into September.

Nectar Sources and Behavior: Adults nectar on a variety of flowers including common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnata*), and butterfly weed (*Asclepias tuberosa*). Later in the summer Joe-pye weed (*Eupatorium* sp.), thistle (*Cirsium* sp.), and aster (*Aster* sp.) are often used.

Threats and Conservation Concerns: *S. idalia* has likely been extirpated from northern New England since before 1950. Loss and fragmentation of open habitats to intensive agriculture and development, reforestation, pesticides, herbicides, and inappropriate and/or overuse of fire (usually prescribed burning) are among the known or reported threats (NatureServe 2005).

Status in Maine: Extirpated.



Top Right: Male upperside. **Bottom Right:** Female underside

Bog Fritillary
Boloria eunomia dawsoni (Barnes & Mcdunnough)

Diagnosis: The upper surface of the wings are orange with black (checkered) markings. On the underside of the hindwing are pearly spots surrounded by a black rim. *B. eunomia* differs from related species of *Boloria* by the presence of a submarginal row of pearly spots surrounded by a black rim on the underside of the hindwing. Wingspan: 32-40 mm.

Range: *B. eunomia dawsoni* is widely distributed in Canada with localized populations in the eastern United States in northwestern Maine and northern Michigan (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: The bog fritillary is known from 19 scattered localities (6 counties, 19 townships) in the northwestern third of the State. This species can be locally abundant in its preferred habitat.

Habitat and Larval Hosts: As its common name implies *B. eunomia* is restricted to bogs, typically bogs that are wet and have good stands of bog cranberry, *Vaccinium oxycoccus*, the larval host plant. In eastern Canada and Michigan *B. eunomia* larvae use

bog cranberry and creeping snowberry (*Gaultheria hispidula*) (Layberry et. al., 1998). R. Webster has observed females laying eggs on bog cranberry on several occasions in Michigan, Quebec, and New Brunswick. Adults are usually most common in bogs with extensive open moss lawn plant communities. This plant community typically has large almost treeless flat (with few hummocks) expanses covered with short sedges (*Carex* sp.), cotton grass (*Eriophorum* sp.), scattered small leatherleaf, bog rosemary (*Andromeda polifolia*), and bog cranberry growing in saturated sphagnum. The open sections of these bogs are usually surrounded by dwarf shrub bog that often grade into a forested black spruce (*Picea mariana*) and/or larch-dominated (*Larix laricina*) bog community.

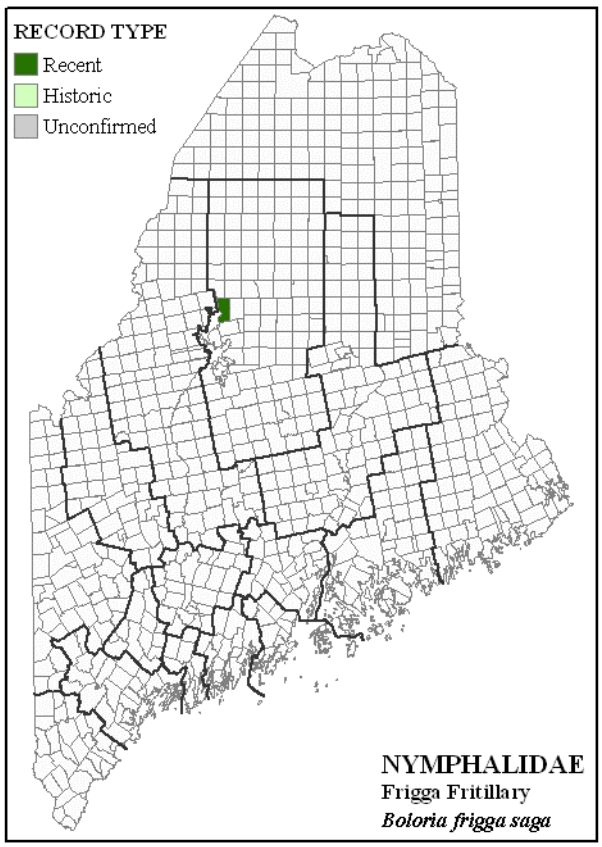
Life Cycle: *B. eunomia* over winters as a half grown larvae and completes development the following spring. This butterfly is typically most common during the last 10 days of June, but can be found from mid June to early July, depending on the season.

Nectar Sources and Behavior: The favorite nectar source of *B. eunomia* adults is Labrador tea, *Rhododendron groenlandicum*. The adults fly rapidly just above the moss-shrub canopy and are usually most common on the perimeter of the bog. On warm evenings *B. eunomia* will fly as late as 20:00 h. Starting around 20:15 h., *B. eunomia* were observed landing and roosting 2-3 meters high on black spruce trees along the perimeter of the Twelve Mile Bog. Presumably this is where the adults pass the night (possibly to avoid late season ground frost).

Threats and Conservation Concerns: There appear to be no specific known threats to this species in Maine currently. The bog habitat this butterfly occupies may be too wet to allow for peat mining. Adequate forested riparian buffers should be maintained to protect peatland hydrology at all known sites.

Further survey work in northwestern Maine may result in the discovery of additional populations of this butterfly with possible reconsideration of its status.

Status in Maine: Currently, *B. eunomia* is listed as special concern in Maine.



Top Right: Male upperside**. Bottom Right:** Mating pair, underside (photo by P. deMaynadier).

Frigga Fritillary
Boloria frigga saga (Staudinger)

Diagnosis: The upperside is orange with black spots and considerable dark scaling towards the base of the wings. The underside of the hindwing is dark brown towards the base and violet grey along the margin with a golden colored band between these two areas. There is a white patch along the anterior margin of the hindwing. *B. frigga saga* is similar to *Boloria bellona* (Fabricius), but has more rounded wings and a better developed white patch on the anterior margin of the hindwing. Wingspan: 36-48 mm.

Range: *B. frigga saga* is widely distributed but local, in Canada with local populations in the eastern United States in northwestern Maine, northern Michigan, Wisconsin and Minnesota (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *B. frigga saga* was recorded for the first time in Maine by P. deMaynadier in June 2002 in Northeast Carry Twp (Piscataquis Co.). This species is not uncommon at this site.

Habitat and Larval Hosts: In Maine adults were found in a partly wooded dwarf shrub bog with open-grown tamarack (*Larix laricina*) dominating the margins. Black spruce was present, but not abundant in the area of the butterfly colony. In Maine this species is closely associated with bog willow (*Salix pedicellaris)*, the probable larval host plant. In Alberta females have been observed ovipositing on willows and dwarf birch, *Betula glandulosa*, and the larvae feed on these plants (Bird et al., 1995). In the arctic, arctic avens, *Dryas integrifolia*, is used as a host (Layberry et. al, 1998).

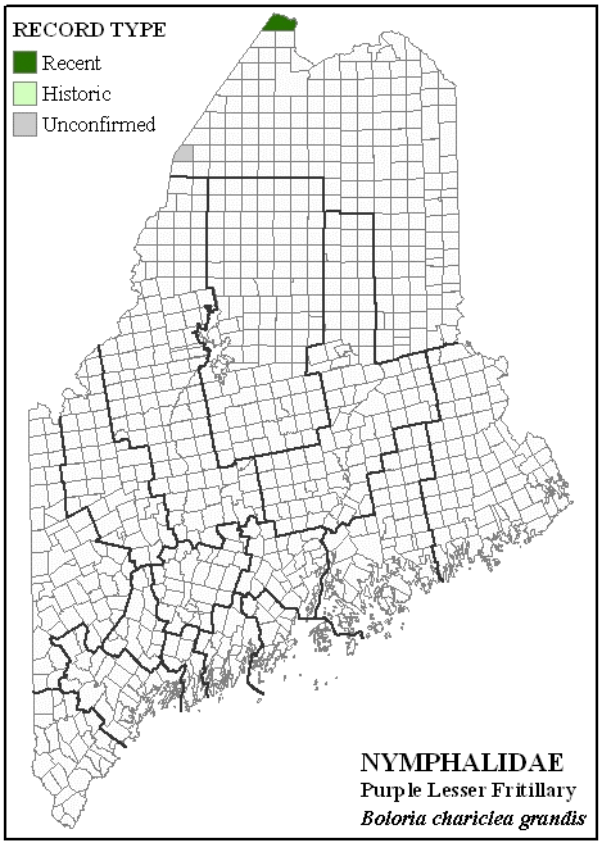
Life Cycle: *B. frigga saga* larvae overwinter as last instar caterpillars, completing development the following spring. Adults are on the wing during late May and the first two weeks of June depending on spring temperatures. The flight period is relatively short, usually less than two weeks.

Nectar Sources and Behavior: *B. frigga saga* adults fly rapidly near the ground among open grown trees in the forested bog margins of the tamarack bog. Adults were most common in areas where bog willow was common and were rarely observed in the open portion of the bog. During the afternoon, adults were occasionally observed nectaring on chokeberry, *Photinia* sp. (formerly *Aronia*).

Threats and Conservation Concerns: Intensive survey is needed to determine the size of the one known population of this species in Northeast Carry TWP. Additional surveys are needed in northern Maine to better assess the status, distribution and threats to this species in Maine.

Adequate forested riparian buffers should be maintained to protect peatland hydrology at all known sites.

Status in Maine: *B. frigga saga* currently has no legal protection in Maine. Its status should be reevaluated if additional populations are not documented in the near future.



Top Right: Male upperside. **Bottom Right:** Male underside

Purple Lesser Fritillary
Boloria chariclea grandis (Barnes & Mcdunnough)

Diagnosis: The upperside of *B. chariclea grandis* is dark orange with black spots. The underside of the hindwing is purplish with a broken rust-colored to yellowish band across the wing and white marginal spots capped with dark purple chevron shaped marks. Often there are two or three whitish spots near the base of the wing. This species cannot be confused with any other species of butterfly in Maine. Wingspan: 36-40 mm.

Range: *B. chariclea grandis* is widely distributed in Canada with local populations in the eastern United States in northwestern Maine and Minnesota (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *B. chariclea grandis* is known from only two localities (2 townships) in Aroostook Co., documented by C. Livesay and A. Brower. This fritillary can be locally common in its preferred habitat.

Habitat and Larval Hosts: In Maine and northern New Brunswick, *B. chariclea grandis* occurs in black spruce woodlands with open grown trees and a dry ericaceous

understory. These sites are typically on sandy soils, but can also be somewhat wet and bog-like. Host plants are probably willows (*Salix sp*.) in Maine. In eastern Canada *B. chariclea grandis* has been reported to use arctic and dwarf willow (Bird et al., 1995).

Life Cycle: First instar larvae do not feed and directly enter diapause, completing development the following spring (Bird et al., 1995). Adults are active from mid to late July in Maine.

Nectar Sources and Behavior: Adults have been observed nectaring on sheep laurel (*Kalmia angustifolia*) in Maine and goldenrod (*Solidago sp.*) in New Brunswick.

Threats and Conservation Concerns: Additional surveys are needed to better understand the status, distribution and threats to this species in northern Maine. The boreal woodland heath preferred by this species is apparently rare in Maine, and it is unlikely that further survey will yield many new occurrences of the butterfly.

Potential threats include intensive forestry practices that lead to conversion of the black spruce woodland type, development, and possibly ecological succession of burn-origin habitats.

Status in Maine: *B. chariclea grandis* currently has no legal protection in Maine. Its status should be reevaluated.

Top Right: Male upperside**. Bottom Right:** Female upperside**.**

Pearl Crescent
Phyciodes tharos (Drury)

Diagnosis: The upperside of *P. tharos* is bright orange with extensive black markings. The open orange areas are crossed by fine black lines. Females are larger with more extensive dark markings. The underside of males varies depending on the brood. The hindwing of first brood individuals is brownish with yellowish and whitish markings. The hindwing of later generations is yellow with a dark patch near the rear margin of the wing. There is usually a silvery crescent within the dark patch in both broods. The underside of females is similarly marked, but with more extensive mottling. *P. tharos* is very similar to the much more common northern crescent, *Phyciodes cocyta* (Cramer). The antennal clubs of males and most females of *P. tharos* are black and white. In *P. cocyta* the antennal clubs are orange and white. The submarginal band on the upperside of the hindwing of most males and many females is complete in *P. tharos*, but incomplete in *P. cocyta*. There are biological differences as well. *P. tharos* has 2 or 3 generations in Maine, with the first generation adults flying in May and early June, before the mostly single brooded *P. cocyta* adults start to fly. Only rarely do second generation individuals of *P. cocyta* occur in Maine. Wingspan: 21-34 mm.

Range: *P. tharos* is common throughout much of the eastern United States northward to southern Maine, and southern Ontario (Layberry et. al, 1998).

Abundance: The pearl crescent is known from nine scattered localities (7 counties, 9 townships) mostly in the southwestern portion of the state. This species can be locally common.

Habitat and Larval Hosts: *P. tharos* typically occurs in old fields and meadows. Larval host plants include a variety of asters (Layberry et. al, 1998).

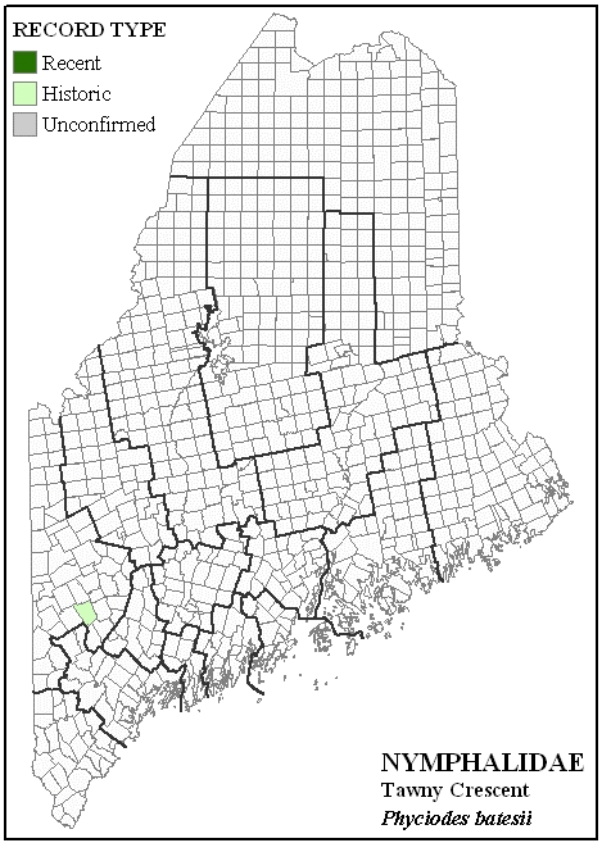
Life Cycle: There are probably three generations of adults in Maine. The first generation occurs in May and the first half of June, the second from mid July into August and a partial generation occurs in September.

Nectar Sources and Behavior: *P. tharos* will nectar on a variety of flowers and is often observed at moisture on dirt roads. Adults typically have a fast gliding flight close to the ground much like their more common relative, *P. cocyta*.

Threats and Conservation Concerns: Currently, there appear to be no major threats to this species in Maine. *P. tharos* is easily confused with *P. cocyta* and has probably been overlooked. It may be more common than current records indicate.

Further surveys are needed to determine the status and distribution of this species in Maine.

Status in Maine: *P. tharos* currently has no legal protection in Maine.



Top Right: Male upperside**. Bottom Right:** Male underside**.**

Tawny Crescent
Phyciodes batesii (Reakirt)

Diagnosis: The upperside of *P. batesii* is bright orange with extensive black markings. The open orange areas are crossed by fine black lines. There is a band of orange spots just past the middle of the forewing that is paler orange than the rest of the wing in both sexes. Females are larger with more extensive dark markings. The underside of males is yellow with a slightly darker patch with a whitish crescent near the rear margin of the hindwing. The underside of females is similarly marked, but slightly darker. *P. batesii* is very similar to the much more common northern crescent, *Phyciodes cocyta* (Cramer) and *P. tharos*. In *P. cocyta* the antennal clubs are orange and white. The antennnal clubs of *P. batesii* and *P. tharos* are black and white. In *P. batesii* and *P. cocyta* the submarginal band on the upperside of the hindwing of most males and many females is incomplete, but is complete in *P. tharos*. Males and females of *P. batesii* are further distinguished from *P. cocyta* males, and males and females of *P. tharos*, by an orange band on the forewing upperside that is lighter than the surrounding orange areas of the forewing. Wingspan: 21-34 mm.

Range: *P. batesii* currently occurs in a band from New York to Georgia northwestward to British Columbia in Canada (Opler & Krizek 1984, Layberry et. al, 1998). In the eastern portion of its range populations are very local, and many have declined or disappeared in recent years. However, this butterfly is still common in prairie areas to the west in Canada (Layberry et. al, 1998).

Abundance: *P. batesii* was collected in Norway (Oxford Co.) around 1865 by S.I. Smith. No other specimens are known from Maine, and the species is now considered to be extirpated.

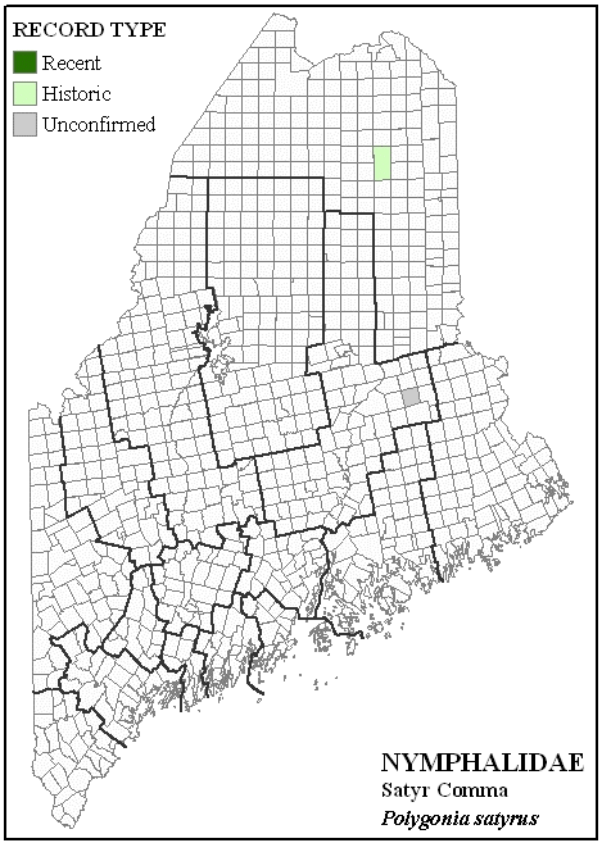
Habitat and Larval Hosts: In the eastern portion of its range, *P. batesii* typically occurs in dry open areas and on rocky outcrops where there is prairie-like vegetation. In West Virginia, wavy-leaved aster (*Aster undulates*) is the host plant (Allen, 1997). Other asters may be used as well.

Life Cycle: *P. batesii* has one generation per year. Larvae enter diapause in the third instar and complete development the following spring. Adults are active during June and early July.

Nectar Sources and Behavior: Adults are often observed in moist areas on dirt roads and will nectar from a variety of flowers.

Threats and Conservation Concerns: *P. batesii* is considered extirpated from Maine and much of its former range in the Northeast. Reasons for the decline of this species are poorly understood.

Status in Maine: Extirpated



Top Right: Male upperside**. Bottom Right:** Male underside

Satyr Comma
Polygonia satyrus (W. H. Edwards)

Diagnosis: The upperside of *P. satyrus* is orange to orange-brown with dark brown spots with a lighter border on the hindwing. The underside is brown, streaked with fine light brown lines. There is a silver comma clubbed at both ends on the hindwing. *P. satyrus* is easily confused with the light form of the much more common *Polygonia comma* (Harris). The light form of *P. comma* usually has light purplish overscaling along the margin of the wings on the upperside and a row of pale submarginal spots on the hindwing. *P. satyrus* lacks the overscaling and has the submarginal band of spots more or less fused together. Wingspan: 45-54 mm

Range: *P. satyrus* occurs across most of Canada south to Wisconsin, Michigan and Maine in the east (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *P. satyrus* is known from only two localities (2 counties, 2 townships).

Habitat and Larval Hosts: *P. satyrus* uses American stinging nettle, *Urtica dioica gracilis*, in New Brunswick -- the probable host plant in Maine. This butterfly occurs in

northern conifer forests, usually near alder swamps or small streams where the host plant is present. Adults are generally rare, but the larvae are often more easily found on the host plant during late June in the appropriate habitats.

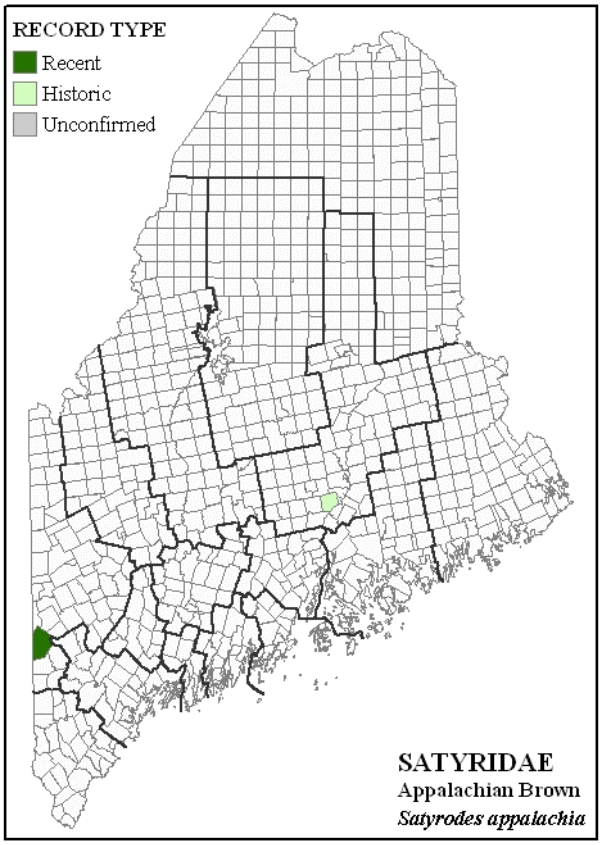
Life Cycle: Adults overwinter and have one generation per year. Overwintered adults appear during May and may be present into early July. Eggs are laid in May and June. Larvae live in a folded (down) leaf of the host and are thus easily found. The larvae of the red admiral, *Vanessa atalanta* (Linnaeus), uses the same host but lives in a leaf nest that is folded up.

Nectar Sources and Behavior: Adults rarely nectar on flowers, but readily feed at sap flows on wounded trees, as do many other species of *Polygonia*. Adults are most frequently observed on moist spots along woods roads through northern coniferous forests.

Threats and Conservation Concerns: There appear to be no major threats at this time to this species in Maine. *P. satyrus* may be more common than current records indicate as the species is widespread in New Brunswick and potential habitat is widespread in northern Maine.

Additional survey work should be done to determine the current status and distribution of this species in Maine.

Status in Maine: *P. satyrus* has no legal protection in Maine.



Top Right: Male upperside**. Bottom Right:** Male underside**.**

Appalachian Brown
Satyrodes appalachia (R. Chermock)

Diagnosis: *S. appalachia* is faded purplish brown in color with four pale bordered dark spots on the forewing and six on the hindwing on the upper and underside of the wings. The spots are slightly blurred on the upperside of the wings, but are much more distinct on the underside. The spots on the underside of the wings each have small white pupils surrounded by two light colored rings. On the underside there is a gently curved dark line between the light dark areas. *S. appalachia* is very similar to *Satyrodes eurydice*. However, *S. eurydice* is yellowish brown rather than purplish brown, and the dark line on the underside is zigzagged rather than gently curved. Wingspan: 40-51 mm.

Range: *S. appalachia* occurs throughout much of the eastern United States northward to central Maine, southern Quebec and southern Ontario (Opler & Krizek 1984, Layberry et. al, 1998).

Abundance: *S. appalachia* is known from two localities (2 counties, 2 townships). The only recent records are two specimens collected by R. Webster and P. deMaynadier during 2000 and 2001 in the Fryeburg Barrens (York Co.).

Habitat and Larval Hosts: *S. appalachia* is a forest butterfly that typically occurs in swampy forests near marshes and streams. The larvae feed on sedges, such as *Carex lacustris* and *C. stricta* (Layberry et. al, 1998).

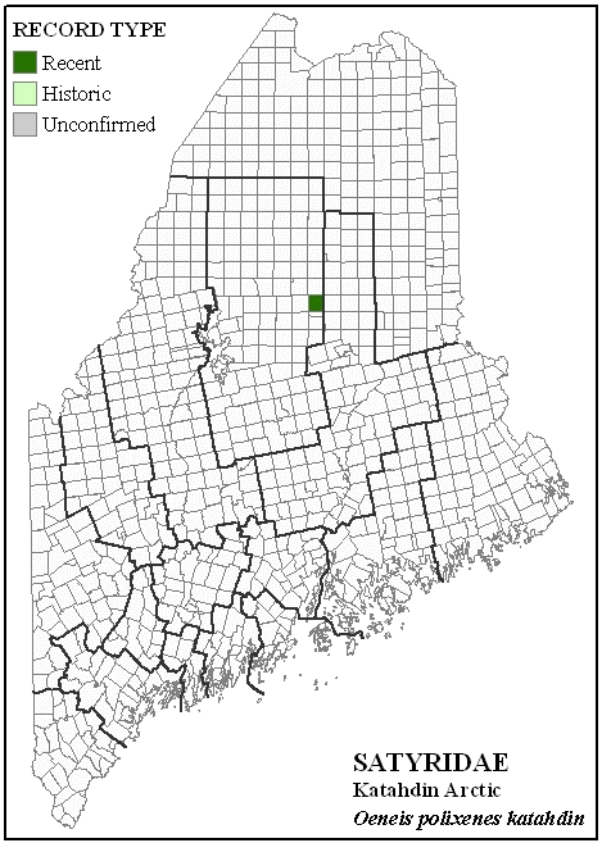
Life Cycle: The larvae overwinter in the third or fourth instar (Layberry et. al, 1998), and there is probably only one generation per year in Maine.

Nectar Sources and Behavior: Adults are most often observed resting on sunlit leaves in small openings and glades near streams and within swampy forests with an abundance of sedges. *S. appalachia* feed at sap flows on wounded trees (often willows) and are sometimes observed on moist spots on roads through forested areas. Adults rarely visit flowers. The more common and very similar looking *S. eurydice* is rarely found in forests and typically occurs in open marshes.

Threats and Conservation Concerns: There appear to be no major threats at this time to this species in Maine. *S. appalachia* is easily confused with *S. eurydice* and has probably been overlooked. Potential habitat is widespread, and the butterfly may be more common than current records indicate.

Further surveys are needed to determine the status and distribution of this species in Maine.

Status in Maine: *S. appalachia* has no legal protection in Maine.



Top Right: Male upperside**. Bottom Right:** Female underside

Katahdin Arctic
Oeneis polixenes katahdin (Newcomb)

Diagnosis: The upperside of *O. polixenes katahdin* is yellowish to orange brown**.** Males often have one small blurry spot on the forewing, while females may have as many as five. The underside of the hindwing is finely mottled and shaded with dark brown and pale grey with a darker medial band. This pattern is very similar in coloration to the lichens and mosses that adults often rest on. This species cannot be confused with any other butterfly in Maine. *Oeneis jutta* (Hübner), the only other *Oeneis* in Maine, is larger and darker with well developed yellow spots on the upperside of the wings.

Range: *O. polixenes katahdin* occurs only on the summit of Mount Katahdin in Baxter State Park in Maine. Other subspecies occur across Canada and in isolated populations in the Rocky Mountains of the western United States (Layberry et. al, 1998).

Abundance: *O. polixenes katahdin* is common in some years on the summit of Mount Katahdin.

Habitat and Larval Hosts: *O. polixenes katahdin* occurs only on alpine tundra. The host plant in Maine is not known. However in other portions of its range it has been observed ovipositing on sedges (*Carex sp.*) and grasses (*Festuca sp.*) and will eat both in captivity (Layberry et. al, 1998).

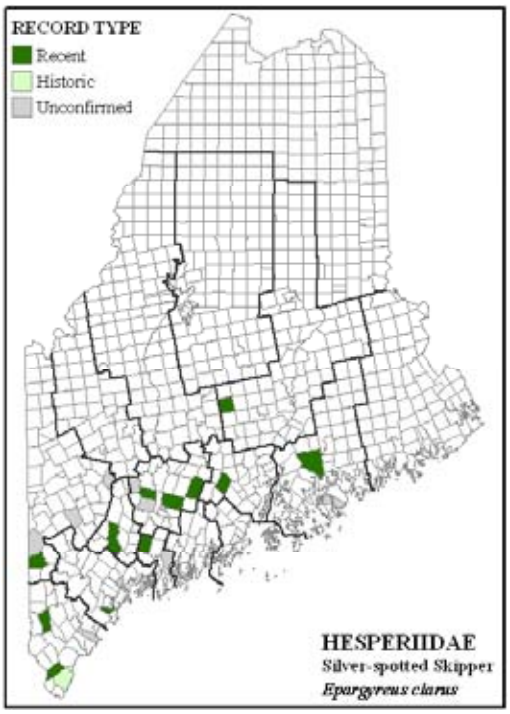
Life Cycle: Adults are active from late June to late July with peak flight during the first week of July. Two years may be required for this species to complete development. Larvae may overwinter in the first and third instars (Opler & Krizek 1984). The life history of this subspecies needs further study and description.

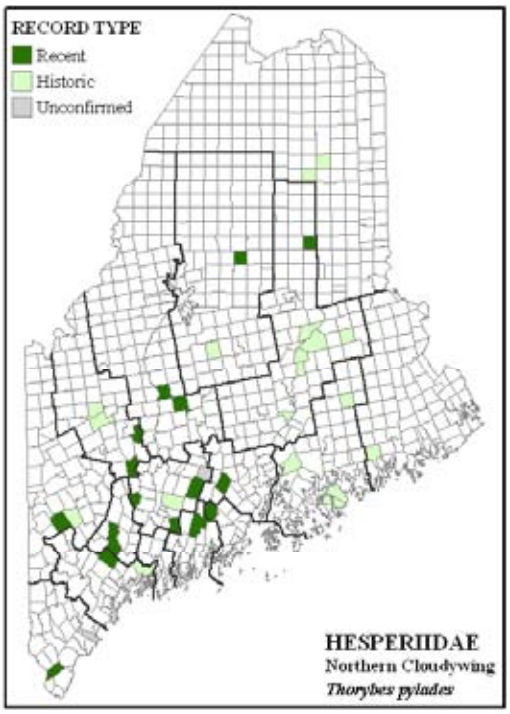
Nectar Sources and Behavior: Males often rest on lichen-covered rocks or on moss on the ground and will fly close to ground with a rapid and darting flight when disturbed, or approached by a female. Males will often return close to the original perch. Females fly less often and when disturbed will fly with a direct flight close to the ground for a considerable distance before landing. When it is windy they often let the wind carry them downwind. The cryptic coloration of the underside makes it difficult to locate this species once it has landed. Adults have not been observed to nectar on flowers.

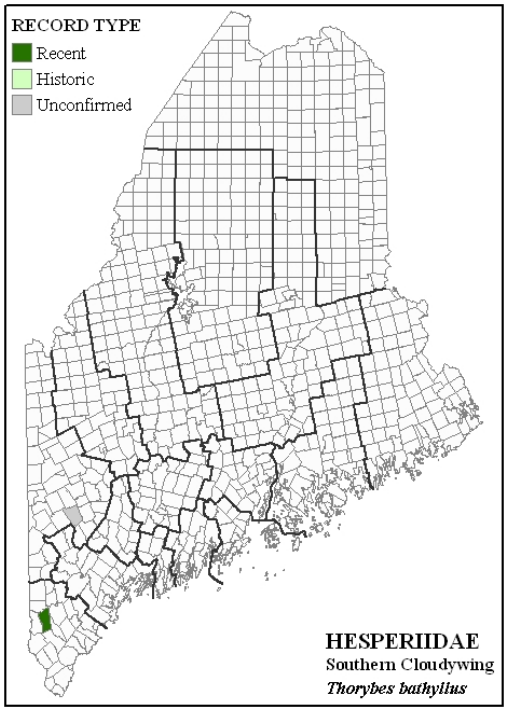
Threats and Conservation Concerns: The Katahdin arctic is an isolated subspecies found nowhere else in the world except on Mount Katahdin in Baxter State Park, Maine. While its habitat is protected, the species remains potentially vulnerable to illegal collection, off-trail trampling of the host plant, and global warming.

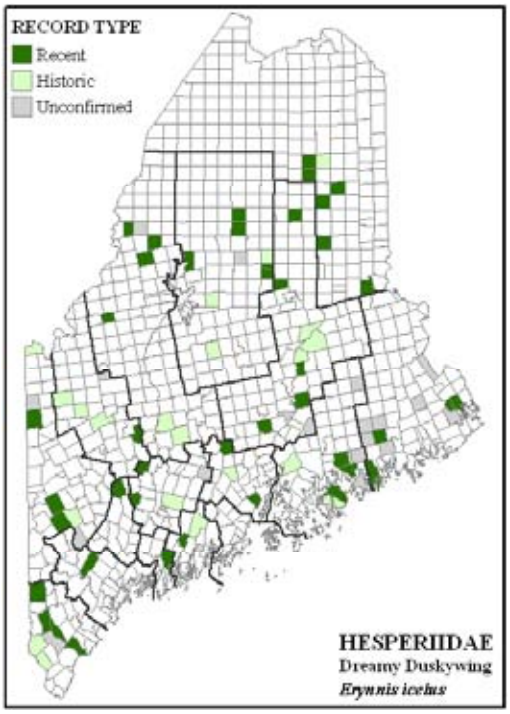
Status in Maine: *O. polixenes katahdin* is listed as endangered in Maine.

Appendix 2. Township Distribution Maps of Maine's Butterfly Species









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Sleepy Duskywing
Erynnis brizo

RECORD TYPE
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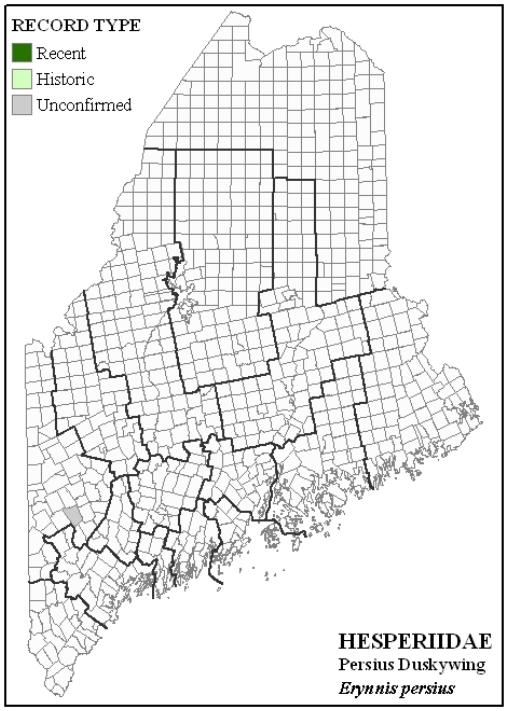
Juvenal's Duskywing
Erynnis juvenalis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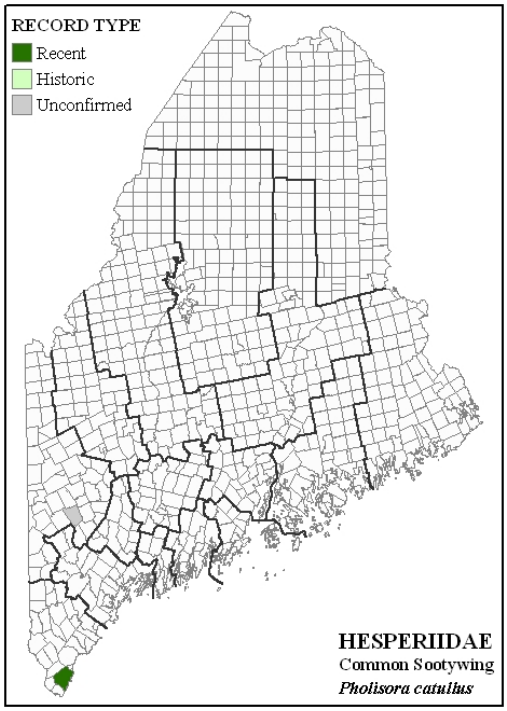
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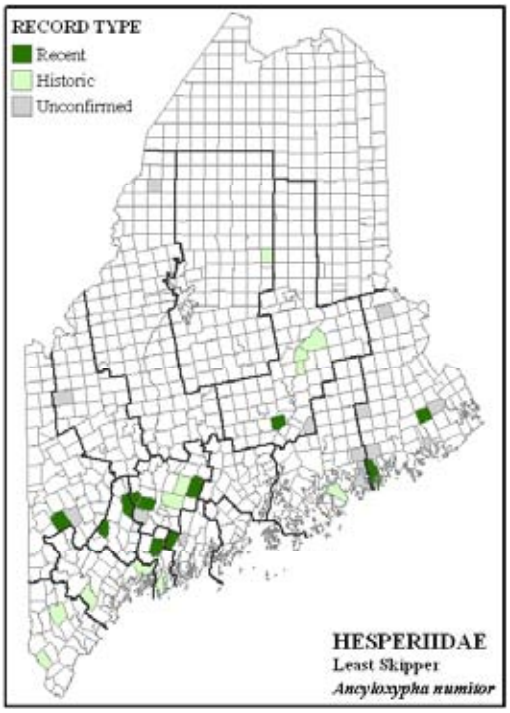
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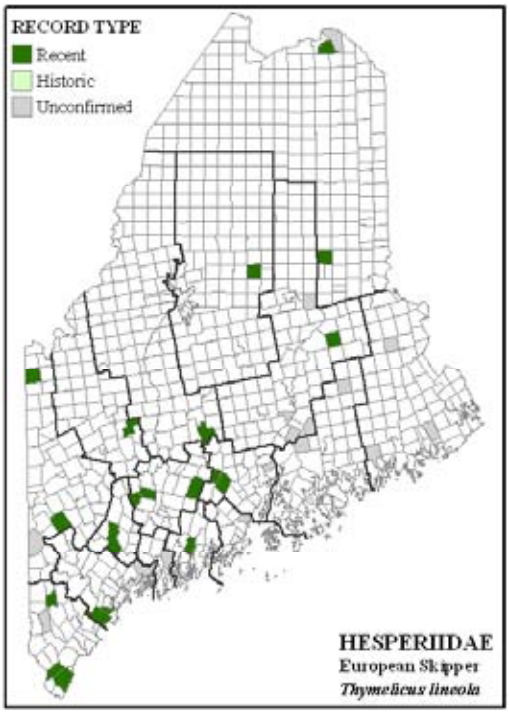
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Thymelicus lineola

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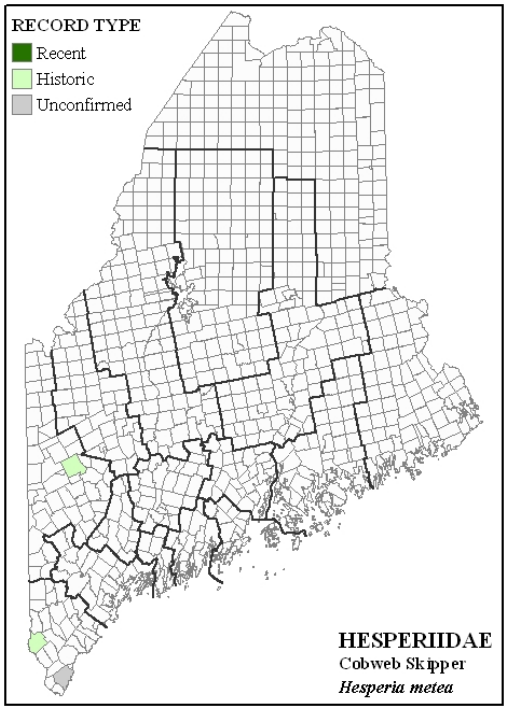
Hesperia leonardus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Hesperia metea

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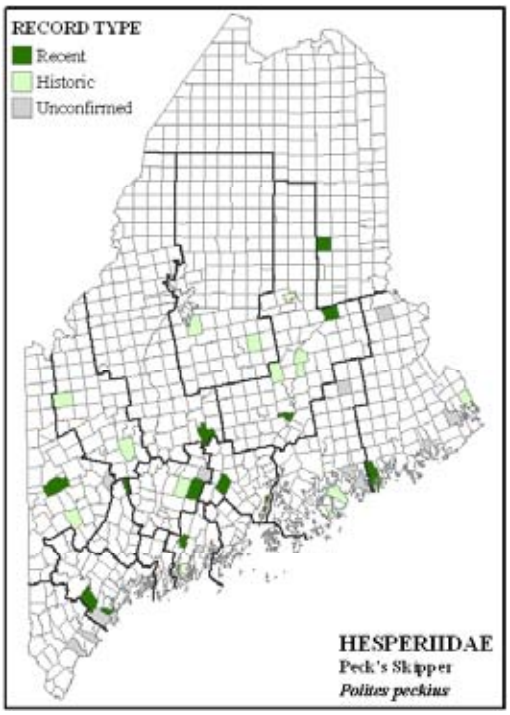
Hesperia sassacus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Tawny-Edged Skipper
Polites themistocles

RECORD TYPE
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Crossline Skipper
Polites origines

RECORD TYPE
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Long Dash Skipper
Polites mystic

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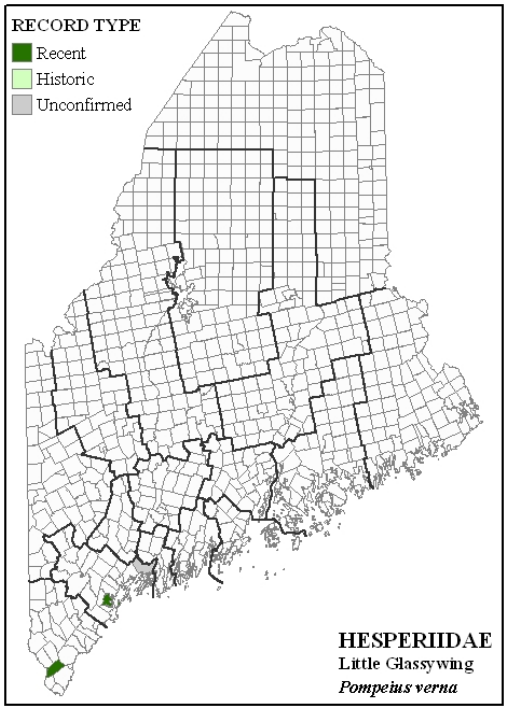
Northern Broken-Dash
Wallengrenia egeremet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Pompeius verna

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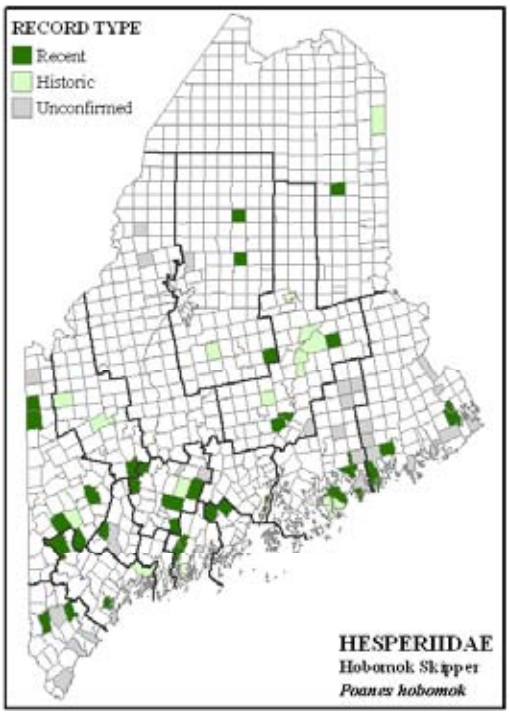
Anatrytone logan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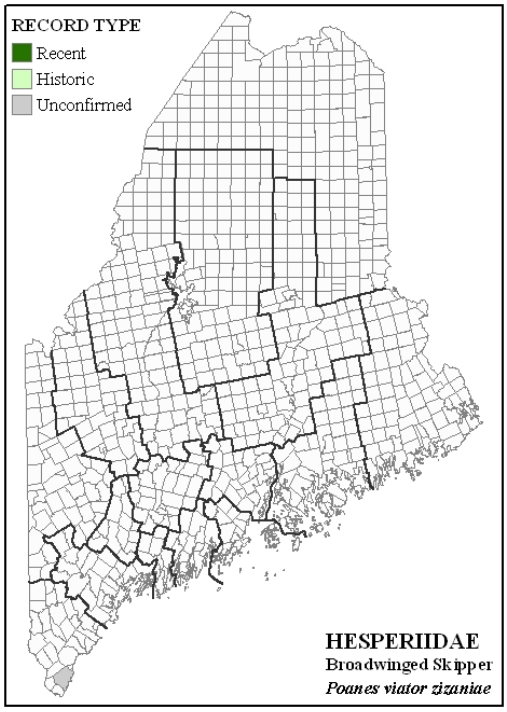
Hobomok Skipper
Poanes hobomok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Poanes viator zizaniae

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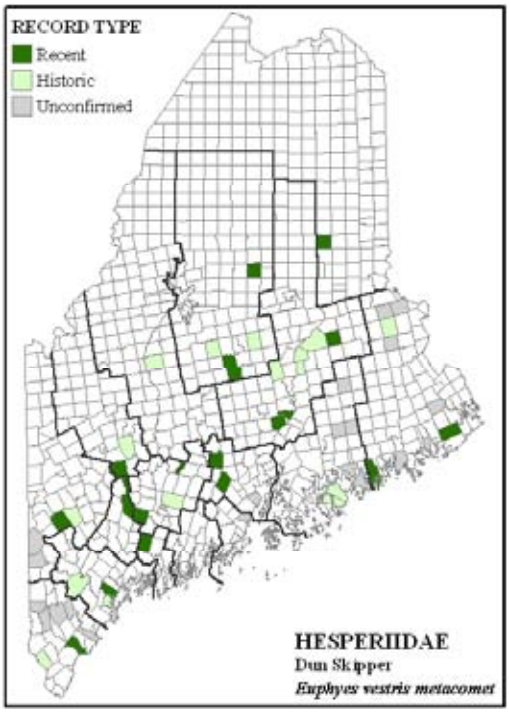
Two-spotted Skipper
Euphyes bimacula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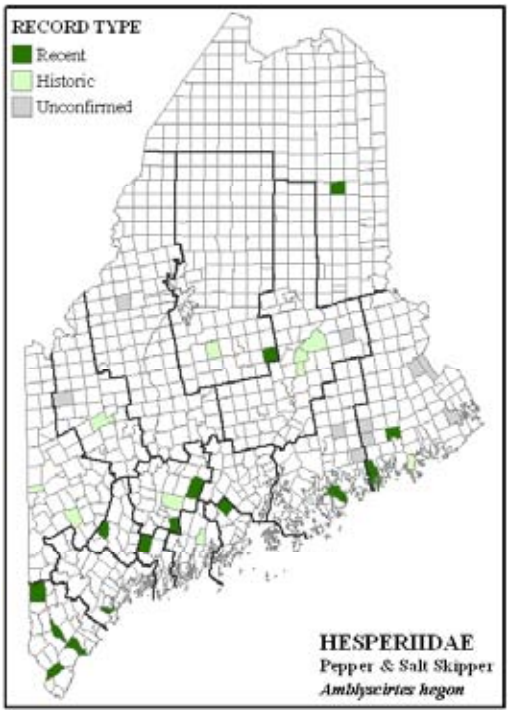
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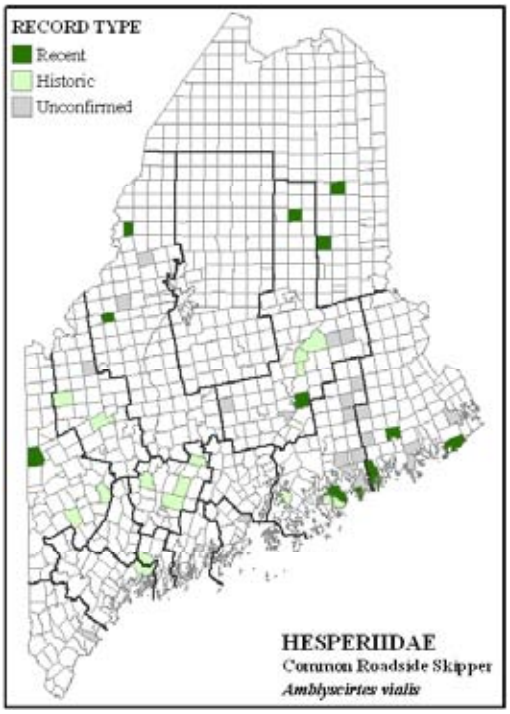
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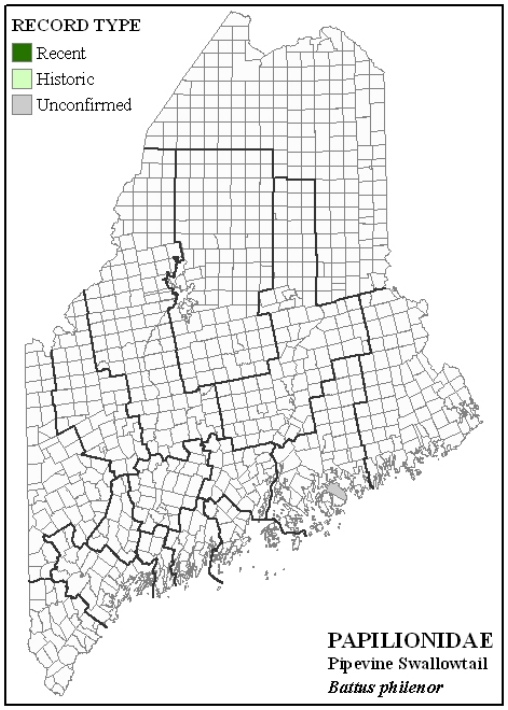
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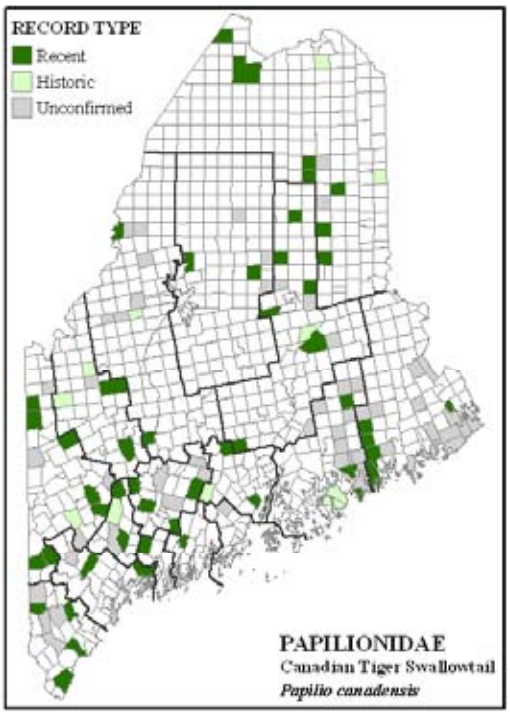
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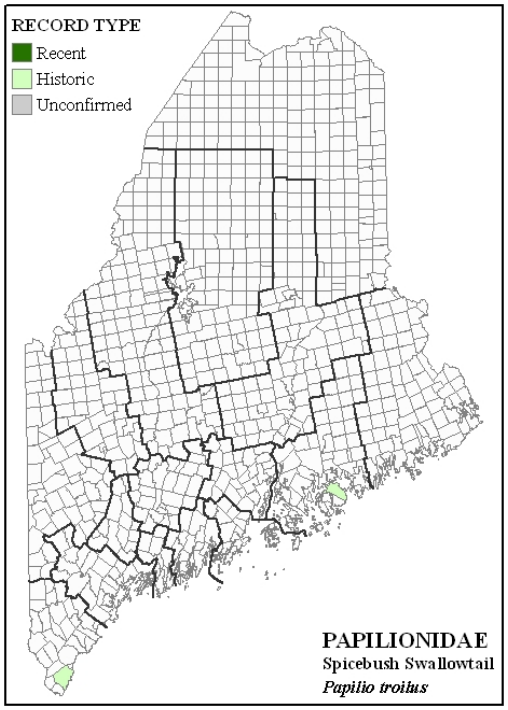
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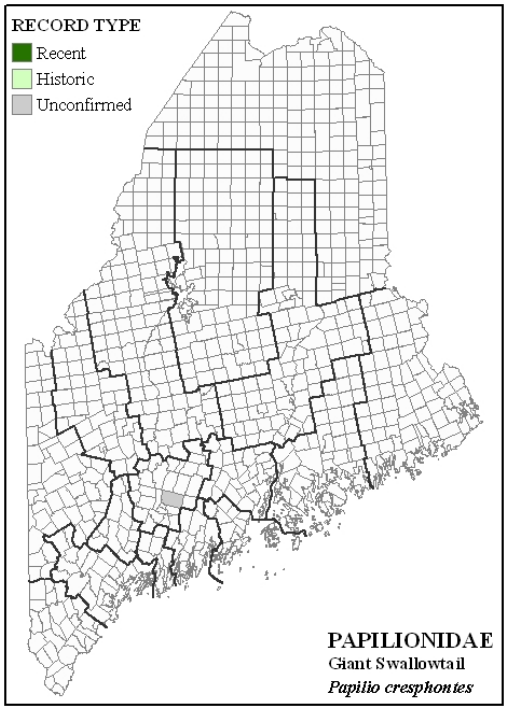
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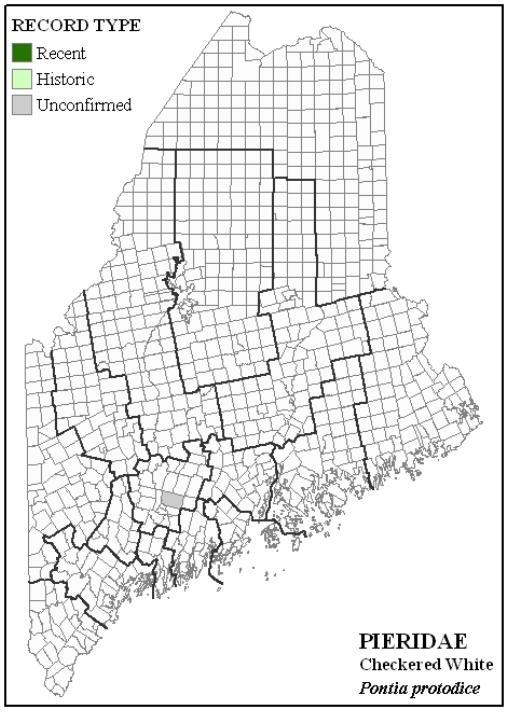
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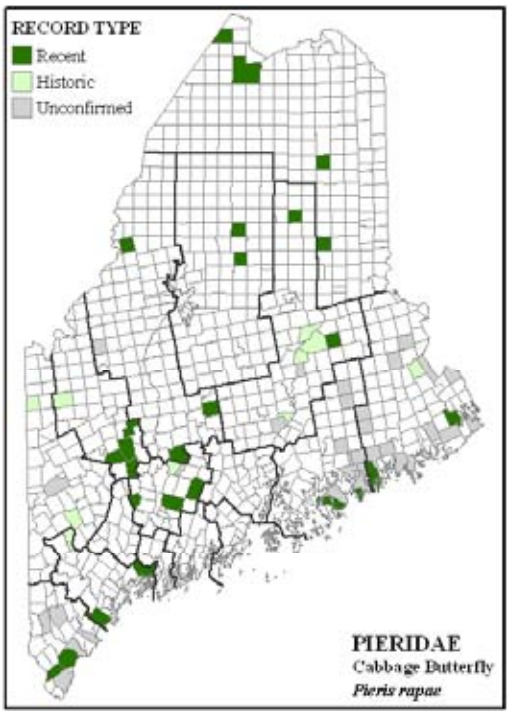
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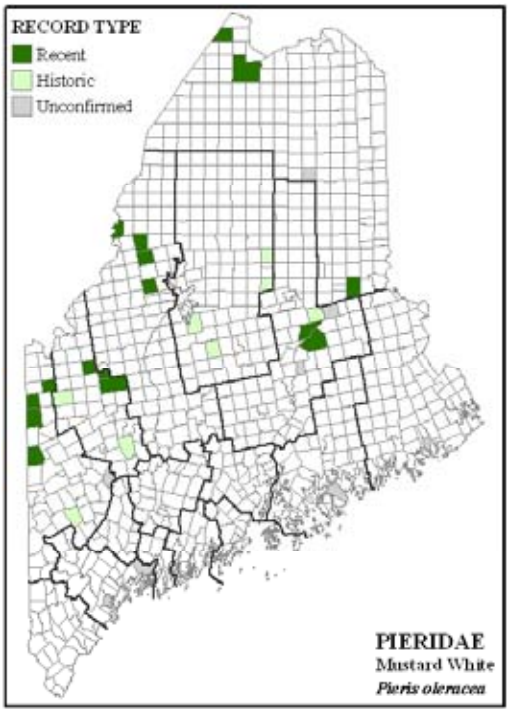
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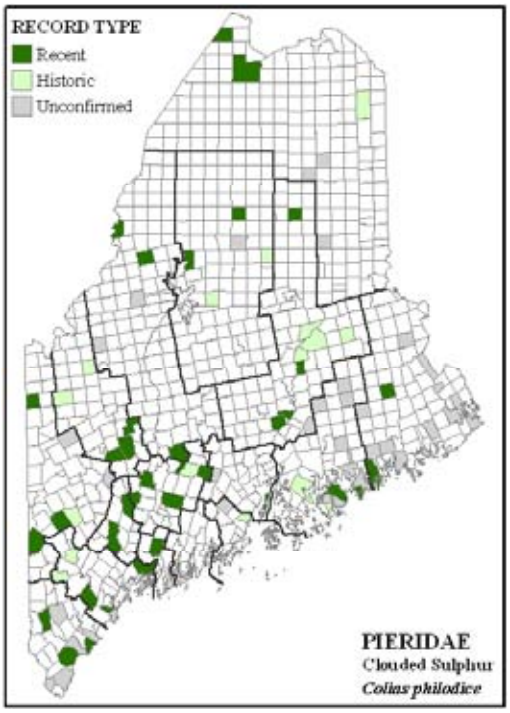
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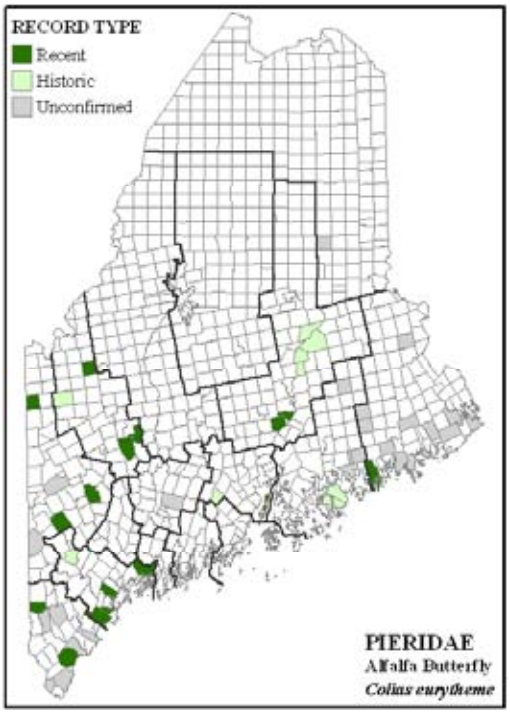
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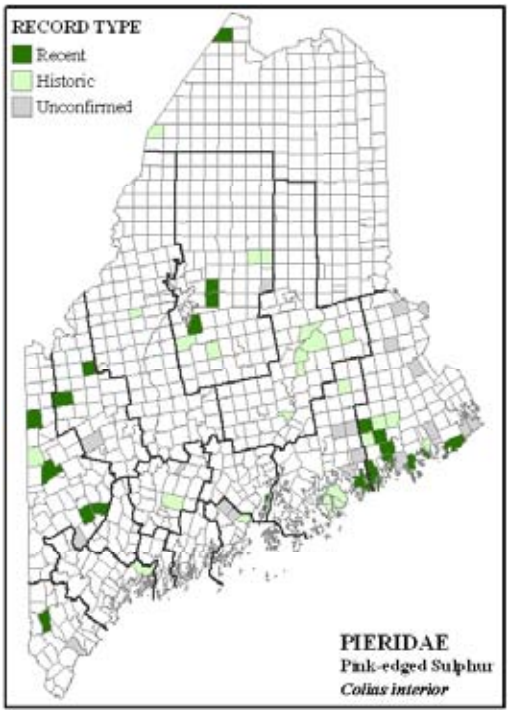
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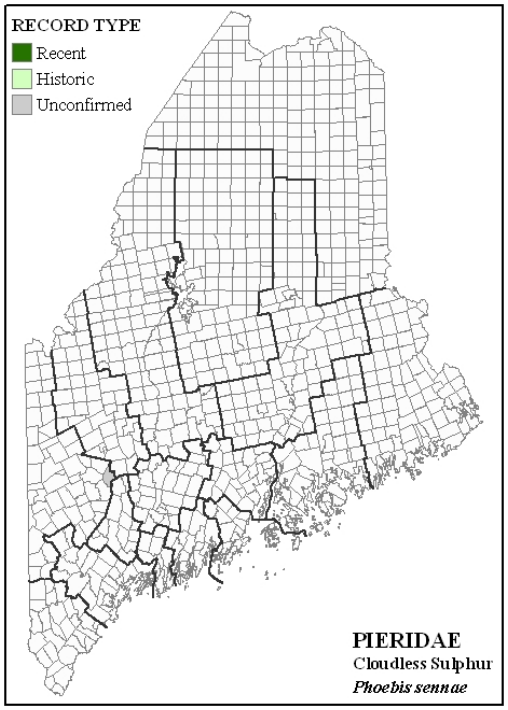
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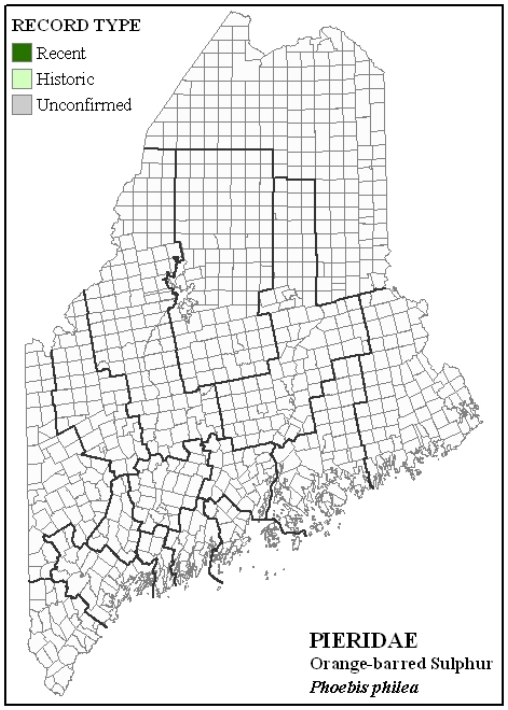
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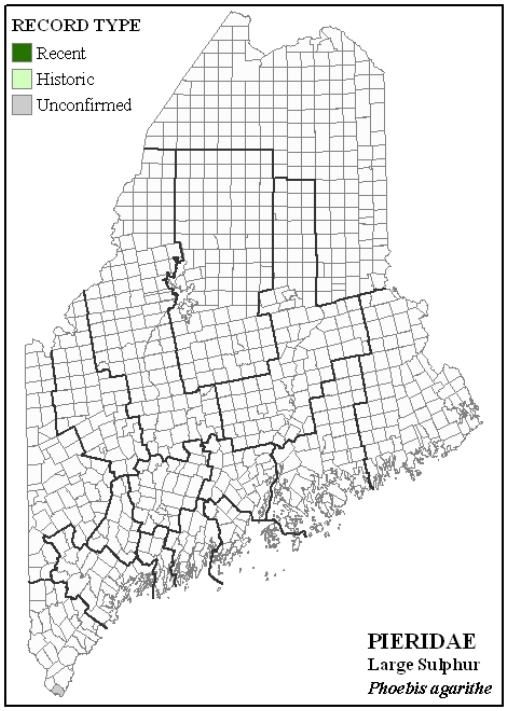
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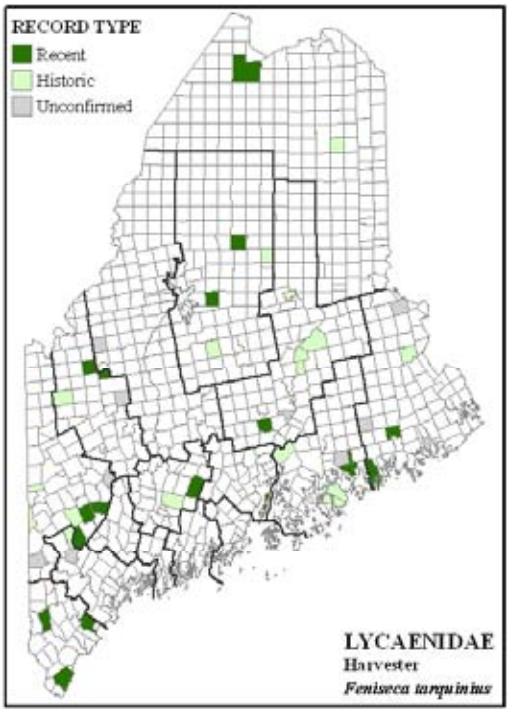
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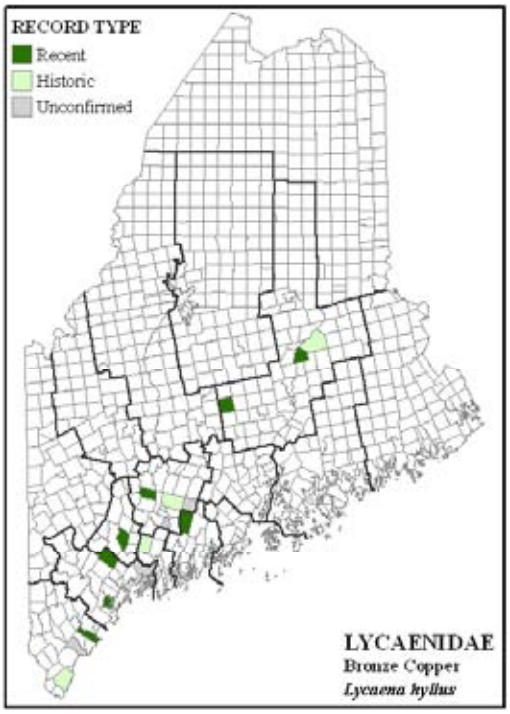
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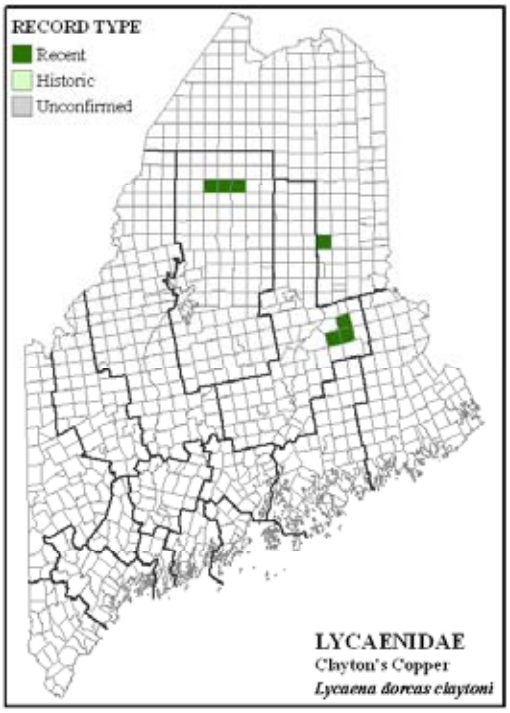
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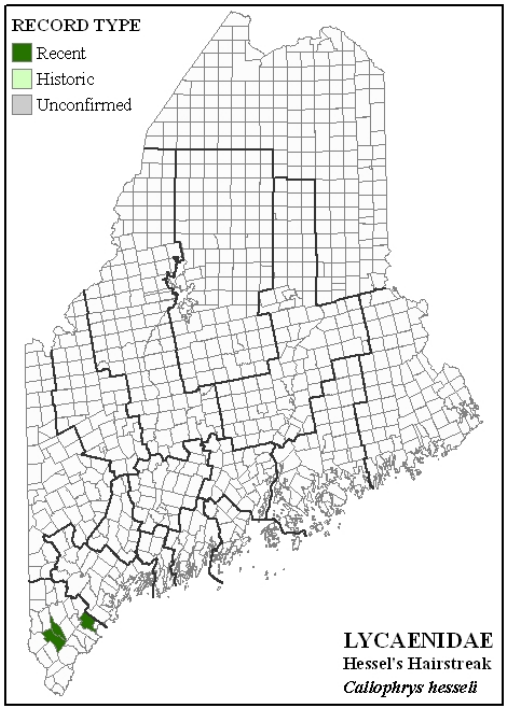
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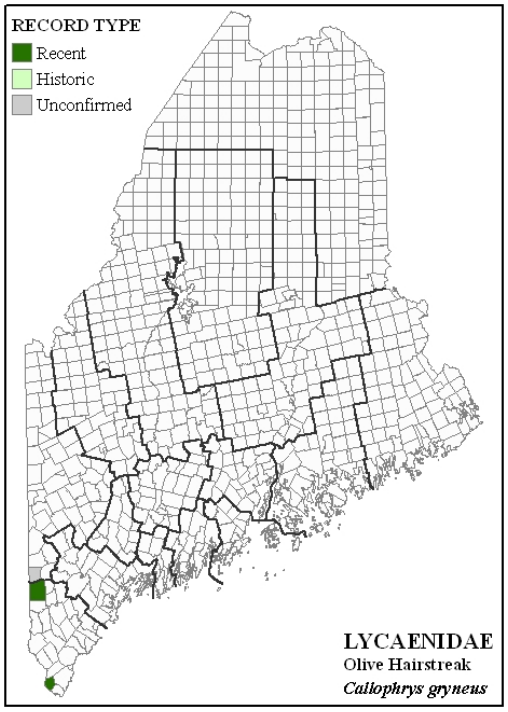
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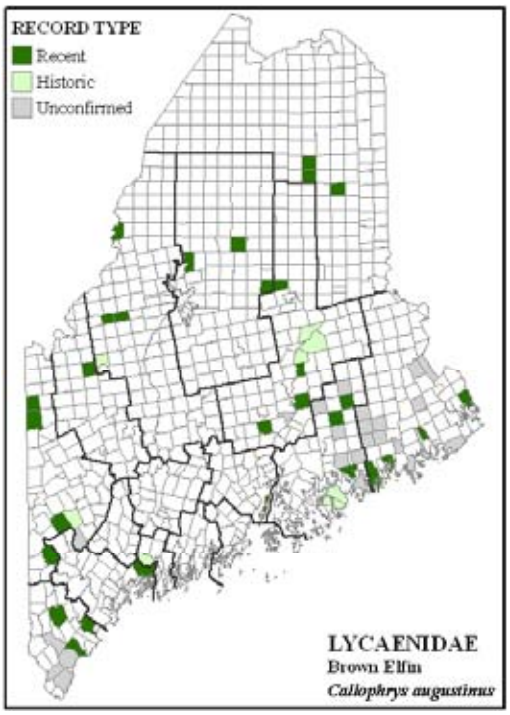
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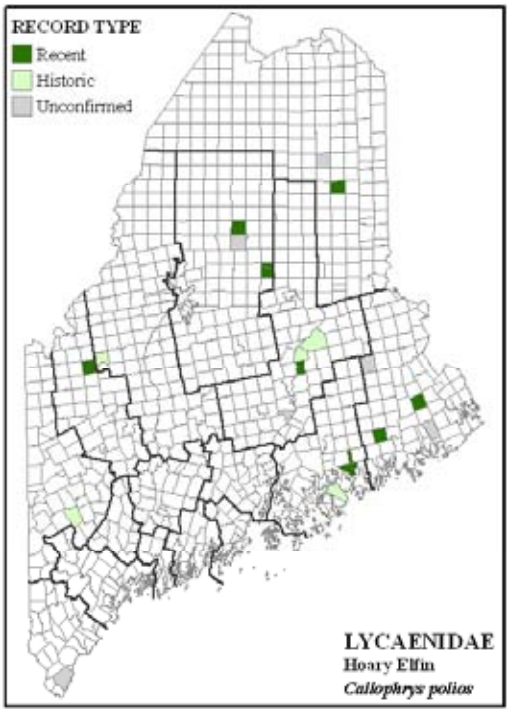
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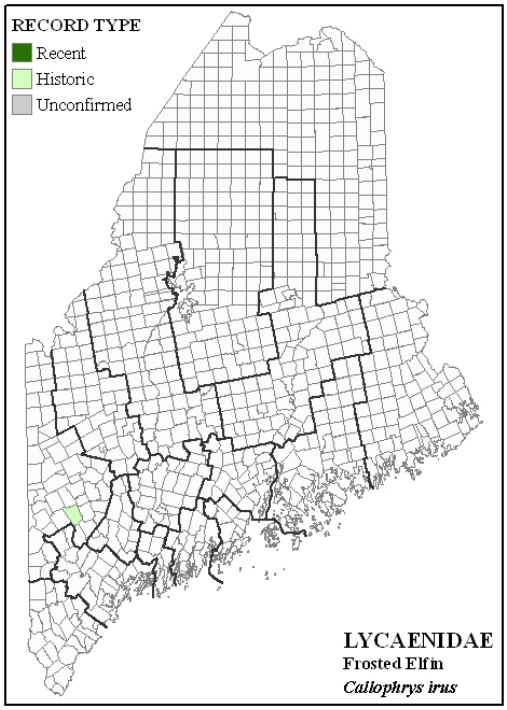
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Frosted Elfin
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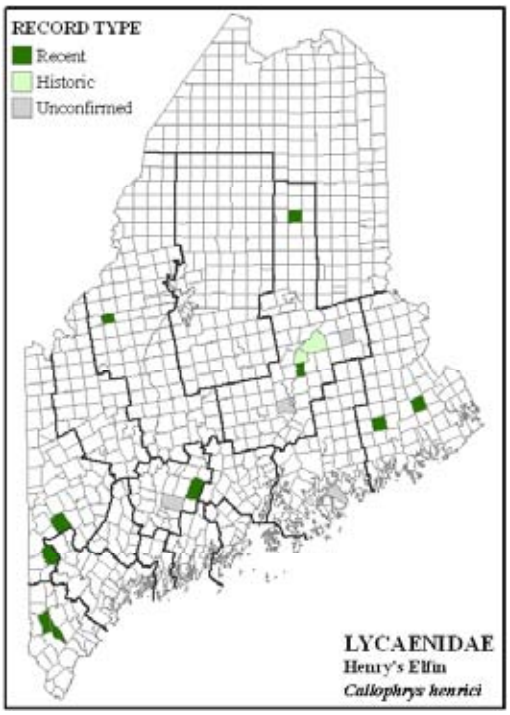
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RECORD TYPE
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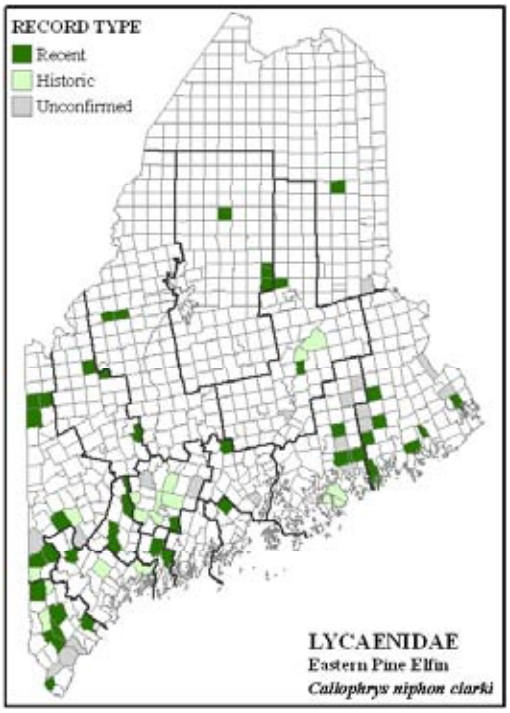
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RECORD TYPE
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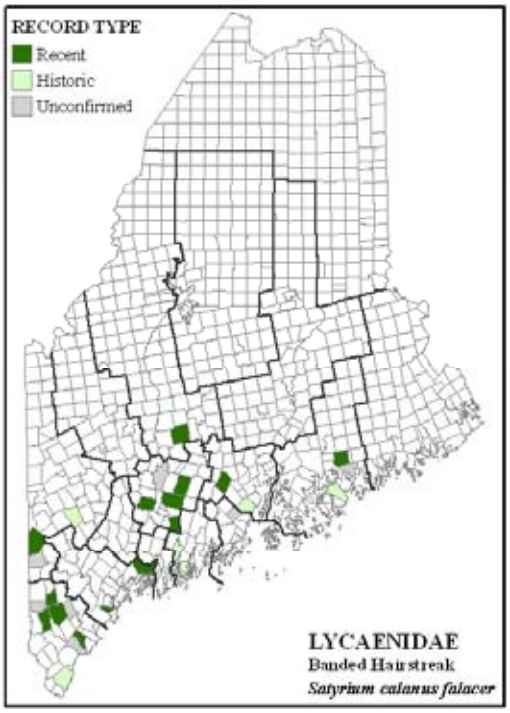
LYCAENIDAE
Western Pine Elfin
Callophrys eryphon

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Coral Hairstreak
Satyrium titus

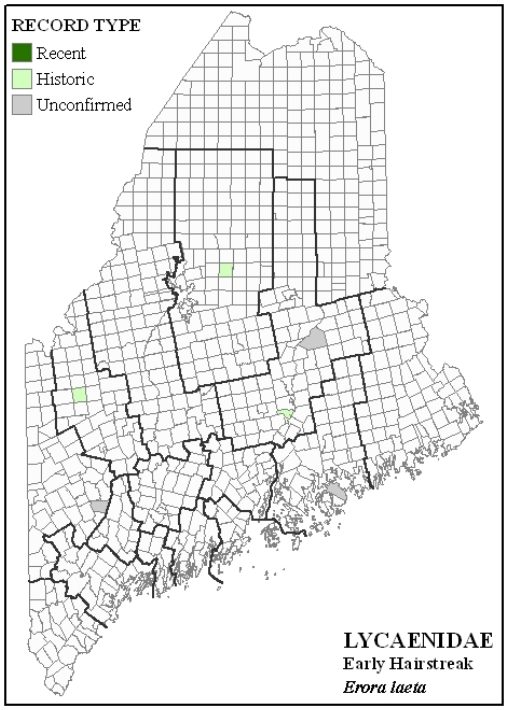
RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Acadian Hairstreak
Satyrium acadica

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Edward's Hairstreak
Satyrium edwardsii

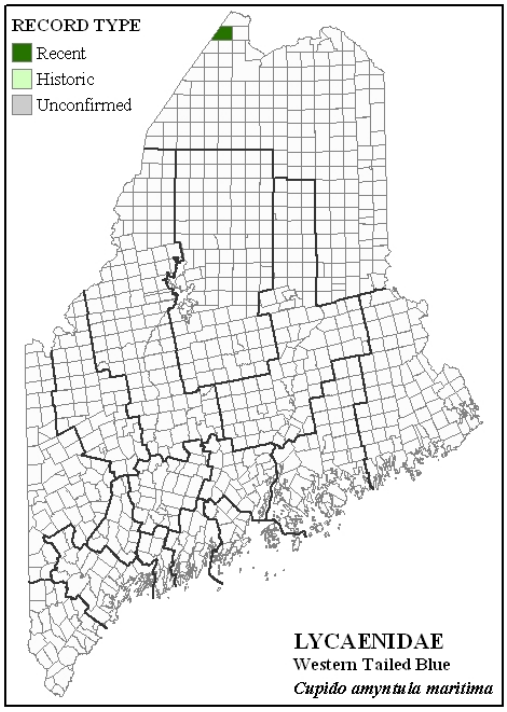

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Banded Hairstreak
Satyrium calanus falacer

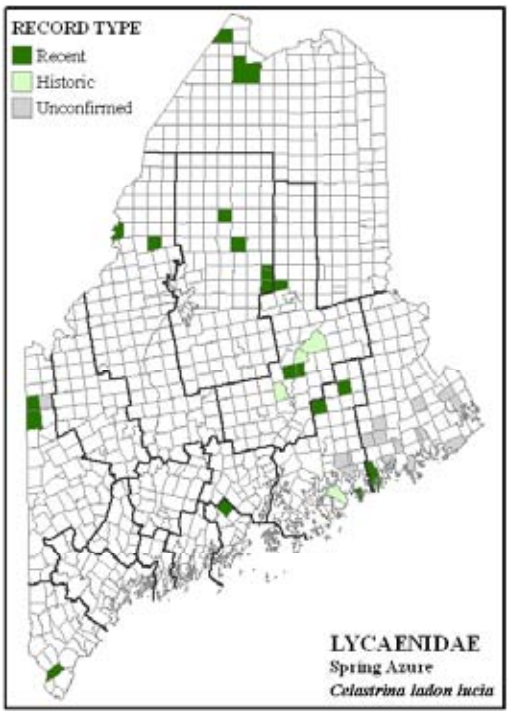
RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Striped Hairstreak
Satyrium liparops strigosum

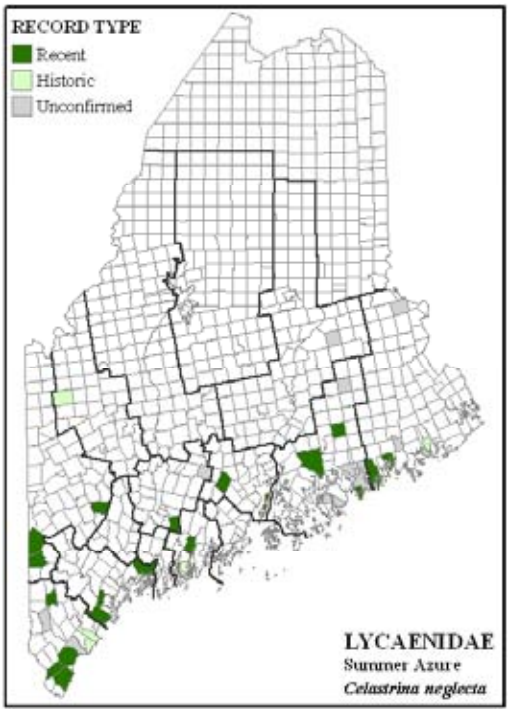
RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Grey Hairstreak
Strymon melinus

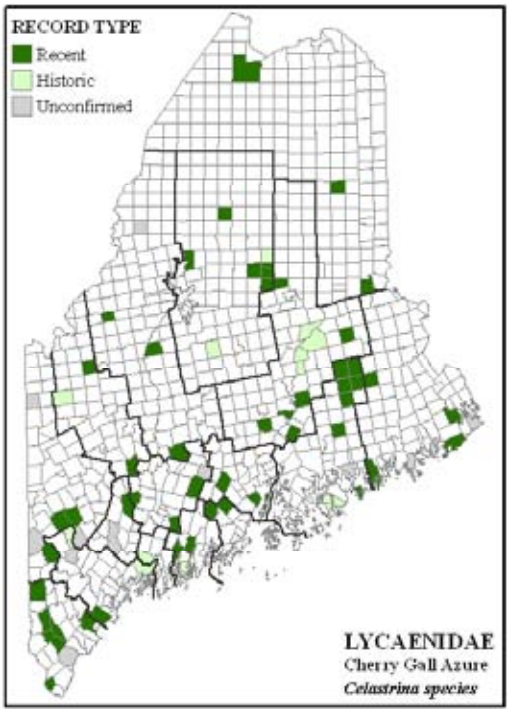

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Early Hairstreak
Erora laeta

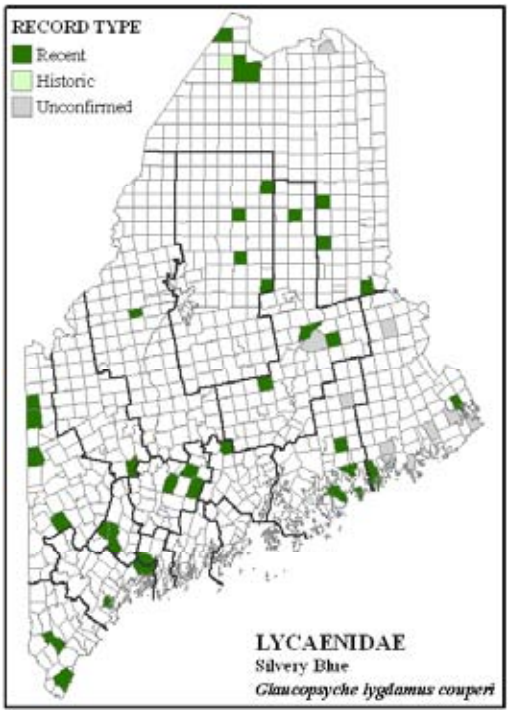
RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Eastern Tailed Blue
Cupido comyntas


RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Western Tailed Blue
Cupido amyntula maritima

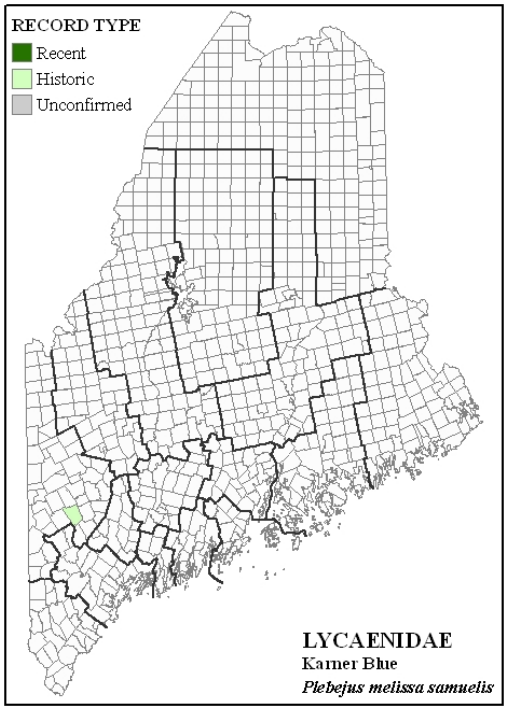

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Spring Azure
Celastrina ladon lucia


RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Summer Azure
Celastrina neglecta

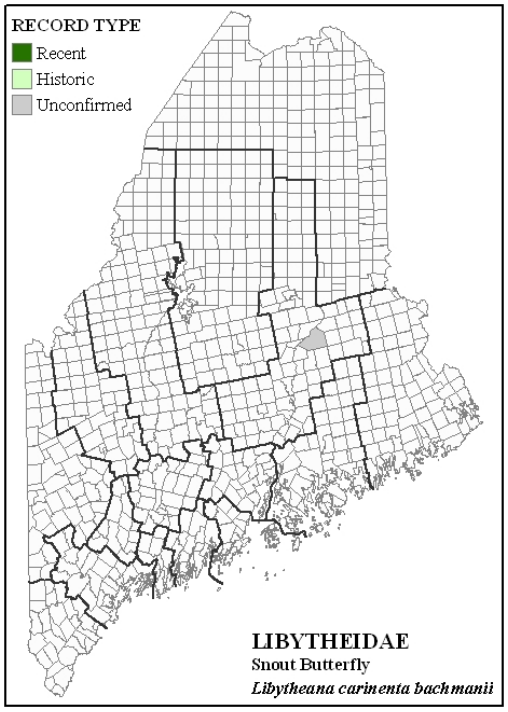

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Cherry Gall Azure
Celastrina species


RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Silvery Blue
Glaucopsyche lygdamus couperi

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Crowberry Blue
Plebejus idas empetri

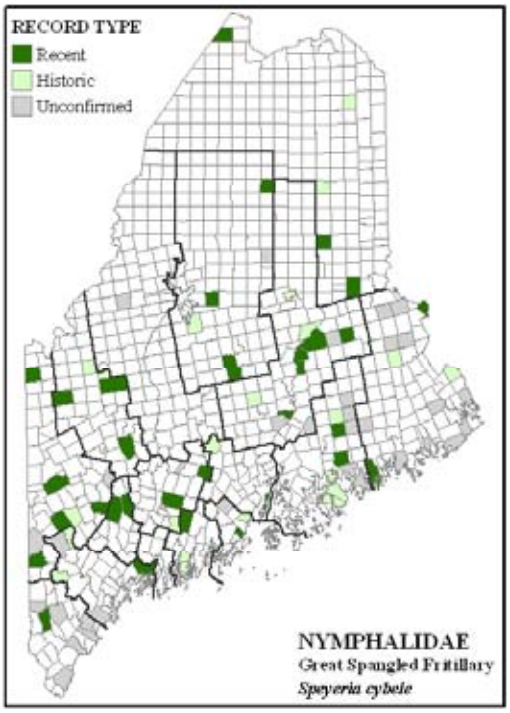

RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Karner Blue
Plebejus melissa samuelis

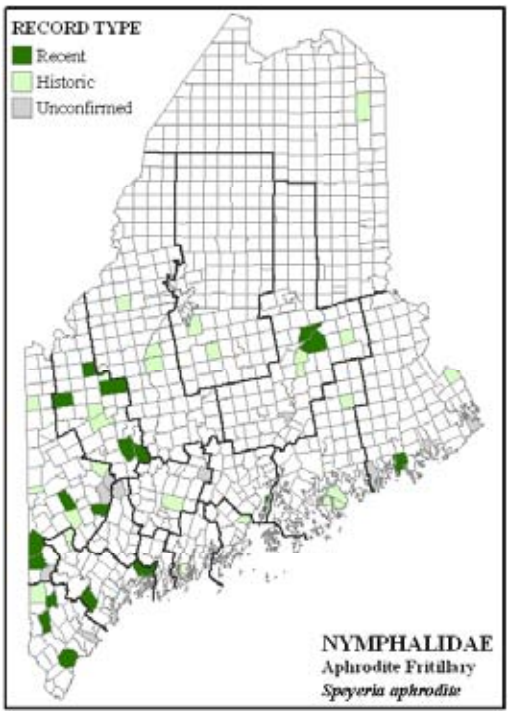
RECORD TYPE
Recent
Historic
Unconfirmed
LYCAENIDAE
Greenish Blue
Plebejus saepiolus amica

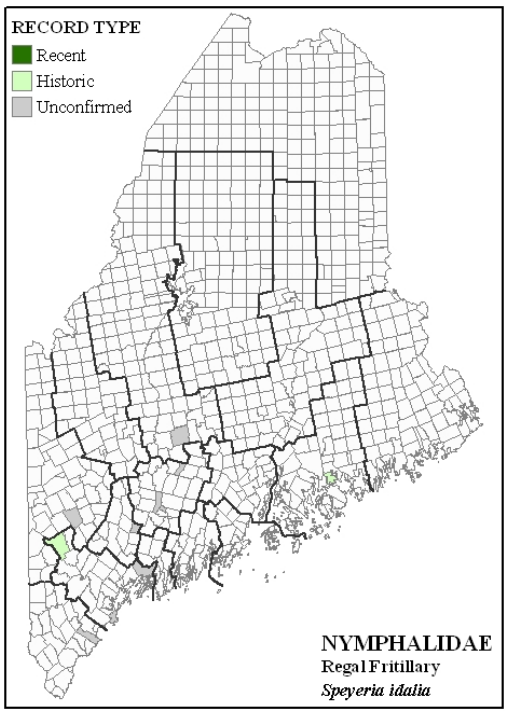

RECORD TYPE
Recent
Historic
Unconfirmed
LIBYTHEIDAE
Snout Butterfly
Libytheana carinenta bachmanii

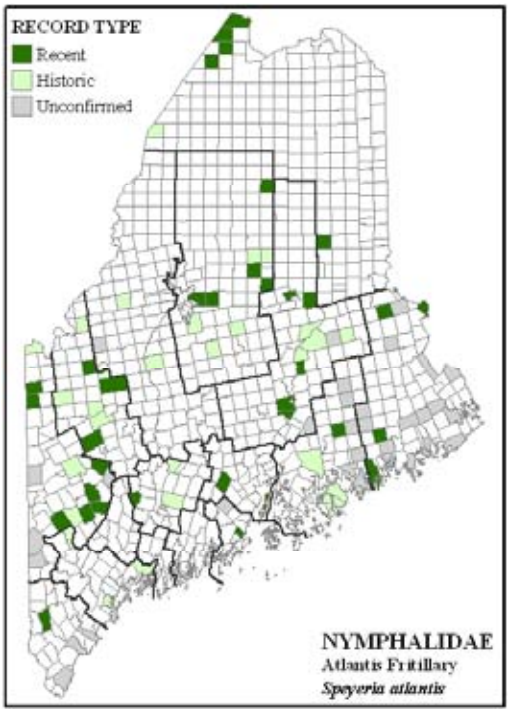
RECORD TYPE
Recent
Historic
Unconfirmed
DANAIDAE
Monarch
Danaus plexippus

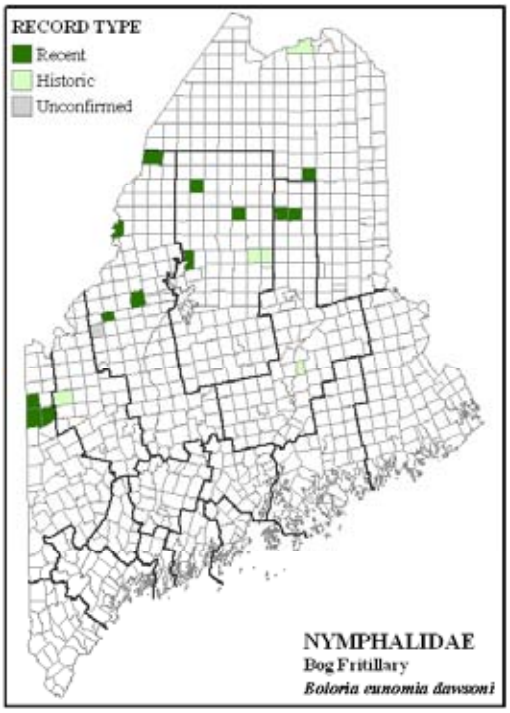
RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Variegated Fritillary
Euptoieta claudia

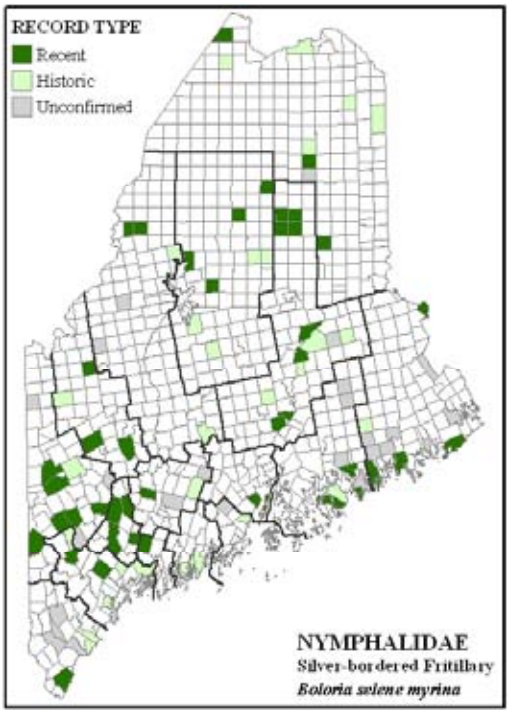

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Great Spangled Fritillary
Speyeria cybele

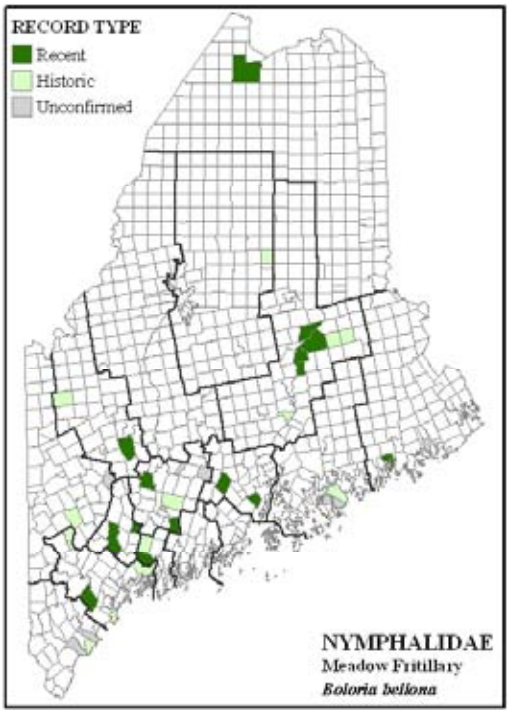

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Aphrodite Fritillary
Speyeria aphrodite

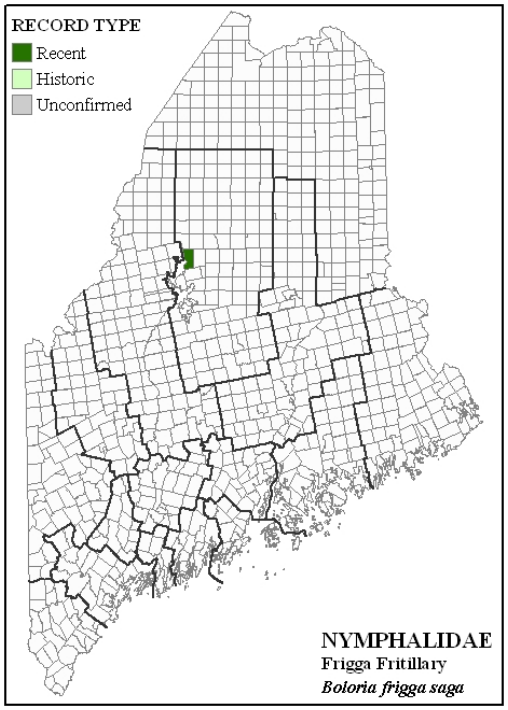

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Regal Fritillary
Speyeria idalia

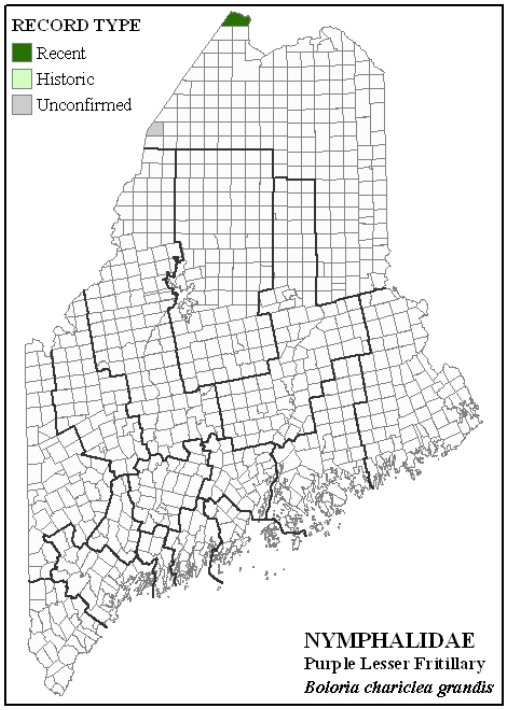

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Atlantis Fritillary
Speyeria atlantis


RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Bog Fritillary
Boloria eunomia dawsoni

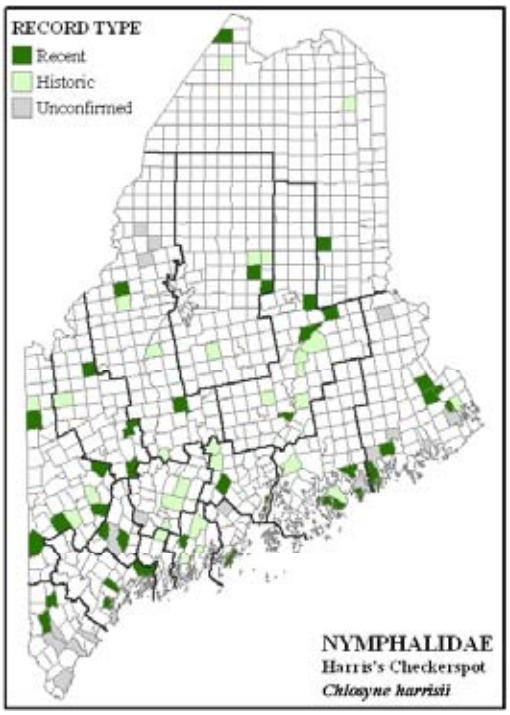

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Silver-bordered Fritillary
Boloria selene myrina


RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Meadow Fritillary
Boloria bellona

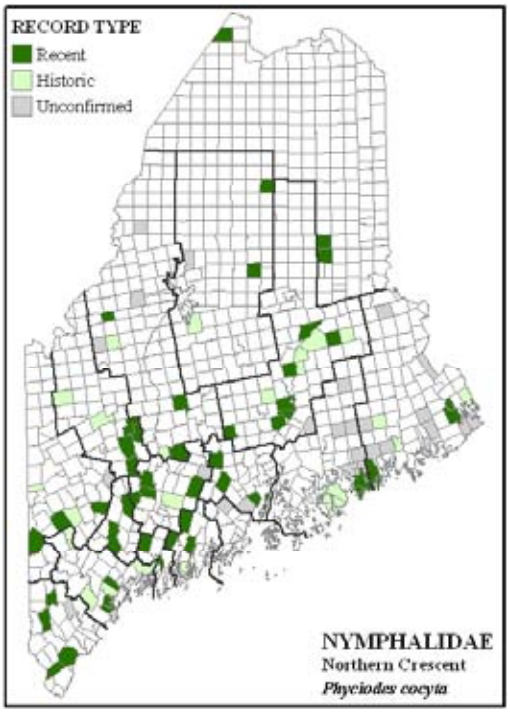

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Frigga Fritillary
Boloria frigga saga

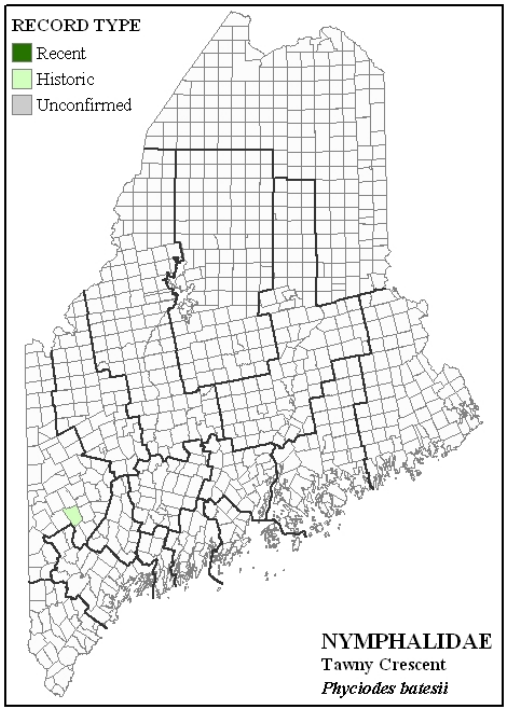

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Purple Lesser Fritillary
Boloria chariclea grandis

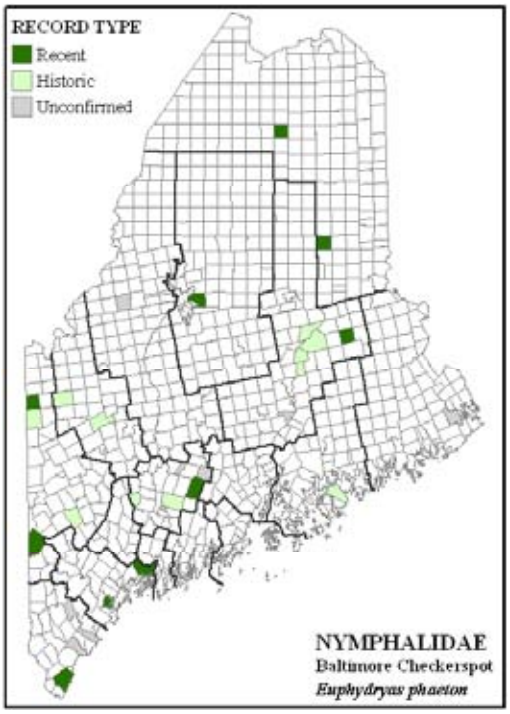
RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Silvery Checkerspot
Chlosyne nycteis


RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Harris's Checkerspot
Chlosyne harrisii

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Pearl Crescent
Phyciodes tharos

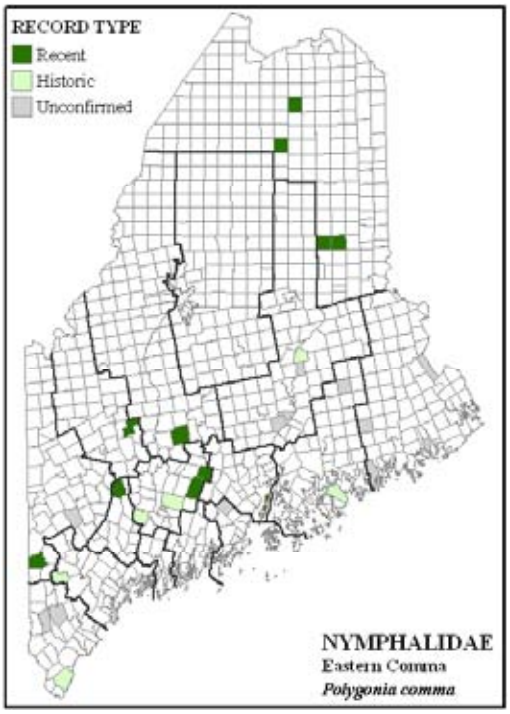

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Northern Crescent
Phyciodes cocyta

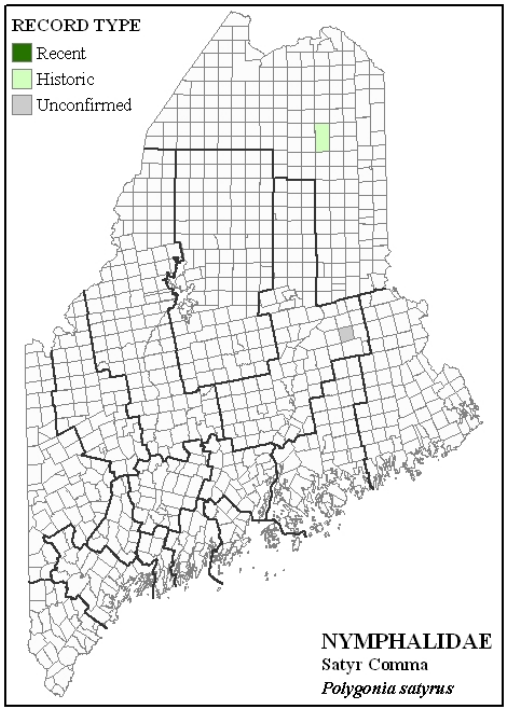

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Tawny Crescent
Phyciodes batesii

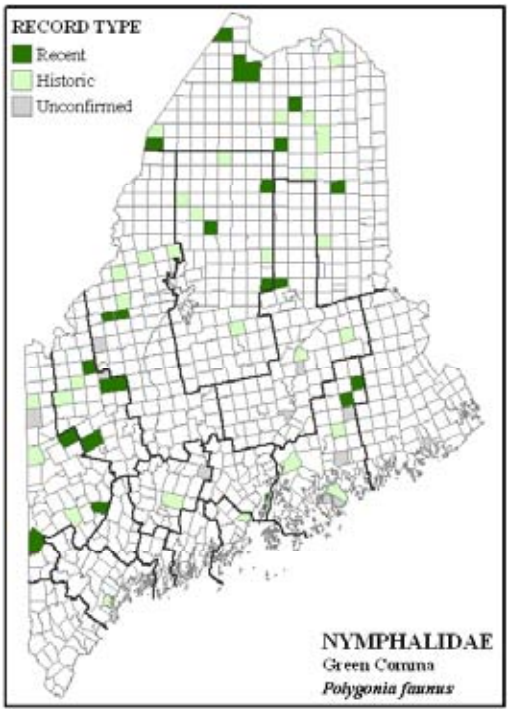

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Baltimore Checkerspot
Euphydryas phaeton

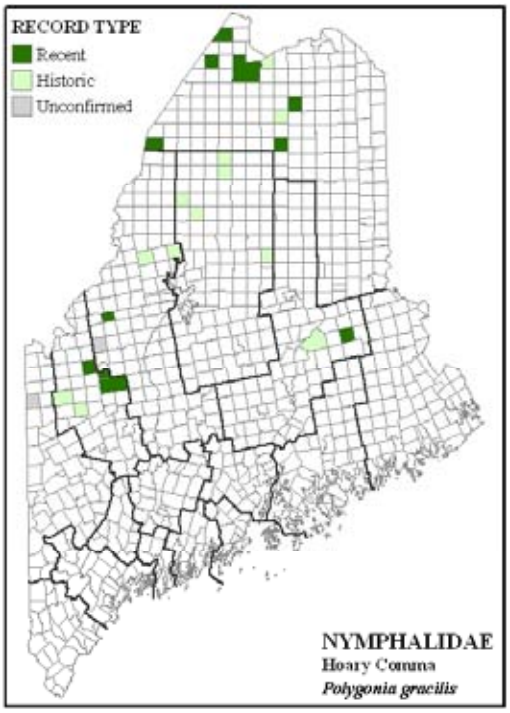
RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Common Buckeye
Junonia coenia

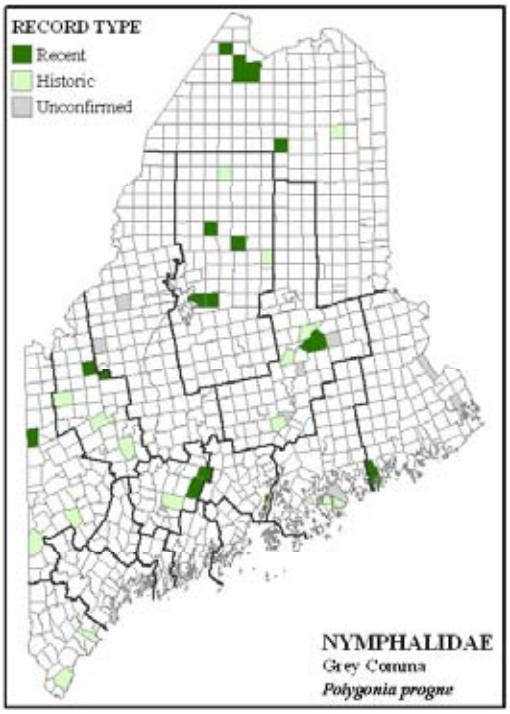
RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Question Mark
Polygonia interrogationis

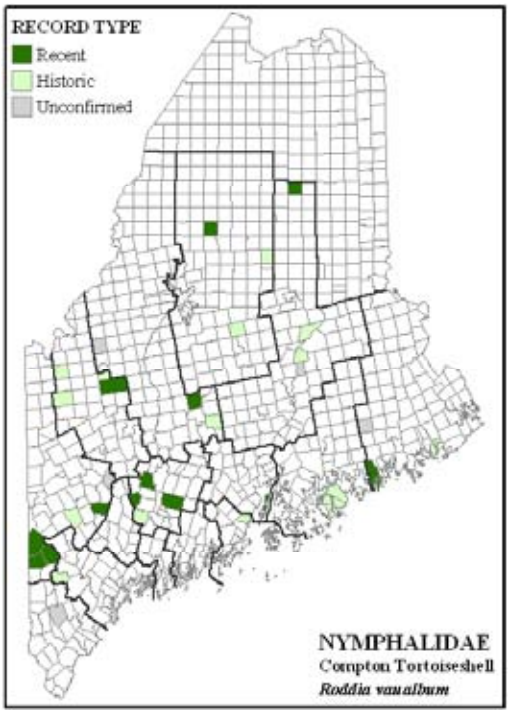

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Eastern Comma
Polygonia comma

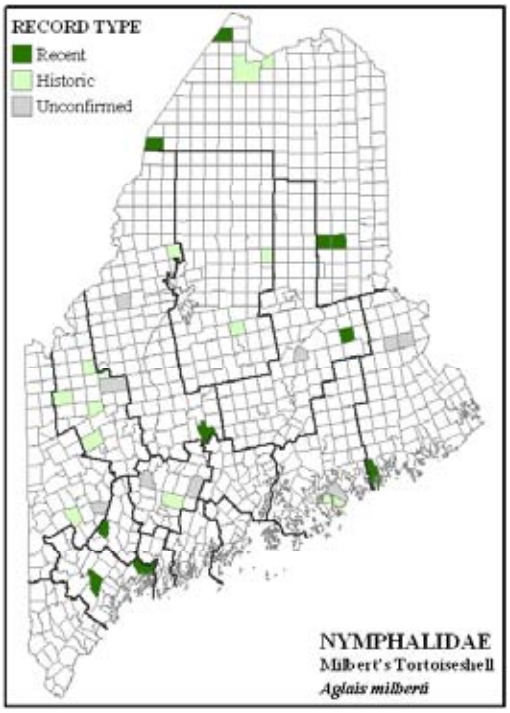

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Satyr Comma
Polygonia satyrus

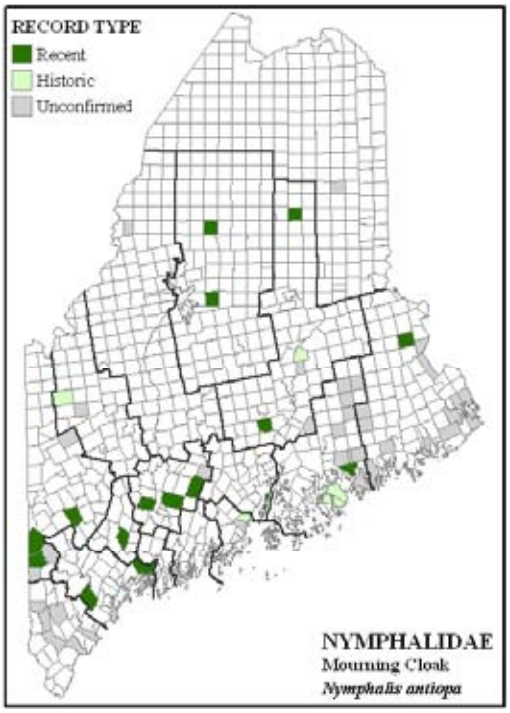

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Green Comma
Polygonia faunus


RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Hoary Comma
Polygonia gracilis

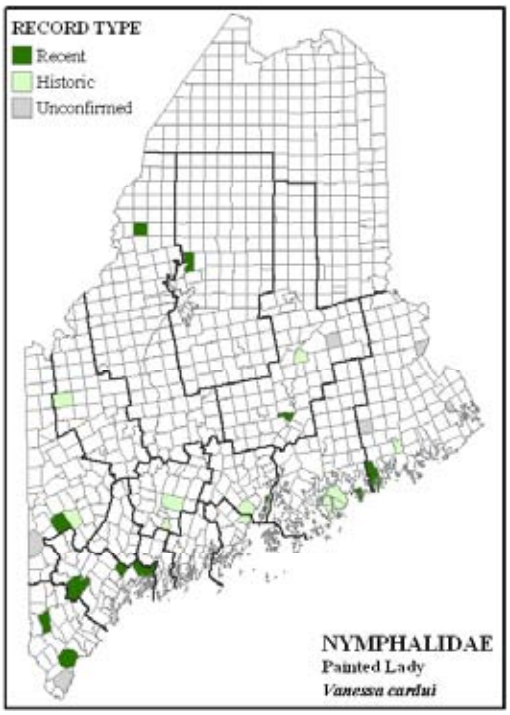

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Grey Comma
Polygonia progne

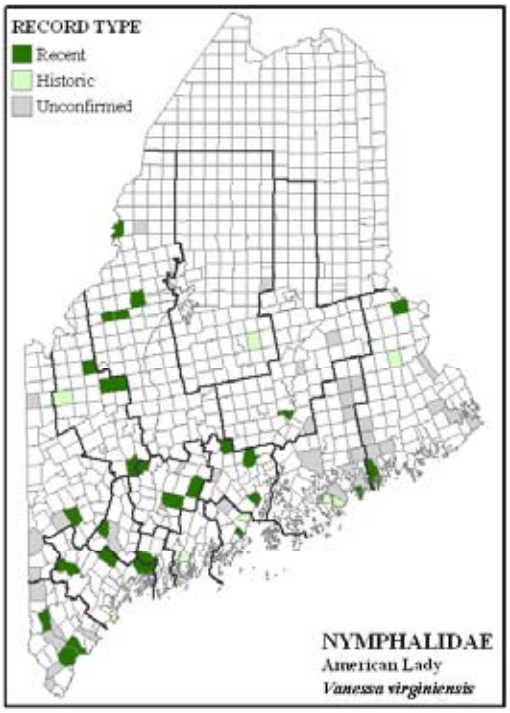

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Compton Tortoiseshell
Roddia vaualbum

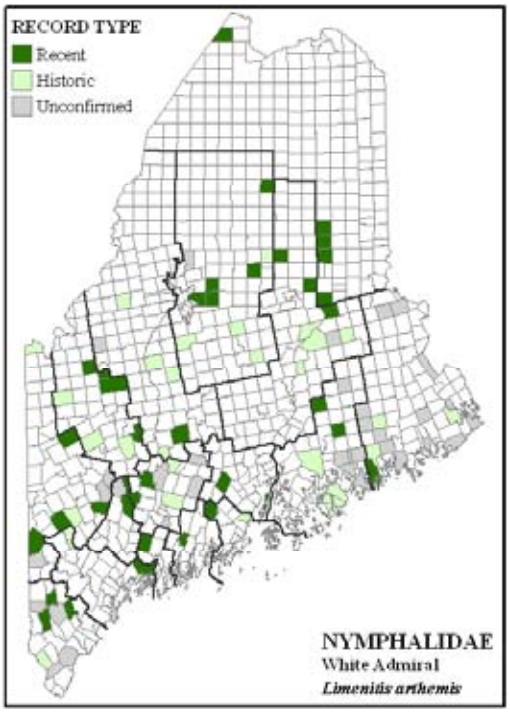

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Milbert's Tortoiseshell
Aglais milberti


RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Mourning Cloak
Nymphalis antiopa

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Red Admiral
Vanessa atalanta rubria

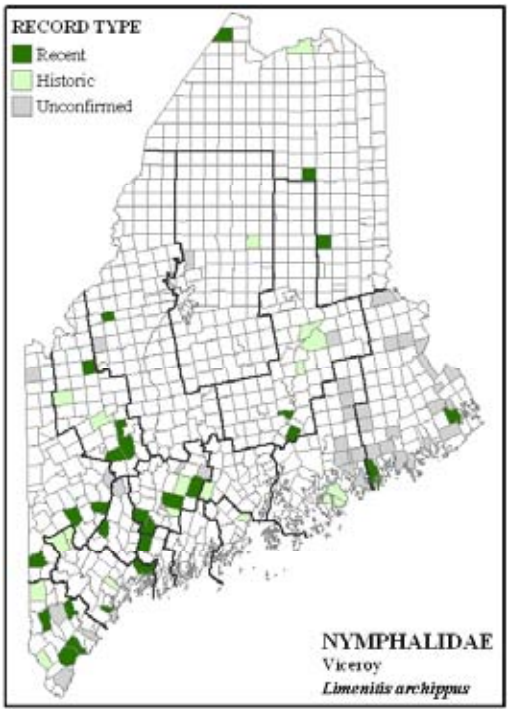

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Painted Lady
Vanessa cardui

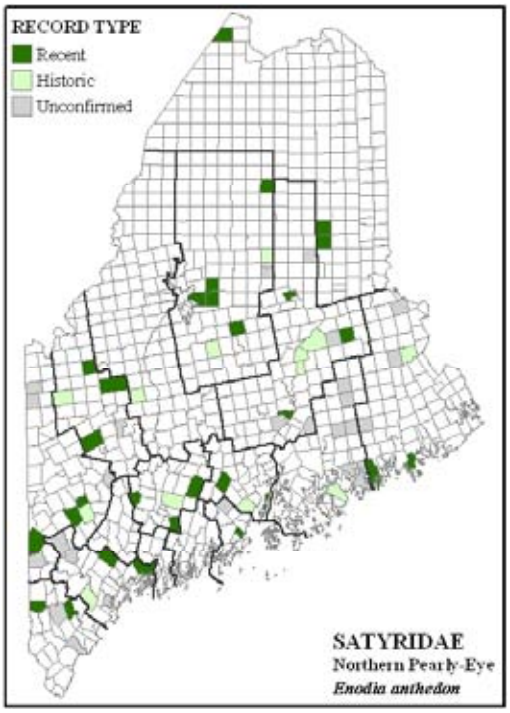

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
American Lady
Vanessa virginiensis

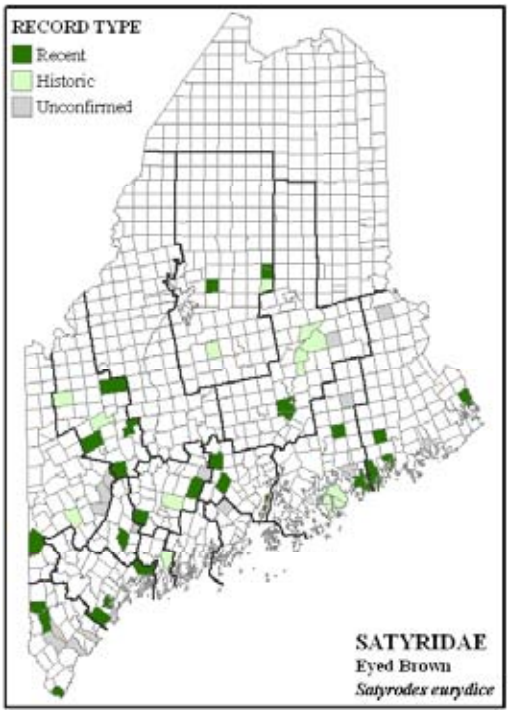

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
White Admiral
Limenitis arthemis

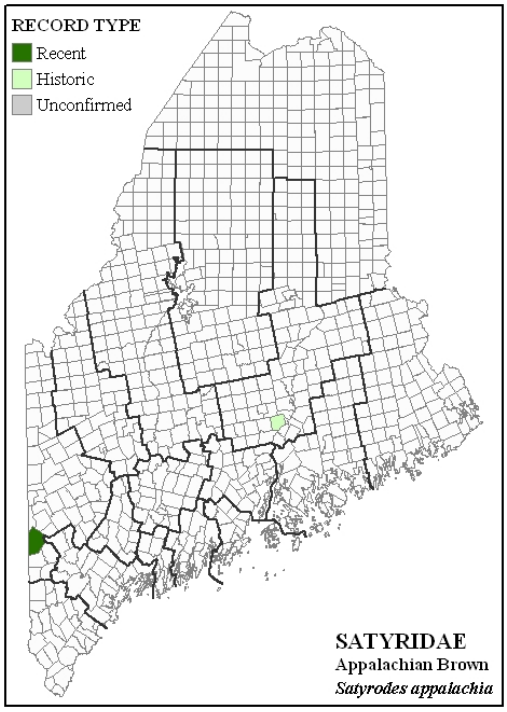
RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
White Admiral Red-spotted Purple Phenotype
Limenitis arthemis (astyanax phenotype)

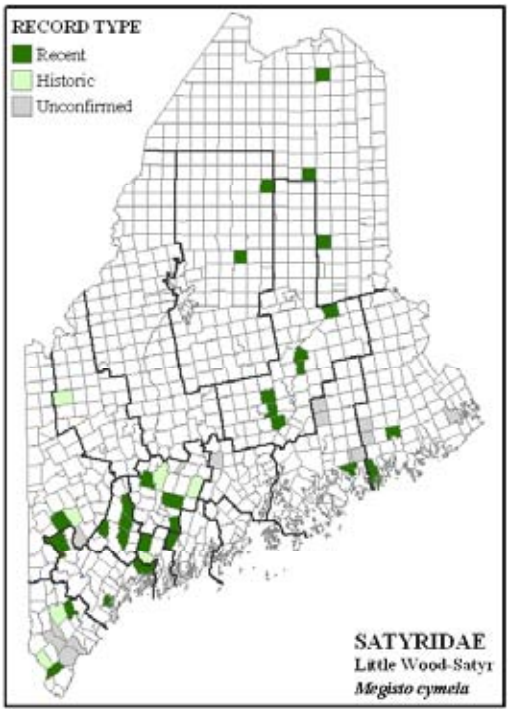
RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
White Admiral Intermediate Phenotype
Limenitis arthemis/astyanax intermediate

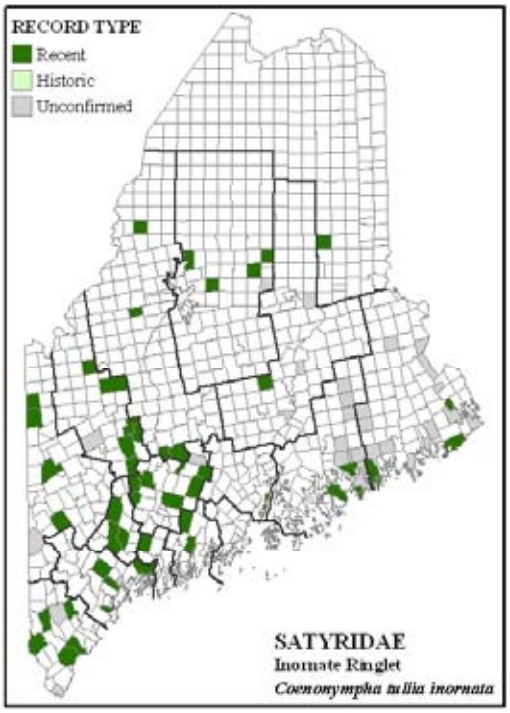

RECORD TYPE
Recent
Historic
Unconfirmed
NYMPHALIDAE
Viceroy
Limenitis archippus

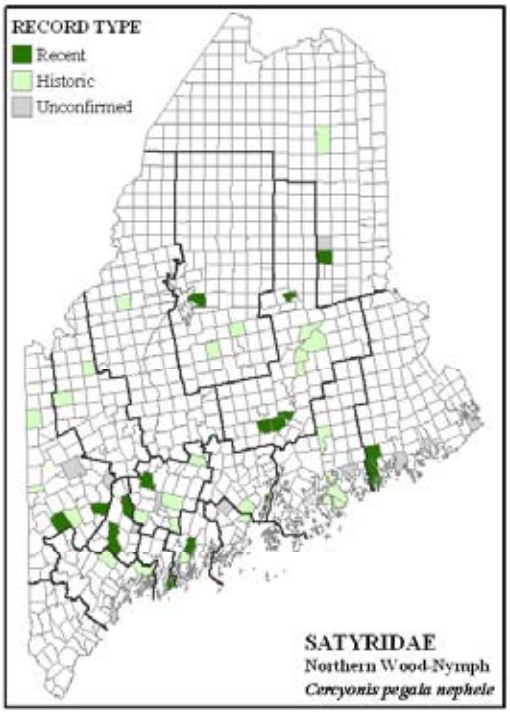

RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Northern Pearly-Eye
Enodia anthedon


RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Eyed Brown
Satyrodes eurydice


RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Appalachian Brown
Satyrodes appalachia

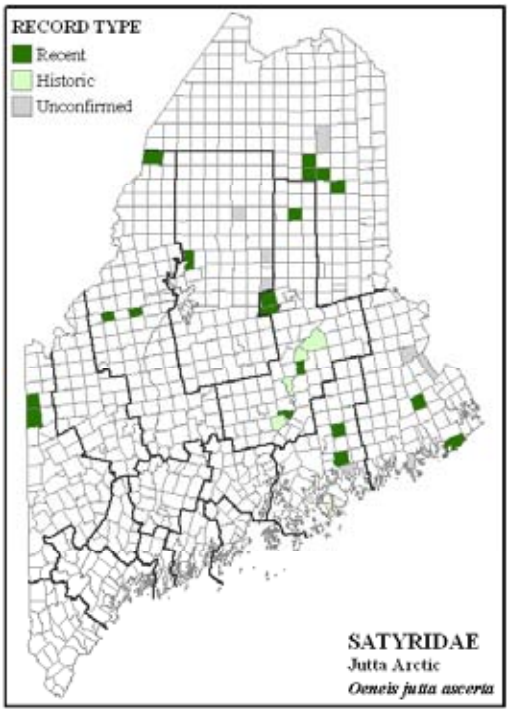

RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Little Wood-Satyr
Megisto cymela

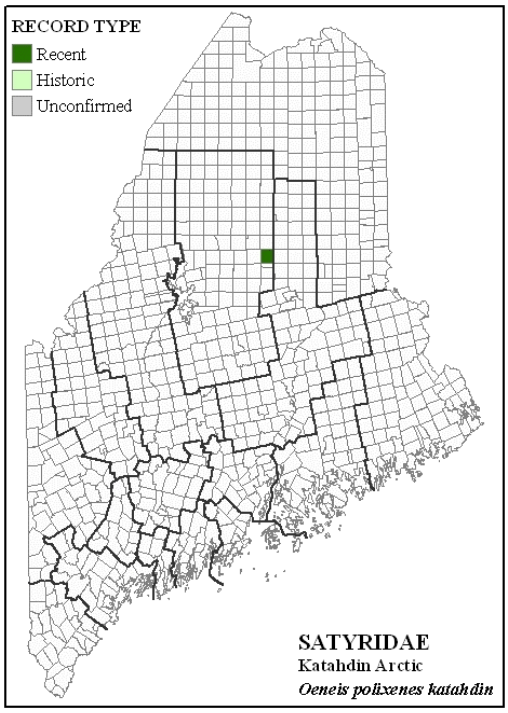

RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Inornate Ringlet
Coenonympha tullia inornata


RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Northern Wood-Nymph
Cercyonis pegala nephele

RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Common Wood-Nymph
Cercyonis pegala alope

RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Common Wood-Nymph, Intermediates
Cercyonis pegala intermediates


RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Jutta Arctic
Oeneis jutta aserta


RECORD TYPE
Recent
Historic
Unconfirmed
SATYRIDAE
Katahdin Arctic
Oeneis polixenes katahdin