

Camp Edwards

Integrated Natural Resources Management Plan

Table 6-14 State Listed Fauna of Camp Edwards

Scientific Name	Common Name	Status in MA	Heritage Status
BIRDS (6)			
<i>Bartramia longicauda</i>	Upland Sandpiper	E	G5
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	T	G5
<i>Circus cyaneus</i>	Northern Harrier	T	G5
<i>Parula americana</i>	Northern Parula	T	G5
<i>Poocetes gramineus</i>	Vesper Sparrow	T	G5
<i>Accipiter striatus</i>	Sharp-shinned Hawk	SC	G5
REPTILES and AMPHIBIANS (2)			
<i>Scaphiopus holbrooki</i>	Eastern Spadefoot	T	G5T5
<i>Terrapene carolina carolina</i>	Eastern Box Turtle	SC	G5T5
ODONATES (5)			
<i>Anax longipes</i>	Comet Darner	SC	G5
<i>Aeshna mutata</i>	Spatterdock Darner	E	G3G4
<i>Enallagma carunculatum</i>	Tule Bluet	SC	G5
<i>Enallagma recurvatum</i>	Pine Barrens Bluet	T	G3
<i>Enallagma laterale</i>	New England Bluet	SC	G3
MOTHS (16)			
<i>Acronicta albarufa</i>	Barrens Daggermoth	T	G3G4
<i>Hemileuca maia</i>	Coastal Barren's Buckmoth	SC	G5T3T4
<i>Catocala herodias gerhardi</i>	Gerhard's Underwing	SC	G3T3
<i>Cicinnus melsheimeri</i>	Melsheimer's Sack Bearer	T	G4
<i>Faronta rubripennis</i>	Pink Streak	T	G3G4
<i>Papaipema sulphurata</i>	Water-Willow Stem Borer	T	G2
<i>Cingilia catenaria</i>	Chain-dotted Geometer	SC	G4
<i>Abagrotis nefascia benjamini</i>	Coastal Heathland Cutworm	SC	G4T3
<i>Metarrhantis pilosaria</i>	Coastal Swamp Metarrhantis	SC	G3G4
<i>Papaipema sp.</i>	Ostrich Fern Borer	SC	G3G4
<i>Itame sp.</i>	Pine Barrens Itame	SC	G3
<i>Zale sp.</i>	Pine Barrens Zale	SC	G3Q
<i>Psectraglaea carnosa</i>	Pink Swallow Moth	SC	G3
<i>Oncocnemis riparia</i>	noctuid moth	SC	G4
<i>Bagisara rectifascia</i>	Straight Lined Mallow Moth	SC	G4
<i>Euchlaena madusaria</i>	Sandplain Euchlaena	SC	G5S1
BUTTERFLYS (1)			
<i>Callophrys irus</i>	Frosted elfin	SC	G3

Table F-3. State Listed Species Known to Occur at Camp Edwards

Scientific Name	Common Name	State Status
Mammals		
<i>Myotis septentrionalis</i>	Northern Long Eared Bat	E
<i>Myotis lucifugus</i>	Little Brown Bat	E
<i>Myotis leibii</i>	Eastern Small-Footed Bat	E
<i>Perimyotis subflavus</i>	Tricolored Bat	E
Reptiles and Amphibians		
<i>Terrapene carolina</i>	Eastern Box Turtle	SC
<i>Heterodon platirhinos</i>	Eastern Hog-nosed Snake	SC
Birds		
<i>Bartramia longicauda</i>	Upland Sandpiper	E
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	T
<i>Circus cyaneus</i>	Northern Harrier	T
<i>Parula americana</i>	Northern Parula	T
<i>Sturnella magna</i>	Eastern Meadowlark	SC
<i>Poocetes gramineus</i>	Vesper Sparrow	T
<i>Caprimulgus vociferus</i>	Eastern Whip-poor-will	SC

Table F-3. State Listed Species Known to Occur at Camp Edwards

Scientific Name	Common Name	State Status
Damselflies and Dragonflies		
<i>Enallagma carunculatum</i>	Tule Bluet	SC
<i>Enallagma recurvatum</i>	Pine Barrens Bluet	T
Moths		
<i>Acronicta albarufa</i>	Barrens Dagger Moth	T
<i>Hemileuca maia</i>	Barrens Buckmoth	SC
<i>Catocala herodias gerhardi</i>	Gerhard's Underwing Moth	SC
<i>Cicinnus melsheimeri</i>	Melsheimer's Sack Bearer	T
<i>Dargida rubripennis</i>	Pink Streak	T
<i>Papaipema sulphurata</i>	Water-Willow Borer Moth	T
<i>Cingilia catenaria</i>	Chain-dot Geometer	SC
<i>Abagrotis nefascia benjamini</i>	Coastal Heathland Cutworm	SC
<i>Metarrhantis pilosaria</i>	Coastal Swamp Metarrhantis	SC
<i>Papaipema sp.</i>	Ostrich Fern Borer	SC
<i>Zale lunifera</i>	Pine Barrens Zale	SC
<i>Psectraglaea carnosa</i>	Pink Sallow	SC
<i>Euchlaena madusaria</i>	Sandplain Euchlaena	SC
<i>Chaetagnia cerata</i>	Waxed Sallow Moth	SC
<i>Cycnia inopinatus</i>	Unexpected Cycnia	T
<i>Lycia ypsilon</i>	Pine Barrens Lycia	T
<i>Speranza exonerata</i>	Pine Barrens Speranza	SC
<i>Sympistis riparia</i>	Dune Nocturnid Moth	SC
<i>Apamea inebriata</i>	Drunken Apamea	SC
Butterflies		
<i>Callophrys irus</i>	Frosted elfin	SC
Bees		
<i>Anthophora walshii</i>	Walsh's Anthora	E
Crustaceans		
<i>Eulimnadia agassizii</i>	Agassiz's Clam Shrimp	E
Plants		
<i>Triosteum perfoliatum</i>	Broad Tinker's Weed	E
<i>Ophioglossum pusillum</i>	Adder's Tongue Fern	T
<i>Eleocharis ovata</i>	Ovate Spike-sedge	E

Sources: MassWildlife 2019b; Mello 2018, Veit 2019

Notes: E = Endangered.
T = Threatened.
SC = Special Concern.



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Northern Long-eared Bat *Myotis septentrionalis*

State Status: **Endangered**
Federal Status: **Threatened**

DESCRIPTION: The Northern Long-eared Bat (or Northern Myotis) is a small bat with large ears, which when pushed forward extend at least 4 mm past its nose. Its fur and wing membranes are light brown, giving it an overall somewhat uniform brown appearance. The hairs on its back are bicolored, with a dark base and lighter tip. The Northern Long-eared Bat averages 50-95 mm in total length, with a tail of 35-42 mm. In weight, it averages 5-8 g. This bat is typically found roosting in trees and feeding in forested habitats, but may occasionally be found in human habitations.

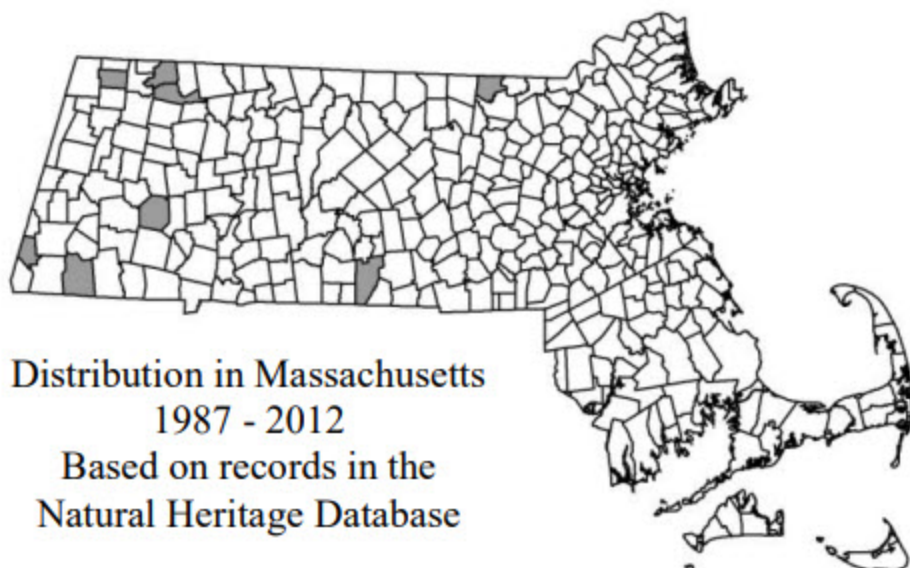
SIMILAR SPECIES: The best diagnostic character to distinguish the Northern Long-eared Bat from other species in Massachusetts is its long ears. The rare Little Brown Bat (*Myotis lucifugus*, Endangered) and Indiana Bat (*Myotis sodalis*, Endangered, federally Endangered) are similar in appearance, but have shorter ears which typically do not extend beyond their nose when pushed forward. The tragus, which is a fleshy projection which sticks up in front of the ear opening, is long and narrowly pointed in the Northern Long-eared Bat, while it is shorter and blunt in the Little Brown Bat. The Little Brown Bat also has glossier fur and a shorter tail relative to its body length. The Indiana Bat has a



Photo: Tammy Ciesla, MassWildlife

keeled calcar (a ridge of cartilage between the foot and the tail), which the Northern Long-eared Bat lacks. Other features of interest in identification include the bat's hairless interfemoral membrane (the skin stretching between the legs and tail) and lack of a black face mask (which is characteristic of Eastern Small-footed Bat, *Myotis leibii*, Endangered).

HABITAT IN MASSACHUSETTS: In the warmer months, colonies of Northern Long-eared Bats may be found roosting and foraging in forested areas. Preferred roosts are in clustered stands of large trees, especially in live or dead hardwoods with large, tall cavities. These bats are found in other tree roosts as well, and occasionally in human-made structures. Northern Long-eared Bats forage under the forest canopy in structurally complex habitats, often above small ponds, vernal pools or streams, along gravel paths or roads, and at the forest



Distribution in Massachusetts
1987 - 2012
Based on records in the
Natural Heritage Database

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Little Brown Bat *Myotis lucifugus*

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: The Little Brown Bat (or Little Brown Myotis) has glossy brown fur, varying in tone from dark brown to reddish brown, to golden brown, to olive. On its back, the hairs are two-toned, appearing dark at the base and light at the tip. On its underside, the fur is lighter and tipped with buff. The bat's face is furry, with only the nostrils and lips bare. The Little Brown Bat averages 60-102 mm in total length, with a tail of 31-41 mm. Its weight in summer averages 4.5 g, but as winter approaches, the bat accumulates fat, and before hibernation average weight approaches 7.5-8.5 g. This widely distributed, once-common bat is found in a variety of habitats, including human habitations.

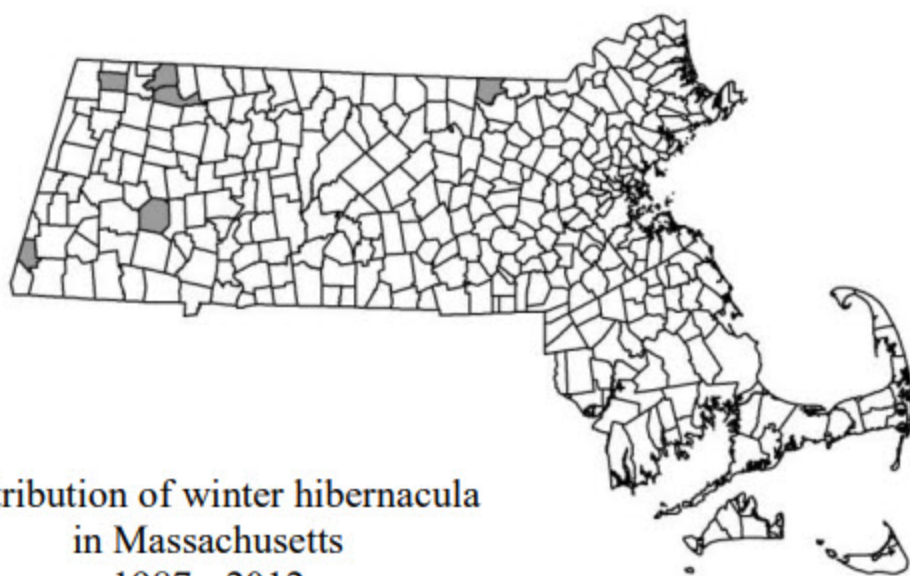
SIMILAR SPECIES: The Big Brown Bat is the only other bat commonly found in houses. It is larger in size than the Little Brown Bat, with a forearm length exceeding 44 mm, and it has a broader nose and less furry face. The rare Indiana Bat is also similar in appearance, but it has a keeled calcar (a ridge of cartilage between the foot and the tail), which the Little Brown Bat lacks. The Little Brown Bat can be distinguished from other species in Massachusetts by its



Photo: Bill Byrne, MassWildlife

bicolored fur, hairless interfemoral membrane (the skin stretching between the legs and tail), lack of a black face mask (which the Small-footed Myotis has), and ears which do not extend more than 4 mm beyond its nose when laid forward.

HABITAT IN MASSACHUSETTS: During the warmer months, Little Brown Bats occupy day and night roosts in small caves, buildings, trees, under rocks, and in piles of wood. They are most commonly found in the evening foraging along forest roads, trails, and water bodies in forest-dominated landscapes. However, they can be found wherever flying insects are abundant. These bats are widespread in Massachusetts, and have been found in 13 of 14 counties. In winter, Little Brown



Distribution of winter hibernacula
in Massachusetts
1987 - 2012
Based on records in the
Natural Heritage Database

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Eastern Small-footed Bat
*Myotis leibii***

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: The Eastern Small-footed Bat (or Small-footed Myotis) is the smallest myotis in the eastern area, with the forearm measuring only 1-1/5 to 1-2/5". It has golden-tinted, almost yellowish fur and relatively short pinkish forearms. It lacks a keeled sternum. It is recognized by the black facial mask, black ears, long-keeled calcar, and the absence of a dark shoulder patch. When laid forward, the ears extend slightly beyond the nose.

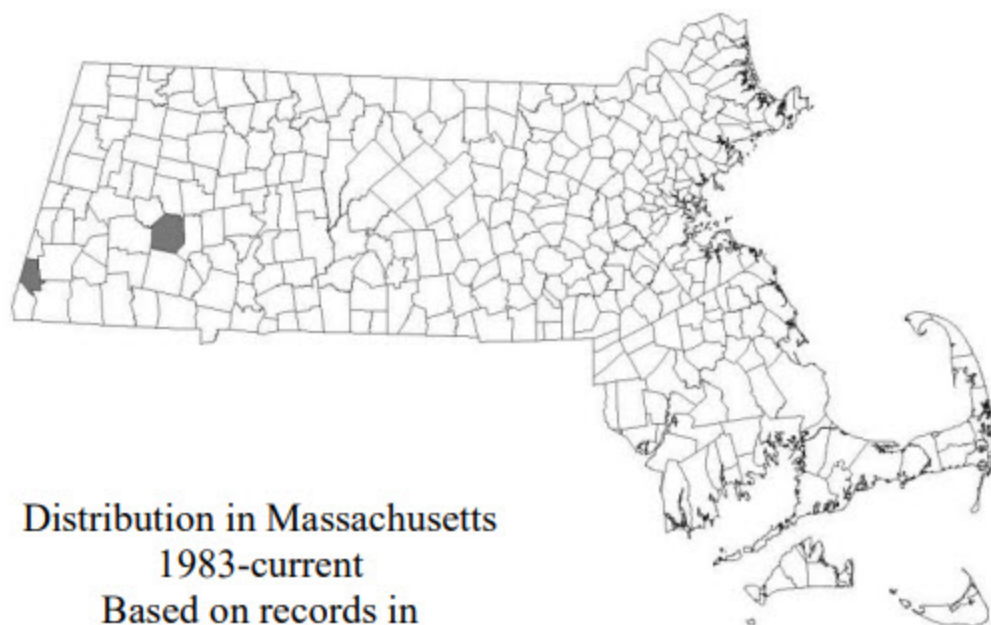
RANGE: From Ontario and southern Quebec south into the mountains of northern Georgia, and west to Arkansas, Missouri, southern Iowa, and eastern Kansas.

HABITAT: Buildings seem to provide suitable places for shelter in summer. In winter, the species is found in caves and mines. Restricted to caves in the foothills of mountains rising to 2,000 feet, with hemlock, spruce, and white cedar predominating among the conifers.

POPULATION STATUS: Considered rare in Massachusetts. Threatened by disturbances during hibernation, resulting in overwinter mortality.



Photo: Gary Peeples/USFWS



Distribution in Massachusetts
1983-current
Based on records in
Natural Heritage Database

Updated 2019

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Tricolored Bat *Perimyotis subflavus*

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: This small bat has uniquely tricolored fur; the hairs of its back are dark gray at the base, yellowish-brown in the middle, and dark brown at the tips. On its underside, the fur is a uniform yellowish brown. Adult Tricolored Bats average 85 mm in total length, with a 40 mm tail. Weight varies from 3.5-6 grams. This bat can also be identified by its weak, fluttery, erratic flight, which has given it the nickname “moth bat.”

SIMILAR SPECIES: The Tricolored Bat, formerly called the Eastern Pipistrelle, can be distinguished from other species found in Massachusetts by the tricolored fur on its back. The back hairs of the Little Brown Bat and most other species in the state are bicolored, dark at the base and light at the tip. The Red Bat has hairs that are rusty in color, with white tips. Hoary and Silver-haired Bats have black or dark brown hairs with white tips.

RANGE: The Tricolored Bat is found across the eastern United States, from Maine south to central Florida, and west to Minnesota and Texas. It occurs north into the eastern provinces of Canada, and south through much of eastern Mexico into Honduras.

HABITAT IN MASSACHUSETTS: During the warmer months, Tricolored Bats occupy day and night roosts in forest vegetation in the canopy, most typically in dead leaves on mature live or recently dead deciduous trees. Maternity colonies, where females rear young, are commonly found among the dead needles of living pines. Colonies and roost sites are also occasionally situated in barns, buildings, and other man-made structures, as well as in caves. Tricolored Bats forage at the treetop level, in partly open country with large trees, over water courses, and at forest-field edges. They avoid deep woods and open fields. These bats are widespread in Massachusetts, and have been documented in 9 of 14

counties. In winter, Tricolored Bats hibernate in limestone caves and abandoned mines, in areas where the humidity is so high that water droplets often cover their fur. Winter hibernacula (hibernation sites) have been reported in Berkshire, Franklin, and Hampden counties.

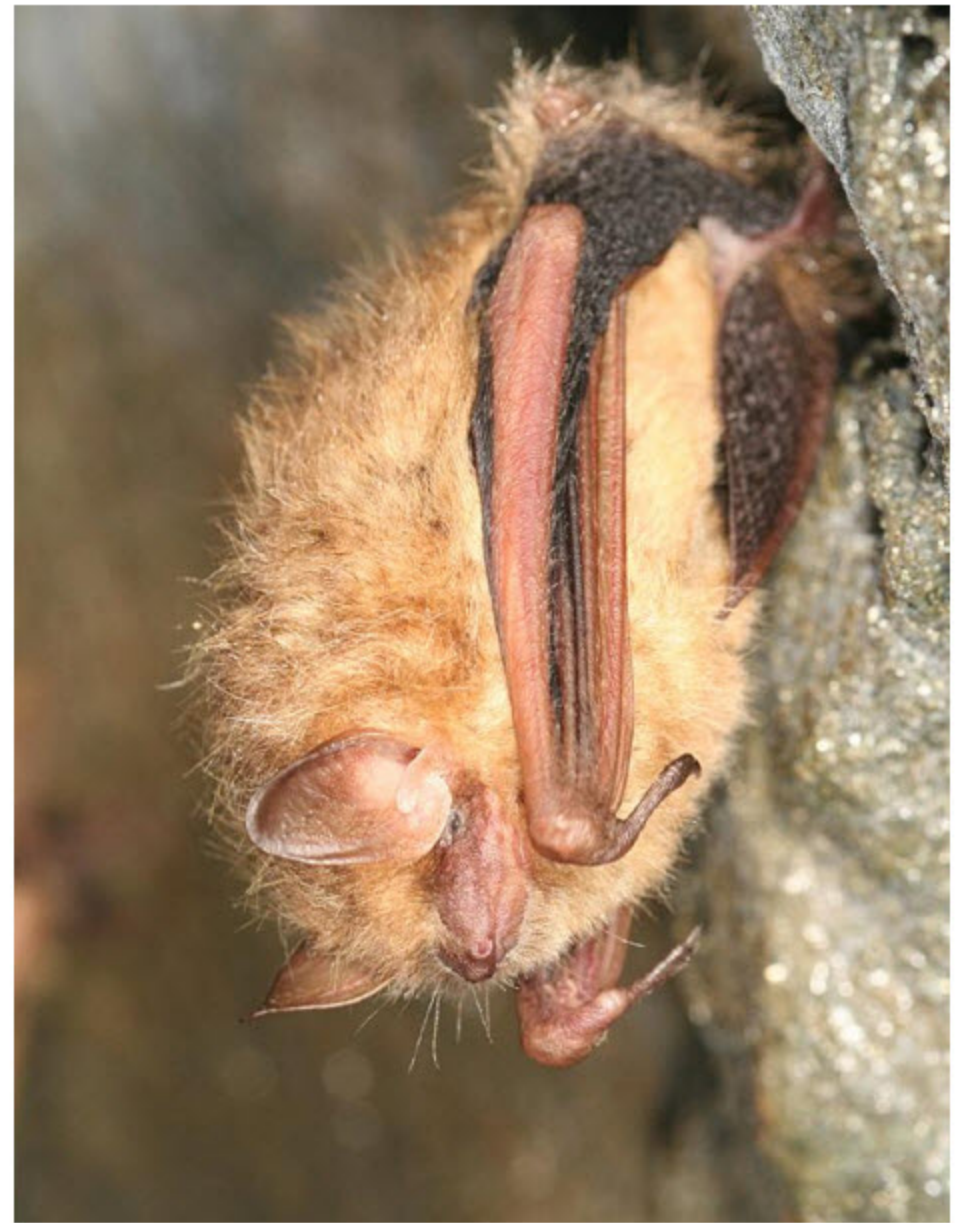


Photo: Tom Murray

LIFE CYCLE/BEHAVIOR: Tricolored Bats are the earliest to emerge to feed in the evening. They use echolocation to locate insects, often catching them in tail or wing membranes. Their foraging area is small relative to other bats, but they may travel up to 5 miles

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Eastern Box Turtle *Terrapene carolina*

State Status: **Special Concern**
Federal Status: **None**

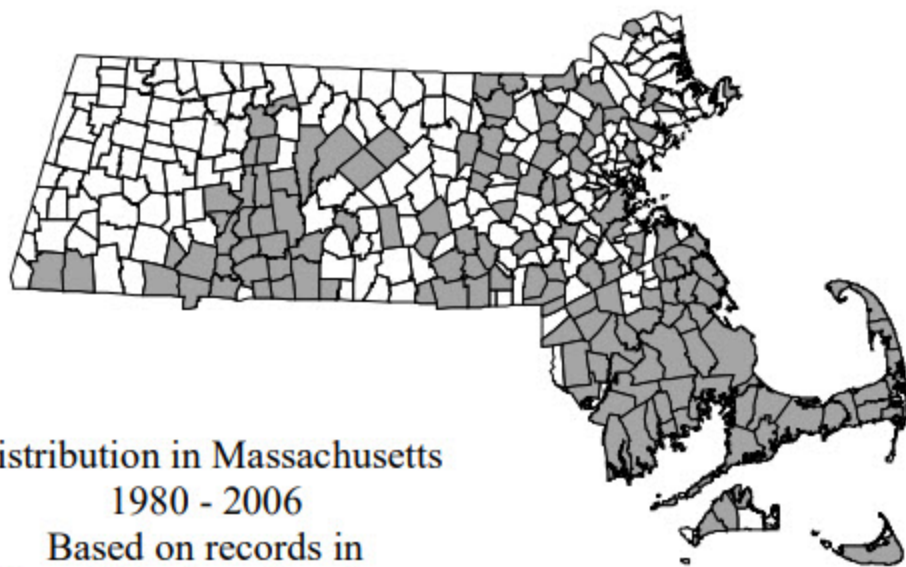
DESCRIPTION: The Eastern Box Turtle is a small terrestrial turtle ranging from 11.4–16.5 cm (4.5–6.6 in.) in length. It is so named because a hinge on the lower shell (plastron) allows it to enclose head, legs, and tail completely within the upper (carapace) and lower shells. The adult box turtle has an oval, high-domed shell with variable coloration and markings. The carapace is usually dark brown or black with numerous irregular yellow, orange, or reddish blotches. The plastron typically has a light and dark variable pattern, but some may be completely tan, brown, or black. The head, neck, and legs also vary in color and markings, but are generally dark with orange or yellow mottling. The Eastern Box Turtle has a short tail and an upper jaw ending in a down-turned beak. The male box turtle almost always has red eyes, and females have yellowish-brown or sometimes dark red eyes. Males have a moderately concave plastron (females' are flat), the claws on the hind legs are longer, and the tail is both longer and thicker than the females. Hatchlings have a brownish-gray carapace with a yellow spot on each scute (scale or plate), and a distinct light-colored mid-dorsal keel (ridge). The plastron is yellow with a black central blotch, and the hinge is poorly developed.



Photo by Liz Willey

SIMILAR SPECIES: The Blanding's Turtle (*Emydoidea blandingii*) may be confused with the Eastern Box Turtle. Often referred to as the "semi-box turtle," the Blanding's Turtle has a hinged plastron enabling the turtle to pull into its shell, but with less closure than in the Eastern Box Turtle. Both may have yellow markings on the carapace; however, the markings on a Blanding's Turtle are spots or flecks rather than blotches. An adult Blanding's Turtle is larger than the box turtle (15-23 cm; 6-9 in. in shell length). While both will be found nesting in similar habitat, the Blanding's Turtle is essentially aquatic whereas the Eastern Box Turtle is terrestrial. Eastern Box Turtle hatchlings could be confused with Spotted Turtle hatchlings, because both have spots on each scute. However, the Spotted Turtle lacks a mid-dorsal keel.

RANGE: The range of the Eastern Box Turtle is from southeastern Maine; south to northern Florida; and west to Michigan, Illinois, and Tennessee. Although Eastern Box Turtles occur in many towns in Massachusetts, they are more heavily concentrated in the southeastern section of the state.



Distribution in Massachusetts
1980 - 2006
Based on records in
Natural Heritage Database

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Eastern Hog-nosed Snake *Heterodon platirhinos* Latreille 1801

State Status: **Special Concern**
Federal Status: **None**

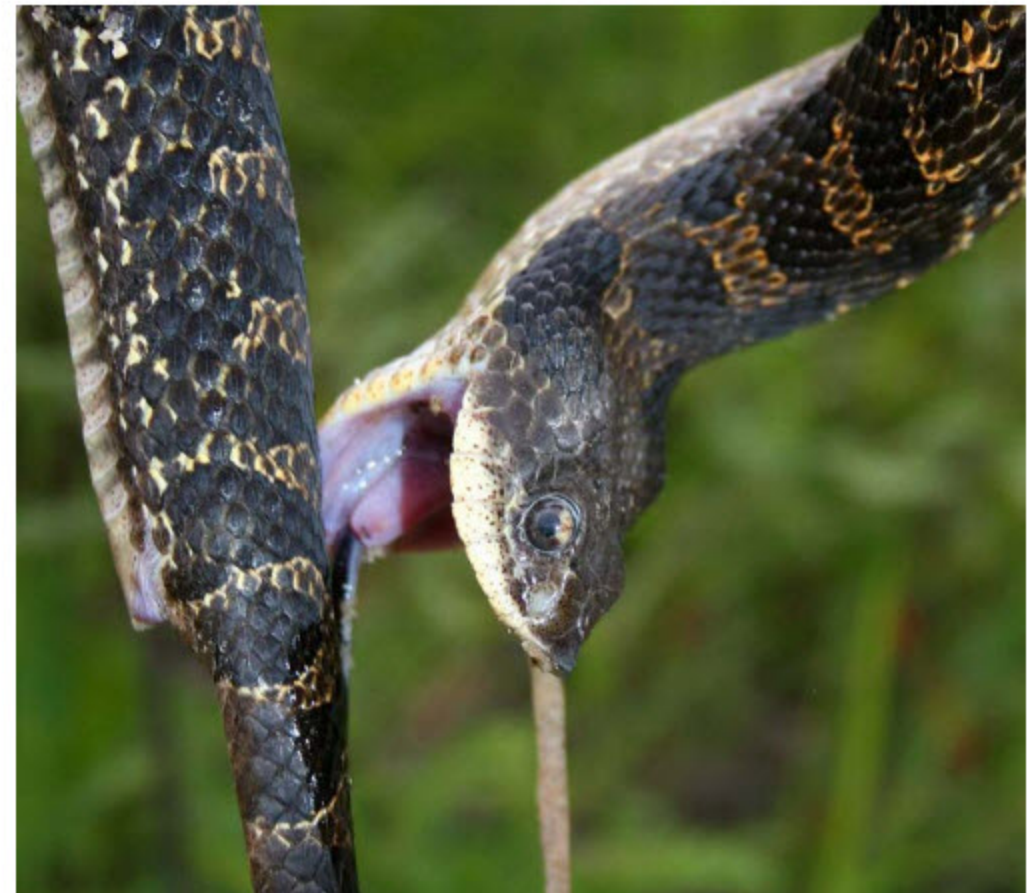
SPECIES DESCRIPTION: The Eastern Hog-nosed Snake (*Heterodon platirhinos*) is a thick-bodied, moderately large snake with a broad head and upturned snout. Most specimens are well patterned with a light background color of yellow, gray, or olive and a regular series of large, rectangular, dark spots down the middle of the back that alternate with dark spots on either side, but the species can be yellowish. Hog-nosed snakes also display partial or complete melanism, appearing slate-colored (rather than jet black). The scales are keeled and the underside of the tail is typically lighter than the rest of the belly. Adults range from approximately 51 to 102 cm (20 to 40 inches) in total length. Mating has been documented in September on Cape Cod (Buchanan et al. 2016), and females typically deposit 15 to 25 eggs in sandy soil or mulch in June or July. Eggs hatch in August and September. Behaviorally, this species is easy to distinguish from all other native snakes because of its elaborate “bluff” anti-predator behavior: it hisses loudly, flares or flattens its neck, and inflates its body substantially when threatened (looking a bit like a cobra). If further harassed, some specimens will thrash and roll on their backs, eject their stomach contents, and “play dead.”

EVOLUTION AND TAXONOMY: *Heterodon platirhinos* is a relatively ancient (Miocene) lineage within the widespread family Dipsadidae, subfamily Heterodontinae (formerly Colubridae). There are three recognized, living species within *Heterodon*—*H. platirhinos* (Eastern Hog-nosed Snake), *H. simus* (Southern Hog-nosed Snake), and *H. nasicus* (Western Hog-nosed Snake). The hog-nosed snakes are now estimated to have diverged from its closest living relative in Massachusetts, the Worm Snake (genus *Carphophis*), between 27.6 and 38.9 million years ago (Pook et al. 2009; Chen et al. 2014; Zheng and Wiens 2016).

DISTRIBUTION AND ABUNDANCE: Eastern Hog-nosed Snake are known from Franklin, Hampshire, Hampden, Worcester, Middlesex, Norfolk, Bristol, Plymouth, and Barnstable Counties below 300 m elevation.



Adult Eastern Hog-nosed Snake from Cape Cod, Barnstable County, Massachusetts, showing upturned nose. Photo: Scott Buchanan



If captured, Hog-nosed Snakes will sometimes feign death, gape their mouth, and eject their stomach contents or salivate. An adult from Franklin County, Massachusetts is pictured. Photo: Mike Jones / MassWildlife

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

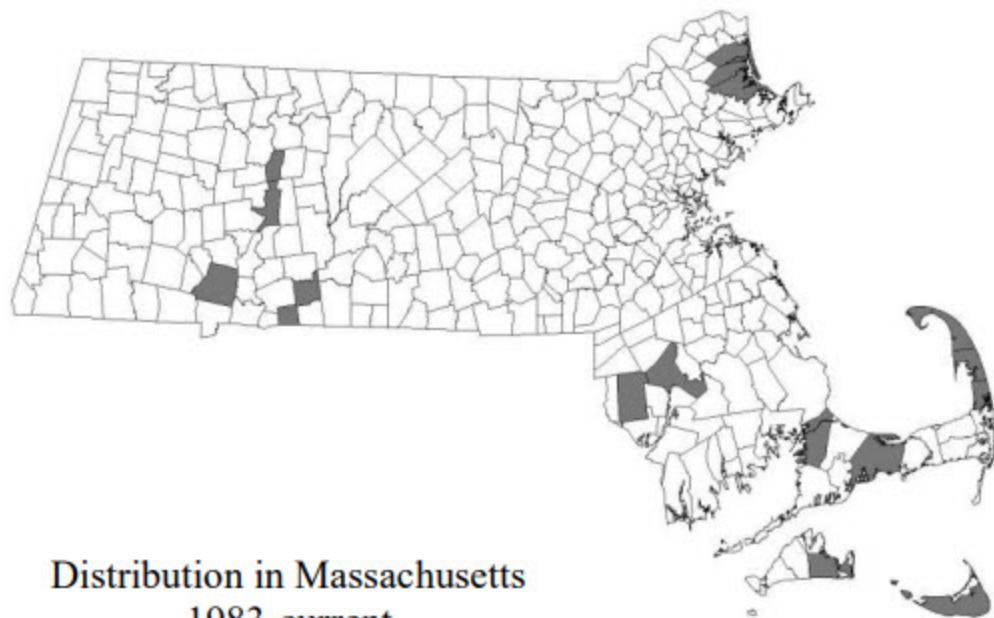
Massachusetts Division of Fisheries & Wildlife

Eastern Spadefoot *Scaphiopus holbrookii*

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Eastern Spadefoot, only 1.75-2.25" (4.4-5.7 cm) long, is a short-legged, squat, big-headed toad with unmistakable cat-like, vertically elliptical pupils. The grayish or blackish-brown with olive skin is fairly smooth and scattered with small warts. Two yellowish lines originate from each eye and run down the back to form a lyre-shaped pattern. Another light line runs along each side of the body. The toad's name comes from the horny, sharp-edged, sickle-shaped spade on the inner surface of the hind foot. It belongs to a primitive amphibian family that is neither a true frog nor a true toad.

SIMILAR SPECIES: The Eastern Spadefoot is the only toad in its family occurring east of the Mississippi River. It is distinguished from the true toads by its smoother skin, vertically elliptical pupils, and single sharp-edged spade on each hind foot.



Distribution in Massachusetts
1983-current
Based on records in
Natural Heritage Database



HABITAT: This burrowing species requires dry, sand or sandy loam soils characteristic of Pitch Pine barrens, coastal oak woodlands, or sparse shrub growth, interspersed with temporary ponds. It prefers areas with leaf litter, and may be found in farmland areas. Colonies may occur within the floodplains of major rivers.

LIFE HISTORY: The Eastern Spadefoot is the most fossorial species of frog or toad in Massachusetts. It burrows up to eight feet below the ground's surface to hibernate during the cold months and to avoid desiccation during the rest of the year. It backs down into its burrow, digging with the hind feet and covering itself over with the fore feet. Spadefoots are secretive and nocturnal; activity peaks just after sundown and before sunrise. In the summer months, individuals remain in their burrows an average of 5-9 days between feedings.

In the warmer months, from April to September, the Spadefoot comes up to breed after prolonged warm and heavy rains. They emerge uttering explosive, low-

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

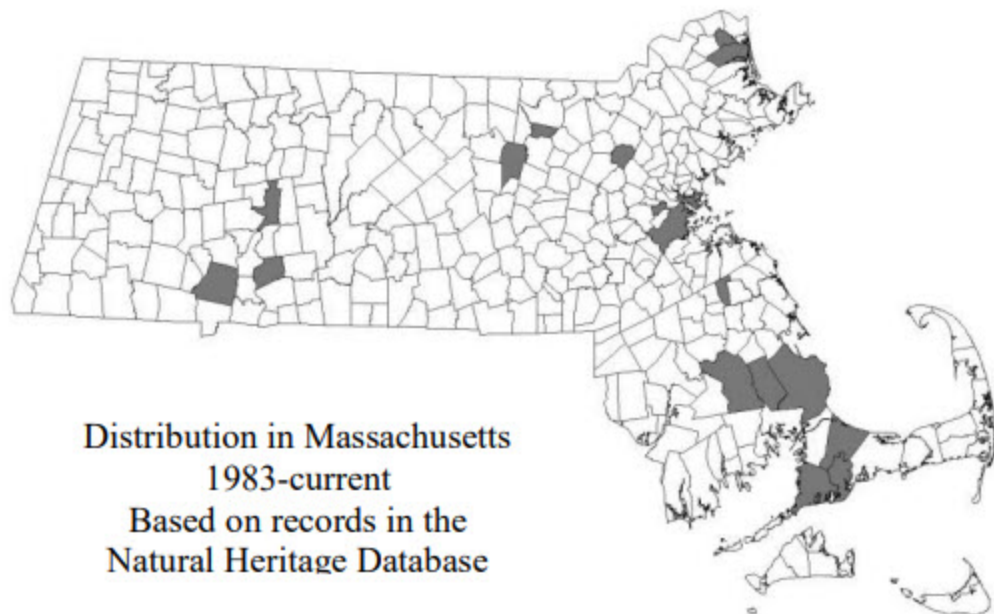
Massachusetts Division of Fisheries & Wildlife

Upland Sandpiper *Bartramia longicauda*

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: The Upland Sandpiper is a slender, moderate-size shore-bird with a small head, large, shoe-button eye, short and thick dark-brown bill, long, thin neck and relatively long tail. Legs are yellowish. It stands about 12 in (30 cm) tall and has a wingspan of 25 to 27 in (64 to 68 cm). The crown is dark brown with a pale buff crown stripe. The rump, upper tail and wings are much darker than the rest of the bird. Calls include a rapid “quip-ip-ip-ip” alarm call, and a long, drawn-out courtship call which has been described as a windy, whistly, “whiiip-whee-ee-oo.” The sexes are similar. This species often poses with its wings up raised when alighting on utility poles or fence posts.

HABITAT IN MASSACHUSETTS: The Upland Sandpiper inhabits large expanses of open grassy uplands, wet meadows, old fields, and pastures. In Massachusetts it is restricted to open expanses of grassy fields, hay fields, and mown grassy strips adjacent to runways and taxiways of airports and military bases. They need feeding and loafing areas as well as nesting areas. It winters in similar landscapes in South America.



Robbins, C.S., B. Braun, and H.S. Zim. Birds of North America. Golden Press, New York. 1966.

ECOLOGY AND BEHAVIOR: The Upland Sandpiper returns to its breeding habitat in Massachusetts mid-April to early May. The birds arrive already paired and usually return to the same area year after year. Their courtship displays include circling flights by individual birds that last 5 to 15 minutes and reach as high as 1000 ft (305 m) during which they give their “windy whistle” call. On the ground, the male will raise his tail and run at his mate stopping suddenly. The nest is a grass-lined depression on the ground. It is well concealed by arched grasses making it invisible from above. Four, or occasionally three, eggs are laid at 26 hour intervals. The eggs are pinkish-buff with fine brown spots. Both sexes incubate the eggs beginning after the clutch is complete. Renesting may occur if the initial clutch is destroyed.

Incubating adults are well-concealed and will tolerate close approach before flushing. The adults are secretive around the nest, approaching it from a distance by walking cautiously through the grass, head held low and squatting lower and lower. Unless flushed, the bird leaves the nest in the same manner. Each bird has a

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Grasshopper Sparrow *Ammodramus savannarum*

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Grasshopper Sparrow is a small sparrow of open fields. It is 4.5 to 5.5 in (11-13 cm) long with a narrow short tail. Each feather of the tail tapers to a point giving it a ragged appearance. It has a flat head which slopes directly into the bill. The upperparts have reddish streaks with contrast with the intervening gray. The dark brown crown is divided by a thin cream-colored center stripe. A yellowish spot extends from the bill in front and below the eye. The sexes are similar. The typical song, often mistaken for the song of a grasshopper, consists of two chip notes followed by “tsk tsick tsurrrr.” Breeding birds also sing a complicated song with many squeaky and buzzy notes intermixed in a long phrase.

SIMILAR SPECIES: Young birds resemble adult Henslow’s Sparrows but have dusky brown streaks or spots on the buffy breast and flanks. Adult Grasshopper Sparrows can be distinguished from the Field Sparrow by the latter’s pinkish bill, rusty cap and white eye ring. Other species similar in appearance and also found in the same type of habitat include the Vesper Sparrow, Savannah Sparrow and Song Sparrow, but Grasshopper

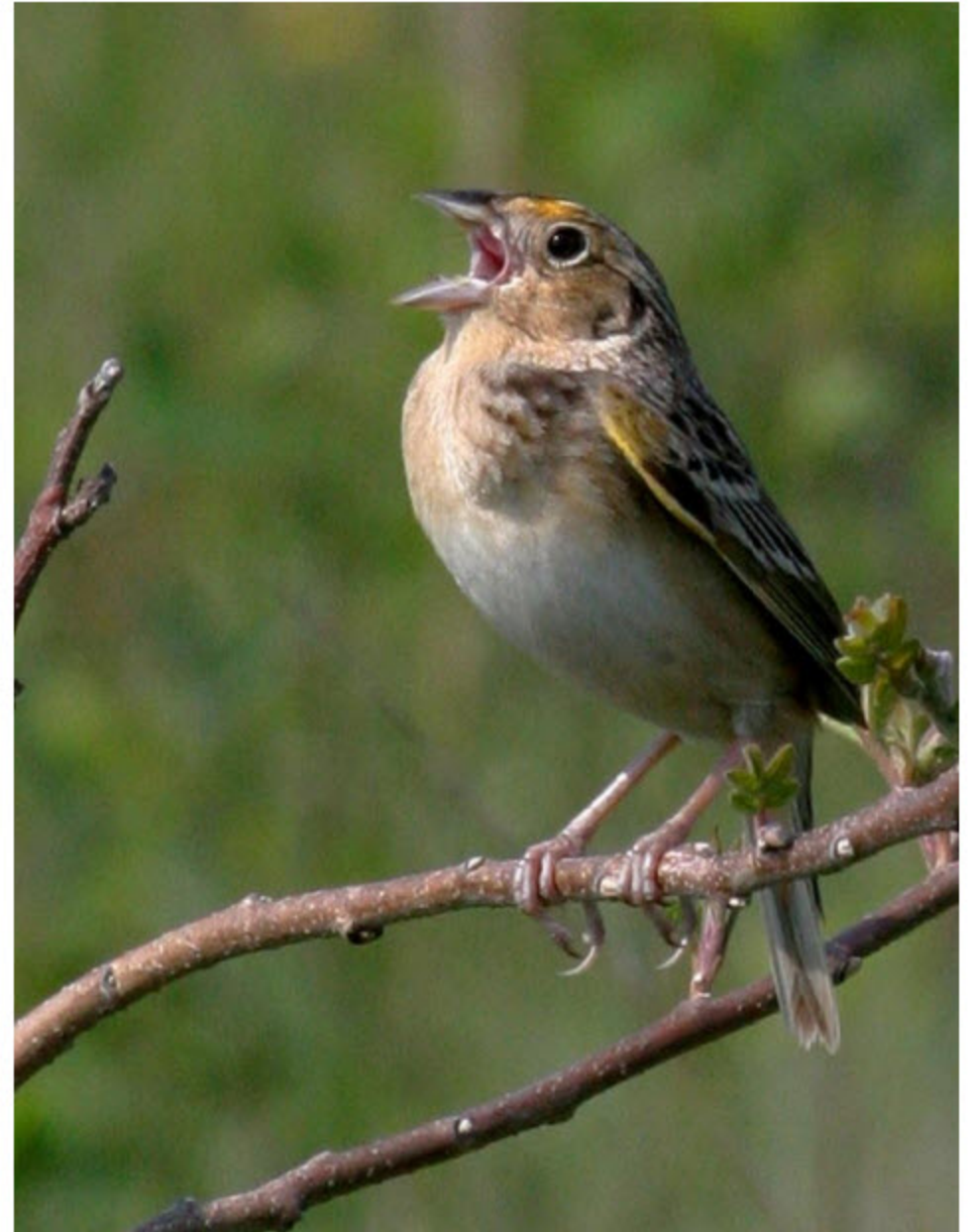
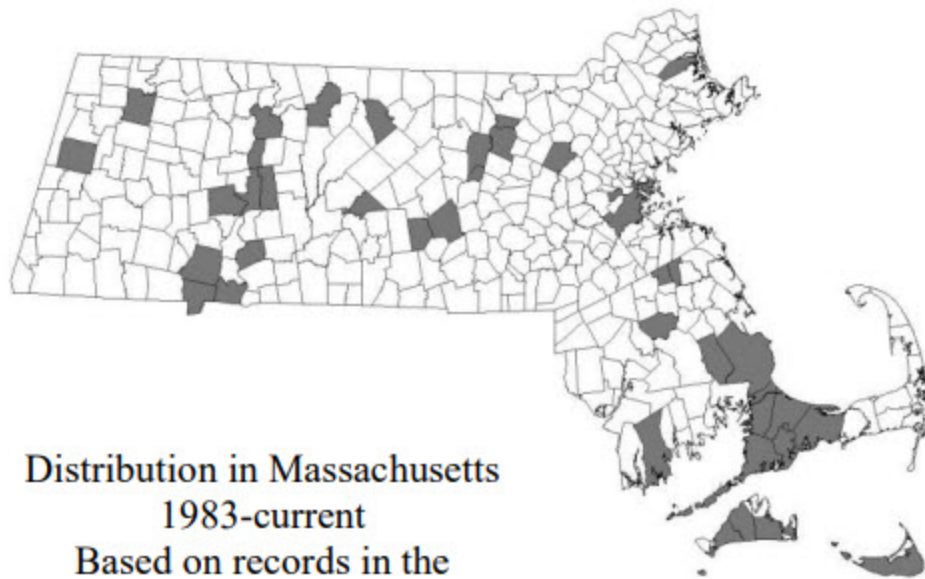


Photo by Chris Buelow, NHESP



Distribution in Massachusetts
1983-current
Based on records in the
Natural Heritage Database

Sparrows differ from these by its buffy, unstreaked throat and breast and the yellowish area around the eye. However, its distinctive call best distinguishes it from all other birds.

ECOLOGY/BEHAVIOR: Grasshopper Sparrows eat, sleep and nest on the ground. When flushed, it usually flies up from the grass, flutters rather low and erratically for a short distance and drops into the grass again. On the ground it either hops or runs.

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Northern Harrier *Circus hudsonius*

State Status: **Threatened**
Federal Status: **None**

GENERAL DESCRIPTION: The Northern Harrier or Marsh Hawk is a slim, long-legged, long-tailed hawk, about 40 to 60 cm (16 to 24 in.) in length, with an owl-like face and long, rounded, narrow wings extending up to 1.2 meters (46 in.) from wing tip to wing tip. Males are pale bluish gray on the head and upper surface, white on the undersurface, and have black wing tips; the tail has a broad subterminal bar with 5 to 7 narrower dark brown bars. Females are dusky brown on the head and upper surface, and light brown with darker vertical streaks on the lower surface; the tail is dark in the center, becoming paler near the outer edges, and has 5 to 7 broad brown bars. Both sexes possess a conspicuous white rump patch, white upper tail coverts, light orange-yellow legs, and black bills. Northern Harriers have large ear openings, but they are usually hidden underneath their feathers. Northern Harriers are known to readily abandon nests when disturbed before the eggs hatch, they vigorously defend their nests once their young have hatched.

SIMILAR SPECIES: The male Northern Harrier's gray coloration makes it distinct from other local birds. However, the female Northern Harrier vaguely resembles the Short-eared Owl (*Asio flammeus*): both

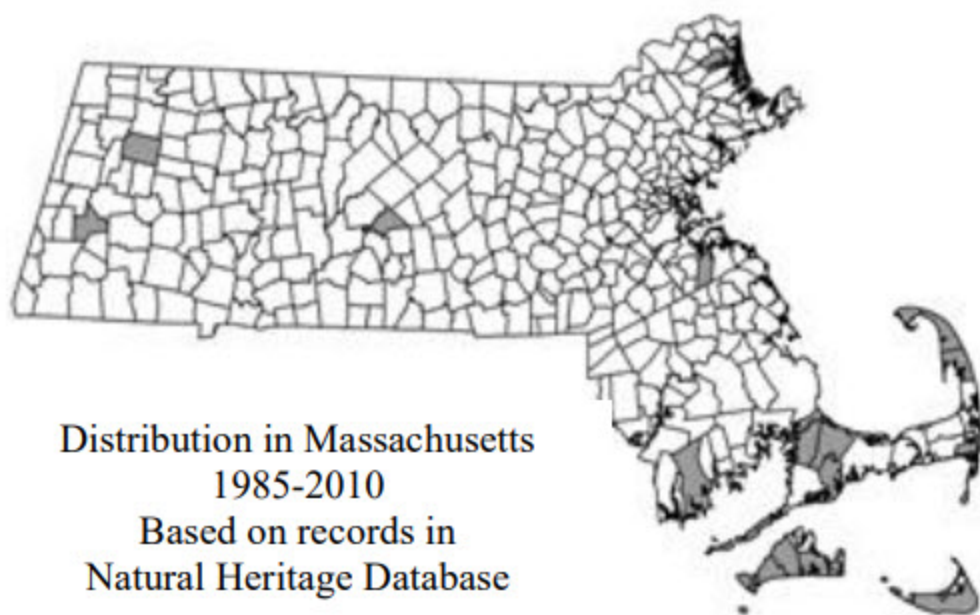


Arthur Singer. From Robbins, C.S., B. Bruun, and H. Zim. 1966. *Birds of North America*. Golden Press, NY.

occupy the same habitat type, have a brownish upper surface and white breast with vertical brown streaks, long rounded wings and black wingtips. However, the Short-eared Owl is smaller, with short feathered legs, a white facial disk, and lacks the bright white rump patch possessed by Northern Harriers.

MIGRATION: Northern Harriers are regularly seen in Massachusetts in the winter, in habitat similar to that used for breeding. Wintering range extends from New England west to southern British Columbia and south into Central America and the West Indies. Those individuals that do migrate, begin to move south in late August or early September.

BREEDING: The breeding season of Northern Harriers extends from March to July in Massachusetts and is initiated by a spectacular courtship ritual called skydancing, which is usually performed only by males and is used to attract mates. A skydancing Northern Harrier performs an aerial acrobatic display of dives,



Distribution in Massachusetts
1985-2010
Based on records in
Natural Heritage Database

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

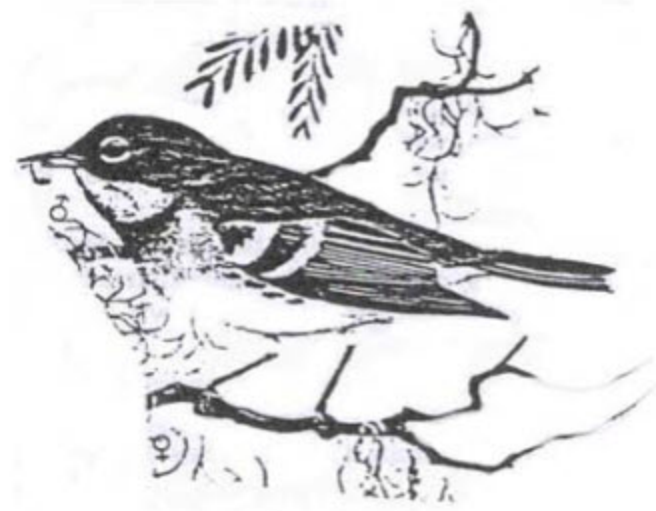
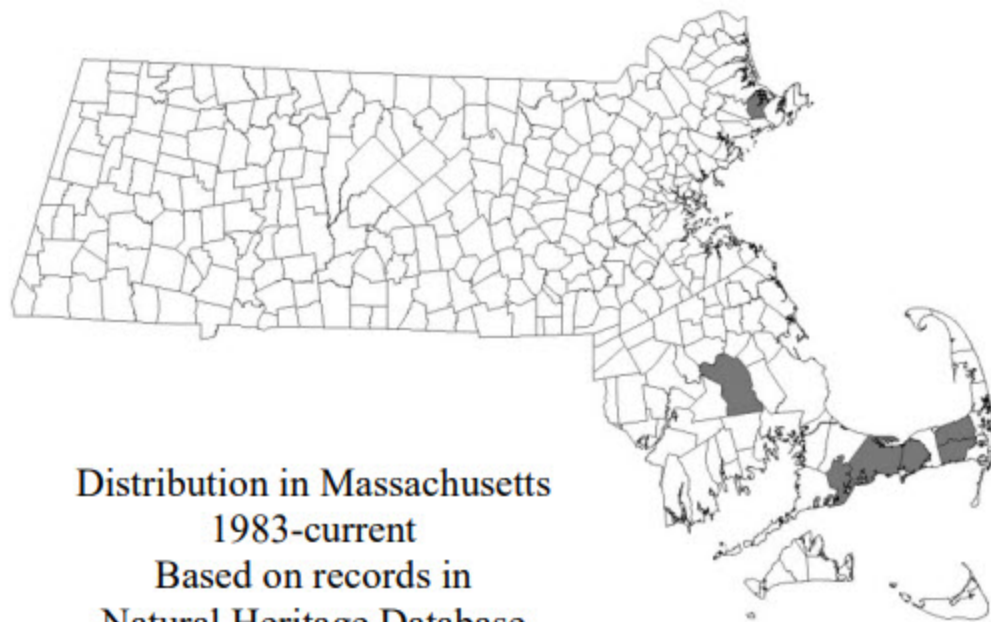
Northern Parula *Setophaga americana*

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Northern Parula is one of the smallest and most distinctly marked of the North American wood warblers. They are 10.8–12 cm (4 1/4 – 4 3/4 in) in length with a wing spread of 17.8–19.7 cm (7–7 3/4 in). The males are bright blue-grey above; white below; an olive patch on the upper back; and two bold white wing bars. They have a white eye ring broken by a black eye line; and a bright yellow throat with a dusky, red-brown chest band. Females and juveniles are similar but paler, and have little or no throat band.

SIMILAR SPECIES IN MASSACHUSETTS: The Black-throated Blue Warbler (*Dendroica caerulescens*) has similar blue-grey upper parts, but lacks the double white wing bar, and has a black throat and face, instead of the yellow throat of *Setophaga americana*.

RANGE: The breeding range of the Northern Parula is from Nova Scotia to Manitoba, south to central Florida and Texas. It is generally associated in the north with the lichen Old-Man's Beard (*Usnea* spp.) and in the south with Spanish moss (*Tillandsia usneoides*). It winters primarily in Mexico, northern Central America and the West Indies.



Robbins, C., B. Bruun, and H. Zim. 1966. Birds of North America.

HABITAT IN MASSACHUSETTS: *Setophaga americana* is characteristically found in wet woodlands, such as Red Maple (*Acer rubrum*) or Atlantic White-cedar (*Chamaecyparis thyiodes*) swamps, river margins, pond shores, or even small depressions. It usually nests in association with the moss-like lichen, Old-Man's Beard (*Usnea* spp.).

LIFECYCLE/BEHAVIOR: In the northeast, the Parula begins nesting in late May or early June. The nest is generally in a hollowed out bunch of hanging *Usnea* lichen in either a deciduous or conifer tree. Though predominately made of *Usnea* spp., the nest may be sparsely lined with finely shredded moss, fine grasses, plant down, or a few hairs. Upon completion, the nest resembles a hanging grey pouch with an opening at or near the top. The nest may also be constructed of other material, such as burlap, leaf fragments, or grass, but this is exceptional. The height of the nest varies from 4 to 40 feet above ground with the average being 25 feet. The same nesting site is often occupied in successive seasons with eggs being laid in the same nest or in another nearby. *Setophaga americana* lays only one clutch of 4 to 5 eggs each year. The eggs are white to cream, speckled with brown, and

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

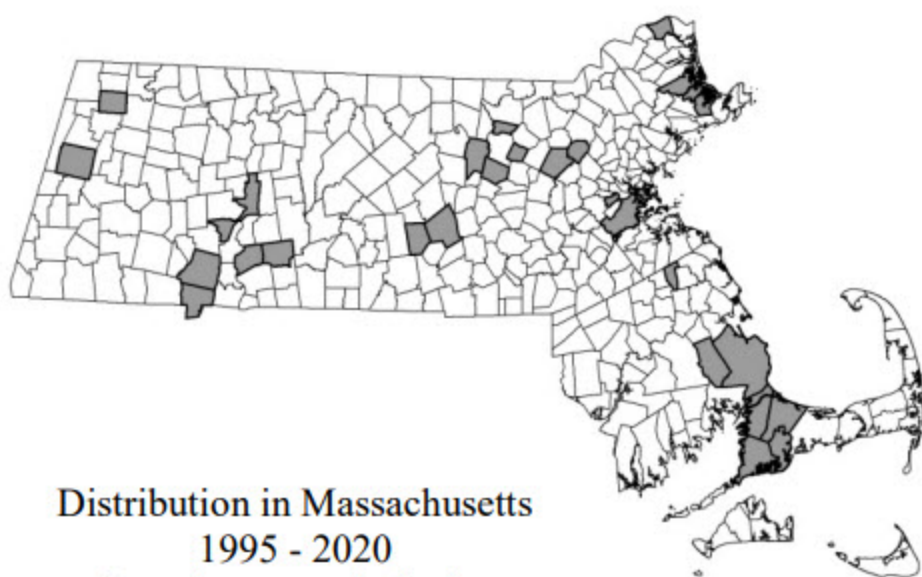
Eastern Meadowlark *Sturnella magna*

State Status: **Special Concern**
Federal Status: **None**

SPECIES DESCRIPTION: The Eastern Meadowlark is a ground-nesting passerine of grasslands, pastures and hayfields. The species breeds throughout the eastern United States, Canada's Maritime Provinces, the desert Southwest, and nearly continuously south to Panama. Individuals breeding in the northern limits of the range are short-distance migrants, often congregating in small flocks and moving south to areas free of snow. The Eastern Meadowlark, like many other birds associated with grasslands, has seen its population fluctuate widely in response to trends in agricultural practices.

DISTRIBUTION AND ABUNDANCE: Eastern Meadowlarks are thinly distributed across the state, and specific breeding sites have become increasingly scarce. They are largely restricted to large grasslands provided by municipal or military airfields, agriculture, or Wildlife Management Areas. Scattered pairs also can be found at other large grasslands throughout the state.

Breeding Bird Survey data shows that the global population of Eastern Meadowlark has experienced an overall decline of 3.3% annually from 1966 to 2015.



Distribution in Massachusetts
1995 - 2020
Based on records in the
Natural Heritage Database

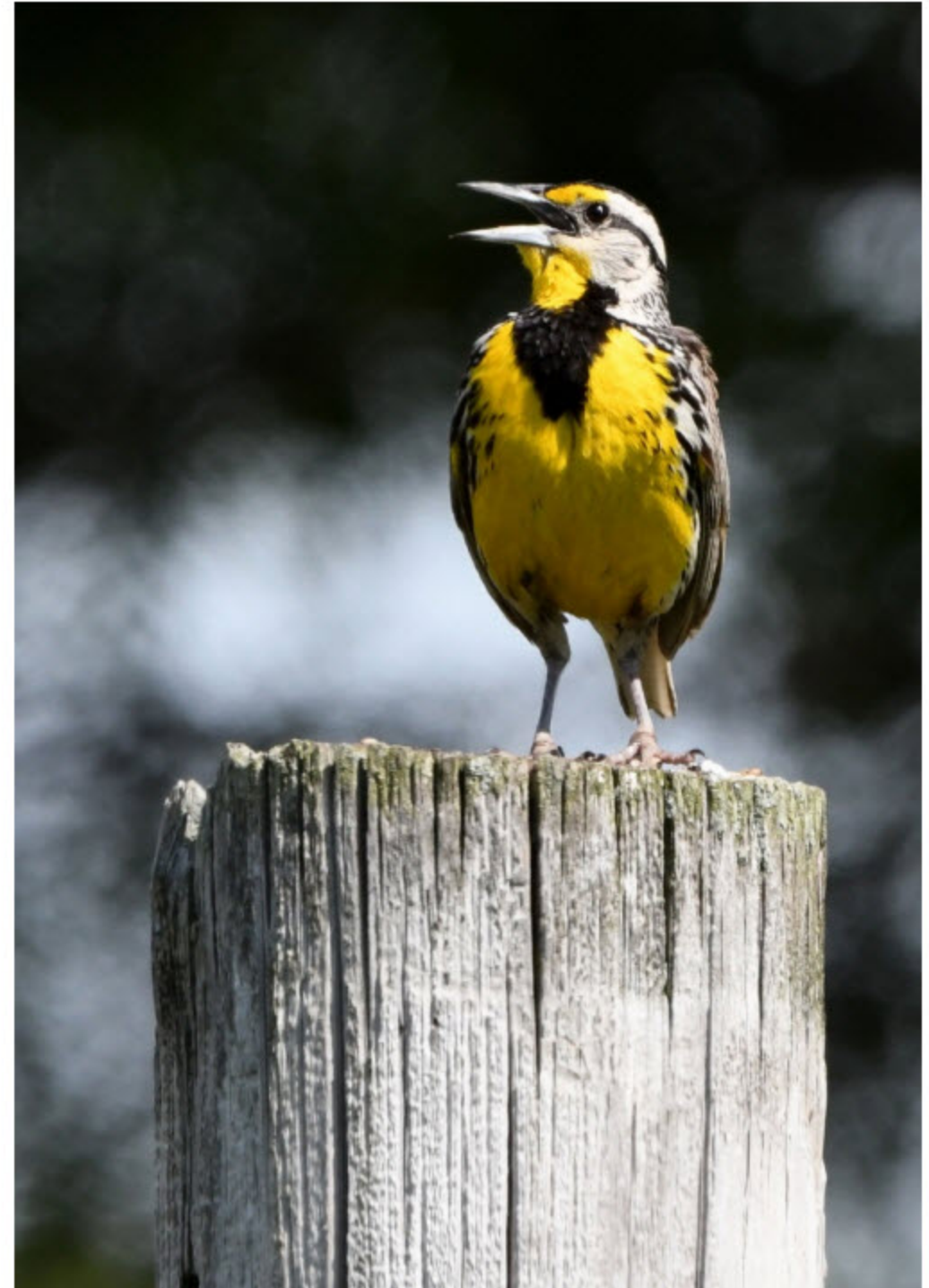


Photo by Jim Hudgins/USFWS

Northeastern states have seen the largest declines, with states such as Rhode Island (10.3%), Connecticut (12.6%) and Massachusetts (9.7%) seeing the sharpest declines during that timeframe. No state has recorded a significant population increase.

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Vesper Sparrow
*Pooecetes gramineus***

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: To the beginning birder, most sparrows appear indistinguishable at first glance, and close attention to details is essential for identification. The overall plumage pattern of the Vesper Sparrow is typical of many sparrow species with the head, back, tail, and wings covered by streaks of black, white, and a variety of browns. The upper chest has a series of evenly-spaced, brown streaks that in some individuals may appear to form a v-shaped spot in the center of the chest. The under-tail and belly are usually cream-colored with no streaking. The Vesper Sparrow looks somewhat like a grayish Song Sparrow (*Melospiza melodia*), but with a thin, white eye-ring. The most distinguishing feature of the Vesper Sparrow is its white outer tail feathers (somewhat like those of the Dark-eyed Junco), which are particularly noticeable in flight and unique among grassland sparrows of Massachusetts. Another distinguishing feature is rufous- or chestnut-colored lesser wing coverts (shoulders), but they are seldom visible except, perhaps, in individuals with worn plumage. Vesper Sparrows are larger than other New England grassland sparrows, with a length of 6.25 inches (15.9 cm) and a wing span of 10 inches (25.4 cm). The song of the Vesper Sparrow is quite beautiful, similar in pattern to that of the Song Sparrow, but sweeter and more plaintive. The song typically begins with paired whistles followed by clear, musical trills that accelerate and descend in tone, described as *too too tee tee chididididididid swiswi-swiswiteew*. Generally, the first two introductory whistles are lower than the second two. In some cases, only a single higher whistle follows the first pair.

SIMILAR SPECIES: No other sparrow that is a regular breeder in Massachusetts has white outer tail feathers. However, there are several species that may co-occur with Vesper Sparrow and otherwise resemble it in appearance. The Savannah Sparrow (*Passerculus sandwichensis*) has a similar plumage pattern but is



Vesper Sparrow, showing rufous-colored shoulders and white outer tail feathers. Photo by, and courtesy of, Jim Stasz, from the USGS Patuxent Migratory Bird Research Center, at <http://www.mbr-pwrc.usgs.gov/id/framlst/i5400id.html>

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Eastern Whip-poor-will *Antrostomus vociferus*

State Status: **Special Concern**
Federal Status: **None**

Description: Eastern Whip-poor-wills are nocturnal birds of dry, open woodlands and clearings. They are seldom seen, though they are quick to announce their presence with their distinctive call on calm, moonlight nights from spring into mid-summer. The call is unmistakable: a rapidly whistled three-note phrase, “*Whip-poor-will*,” with an emphasis on the first and third notes. At close range, a brief introductory “*cluck*” can be heard in the call. Calling is most intense during crepuscular hours and during moonlit nights.

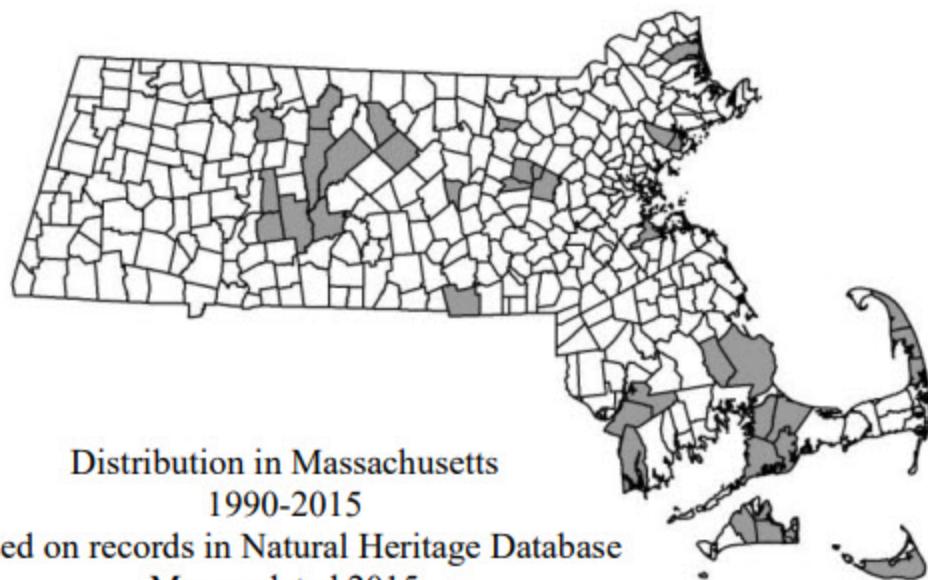
Whip-poor-wills measure 22-26cm in length, and weigh between 43 and 64g. Their body shape is distinct with a relatively small body always held horizontally when perched, and a large, flat head with large, dark eyes and a very small bill. The bill is bordered by long bristles for capturing food items in flight, and opens to create a very large gape. The legs and feet are very small and seldom seen, always tucked against the body while perching or in flight. In flight, Whip-poor-wills are slow and silent, appearing moth-like, often hovering and flying erratically in pursuit of flying insects.



Photo: John Winze

The sexes are nearly identical in plumage: cryptically colored to match the streaked browns and grays of the forest floor. These color patterns blend perfectly into the sun-dappled oak leaf litter where they nest, or the thick branches that they perch on during the day. This camouflage is so effective that most birds are not detected until they are flushed by an approaching observer, that is, within just a few feet of the bird. In flight, a broad band of white on the outer tip of the tail can be seen on the male, and both sexes have a bright white patch on the throat, accented by a black border on the male and a buffy border on the female.

Similar Species in Massachusetts: There are two other members of the Nightjar family that occur in Massachusetts: Chuck-will’s-widow (*Antrostomus carolinensis*) and Common Nighthawk (*Chordeiles minor*). Both of these birds have a superficially similar appearance and can occur in similar habitat to Whip-poor-will. Chuck-will’s-widow is best separated by call (see below), but also by its noticeably larger size, heavier body structure, and overall buffier, less-contrasting plumage. Chuck-will’s-widows are seldom encountered in Massachusetts (although their range is spreading northward), occurring only every few years, mostly in coastal situations.



Distribution in Massachusetts
1990-2015

Based on records in Natural Heritage Database
Map updated 2015


A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581

tel: (508) 389-6360, fax: (508) 389-7891

Sharp-shinned Hawk

Accipiter striatus

State Status: None

Federal Status: None

Etymology: "Sharp-shinned" refers to the raised ridge on the inside front of the tarsus (not actually a "shin"). *Accipiter* is Latin for "bird of prey" probably derived from *accipere* "to take" or from the Greek *aci*, "swift" and *pteron*, "wing." *Striatus* is Latin for "striped," referring to the underparts of the immature bird.

Description: The Sharp-shinned Hawk, which is slightly larger than a blue jay, is the smallest member of the *Accipiter* Family, measuring 25-36 cm (10-14 in) in length. It has a slim body; short, broad wings rounded at the tips, ranging from 51-69 cm (20-27 in) when extended; and a long narrow, and usually notched or square-tipped tail. The adult plumage is dark slate-grey above with white underparts finely barred with red-brown. Its head is slate-grey down to the eye-line; white thinly streaked with brown below the eyeline; and red-brown cheeks. The tail has three or four bands of dark and light brown of equal width both above and below; white undertail coverts; and a narrow greyish-white tip (terminal band). The eyes of the adult Sharp-shinned Hawk are red and its long stick-like legs are a bright yellow. The sexes have similar plumage but the females are less bluish above, lighter below, and are noticeably larger than the males. The juveniles and immature adults have brown upperparts splotched with white. Underparts are white splotched with brown.

Sharp-shinned, or "Sharpie" has a distinctive flight pattern characterized by a series of steady rapid wingbeats followed by a short interval of gliding (e.g., Flap, Flap, Flap...Sail), and intermittent soaring, usually in small circles. It is buoyant in flight; uses its tail as a rudder to maneuver, and is capable of great bursts of speed to capture its prey.

The call of the Sharp-shinned Hawk is a series of very rapid cackles, given when the bird is alarmed. The common note sounds like a "kek, kek, kek" with a slight nasal quality, the male's voice being much weaker than the female's.

Population Status: In the 19th and 20th centuries, Sharp-shinned Hawks were slaughtered in tremendous numbers by people who erroneously believed that this hawk affected songbird populations. When legal measures were implemented in the early 1900's to protect the Sharp-shinned Hawk, populations increased noticeably. However, when DDT and its associated pesticides were introduced into the environment in the 1950's, the pesticides accumulated in the Sharp-shinneds' prey and were magnified through the food



Above: Adult Sharp-shinned hawk.
Photo: U.S. Forest Service file photo from
<http://www.fws.gov/yreka/northerngoshawk.html>

Below: Juvenile Sharp-shinned Hawk,
Photo: Trisha Shears from:
http://commons.wikimedia.org/wiki/File:Juvenile_SharpShinnedHawk.jpg



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

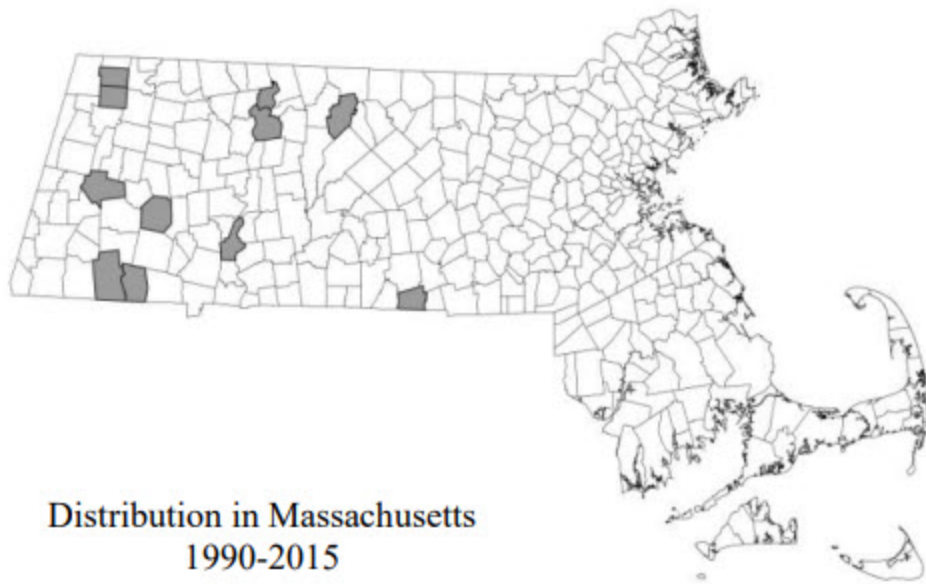
Massachusetts Division of Fisheries & Wildlife

Tule Bluet *Enallagma carunculatum*

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION OF ADULT: The Tule Bluet is a small, semiaquatic insect of the order Odonata, suborder Zygoptera (the damselflies) and family Coenagrionidae (pond damselflies). Like most adult damselflies, the Tule Bluet has a very long, slender abdomen, large eyes on the sides of the head, short antennae, and four heavily veined wings that are held folded together over the back. On males, the thorax (winged and legged section behind the head) is blue with black stripes on the “shoulders” and top. The abdomen, which is composed of ten segments, is blue with varying black markings on each segment, the black most extensive on the 5th through 8th segments. Females have thicker abdomens than the males, and are generally brown where the males are blue, though older females may become quite blueish. The black abdominal markings are more extensive on females than males.

Adult Tule Bluets range from 1 to 1.4 inches (26 mm to 37 mm) in length. Fully developed nymphs are about 0.75 to 0.9 inch (19 mm to 23 mm) in length.



Distribution in Massachusetts
1990-2015
Based on records in
Natural Heritage Database



Photo © Blair Nikula

SIMILAR SPECIES: The bluets (genus *Enallagma*) comprise a large group of damselflies, with no fewer than 20 species in Massachusetts. Identification of the various species can be very difficult and often requires close examination of the terminal appendages on the males (Nikula *et al.* 2007) or the mesostigmal plates (located behind the head) on the females (Westfall & May 1996). The Tule Bluet is most similar in appearance to the common, widespread Familiar Bluet (*E. civile*). The two species are most safely distinguished by the shape of the terminal appendages on the male and the mesostigmal plates of the females. The black abdominal markings on Tule Bluets are generally more extensive, particularly on the 4th through 6th segments, giving them a darker overall appearance than Familiar Bluets. However, there is some variation in this feature and it is not entirely reliable for identification.

HABITAT: Tule Bluets inhabit a variety of wetlands, but seem to be most numerous on large lakes. In addition to lentic, freshwater habitats, they have also been found on sluggish rivers and apparently are fairly tolerant of brackish and saline conditions. They occur in well-

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

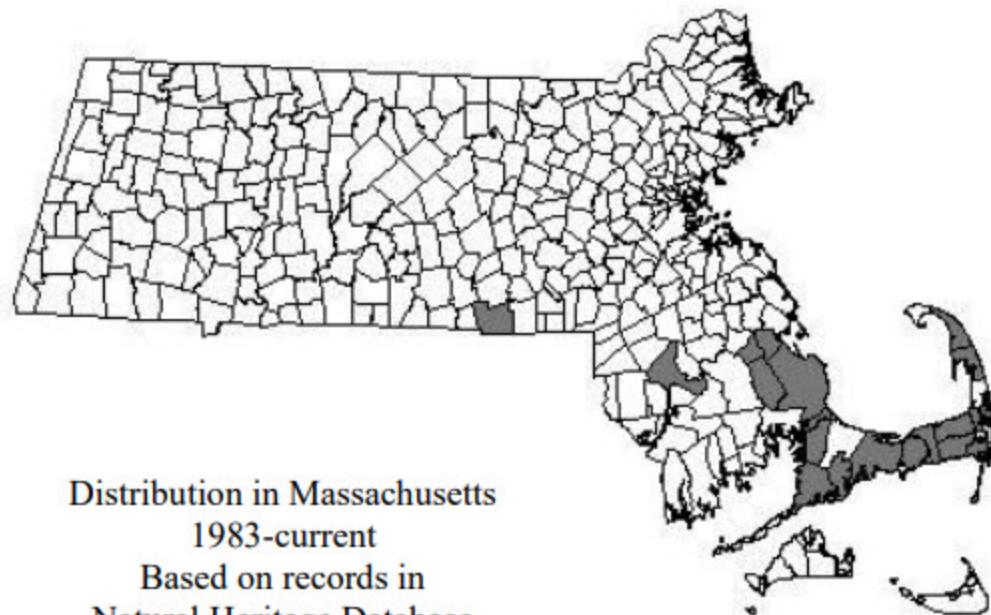
www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Pine Barrens Bluet *Enallagma recurvatum*

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION OF ADULT: The Pine Barrens Bluet is a small, semi-aquatic insect of the order Odonata, suborder Zygoptera (the damselflies), and family Coenagrionidae (pond damselflies). Like most damselflies, Pine Barrens Bluets have large eyes on the sides of the head, short antennae, and four heavily veined wings that are held folded together over the back. The male's thorax (winged and legged section behind the head) is mostly blue with black stripes on the "shoulders" and top. The Pine Barrens Bluet has a long, slender abdomen, which is composed of ten segments. The abdominal segments are blue with an increasing amount of black distally through segment 7. Segments 8 and 9 are entirely blue, except segment 8 has a small horizontal black dash on each side of the segment. This mark can sometimes be absent. The top of segment 10 is black. Females have thicker abdomens than the males, and are generally brown where the males are blue, though older females may become quite bluish. Pine Barrens Bluets average just over one inch (26mm to 29mm) in length.



Distribution in Massachusetts
1983-current
Based on records in
Natural Heritage Database



Photo © Blair Nikula

SIMILAR SPECIES: The bluets (genus *Enallagma*) comprise a large group of damselflies, with no less than 20 species in Massachusetts. Identification of the various species can be very difficult and often requires close examination of the terminal appendages on the males (Nikula *et al.* 2007) or the mesostigmal plates (located behind the head) on the females (Westfall and May 1996). The Pine Barrens Bluet is most similar in appearance to the New England Bluet (*E. laterale*), a species of Special Concern in Massachusetts. Both are found at several of their known locations. The two species are most safely distinguished by the shape of the terminal appendages on the male and the mesostigmal plates of the females. The black dash on the sides of segment 8 is generally larger in the New England Bluet, however this feature is highly variable and should not be used for definitive identification.

HABITAT: Pine Barrens Bluets are regional endemics and appear to be restricted to coastal plain ponds. Their range coincides closely with the distribution of those ponds. Some of the common attributes shared by ponds inhabited by the Pine Barrens Bluet include: sandy

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Comet Darner *Anax longipes*

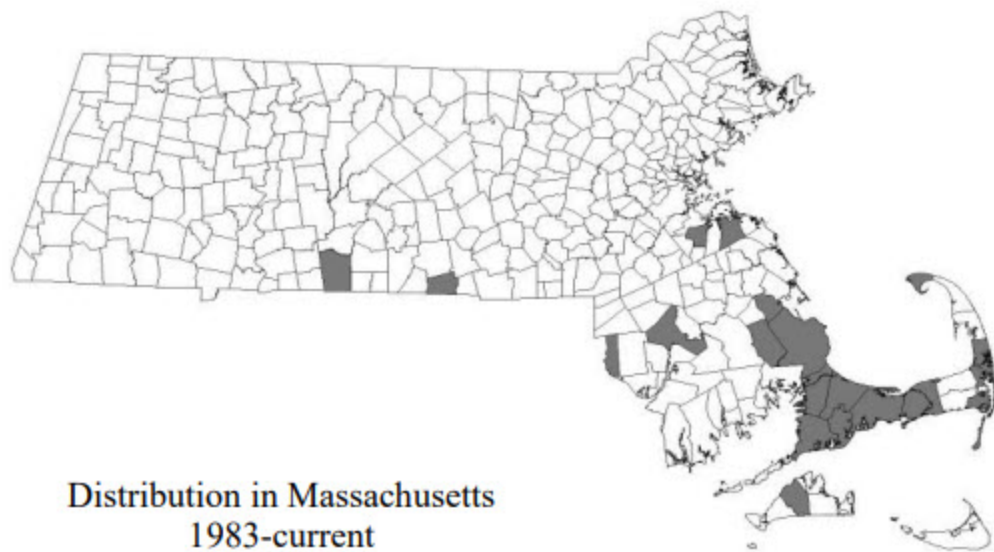
State Status: **None**
Federal Status: **None**

DESCRIPTION OF ADULT: The Comet Darner (also known as the Long-legged Green Darner in earlier references) is a stunning insect species in the order Odonata, suborder Anisoptera (the dragonflies), and family Aeshnidae (the darners). It is a large dragonfly with a bright red abdomen and bright green thorax (winged and legged segment behind the head). The first two abdominal segments are swollen and the third is constricted, giving the insect a slender-waisted appearance. The Comet Darner has long red legs that fade to black towards their ends. The wings are transparent and usually clear, though they can be tinged with amber. The face is bright green and unmarked. The compound eyes are green in mature males, but sky blue in females.

Comet Darners are very large dragonflies ranging from 3.0 to almost 3.4 inches (75 - 87 mm) in overall length, with the females averaging somewhat larger. Wingspread may be over four inches (107 mm).



Photo © Blair Nikula



Distribution in Massachusetts
1983-current
Based on records in
Natural Heritage Database

SIMILAR SPECIES: There is one other species of *Anax* found in Massachusetts, the Common Green Darner (*A. junius*). The Comet Darner bears some resemblance to this species. However, it is easy to distinguish between the two species as Common Green Darners have a “bull’s eye” pattern located on the top of the forehead while the forehead in the Comet Darner is not marked. Mature male Common Green Darners have blue and black abdomens, while the mature male Comet Darner has a bright red abdomen. Young males and females are more difficult to distinguish. At these stages, both species have a dull red abdomen. Still, the “bull’s eye” marking on the head will distinguish the two. Comet Darners are generally larger than Common Green Darners and have longer legs.

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Spatterdock Darner *Rhionaeschna mutata*

State Status: **None**
Federal Status: **None**

DESCRIPTION OF ADULT: The Spatterdock Darner (also known as the Spring Blue Darner in some earlier references) is a stunning insect in the order Odonata, suborder Anisoptera (the dragonflies), and family Aeshnidae (the darners). The adult is a large dragonfly magnificently colored with intense blues and rich browns. The thorax (winged and legged section behind the head) is mostly brown, with two pale lateral stripes, and the abdomen (the long section behind the thorax) is predominantly brown and marked with sky-blue. The Spatterdock Darner has black legs and transparent to amber-tinged wings. The face is light blue, and the eyes are a brilliant deep blue in mature individuals. The first two abdominal segments are swollen while the third is constricted, giving the insect a slender-waisted appearance. The male has unique terminal appendages (reproductive structures located at the end of the abdomen) which distinguish it from all other dragonflies, although a magnifying lens is needed to see crucial features of these appendages (Needham *et al.* 2000).

Spatterdock Darners range from 2.6 to almost 3 inches (67 - 75 mm) in overall length, with the females averaging somewhat larger. Wingspread ranges from 3.5 to 3.9 inches (90 - 100mm).

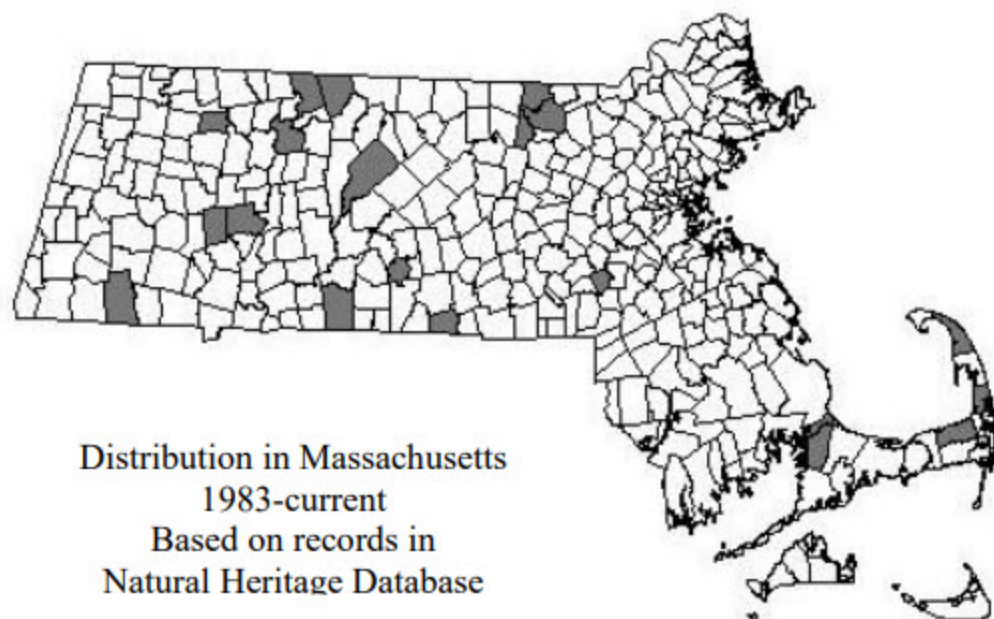


Photo © Blair Nikula

SIMILAR SPECIES: Ten species of blue darners (genera *Aeshna*, *Nasiaeschna*, and *Rhionaeschna*) occur regularly in Massachusetts and the Spatterdock Darner closely resembles many of them in appearance. However, the Spatterdock Darner is the only blue darner in the Northeast in which the eyes and face are rich blue in color (in both sexes). The shape of the lateral thoracic markings, which are relatively straight in the Spatterdock Darner, can be used to determine the species (Nikula *et al.* 2007). The flight period of the Spatterdock Darner is unique among the Massachusetts darners: it begins in late May and ends by mid-July, while the other species all fly from mid-summer into the fall. One other species of darner, the Cyrano Darner (*Nasiaeschna pentacantha*) is similar in appearance and flies at the

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Barrens Dagger Moth
*Acronicta albarufa***

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Barrens Dagger Moth (*Acronicta albarufa*) is a noctuid moth with a wingspan of 30-35 mm (Forbes 1954). The forewing is gray, mottled with black and white. The postmedial line is black, margined with white proximally, descending in a jagged line from the costa, then curving abruptly inward toward the median area, then again curving abruptly to descend in a straight line from just below the reniform spot to the inner margin. A black anal dash and prominent, black basal dash are present, the latter curving toward the costa. The reniform spot is rusty brown in color, and the orbicular spot round, often white with a gray center. The hind wing of the male is white with a grayish-brown margin and (often obscure) discal spot; the hind wing of the female is grayish-brown, darker at the margin and with an obscure discal spot. The head and thorax are concolorous with the gray of the forewings; the abdomen is lighter, grayish-brown. In Massachusetts, the Barrens Dagger Moth is most often confused with the Ovate Dagger (*Acronicta ovata*) and Southern Oak Dagger (*Acronicta increta*). Compared to the Barrens Dagger, the forewing of the former is typically lighter gray, and the forewing of both less evenly gray overall, with lighter gray in the median area and more dark shading in the basal and anal areas. Both the Ovate and Southern Oak Dagger have a basal dash that splits distally,



Acronicta albarufa, male • Specimen from MA: Plymouth Co., Plymouth, collected 27 Jul 2002 by M.W. Nelson

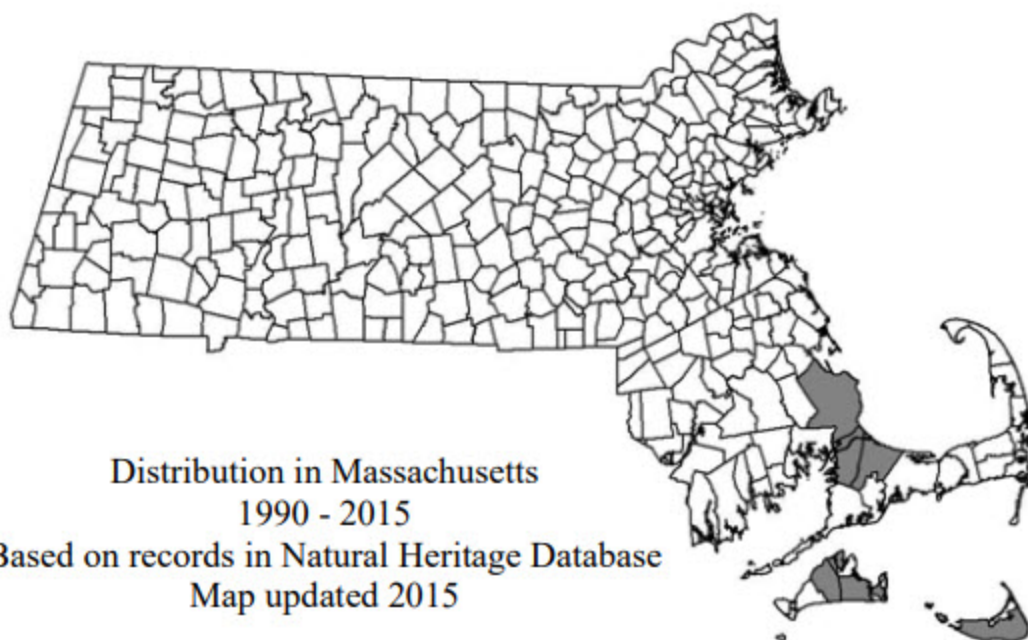
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

forming a 'Y' with one branch curving toward the costa and another toward the inner margin. Compared to the distinct, rusty brown reniform spot of the Barrens Dagger Moth, that of the Ovate Dagger is typically more yellow, and that of the Southern Oak Dagger typically more pale, or altogether lacking pigment other than gray. Unlike the white hind wing of the male Barrens Dagger Moth, the hind wing of the male Ovate and male Southern Oak Dagger is grayish-brown, only slightly lighter in color than the female of each species, respectively.

HABITAT: In Massachusetts, the Barrens Dagger Moth inhabits xeric, open pitch pine-scrub oak barrens and scrub oak thickets on sandy soil.

LIFE HISTORY: In Massachusetts, the Barrens Dagger Moth flies from mid-June through mid-August. Larvae feed from summer into early fall, and pupae overwinter. In



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

Route 135, Westborough, MA 01581

tel: (508) 389-6360; fax: (508) 389-7891

www.nhesp.org

Barrens Buckmoth

Hemileuca maia

State Status: **Special Concern**

Federal Status: None

Description: The Barrens Buckmoth is a day-flying saturniid moth with wings that are black proximally and distally, the median area with a white, semi-translucent band; the reniform and discal spots are yellow and elongate. The male has bright orange on the thorax and the anterior of the abdomen. Wingspan is 50-75 mm, with females larger than males. The larvae are black with a yellow spiracular stripe and/or yellow speckling, and long, branching dorsal spines that can inflict a painful sting. The larva reaches a length of 45-60 mm in the final instar.

Habitat: In Massachusetts the Buckmoth inhabits xeric, open habitats with extensive scrub oak thickets, especially sandplain pitch pine-scrub oak barrens, as well as maritime shrublands.

Life History: Adult moths fly on sunny days from late September through October. Females lay eggs in clustered rings around twigs of scrub oak (*Quercus ilicifolia*), occasionally on other species of shrubby oaks. Eggs overwinter and hatch in May. Larvae feed in gregarious clusters through June into July, when late-instar larvae disperse and become more solitary; they may be found on plants other than oak at this stage. Pupation occurs in late July or early August, and pupae diapause until the fall.

Range: The Buckmoth (*Hemileuca maia*) occurs from southern New England west through New York, Pennsylvania, and Michigan to southeast Wisconsin in scattered, localized populations; it is more widespread from southern New Jersey south to Florida and west to Illinois and Texas. In Massachusetts the Buckmoth is restricted to the southeast coastal plain, with one inland population in the Connecticut River Valley.



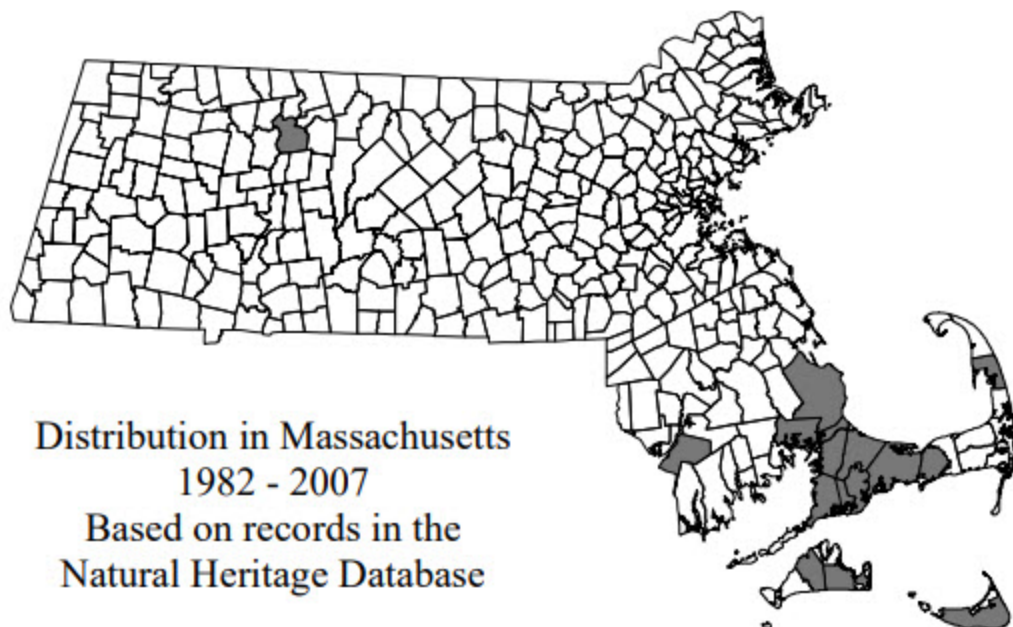
Photo by M.W. Nelson

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Threats

- Habitat loss
- Fire suppression
- Invasion by exotic plants
- Introduced generalist parasitoids
- Insecticide spraying
- Off-road vehicles



Updated June 2007
M.W. Nelson



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

Route 135, Westborough, MA 01581

tel: (508) 389-6360; fax: (508) 389-7891

www.nhesp.org

Gerhard's Underwing

Catocala herodias gerhardi

State Status: **Special Concern**

Federal Status: None

Description: Gerhard's Underwing is a noctuid moth with a wingspan of 55-65 mm. The forewings are grayish-brown with dark longitudinal streaks along the veins, alternating with white streaks distally, and prominent white shading along the costal margin. The hind wings are banded with black and bright crimson, fringed with white.

Habitat: Xeric, oak-dominated woodland, barrens, and scrub habitats on sandy soil or rocky summits and ridges. In Massachusetts, Gerhard's Underwing inhabits open-canopy pitch pine-scrub oak barrens, especially scrub oak thickets; also open oak woodland on Martha's Vineyard.

Life History: Adult moths fly in July and August. Eggs are laid on the stems of scrub oak (*Quercus ilicifolia*), where they overwinter, hatching in early spring. Larvae feed on the catkins and new leaves of scrub oak, and pupate in June.

Range: Gerhard's Underwing occurs in sandplain habitats on Cape Cod and the offshore islands of Massachusetts, on eastern Long Island, New York, and in southern New Jersey; as well as on summits and ridges in western Massachusetts and Connecticut, the lower Hudson Valley of New York, and south through the Appalachian mountains to North Carolina.



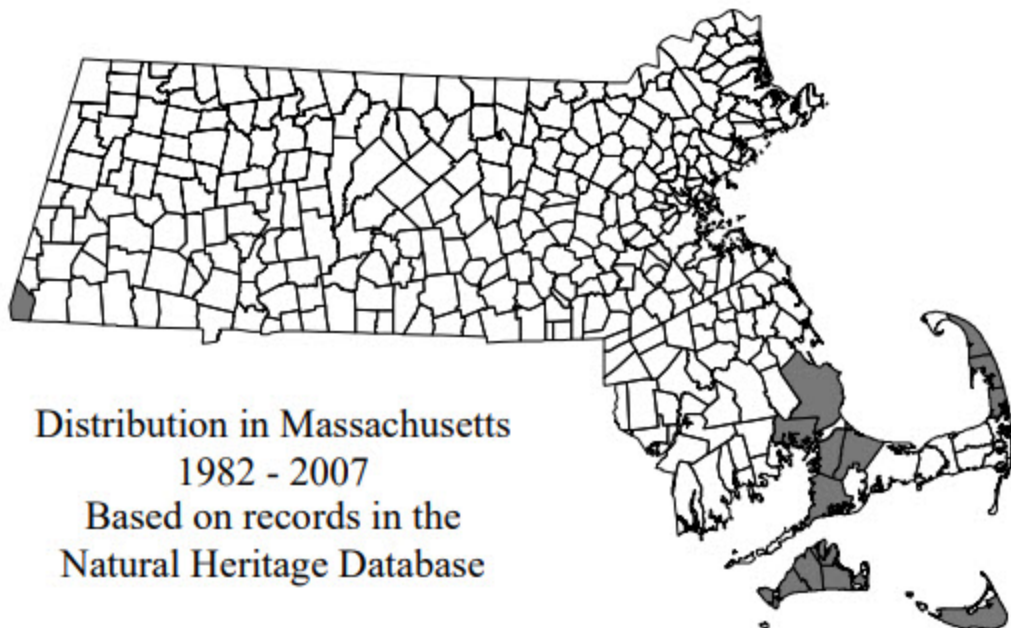
Photo by M.W. Nelson

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Threats

- Habitat loss
- Fire suppression
- Invasion by exotic plants
- Introduced generalist parasitoids
- Insecticide spraying
- Off-road vehicles
- Light pollution





**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Melsheimer's Sack-bearer
*Cicinnus melsheimeri***

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: Melsheimer's Sack-bearer (*Cicinnus melsheimeri*) is a mimallonid moth with a wingspan of 35-50 mm (Covell 1984). The forewing is hooked at the tip, pale, grayish-pink in color, becoming brown toward the outer margin, and overlaid with black speckling. The gray postmedial line is straight, curving inward near the costal margin; the antemedial line is also gray, but toothed and curving more sharply inward at the costa. The reniform spot is a small, gray dash. Like the forewing, the hind wing is pale, grayish-pink in color, becoming brown toward the outer margin, overlaid with black speckling; the postmedial line is gray and straight. On both the forewing and hind wing, the upper layer of scales is underlaid with bright orange, particularly toward the outer margin, which becomes more apparent as the wings wear. The head, thorax, and abdomen match the pale, grayish-pink of the inner portions of the wings, and are also overlaid with black speckling.

HABITAT: Melsheimer's Sack-bearer is more ecologically generalized southward, but in Massachusetts it is restricted to sandplain pitch pine-scrub oak barrens, especially scrub oak thickets. It may also be found in shrubby grasslands and heathlands with a component of scrub oak.



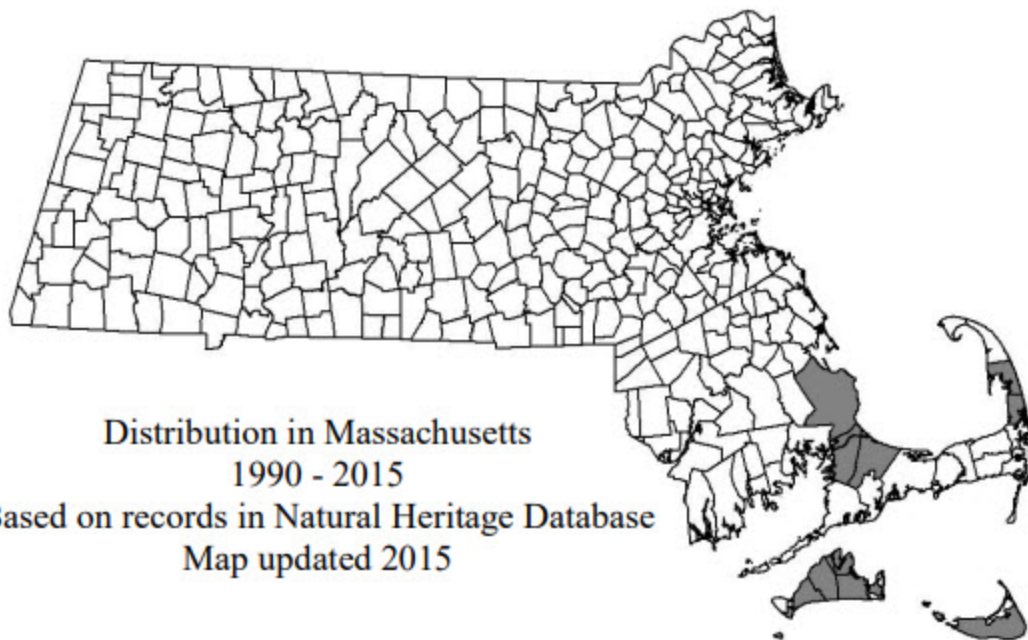
Cicinnus melsheimeri • Specimen from MA: Plymouth Co., Plymouth, adult female collected 26 Jun 2002 by M.W. Nelson, reared from egg, adult emerged 20 Jun 2003

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

LIFE HISTORY: Adult moths fly in June and early July, with the peak flight in late June. Larvae feed on scrub oak (*Quercus ilicifolia*) from summer through fall, constructing a portable, protective shelter ("sack") out of leaves and silk. Larvae overwinter and pupate in the spring.

GEOGRAPHIC RANGE: Melsheimer's Sack-bearer is found from Massachusetts south to Florida, and west to Wisconsin and Texas (Covell 1984). It is rare and local in the northern part of its range, more common from the New Jersey pine barrens southward. In Massachusetts it is restricted to Cape Cod and the offshore islands, west to Plymouth.



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**The Pink-streak
*Dargida rubripennis***

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Pink-streak (*Dargida rubripennis*) is a noctuid moth with a wingspan of 32-37 mm (Covell 1984). The forewing is light tan in color, with a bright pink streak that is narrow at the wing base, gradually broadening across the median area, and further broadening to encompass the entire outer margin; the streak is bisected by a whitish-tan line along the cubital vein. The forewing has an additional pink streak along the outer one-third to one-half of the costal margin, and a black, narrow and elongate basal dash. The hind wing is a tan shade of white. The head, thorax, and abdomen are tan in color; the front of the thorax is frosted with white.

HABITAT: In Massachusetts, the Pink-streak inhabits sandplain grasslands and dunes, and occasionally anthropogenic grasslands such as airports and utility line rights-of-way on sandy soils.

LIFE HISTORY: In Massachusetts, the Pink-streak flies from mid-July to early August. The preferred larval host plant is switchgrass (*Panicum virgatum*). Larvae feed primarily on the developing seeds of this grass, becoming fully grown by late August or early September. The pupa overwinters beneath the surface of the soil.



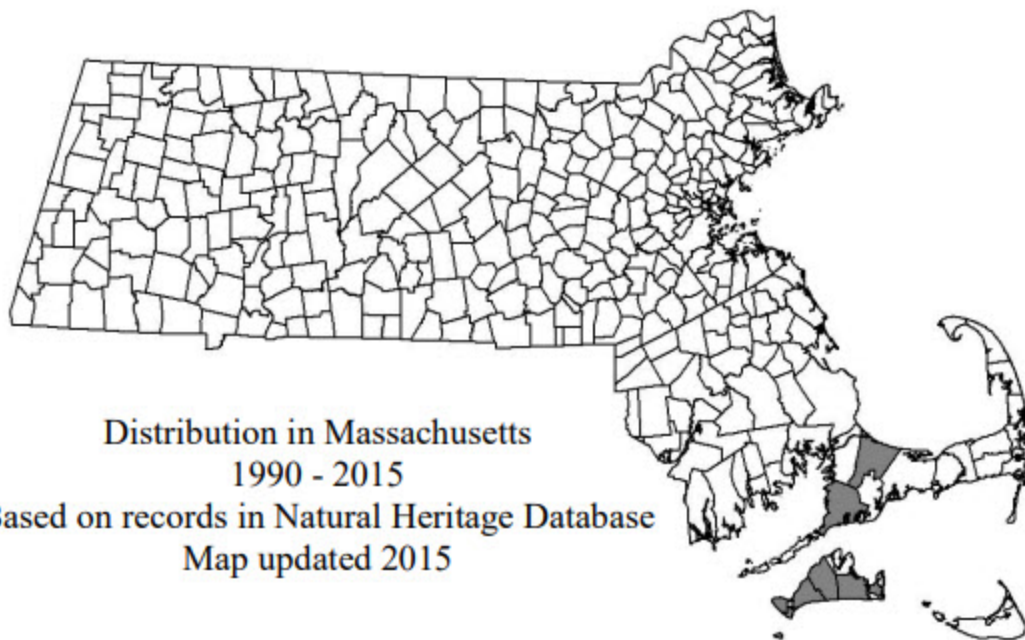
Dargida rubripennis • Specimen from MA: Dukes Co., Chilmark, larva collected 29 Aug 2007 by M.W. Nelson and Tim Simmons, adult emerged 6 Aug 2008

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

GEOGRAPHIC RANGE: The Pink-streak occurs from southeastern Massachusetts south to Florida, and west to Minnesota and Texas (Covell 1984). In Massachusetts, this species is only known to occur on Cape Cod and the island of Martha’s Vineyard.

STATUS AND THREATS: The Pink-streak is threatened by habitat loss and suppression of fire, which is needed to maintain the open structure of its habitat and promote growth of its host plants. Other potential threats include invasion by exotic plants, introduced generalist parasitoids, aerial insecticide spraying, non-target herbiciding, off-road vehicles, and light pollution.



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Water-willow Borer
*Papaipema sulphurata***

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Water-willow Borer (*Papaipema sulphurata*) is a noctuid moth with a wingspan of 32-38 mm. The forewing is yellow, overlaid with darker, orangish-brown, with purplish-brown shading in the basal and terminal areas. The postmedial line is double (the distal line dark, purplish-brown, thicker than the orangish-brown proximal line), largely straight but curving in toward the costa distal to the reniform spot. An orangish-brown, diffuse and faint median line may be present. The antemedial line is orangish-brown in color and double, with the proximal line often obscured by the basal shading. The reniform spot is a large ring, outlined in orangish-brown and filled with yellow matching the ground color of the forewing. The orbicular and claviform spots are relatively large, the orbicular relatively round and the claviform elongate; like the reniform, both are outlined in orangish-brown and filled with yellow. The hind wing is tan, slightly tinged with orange; a faint discal spot may be present. The elongate scales of the head and thorax are a variable mixture of yellow, orangish-brown, and purplish-brown, matching the overall coloration of the forewing. The abdomen is tan, slightly tinged with orange, matching the color to the hind wing. The Burdock Borer (*Papaipema cataphracta*) is very similar, but the forewing is less saturated with the warm, orange tint of the Water-



Papaipema sulphurata • Specimen from MA: Plymouth Co., Carver, collected 16 Sep 2001 by M.W. Nelson

Adult Flight Period in Massachusetts

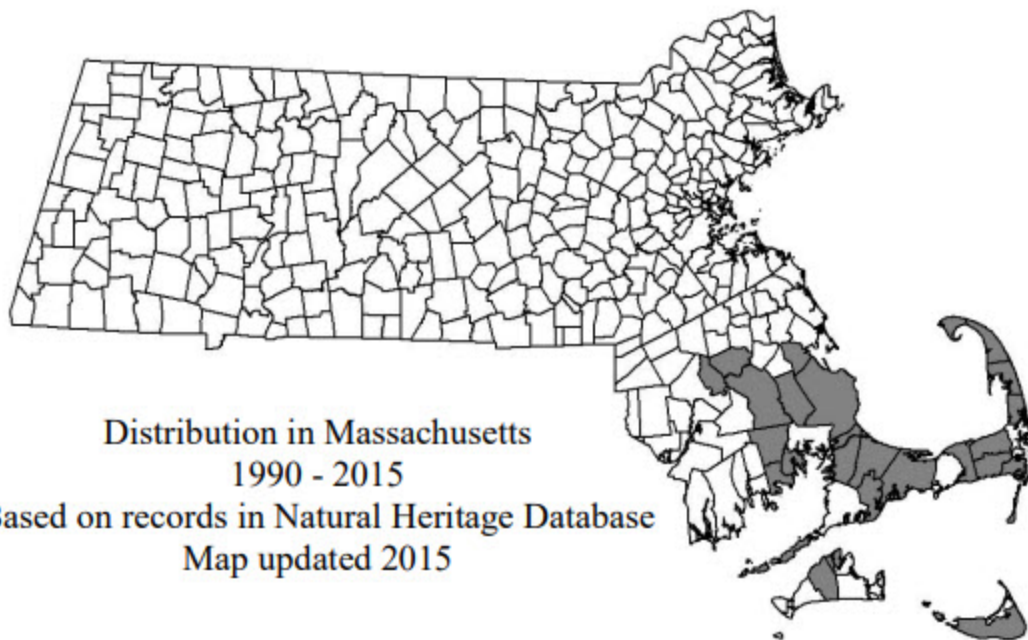
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

willow Borer (Forbes 1954).

HABITAT: The Water-willow Borer inhabits shallow portions of coastal plain wetlands (swamps, edges of lakes and ponds, riparian areas, abandoned cranberry bogs, vernal pools, etc.) where water-willow (*Decodon verticillatus*) grows.

LIFE HISTORY: In Massachusetts, adult Water-willow Borer moths fly in September and early October. Eggs overwinter, hatching in the spring. The larvae bore into and feed internally on the stems of water-willow (*Decodon verticillatus*), becoming fully grown and pupating in late August or early September.

GEOGRAPHIC RANGE: The Water-willow Borer is endemic to southeastern Massachusetts, occurring in



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Chain-dotted Geometer
*Cingilia catenaria***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Chain-dotted Geometer (*Cingilia catenaria*) is a geometrid moth with a wingspan of 30-40 mm (Forbes 1948). Both the forewing and the hind wing are white with postmedial and terminal “chains” (lines) of black dots. The forewing also has an antemedial line of black dots, and a reniform spot consisting of a small, black dot. The discal spot on the hind wing is a similar black dot. There are bright yellow patches on the head and the thorax at the base of the forewing; the body is otherwise white. The larva is a bright yellow inchworm with thin black stripes; the spiracles are black, surrounded by white patches flanked with black; it grows to a length of 35 mm (Wagner 2005).

HABITAT: In Massachusetts, the Chain-dotted Geometer inhabits coastal plain shrublands, including sandplain grasslands and heathlands, dunes, bluffs, and maritime shrublands; occasionally also open pitch pine/scrub oak barrens.

LIFE HISTORY: In Massachusetts, adult moths fly in September and early October, with the peak flight in late September. Eggs overwinter and hatch in the spring. Larvae feed from late June through early August on a variety of shrubs, with an apparent preference for



Cingilia catenaria • Specimen from MA: Barnstable Co., Sandwich, larva collected 4 Aug 2003 by K. Wilson, adult emerged 28 Sep 2003

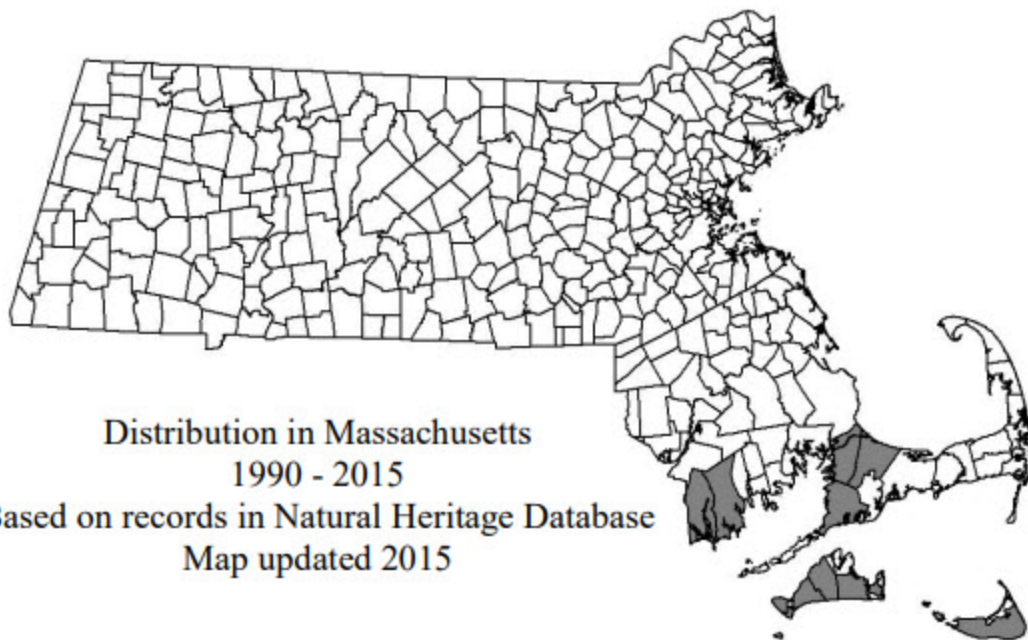
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

huckleberry (*Gaylussacia*), blueberry (*Vaccinium*), bayberry (*Morella pensylvanica*), and sweet gale (*Myrica gale*).

GEOGRAPHIC RANGE: The Chain-dotted Geometer is found from Nova Scotia and New Brunswick south to Maryland, and west to Alberta, Minnesota, and Ohio (Covell 1984, McGuffin 1987, Wagner 2005). Formerly more common and widely distributed in Massachusetts, this species is now restricted to locations near the coast in the southeastern part of the state.

STATUS AND THREATS: The Chain-dotted Geometer is threatened by habitat loss and fire suppression. Other potential threats include introduced generalist parasitoids, aerial insecticide spraying, non-target herbiciding, and off-road vehicles.



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for ‘endangered wildlife conservation’ on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Coastal Heathland Cutworm
*Abagrotis benjamini***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Coastal Heathland Cutworm (*Abagrotis benjamini*) is a noctuid moth with a forewing length of 13-16 mm (Lafontaine 1998). The forewing ground color is reddish-brown, the outer margin frosted with a band of pale gray; there are two black wedges at the costal margin, one above the reniform spot and another above the antemedial line. The postmedial and antemedial lines are obscure, consisting of scales slightly more pale than the ground color. The reniform and orbicular spots range from faintly to prominently darker than the ground color. The hind wing is grayish-brown, darker toward the outer margin, with an obscure discal spot. The head and thorax are concolorous with the forewing ground color, and the abdomen is concolorous with the hind wing.

HABITAT: In Massachusetts, the Coastal Heathland Cutworm inhabits xeric and open coastal habitats on sandy soil, including sandplain grasslands, dunes and bluffs, coastal heathlands or other maritime shrublands, and occasionally open pitch pine/scrub oak barrens.

LIFE HISTORY: Adult Coastal Heathland Cutworm moths emerge from late June through July, with late-emerging or summer-aestivating individuals flying through the end of September. Larvae overwinter partially



Abagrotis benjamini • Specimen from CT: New London Co., Old Lyme, collected 21 Jul 2004 by G. Tyler

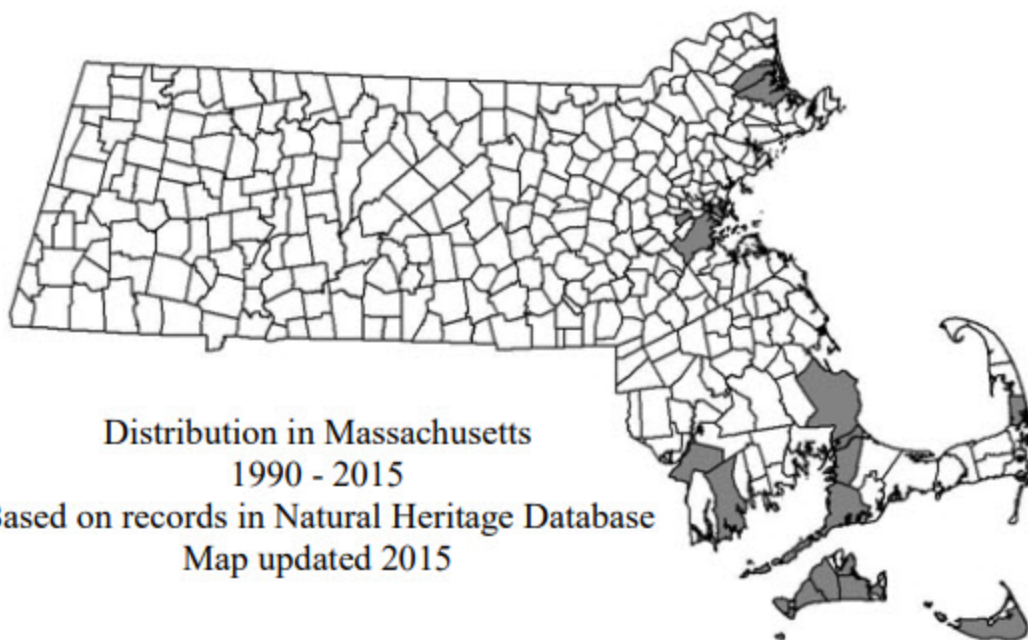
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

grown, and resume feeding in the spring. The larval host plants in Massachusetts are undocumented, but probably consist of a variety of low-growing shrubs. In the western U.S., larvae have been found on shadbush (*Amelanchier*) and currant (*Ribes*) (Crumb 1956).

GEOGRAPHIC RANGE: The Coastal Heathland Cutworm is widely distributed across western North America, from southern British Columbia to southern California, east to Alberta and New Mexico; in the East, it is limited to the Atlantic Coastal Plain from New Brunswick south to New Jersey (Lafontaine 1998). In Massachusetts, it occurs along the coast from the North Shore south to Boston and Plymouth, on Cape Cod and the offshore islands, and west to Dartmouth.

STATUS AND THREATS: The Coastal Heathland Cutworm is threatened by habitat loss and fire



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

Route 135, Westborough, MA 01581

tel: (508) 389-6360; fax: (508) 389-7891

www.nhesp.org

Coastal Swamp Metarranthis

Metarranthis pilosaria

State Status: **Special Concern**

Federal Status: None

Description: The Coastal Swamp Metarranthis is a geometrid moth with smoothly curved postmedian lines on all four wings, the area inside the postmedian lines reddish-brown and the area outside pinkish-tan; the reniform spots are absent, and the discal spots small and black; all four wings are peppered with black, and are bright orange ventrally. The wingspan is 24-28 mm.

Habitat: In Massachusetts the Coastal Swamp Metarranthis inhabits acidic swamps and bogs, as well as sandplain pitch pine/scrub oak barrens and heathlands.

Life History: Adult moths fly in June and early July. Larvae feed on blueberry (*Vaccinium*) in dry habitats, and blueberry, cranberry (*Vaccinium*), and probably also leatherleaf (*Chamaedaphne calyculata*) or other heaths in wet habitats. Larvae feed through the summer, and pupate in September. The pupa overwinters.

Range: The Coastal Swamp Metarranthis is endemic to eastern Massachusetts, Rhode Island, and southern New Jersey. In Massachusetts it is found on the southeastern coastal plain, and in a few inland bogs.



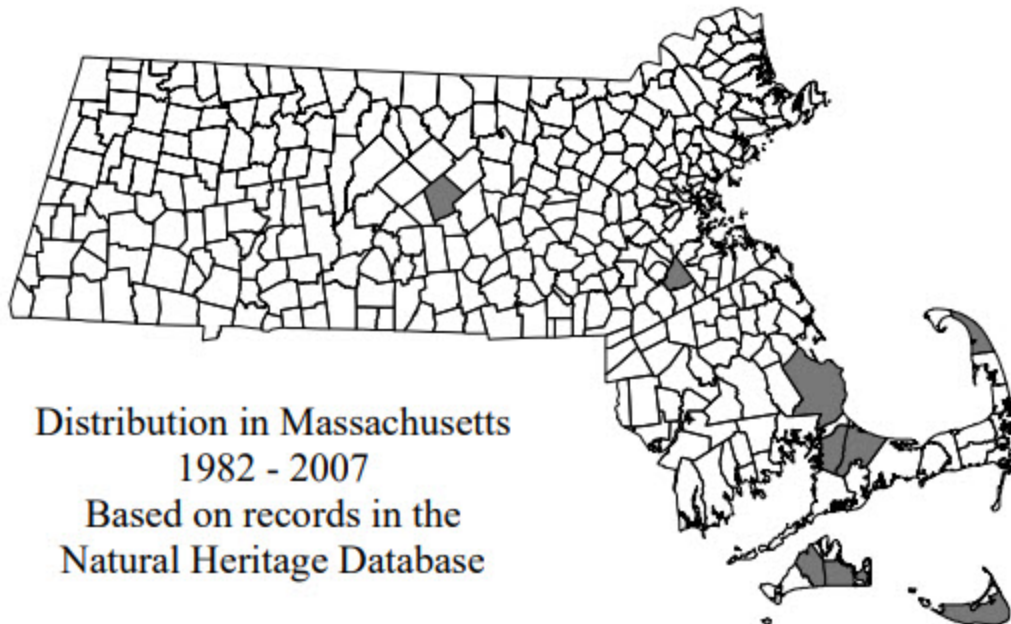
Photo by M.W. Nelson

Adult Flight Period in Massachusetts


Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Threats

- Habitat loss
- Fire suppression
- Hydrologic alteration
- Invasion by exotic plants
- Introduced generalist parasitoids
- Insecticide spraying
- Off-road vehicles
- Light pollution



Distribution in Massachusetts
1982 - 2007
Based on records in the
Natural Heritage Database



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
tel: (508) 389-6360, fax: (508) 389-7891
www.nhesp.org

Ostrich Fern Borer

Papaipema sp. 2 near *pterisii*

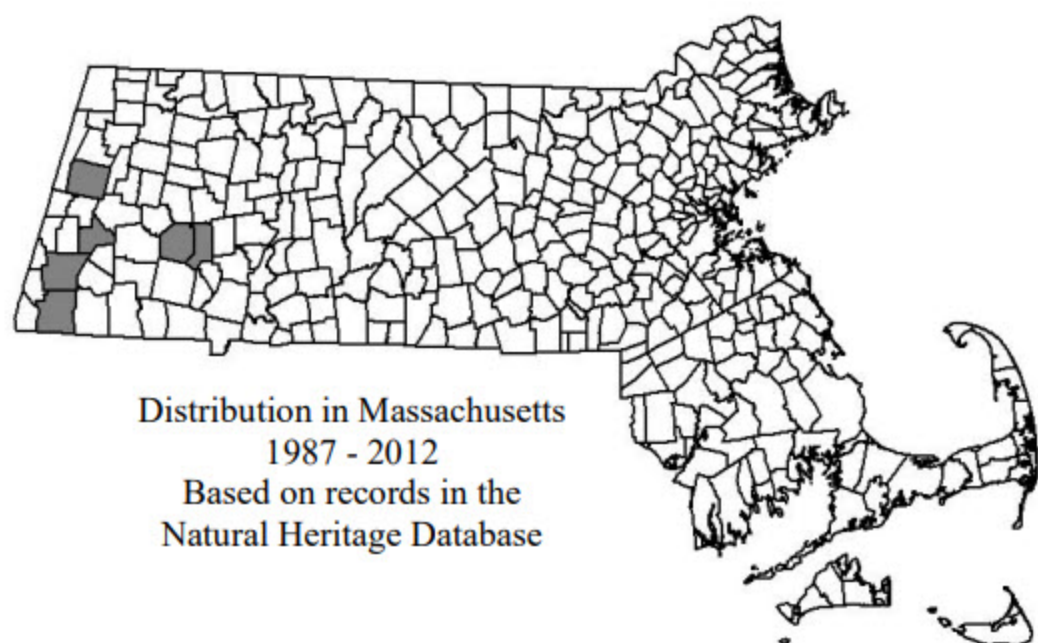
State Status: **Special Concern**
Federal Status: **None**

Description: Not formally described in published scientific literature, the Ostrich Fern Borer is a noctuid moth with bright, orange-yellow forewings overlaid with darker, brownish-orange, sometimes with pink shading towards the outer wing margins. Some individuals are a lighter, more faded yellowish-orange, or a darker, more brownish-orange. The reniform spot is large and white with an orange center; the orbicular spot is white, with two identical, merged spots immediately below. The hind wings are a uniform pinkish-tan. Wingspan is 32-36 mm. The larva has an orange to orangish-brown head and prothorax, and a nondescript, cream-colored body with small black spots and spiracles; it grows to a length of ~35 mm.

Habitat: The Ostrich Fern Borer inhabits mature floodplain forest and wooded swamps with Ostrich Fern (*Matteuccia struthiopteris*).

Life History: In Massachusetts, Ostrich Fern Borer moths fly from late August through late September. Eggs overwinter, and larvae hatch in spring. The larvae bore into and feed on the stems and roots of Ostrich Fern (*Matteuccia struthiopteris*), becoming fully grown and pupating by August.

Geographic Range: The Ostrich Fern Borer is currently known from six towns in Massachusetts, in Berkshire and western Hampshire and Hampden Counties. Massachusetts populations are at the eastern edge of a relatively small range that extends north to Vermont, south to Pennsylvania, and west to Wisconsin (NatureServe 2012).



Papaipema sp. 2 near *pterisii* • Specimen from MA: Berkshire Co., Sheffield, larva collected 25 Jul 2009 by M.W. Nelson, adult emerged 6 Sep 2009

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Status and Threats: The Ostrich Fern Borer is threatened by habitat loss and hydrologic alteration that disrupts the flooding regime in its habitat. This species prefers mature floodplain forest with Ostrich Fern in a shaded to partially shaded microhabitat, so timber harvest may be a threat. Other potential threats include invasion by exotic plants, insecticide spraying, and light pollution.

Literature Cited

NatureServe. 2012. NatureServe Explorer: an online encyclopedia of life. Version 7.1. NatureServe, Arlington, Virginia. <http://www.natureserve.org/explorer/>.

Updated December 2012
M.W. Nelson

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Pine Barrens Zale
*Zale lunifera***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Pine Barrens Zale (*Zale lunifera*) is an erebid moth with a wingspan of 30-34 mm. The forewing is mottled with pale and dark grays, paler in the subterminal area and between the median area and the antemedial line, darker between the subterminal area and the median area and in the basal area. The brownish-black postmedial line is relatively thin and waved; the brown to brownish-black antemedial line is thicker, also waved. A brownish-black apical dash may be present. The yellowish-brown reniform spot is narrow and elongate, the black orbicular spot small and round. The hind wing is banded with pale and dark brownish-grays; a faint discal spot may be present. The head and thorax is mottled with shades of gray and brown matching those on the forewing, and the abdomen is brownish-gray, similar in color to the hind wing. The very similar Intent Zale (*Zale intenta*) is slightly larger than the Pine Barrens Zale, often with a more striate wing pattern; the forewing antemedial line is less wavy, and the orbicular spot faint or absent (Schmidt 2010). Genitalic dissection may be necessary for definitive identification.

HABITAT: In Massachusetts, the Pine Barrens Zale inhabits sandplain pitch pine-scrub oak barrens, especially scrub oak thickets.



Zale lunifera • Specimen from MA: Plymouth Co., Plymouth, collected 10 Jun 2003 by M.W. Nelson

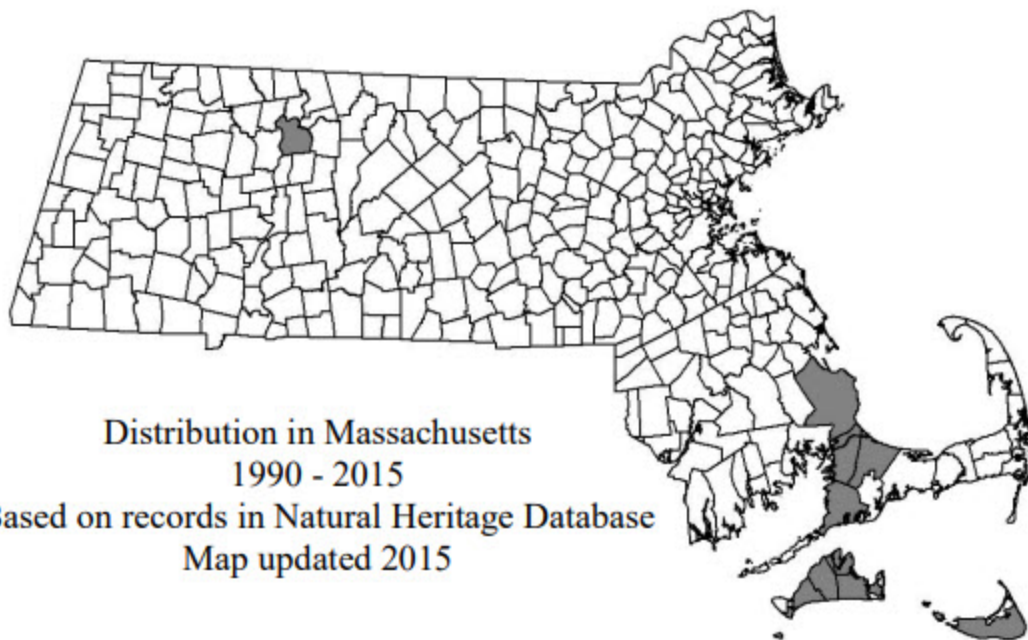
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

LIFE HISTORY: In Massachusetts, adult Pine Barrens Zale moths fly from mid-May to late June. Eggs hatch soon after they are laid, and the larvae feed on new growth of scrub oak (*Quercus ilicifolia*). Larvae pupate by late July, and pupae overwinter.

GEOGRAPHIC RANGE: The Pine Barrens Zale is locally distributed along the Atlantic and Gulf Coastal Plains from southern Maine south to Florida and west to Mississippi (Schmidt 2010). In Massachusetts, this species occurs in the southeastern part of the state and in the Connecticut River Valley.

STATUS AND THREATS: The Pine Barrens Zale is threatened by habitat loss and suppression of fire, which is needed to maintain the open structure of its habitat and promote growth of its host plant. Other potential threats include introduced generalist parasitoids, aerial insecticide



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Pink Sallow Moth
*Psectraglaea carnosa***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Pink Sallow Moth (*Psectraglaea carnosa*) is a noctuid moth with a wingspan of 38-45 mm (Forbes 1954). The forewing is bright, reddish-pink; a variable amount of gray shading may be present from the median area to the inner margin. A faint yellow subterminal line is present, and the reniform and orbicular spots are faintly outlined in yellow. The hind wings are light tan in color, shaded with pink. The head and thorax are concolorous with the reddish-pink of the forewings, and the abdomen is light tan shaded with pink, similar in color to the hind wings.

HABITAT: The Pink Sallow Moth is found in a variety of habitats with ericaceous vegetation, including pitch-pine scrub oak barrens and heathlands on sandplains or rocky summits and ridges, acidic bogs and swamps, and occasionally logged areas, old fields, or utility line rights-of-way.

LIFE HISTORY: Adult Pink Sallow Moths fly in late September and October. Eggs overwinter, hatching in the spring. Larvae feed on lowbush blueberries (*Vaccinium angustifolium* and *V. pallidum*) and possibly other *Vaccinium* species from spring through early summer, pupating by July and diapausing until the fall.



Psectraglaea carnosa • Specimen from MA: Plymouth Co., Plymouth, collected 2 Oct 2002 by M.W. Nelson

Adult Flight Period in Massachusetts

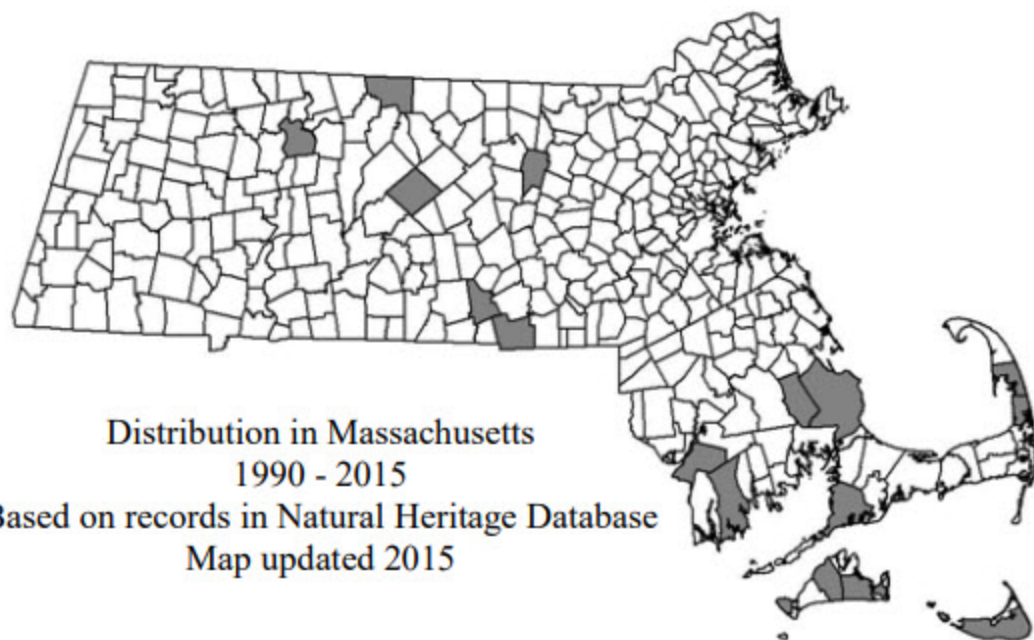
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

GEOGRAPHIC RANGE: The Pink Sallow Moth is endemic to northeastern North America, ranging from Maine south to Maryland, and west to Pennsylvania, Michigan, and Wisconsin; it is rare and spottily distributed throughout this range (Schweitzer et al. 2011). In Massachusetts, this species occurs on the southeast coastal plain, as well as in Worcester and Franklin Counties.

STATUS AND THREATS: The Pink Sallow Moth is threatened by habitat loss and fire suppression. Other potential threats include introduced generalist parasitoids, aerial insecticide spraying, non-target herbiciding, off-road vehicles, and light pollution.

REFERENCES:

Forbes, W.T.M. 1954. *Lepidoptera of New York and Neighboring States*. Part III. Memoir 329, Cornell



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Scrub Euchlaena
*Euchlaena madusaria***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Scrub Euchlaena (*Euchlaena madusaria*) is a geometrid moth with a wingspan of 28-40 mm (McGuffin 1981). Both the forewing and the hind wing are light tan proximal to the postmedial line, and darker tan with black speckling distal to the postmedial line. The postmedial line on both forewing and hind wing is prominent, a rusty, reddish-brown color, and complete and smoothly curved from the costal margin to the inner margin. The antemedial line is brown and dentate on the forewing; on the hind wing it is weak to absent. The reniform and discal spots are reduced to small, solid, brownish-black dots, occasionally obscure to absent. The forewing has a broad, cream-colored apical dash. The fringe of both the forewing and the hind wing is rusty, reddish-brown in color, matching the color of the postmedial line. The head, thorax, and abdomen are all light tan in color, matching the wings proximal to the postmedial line. In Massachusetts, the pale spring brood of the Deep Yellow Euchlaena (*Euchlaena amoenaria*) may be confused with the Scrub Euchlaena. On the underside of the hind wing of the Scrub Euchlaena, the outer postmedial line forms a wide loop as compared to the Deep Yellow Euchlaena, which has a narrow loop (Forbes 1948).



Euchlaena madusaria • Specimen from MA: Hampden Co., Chicopee, collected 4 Jun 2002 by M.W. Nelson

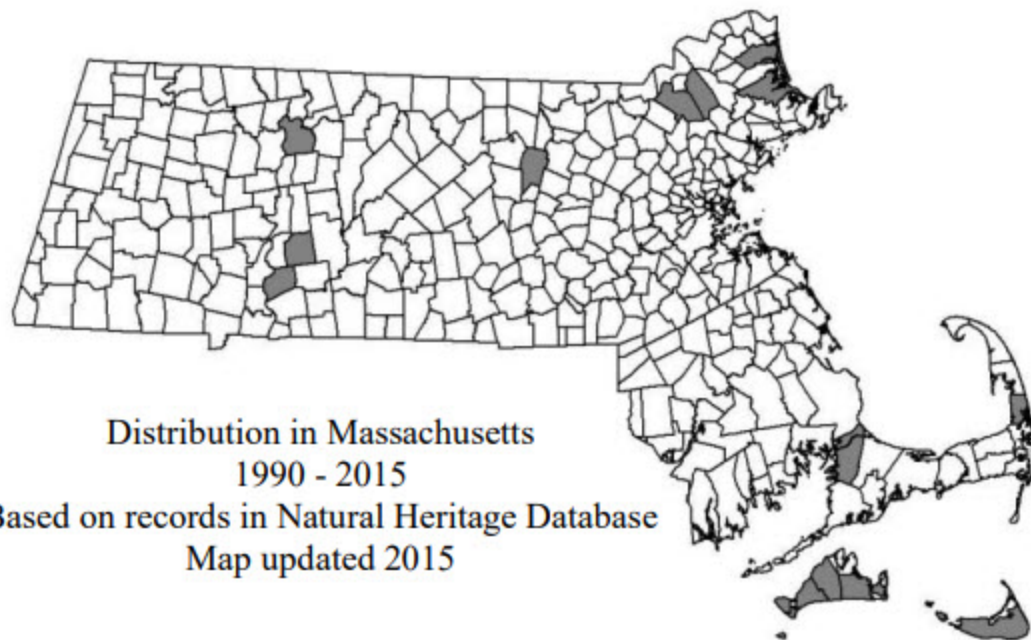
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

HABITAT: In Massachusetts, the Scrub Euchlaena inhabits sandplain pitch pine-scrub oak barrens, heathlands, and shrubby grasslands.

LIFE HISTORY: In Massachusetts, the Scrub Euchlaena has two broods per year, the first flying from late May through late June, and the second flying in August. Larvae are probably somewhat polyphagous, but the habitat associations of the Scrub Euchlaena in Massachusetts indicate a likely preference for lowbush blueberries (*Vaccinium angustifolium* and *V. pallidum*). Larvae from the second annual generation overwinter partially grown, completing development in the spring.

GEOGRAPHIC RANGE: The Scrub Euchlaena ranges from Nova Scotia south to Florida, and west to British Columbia and Texas (Forbes 1948, McGuffin 1981). In Massachusetts, the Scrub Euchlaena is known to occur in



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

Route 135, Westborough, MA 01581

tel: (508) 389-6360; fax: (508) 389-7891

www.nhesp.org

Waxed Sallow Moth

Chaetagnaea cerata

State Status: **Special Concern**

Federal Status: None

Description: The Waxed Sallow is a noctuid moth with a wingspan of 35-38 mm. The forewings are grayish-brown, tinted with rose, with narrow yellow lines along the main veins, maroon antemedial and postmedial lines, and round orbicular and reniform spots narrowly outlined in yellow. The hind wings are nondescript, grayish-brown. Wings of freshly emerged individuals have a waxy sheen.

Habitat: The Waxed Sallow Moth inhabits pitch pine-scrub oak barrens and heathlands on sandplains or rocky summits and ridges; occasionally also coastal forest with a heath understory, or maritime shrublands.

Life History: Adult moths fly mainly in October, occasionally into early November. Eggs overwinter, hatching in early spring. Larvae feed on huckleberry (*Gaylussacia baccata*), lowbush blueberries (*Vaccinium angustifolium* and *V. pallidum*), and possibly other low-growing shrubs. Larvae pupate in late spring or early summer, diapausing through the summer and early fall.

Range: The Waxed Sallow Moth is found from Maine (at least historically) west to Manitoba and south to West Virginia; populations are very localized and disjunct within this range. In Massachusetts it is restricted to the coastal plain in the southeastern part of the state.



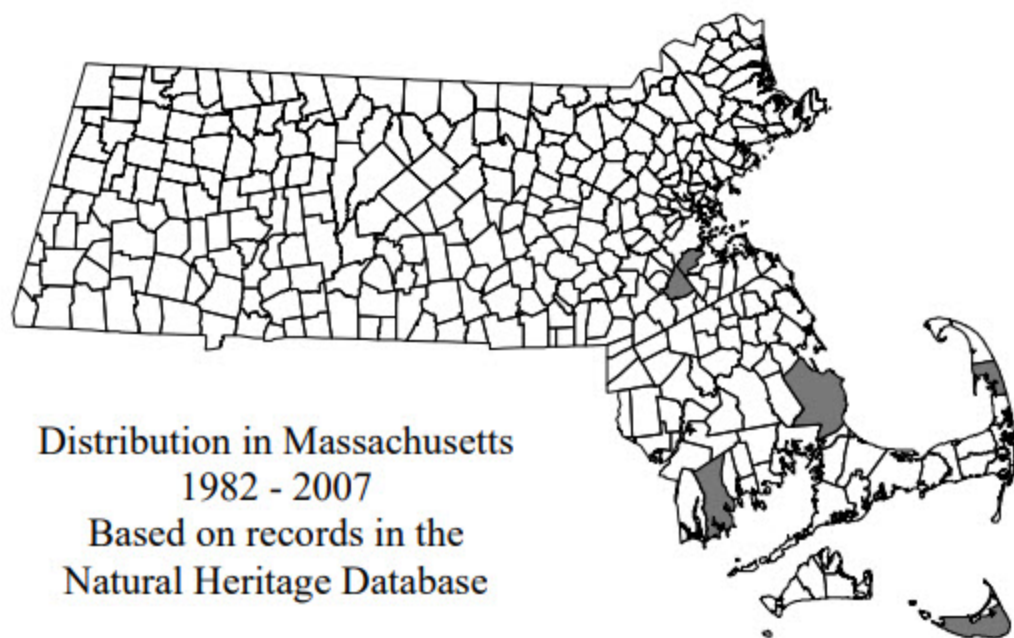
Photo by D.L. Wagner

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Threats

- Habitat loss
- Fire suppression
- Invasion by exotic plants
- Introduced generalist parasitoids
- Insecticide spraying
- Off-road vehicles
- Light pollution



Distribution in Massachusetts
1982 - 2007
Based on records in the
Natural Heritage Database



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Collared Cynia
*Cynia collaris***

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Collared Cynia (*Cynia collaris*) is an erebid moth with a wingspan of 28-36 mm (Covell 1984). The forewing and hind wing are concolorous and without pattern, ranging from solid white with a hint of gray, to solid gray (as in the individual figured at right). There is a bright yellow streak along the costa of the forewing, which does not fully extend to the wing apex, as it does in the similar Delicate Cynia (*Cynia tenera*). The head of the Collared Cynia is the same bright yellow as the costa of the forewing, the thorax is concolorous with the white or gray wings, and the abdomen is bright yellow with a dorsal line of black dots. The caterpillar is bright orange in color, with tufts of gray setae (hairs) evenly distributed over the thorax and abdomen; it reaches a length of about 32 mm.

HABITAT: In Massachusetts, the Collared Cynia inhabits sandplain grasslands and heathlands.

LIFE HISTORY: In Massachusetts, the Collared Cynia has two broods, the first flying in late May and early June, and the second flying in late July and early August. Eggs are laid on milkweeds (*Asclepias*); in Massachusetts, the preferred host plant is orange milkweed (*Asclepias tuberosa*). The bright orange color of the caterpillar



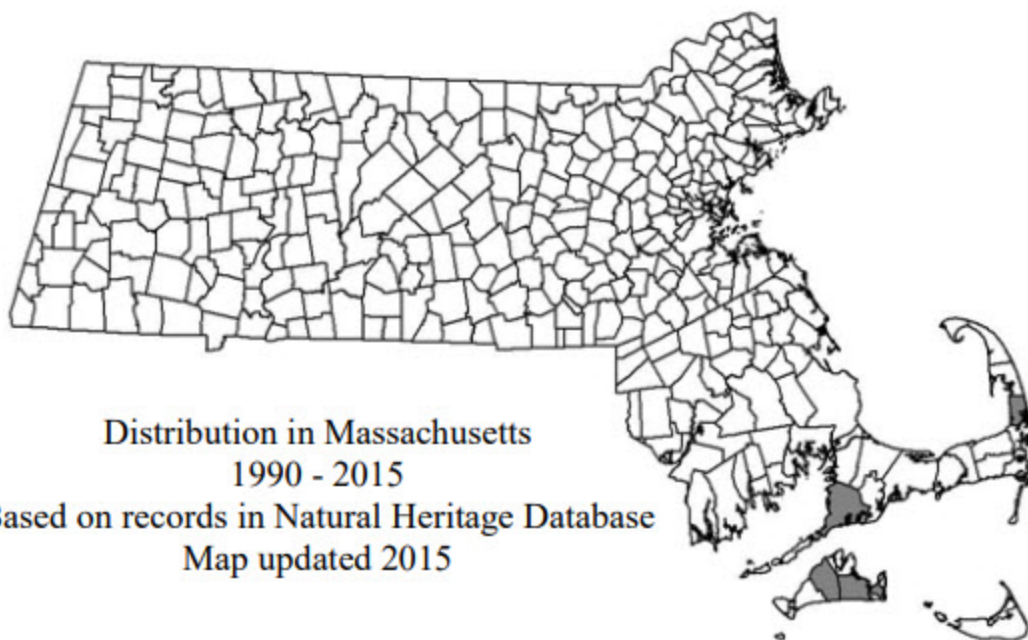
Cynia collaris • Specimen from MA: Barnstable Co., Falmouth, larva collected 10 Sep 2008 by M.W. Nelson and J. Garrett, adult emerged 25 May 2009

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

matches the flowers of orange milkweed, providing crypsis when it is on the flowers. When the caterpillar is on the foliage or stem of its host plant, the bright orange color provides a warning to potential predators, as the larva's tissues sequester distasteful and poisonous cardenolides acquired from the host plant (Nishio 1981). The pupa overwinters in a cocoon made from setae plucked from the caterpillar's own body, woven together with silk.

GEOGRAPHIC RANGE: The Collared Cynia occurs from Massachusetts south to Florida, and west to South Dakota and Texas (Covell 1984). In Massachusetts, this species is restricted to Cape Cod and Martha's Vineyard.



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581

tel: (508) 389-6360, fax: (508) 389-7891

www.nhesp.org

Pine Barrens Lycia

Lycia ypsilon

State Status: **Threatened**

Federal Status: **None**

Description: The Pine Barrens Lycia (*Lycia ypsilon*) is a geometrid moth with a wingspan of 30-35 mm in the male (Covell 1984); the wings of the female are rudimentary and non-functional. In the male, both the forewing and the hind wing are gray, with black, smoothly-curved postmedial and antemedial lines. On the forewing, the median area is white, bisected by a black, relatively straight and wide median line. The postmedial line is margined by a brown band distally, and brown shading is present proximal to the antemedial line. The reniform and discal spots are reduced to small, solid, black dots; the reniform spot may be obscured by the median line. White subterminal lines are present on the forewing and the hind wing, but may be obscure on the hind wing. In both sexes, the thorax and abdomen are densely hairy, gray or grayish-tan in color, with black, paired dots on the dorsum of each abdominal segment.

Habitat: In Massachusetts, the Pine Barrens Lycia inhabits open, shrubby areas within scrub oak barrens.

Life History: In Massachusetts, male Pine Barrens Lycia moths fly in May. Females ascend shrub and tree trunks and emit pheromone, waiting for males to find them by scent. The larval host plants are undocumented in Massachusetts; this species feeds on rose family plants (Rosaceae) elsewhere. Larvae are fully grown by July (Forbes 1948). Pupae overwinter.

Geographic Range: In Massachusetts, the Pine Barrens Lycia occurs on Martha's Vineyard and inner Cape Cod. Its range extends south to Florida, and west to Minnesota and Texas (Covell 1984).



Lycia ypsilon, male • Specimen from FL: Nassau Co., Fernandina Beach, collected 3 Mar 2000 by B.D. Williams

Adult Flight Period in Massachusetts

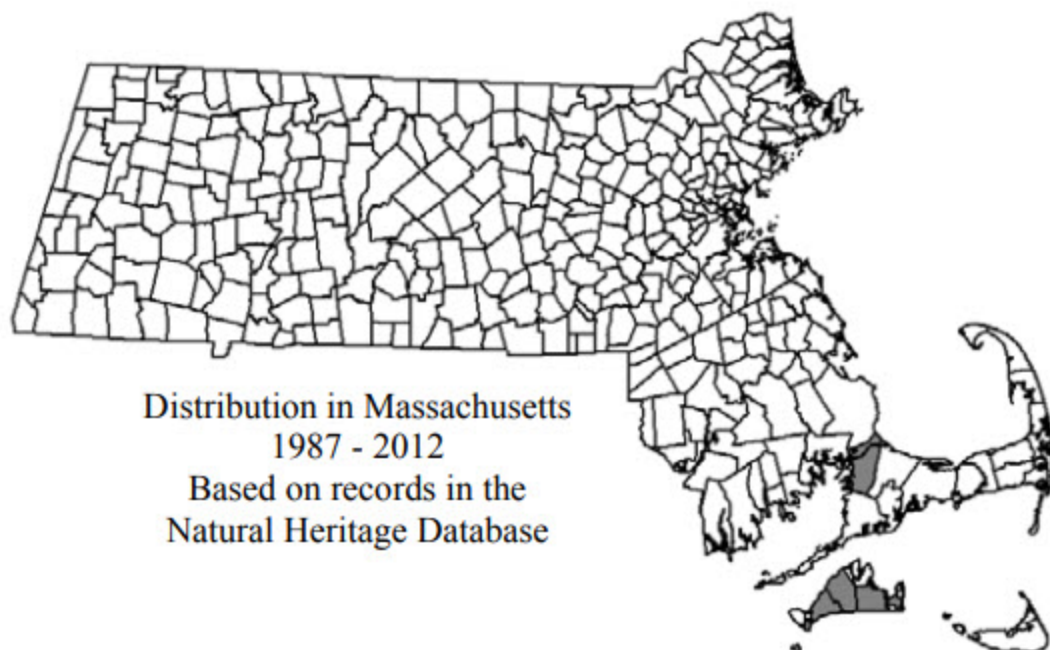
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Status and Threats: The Pine Barrens Lycia is threatened by habitat loss and suppression of fire, which is needed to maintain the open structure of its habitat. Other potential threats include invasion by exotic plants, introduced generalist parasitoids, insecticide spraying, off-road vehicles, and light pollution.

Literature Cited

- Covell, C.V. 1984. *A Field Guide to Moths of Eastern North America*. Peterson Field Guide Series. Houghton Mifflin, Boston, Massachusetts. 496 pp.
- Forbes, W.T.M. 1948. *Lepidoptera of New York and Neighboring States*. Part II. Memoir 274, Cornell University Agricultural Experiment Station, Ithaca, New York. 263 pp.

Acknowledgements: Massachusetts observation data provided by local lepidopterists, with multiple contributions by P.Z. Goldstein and M. Mello. Fact sheet authored by M.W. Nelson, NHESP Invertebrate Zoologist, October 2012.



Updated October 2012

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Pine Barrens Speranza
*Speranza exonerata***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Pine Barrens Speranza (*Speranza exonerata*) is a geometrid moth with a forewing length of 11-13 mm (Ferguson 2008). The forewing is pale grayish-brown in color, peppered with dark brown to black scales, and with faint brown postmedial, median, and antemedial lines, all of which may be obscure in some (particularly worn) individuals. The postmedial, median, and antemedial lines tend to be slightly darker and more pronounced in the female as compared to the male. The hind wing is pale yellow, speckled with brown; in some individuals (particularly females), the brown speckling may be more pronounced, and concentrated to form a postmedial line, median line, and discal spot. The discal spot is typically present in the male, but may be obscure. The head is brownish-orange in color, the thorax concolorous with the grayish-brown of the forewings, and the abdomen tan. The male Sulphur Angle Moth (*Speranza sulphurea*) is similar to the male Pine Barrens Speranza; however, the forewing of the former is more evenly colored, typically without lines, or with only a faint and incomplete postmedial line.

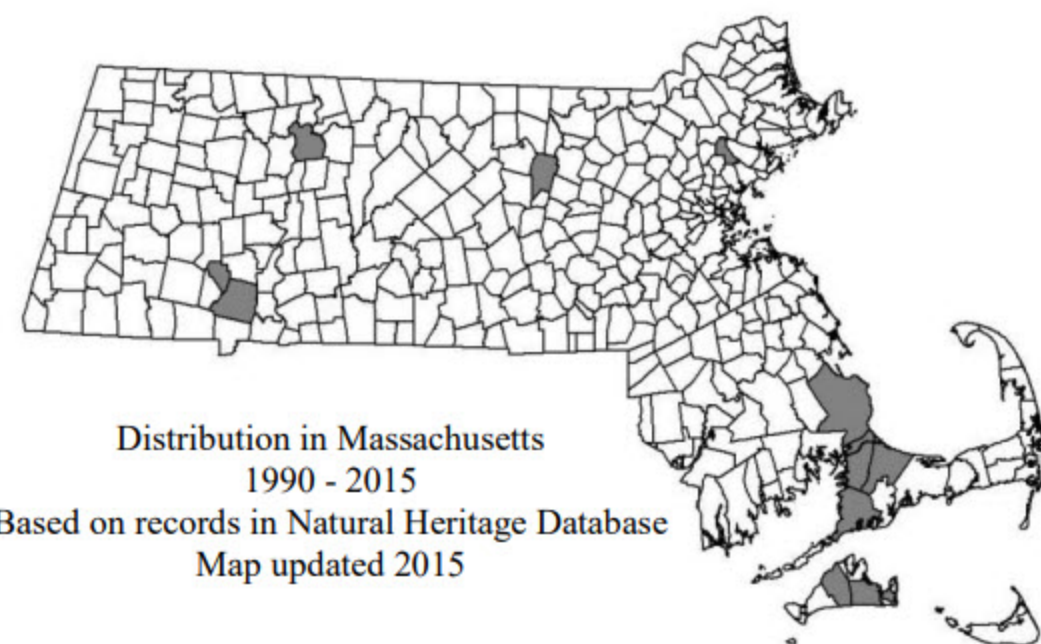
HABITAT: In Massachusetts, the Pine Barrens Speranza inhabits pitch pine-scrub oak barrens on sandplains and rocky summits and ridges.



Speranza exonerata, male • Specimen from MA: Plymouth Co., Plymouth, adult female collected 3 Jul 2008 by M.W. Nelson, reared from egg, adult emerged 29 Jun 2009



Speranza exonerata, female • Specimen from MA: Plymouth Co., Plymouth, adult female collected 3 Jul 2008 by M.W. Nelson, reared from egg, adult emerged 29 Jun 2009



Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Dune Sympistis
*Sympistis riparia***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Dune Sympistis (*Sympistis riparia*) is a noctuid moth with a wingspan of 30-35 mm (Forbes 1954). The forewing is olive tan in color, frosted with white scales, particularly toward the costal margin; the subterminal area has a series of faint to prominent black dashes, each outlined with white, extending from the wing apex to the anal angle. The forewing has a black basal dash that extends into a white, elongate claviform spot. The orbicular spot is also white and elongate, finely outlined with black. The reniform spot is obscure, consisting of a diffuse patch of white scales, often with a small black dot at the inner edge. The forewing fringe is checkered with alternating olive tan and white scales. The hind wing is tan, pale proximally and darker toward the outer margin, with a faint discal spot and white fringe. The head, thorax, and abdomen are all tan, frosted with white.

HABITAT: In Massachusetts, the Dune Sympistis inhabits coastal dunes, dunegrass grasslands, and bluffs, as well as coastal sandplain grasslands and heathlands.

LIFE HISTORY: In Massachusetts, adult Dune Sympistis moths fly from mid-June to mid-July, with stragglers into late July. The larval host plant is undocumented. Species of *Sympistis* overwinter in either



Sympistis riparia • Specimen from MA: Barnstable Co., Wellfleet, collected 18 Jun 2001 by M.W. Nelson

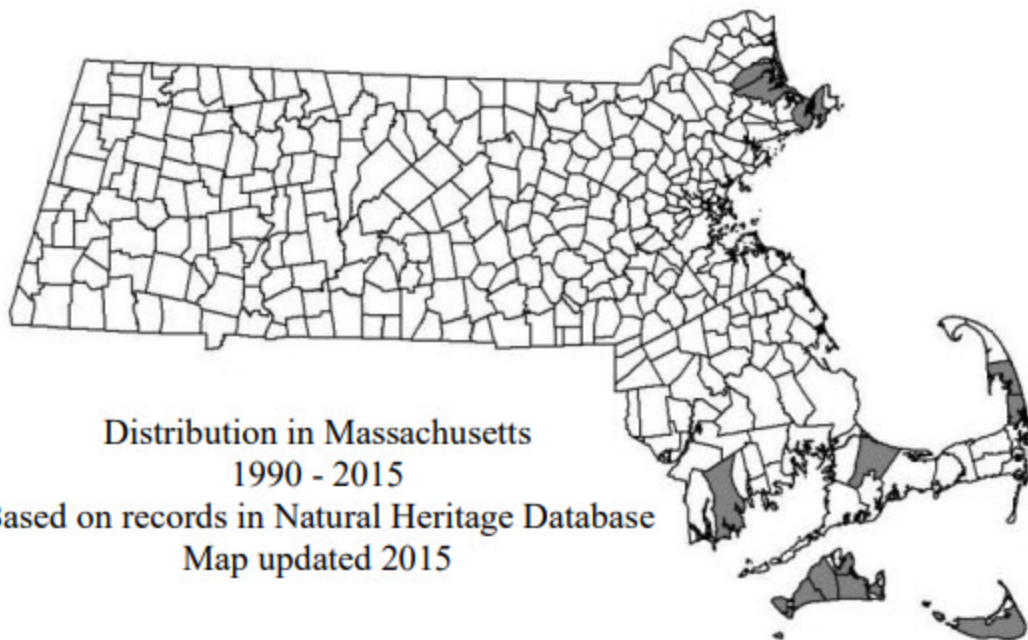
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

the egg or pupal stage (Wagner et al. 2011).

GEOGRAPHIC RANGE: The extent of the global range of the Dune Sympistis is unclear due to confusion with several closely related species (McDunnough 1941, Troubridge & Crabo 1998), but at least consists of the coastal Atlantic region from the Canadian Maritime Provinces south to North Carolina. Specimens from the Great Lakes States are transitional in wing pattern to the western *Sympistis major* (Forbes 1954). Specimens from west of the Great Lakes States likely represent *Sympistis major*, or another closely related species. In Massachusetts the Dune Sympistis occurs along the coast, in both the northeastern and southeastern parts of the state.

STATUS AND THREATS: The Dune Sympistis is threatened by habitat loss and fire suppression. Other potential threats include introduced generalist parasitoids,



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Drunk Apamea Moth
*Apamea inebriata***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Drunk Apamea Moth (*Apamea inebriata*) is a noctuid moth with a forewing length of 15-19 mm (Ferguson 1977). The forewing is longitudinally streaked with straw-yellow along the costal margin, reddish-brown through the median area, black between the median area and the inner margin, and whitish-gray along the inner margin, giving an overall appearance that is cryptic on dead wood (Mikkola et al. 2009). The reniform spot is faintly outlined with black and white dots. The hind wings are tan to brown, darker toward the wing margin, with a faint, elongate discal spot. Elongate scales on the head and thorax are a mixture of straw-yellow, reddish-brown, black, and whitish-gray, matching the overall coloration of the forewing. The abdomen is tan with elongate, reddish-brown and white scales dorsally. *Apamea inebriata* was described and separated from the similar and more common and widespread *Apamea verbascoides* by Ferguson (1977). As compared to *A. verbascoides*, *A. inebriata* is slightly smaller (forewing length ~1 mm shorter on average) and has a brighter appearance overall, with brown streaks that are more reddish, and the gray area along the inner margin more whitish and contrasting. *A. inebriata* has a black basal dash that is shorter and thinner (sometimes almost completely absent) as compared to *A. verbascoides*.



Apamea inebriata • Specimen from MA: Plymouth Co., Plymouth, collected 27 Jul 2002 by M.W. Nelson

Adult Flight Period in Massachusetts

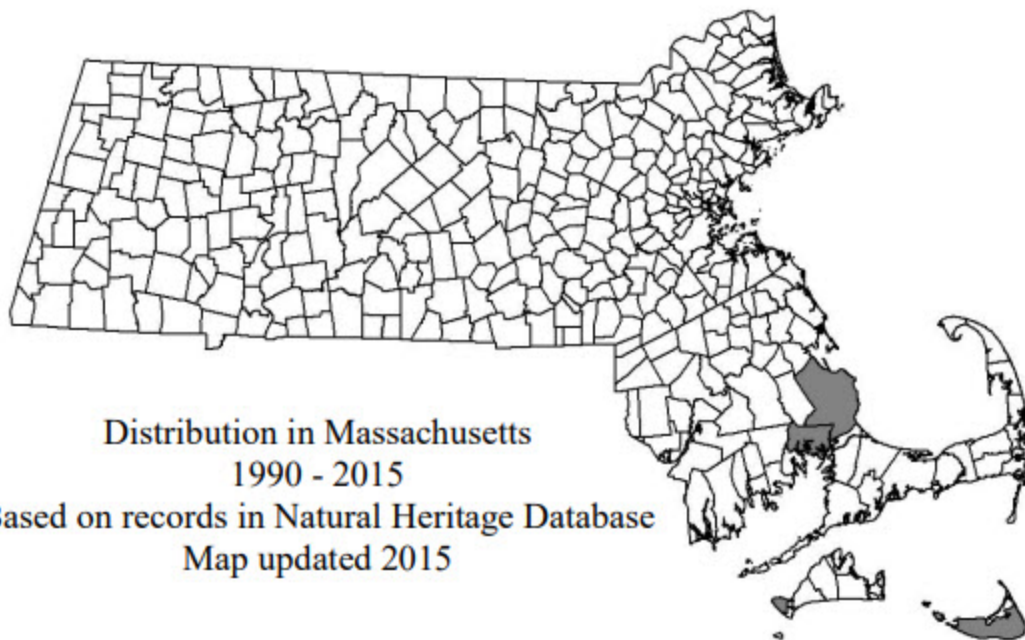
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Additionally, the small white patch of scales at the juncture of wing veins M₃ and Cu₁ is more pronounced in *A. verbascoides*, much smaller or absent in *A. inebriata*.

HABITAT: In Massachusetts, the Drunk Apamea Moth inhabits fresh or brackish, grassy wetlands, including marshes, bogs, shrub swamps, and coastal plain pond shores.

LIFE HISTORY: In Massachusetts, adult Drunk Apamea Moths fly in July and early August. Early instar larvae overwinter, and complete development in spring and early summer. The larval host plants of the Drunk Apamea Moth are undocumented, but probably consist of one to several species of wetland grasses (Poaceae).

GEOGRAPHIC RANGE: The Drunk Apamea Moth is endemic to the coastal plain of eastern North America,



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Frosted Elfin
*Callophrys irus***

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Frosted Elfin (*Callophrys irus*) is a lycaenid butterfly with a wingspan of 26-32 mm (Opler 1998). Like most gossamer-wings, the Frosted Elfin rests with wings folded above its back. The upper side of the wings, hidden in this position, are uniform dark brown in color. The wings are also brown on the underside, the forewing with a dashed postmedial line outlined with white. The underside of the hind wing is dark brown in the basal area, brown frosted with whitish-gray toward the outer margin. The hind wing has an obscure postmedial line outlined with white, typically most prominently outlined at the costa with a short white dash, sometimes also toward the inner margin. There is a prominent black submarginal spot above the tail. The Frosted Elfin is similar to Henry's Elfin (*Callophrys henrici*); however, the forewing postmedial line of Henry's Elfin is continuous (not dashed). The basal area of the hind wing of Henry's Elfin is darker brown than that of the Frosted Elfin, and the postmedial line is typically more completely outlined with white; there is usually no black submarginal spot, and when a spot is present it is smaller than that of the Frosted Elfin. The Frosted Elfin may also be confused with the Hoary Elfin (*Callophrys polios*); however, the underside of the forewing of the Hoary Elfin has whitish-gray shading along the outer margin, which is absent in



Callophrys irus • MA: Plymouth Co., Plymouth • 27 Apr 2013 • Photo by M.W. Nelson

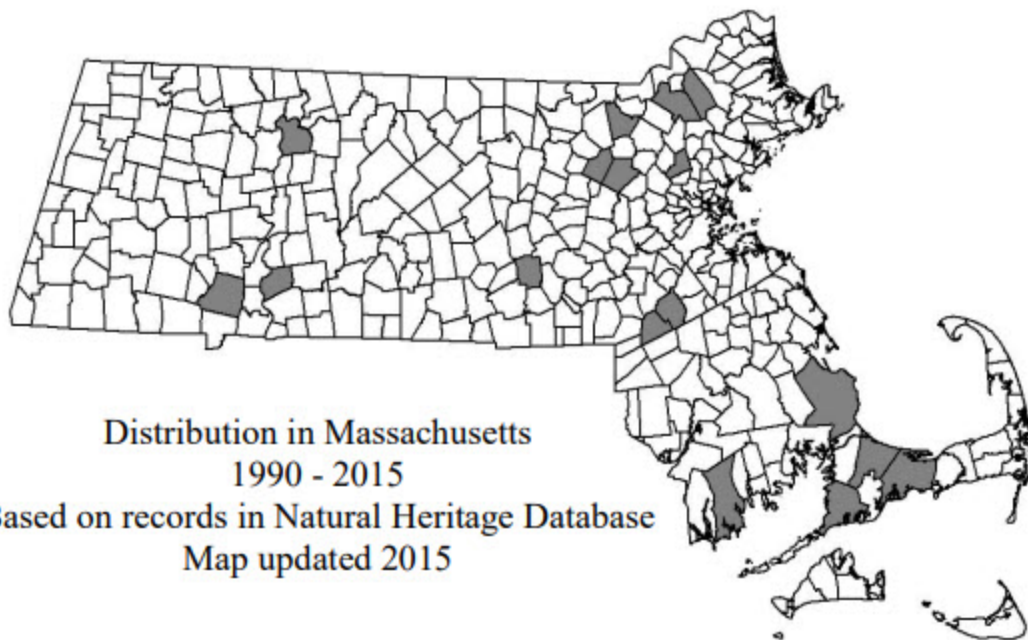
Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

the Frosted Elfin.

HABITAT: The Frosted Elfin inhabits xeric and open, disturbance-dependent habitats on sandy (occasionally rocky) soil, especially heath/grassy openings in pitch pine-scrub oak barrens, but also similar anthropogenic habitats such as utility line rights-of-way, railways, old sand/gravel pits, and airports.

LIFE HISTORY: In Massachusetts, adult Frosted Elfin butterflies fly from mid-April through mid-June. Larvae



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



**Natural Heritage
& Endangered Species
Program**

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

**Walsh's Anthophora
*Anthophora walshii***

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: Walsh's Anthophora (*Anthophora walshii*) is a distinctive bee of moderate dimensions (14-16 mm in length and 5-6 mm wide), similar in size to a worker bumble bee. The head, thorax, and first segment of the abdomen are covered in long, pale yellow hair. The remainder of the abdomen is dark except for narrow, ivory-colored bands around the rear edge of the abdominal segments (the first four segments in the female, the first six in the male) (Mitchell 1962). The banded abdomen is unique, not found in any other eastern species of *Anthophora*. Males are distinguished from females by the extensive ivory markings on the front of the face and base of the antennae; the male also has longer antennae than the female. The foraging behavior of Walsh's Anthophora helps differentiate it in the field from other bees of similar size. Unlike both honey and bumble bees, which fly slowly and methodically between flowers while collecting pollen and nectar, the flight of Walsh's Anthophora is quick and direct; each flower is visited briefly (typically less than 3 seconds) before moving on to the next.

HABITAT: In Massachusetts, Walsh's Anthophora is found in open, disturbed coastal habitats on sandy soil



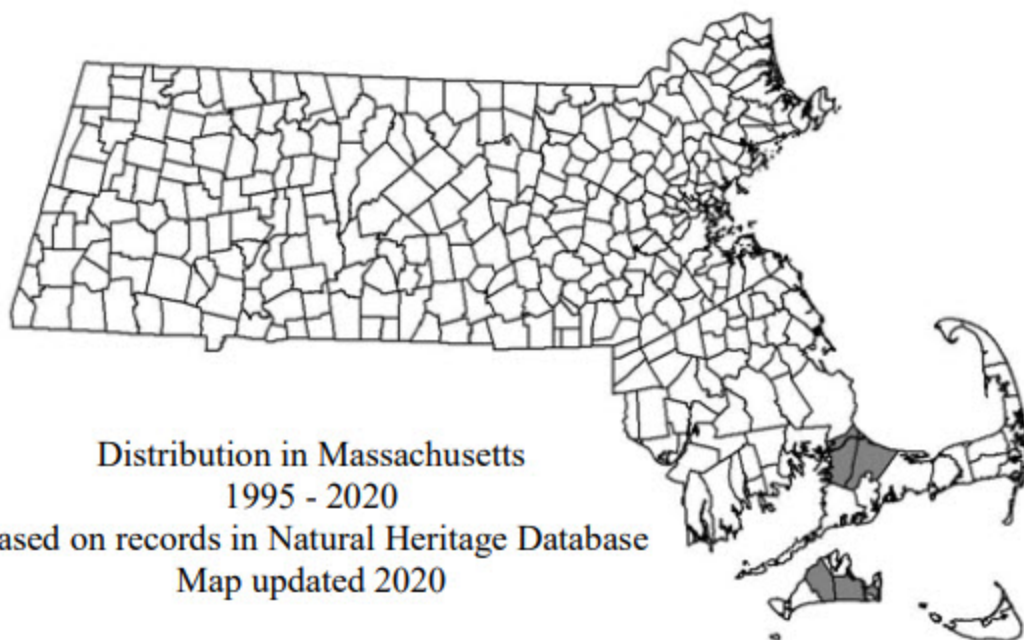
Anthophora walshii • MA: Barnstable Co., Bourne • 7 Jul 2017 • Photo by M.F. Veit

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						■	■	■			

where Wild Yellow Indigo (*Baptisia tinctoria*) is relatively abundant. Habitats include managed grasslands, utility rights-of-way, and fire breaks.

LIFE HISTORY: In Massachusetts, Walsh's Anthophora has been collected or observed from early July through late September, with the majority of records between mid-July and mid-August. Like other *Anthophora* species, Walsh's Anthophora is a solitary (non-social) ground nester. Nesting has been documented in Massachusetts in sparsely vegetated, sandy soils in or near stands of Yellow Wild Indigo. Nest entrance holes are circular, 6-7 mm in diameter, and have a narrow fan of tailings extending about 4 cm from the opening. Nests occur both individually and in small aggregations of 3-7 (Veit 2019).



Distribution in Massachusetts
1995 - 2020

Based on records in Natural Heritage Database
Map updated 2020

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

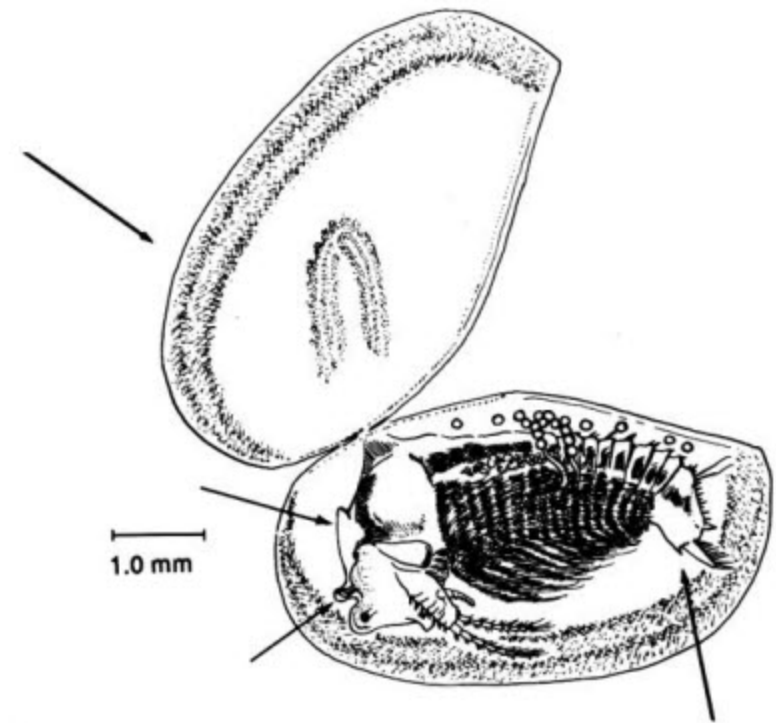
Massachusetts Division of Fisheries & Wildlife

Agassiz's Clam Shrimp *Eulimnadia agassizii*

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: Agassiz's Clam Shrimp is a small crustacean that resembles a mollusk at first glance because it is enclosed in a bivalved structure called a carapace. The egg-shaped carapace is transparent, ranging in color from clear to brown. It consists of two shell-like valves that are connected by a fold, each with 4 (occasionally 5) growth lines. The valves enclose the head and eyes, body, and feathery appendages of Agassiz's Clam Shrimp. Like all clam shrimps, this species swims with the fold of its carapace pointing up and its appendages pointing down to aid in locomotion, respiration, and feeding. Specimens of Agassiz's Clam Shrimp can reach up to 9 mm, but examination of specimens from one population reached only ~6.0 mm.

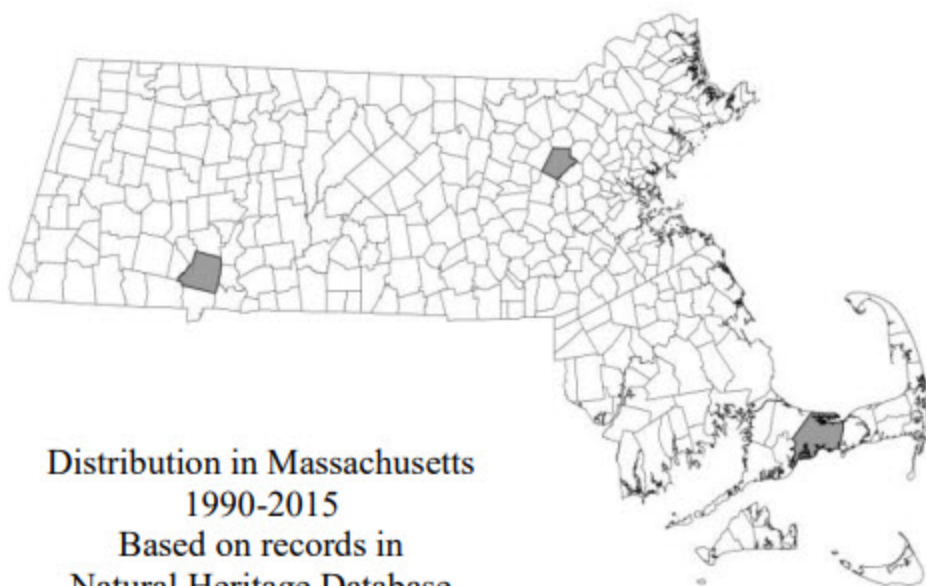
SIMILAR SPECIES: Two other species of clam shrimp in the class Branchiopoda are quite similar to Agassiz's Clam Shrimp. The Holarctic Clam Shrimp (*Lynceus brachyurus*) from the order Laevicaudata is a more commonly encountered clam shrimp. This clam shrimp is light orange in color, without growth lines on its carapace, and with a smaller, more rounded



Thorp, J.H., and A.P. Covich (eds.) 2001. *Ecology and Classification of North American Freshwater Invertebrates*. 2nd Edition. Academic Press.

appearance. The Holarctic Clam Shrimp is found in larger, more persistent ephemeral freshwater habitats. A stereomicroscope is needed to differentiate Agassiz's Clam Shrimp from another species in the order Spinicaudata, the American Clam Shrimp (*Limnadia lenticularis*). The American Clam Shrimp is also translucent in color, is less narrow and more rounded, has 7 to 18 growth lines on its carapace, and is larger at an average of 10 mm. The American Clam Shrimp has been found together with Agassiz's Clam Shrimp in late June. Identification guides sufficiently illustrate the differences between these three species (Smith 2000).

HABITAT: Agassiz's Clam Shrimp has been found in the ephemeral pools of a floodplain depression and in a flooded hay field after the heavy rain of a large storm (Smith 1995). It has also been found in a flooded sand trap and a nearby flooded depression on a golf course (Zinn and Dexter 1962). In 1999, Agassiz's Clam



Distribution in Massachusetts
1990-2015
Based on records in
Natural Heritage Database

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp