

## Butterflies of Rhode Island

### INTRODUCTION

Butterflies belong to an order of insects called Lepidoptera, which also includes moths. These insects have two pairs of “scaly wings” covered in microscopic, dust-like scales. There are about 300,000 species of lepidopterans worldwide and North America is home to about 800 species of butterfly. Unfortunately, almost 20% of North America’s butterflies are facing extinction, including species that are native to Rhode Island.

### LIFE CYCLE

Butterflies have four life stages: the egg, the larva (caterpillar), the pupa (chrysalis), and the adult butterfly. The length of a butterfly’s life cycle varies depending on the species (30 - 200 days).

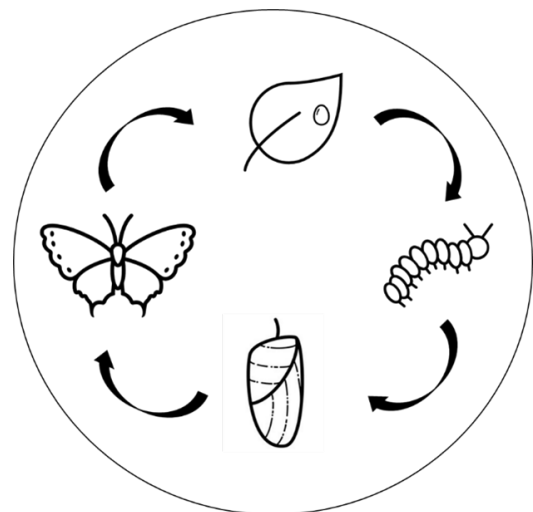
**Egg:** Butterfly eggs tend to be small and inconspicuous. Adult females lay eggs on their species-specific host plant, usually on the underside of leaves. The timing of egg-laying varies between species.

**Caterpillar:** In the caterpillar stage, the insect eats as much as possible so that they will have substantial fat stores as adults. As the caterpillar eats, it can grow up to 100 times its size in a matter of days. As it grows, it splits its skin and sheds about 4 or 5 times. Most butterflies spend the majority of their life as a caterpillar and many butterflies overwinter in this larval stage, buried in leaf litter or in shallow soils.

**Chrysalis:** Once a caterpillar is fully grown, it will find a sheltered spot and molt its skin one more time. Once molted, their outer skin will harden to form a protective shell called a chrysalis. Inside the chrysalis, most of the caterpillar will be digested by enzymes except for a few important groups of cells called “imaginal discs.” These imaginal discs will eventually grow into all of the parts needed to form an adult butterfly. During this transitional process, it is very important not to disturb the chrysalis as this may interfere with the transformation.

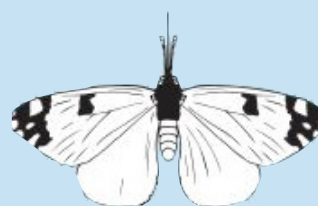
**Butterfly:** Once the transformational process is complete, an adult butterfly will emerge from its

chrysalis in a process called eclosion. When butterflies emerge, they have shrunken wings and swollen abdomens. They hang upside down for up to two hours as fluid (meconium) is pumped into their wings. They are very delicate and can’t fly during this stage of development, so it’s important not to touch or otherwise disturb them. Once the fluid has filled the wings and hardened in the wing veins, the butterfly is able to fly! As an adult, the main goal of a butterfly is to mate and lay eggs.



### What's the difference between a butterfly and a moth?

Butterflies are typically brighter in coloration than moths and are found exclusively during the day, while moths are usually active at night and have more muted coloration. Butterflies also have antennae that end in a club shape, while moths have either tapered or fanned antennae.



BUTTERFLY



MOTH

## DIET

Butterflies feed on the nectar of flowers and prefer blossoms that are red, yellow, orange, pink or purple. They also like to visit flowers that are easy to land on, such as clustered flowers. When they visit these flowers, they get pollen stuck to their bodies which allows them to transport it to other flowers and assist in pollination.

In addition to feeding on the nectar of flowers, butterflies require specific “host plants” to feed on as caterpillars. Adult female butterflies lay their eggs on the host plant specific to their species and then these plants will become the first food for their hatched caterpillars. Therefore, the availability of the correct host plant is essential for butterflies to complete their lifecycle.

## THREATS

**Habitat Loss:** One of the biggest threats to all pollinators, including butterflies, is land use change due to increased urbanization or agricultural intensification. This type of land use change can lead to habitat loss and habitat fragmentation, meaning that butterflies may not have access to suitable areas for laying eggs or foraging for food.

**Disease:** Currently, there are no disease prevention regulations required for commercial butterfly breeders in the United States. Therefore, commercially raised butterflies (e.g., those used for wedding releases) can be exposed to higher levels of common diseases and parasites in captive rearing settings than in the wild. Wild-caught butterflies that are raised indoors are also more susceptible to disease, especially if they are raised in large numbers. These parasites and diseases can also spread to wild populations when these commercial or captive-reared butterflies visit the same flowers as wild-reared butterflies.

**Pesticide Use:** The ingredients in the chemical pesticides that are used widely in agriculture, on private property, and in local communities (including those available at the hardware store) can harm pollinators in a variety of ways. Insecticides can kill adult butterflies and caterpillars outright (lethal effect) and can also reduce butterflies’ reproductive capabilities and overall size (sublethal effect). Even if an insecticide is applied to target a specific species (e.g., mosquito sprays) or if the pesticide is labeled as “organic” it can still have both lethal and nonlethal effects on non-target species, such as butterflies. Herbicides can also harm butterflies by reducing the number of flowers in the landscape, which reduces the amount of food that they have access to.

**Climate Change:** Climate change can affect butterflies by altering the emergence time of both flowers and the butterflies themselves. This means that when butterflies reach their adult stage, there may either not be enough flowers for them to forage on or there may not be an adequate number of host plants available.



*Black swallowtail caterpillar, Spencer Hardy*

## CONSERVATION ACTIONS

- Plant native butterfly host plants, such as milkweeds, willows, violets, and bluestem grasses.
- Plant native, nectar-rich flowers that bloom throughout the butterfly flight season (April – November).
- Avoid planting non-native or cultivar butterfly host or food plants, as they may not provide these insects with the nutrients they need (check out the [URI Native Plant Guide](#) to locate Rhode Island nurseries that carry native plant species!).
- Leave the leaves in the fall to provide cover and protection for overwintering butterflies by either leaving a thin layer of leaves on your lawn, spreading raked leaves over your vegetable and garden beds, or piling them around ornamental trees and shrubs.
- Remove invasive plants like bittersweet, garlic mustard, and dog-strangling vine, which can outcompete and choke out native plants that are beneficial for butterflies.
- Avoid using weedkillers and insect sprays in your garden and on your lawn, as these can both limit the availability of flowers available for butterflies to feed on and can poison their nectar.
- Be cautious about store-bought butterfly kits, as the caterpillars that are included in these kits are prone to diseases, parasites, and harmful fungi, and therefore should not be released into the wild where these pathogens may spread to wild butterfly populations.

## EXAMPLES OF NEW ENGLAND NATIVE FLOWERS FOR BUTTERFLIES

BLOOM TIME	SPECIES	
<b>Early Bloom</b>	<ul style="list-style-type: none"> <li>• Pussy willow</li> <li>• Black willow</li> <li>• Yellow and wild indigo</li> </ul>	<ul style="list-style-type: none"> <li>• Northeastern beardtongue</li> <li>• Common golden Alexanders</li> <li>• Red columbine</li> </ul>
<b>Mid Bloom</b>	<ul style="list-style-type: none"> <li>• Sweet pepperbush</li> <li>• Purple Joe-Pye weed</li> <li>• Blue vervain</li> </ul>	<ul style="list-style-type: none"> <li>• Broad-leaved mountain mint</li> <li>• Whorled mountain mint</li> <li>• White meadowsweet</li> </ul>
<b>Late Bloom</b>	<ul style="list-style-type: none"> <li>• Seaside goldenrod</li> <li>• Licorice goldenrod</li> <li>• Gray goldenrod</li> </ul>	<ul style="list-style-type: none"> <li>• Purple wood aster</li> <li>• New England aster</li> <li>• Common buttonbush</li> </ul>

## RHODE ISLAND BUTTERFLY SPECIES OF GREATEST CONSERVATION NEED

The State and Tribal Wildlife Grants (SWG) program was created by Congress in 2000 to fund actions to conserve declining fish and wildlife species before they become threatened or endangered. To participate, states complete a State Wildlife Action Plan (SWAP) every 10 years, including an updated Species of Greatest Conservation Need (SGCN) list. The list below is not a complete account of all of the species native to Rhode Island, but those that were listed as Species of Greatest Conservation Need in the 2015 RI SWAP.

### COPPERS (SUBFAMILY: LYCAENINAE)

SPECIES	HOST PLANT	HABITAT	FLIGHT PERIOD
Bronze copper ( <i>Lycaena hyllus</i> )	Docks ( <i>Rumex spp.</i> )	Shrub swamps and wet meadows	June – September
Bog copper ( <i>Lycaena epixanthe</i> )	Small cranberry ( <i>Vaccinium oxycoccos</i> )	Sphagnum bogs	June – July



*American copper (Rachel Bonoan)*



*Bronze copper (Max McCarthy)*

## HAIRSTREAKS & ELFINS (SUBFAMILY: THECLINAE)

SPECIES	HOST PLANT	HABITAT	FLIGHT PERIOD
Henry's elfin ( <i>Callophrys henrici</i> )	American holly ( <i>Ilex opaca</i> )	Mixed oak forest gaps	April – May
Hoary elfin ( <i>Callophrys polios</i> )	Bearberry ( <i>Arctostaphylos uva-ursi</i> )	Pitch pine barrens	April – June
Hessel's hairstreak ( <i>Callophrys hesseli</i> )	Atlantic white cedar ( <i>Chamaecyparis thyoides</i> )	White cedar swamps	April – May
Acadian hairstreak ( <i>Satyrium acadicum</i> )	Shrub willows ( <i>Salix spp.</i> )	Shrub swamps and wet meadows	June – July
Edward's hairstreak ( <i>Satyrium edwardsii</i> )	Scrub oak ( <i>Quercus ilicifolia</i> )	Pitch pine woodlands	June – August
Hickory hairstreak ( <i>Satyrium caryaevorum</i> )	Hickories ( <i>Carya spp.</i> )	Mixed oak and hickory forests	June – August

### STATE LISTED SPECIES: Frosted Elfin (*Callophrys irus*)

The frosted elfin ranges widely throughout the eastern U.S. from western Maine to Florida and west to central Wisconsin and eastern Texas. However, it is extremely local and usually scarce throughout this area. In Rhode Island, where it is Critically Imperiled, it is limited to only 2-3 sites where the largest populations of its host plants, wild indigo (*Baptisia tinctoria*) and wild lupine (*Lupinus perrenis*), are found. The frosted elfin's primary habitat is pitch pine barrens and its flight period is from April to June.



*Hickory hairstreak (Spencer Hardy)*



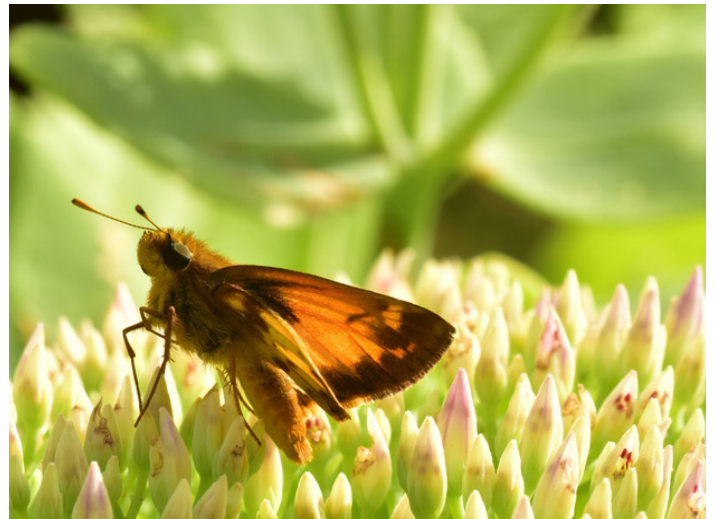
*Frosted elfin (Rachel Bonoan)*

## FRITILLARIES (SUBFAMILY: ARGYNNINAE)

SPECIES	HOST PLANT	HABITAT	FLIGHT PERIOD
Aphrodite fritillary ( <i>Speyeria aphrodite</i> )	Violets ( <i>Viola</i> spp.)	Shrub swamps and wet meadows	June – October
Meadow fritillary ( <i>Boloria bellona</i> )	Violets ( <i>Viola</i> spp.)	Shrub swamps and wet meadows	April – October
Silver-bordered fritillary ( <i>Boloria selene</i> )	Violets ( <i>Viola</i> spp.)	Graminoid fens	May – September



*Silver-bordered fritillary (Spencer Hardy)*



*Zabulon skipper (Rachel Bonoan)*

## SKIPPERS (FAMILY: HESPERIIDAE)

SPECIES	HOST PLANT	HABITAT	FLIGHT PERIOD
Cobweb skipper ( <i>Hesperia metea</i> )	Little bluestem ( <i>Schizachyrium scoparium</i> ) and bushy bluestem ( <i>Andropogon glomeratus</i> )	Old, disturbed fields	May
Dusted skipper ( <i>Atrytonopsis hianna</i> )	Bluestem grasses ( <i>Andropogon</i> and <i>Schizachyrium</i> spp.)	Old, disturbed fields	May – June
Persius duskywing ( <i>Erynnis persius</i> )	Wild indigo ( <i>Baptisia tinctoria</i> ) and wild lupine ( <i>Lupinus perrenis</i> )	Pitch pine barrens	May – June
Sleepy duskywing ( <i>Erynnis brizo</i> )	Scrub oak ( <i>Quercus ilicifolia</i> )	Pitch pine woodlands	April – May
Black dash ( <i>Euphyes conspicua</i> )	Sedges ( <i>Carex</i> spp.)	Shrub swamps and wet meadows	June – August

## MONARCH BUTTERFLIES

On July 21st, 2022, North America's two migrating monarch butterfly (*Danaus plexippus*) populations were officially listed as Endangered by the International Union for Conservation of Nature (IUCN). While this listing doesn't carry regulatory weight, it points to the need for conservation actions to protect this beautiful, valuable pollinator.

According to the IUCN, monarch butterfly populations throughout the United States and Canada have declined between 22% and 72% over the last decade. Additionally, the Eastern population (which includes the butterflies that we see here in Rhode Island throughout the summer and fall) is estimated to have shrunk by 84% between 1996 and 2014.

As of 2020, monarch butterflies are a candidate for federal listing under the Endangered Species Act and have been deemed warranted for listing. However, the butterflies have been precluded from the list due to higher priority species taking precedence, as there are only so many species that can be listed per year. If approved, federal listing would offer these butterflies new protections, but for now it's important that we take action in our gardens and communities to support this species!

## MONARCH FAQs

### **Do monarchs migrate?**

There are several populations of monarch butterflies that occur in the United States, both migratory and non-migratory. In Hawaii and Florida there are populations of non-migratory monarchs who are able to overwinter because the climates are mild year-round. Migratory monarchs living west of the Rocky Mountains (Western Population) overwinter on the Pacific Coast of California and near Baja, Mexico. Migratory monarchs living east of the of the Rocky Mountains (Eastern Population) overwinter in the oyamel fir tree forests of the Mexican Sierra Madre Mountains.

Migratory monarchs make a long, multi-generational journey each year to complete their migration. After spending the winter in their southern overwintering grounds, monarch butterflies will mate, lay eggs, and then die. Their offspring (known as the First Generation) will journey a few miles northward and then will also reproduce and die. The First Generation will be followed by two or three other generations, each of which will only live 2-5 weeks as they continue the journey north through the USA farm belt towards Canada. The final generation (the Super Generation) emerges after mid-August and will live about 6-9 months so that it can make the complete journey south. This means that the monarchs that make it to the overwintering grounds are potentially the great-great-great grandchildren of the monarchs that overwintered there the year before!

### **Should I rear monarch butterflies indoors?**

While it may seem like a good idea to bring monarch caterpillars indoors to protect them from predators and the elements, captive-raised monarchs may not be as healthy as the monarchs that grow up in the wild. Natural selection is very good at weeding out individuals that are not as "fit" for survival, which helps keep these populations healthy. In the monarch's case, research has shown that captive rearing can reduce the butterflies' ability to migrate, which means they will not be able to complete their lifecycle and therefore won't contribute to the next generation of monarchs.

If you are an educator and want to raise monarchs for educational purposes, please follow the guidelines provided by the [Xerces Society for Invertebrate Conservation](#) to reduce harm to local monarch populations.



Monarch butterflies (Katherine Burns)

### **What are some of the major threats to monarchs?**

One of the greatest threats to monarch butterflies is the loss of habitat. In their journey north, monarchs pass through major agricultural areas that are dominated by genetically modified, herbicide resistant crops. Therefore, when these chemical herbicides are applied, they kill everything other than the resistant crop species, including milkweed.

Another major threat to monarchs is the destruction of the butterfly's overwintering grounds. In Mexico, both legal and illegal logging in the oyamel fir forests diminishes the amount of overwintering habitat available to Eastern monarchs. In California, many sites where the Western populations roost during the winter have been destroyed due to urban development.

### **Where and when can I see monarchs in Rhode Island?**

Monarchs can be seen in Rhode Island starting in early June, however there is a major increase in numbers in the late summer and early fall when the Super Generation begins its journey southward. You can find these large, orange and black butterflies in open fields and gardens, especially those with lots of native milkweeds and nectar-rich flowers, up until November.

### **How can I best help monarchs?**

Planting native milkweed species is the best way to help monarchs! Suitable native milkweeds for New England include Clasping, Swamp, Butterfly, and Common Milkweed. To source native milkweed in Rhode Island, check out the URI Native Plant Guide for local nursery suggestions. Please do not plant tropical milkweed, which is non-native and can interfere with monarch migration and reproduction. Tropical milkweed grows later in the year than native milkweeds, which can confuse monarchs and interfere with their migration timing.



*Top left: Monarch butterfly egg (Spencer Hardy) Top right: Monarch butterfly caterpillar (Katherine Burns)  
Bottom left: Monarch butterfly crysalis (Pixabay) Bottom right: Monarch butterfly adult (Rachel Bonoan)*

### **DID YOU KNOW?**

Many butterflies rely on young forest habitat. Visit [youngforest.org](http://youngforest.org) to learn more about how RI is part of a regional effort to conserve this critical habitat!