

SOME BUTTERFLIES AND MOTHS



ON THE COVER

Cover photo is detail of a butterfly wing (Castniidae, Guiana). Reproduced with permission of the photographer, Kjell B. Sandved, Museum of Natural History, Smithsonian Institution.

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Butterflies and moths provide one of the most fascinating and colorful aspects of summer. Our appreciation of them—and of other natural citizens—depends largely upon our knowledge. This guide and the photographs in it are presented in hopes that interest will be stimulated, knowledge increased, and enjoyment of the outdoors multiplied. But basic conservation is also involved; the gypsy moth, for example, is presently a serious menace. All of us should know more about him.

More than 2,500 different kinds of moths and butterflies have been found in New York State alone. Specimens shown (actual size) on the following pages are the larger or more brightly colored ones that are likely to be seen by anyone who spends much time outdoors. Although nearly all moths and butterflies feed on living plants, only a few—perhaps 150—are numerous enough to be considered pests.

We may wonder why these large insects, which often seem so common, do not more often become pests. The answer is that parasites and predators do a pretty good job of holding insect populations in check. Many tiny wasps destroy moth and butterfly eggs. Other wasps and flies kill the caterpillars and the pupae, and finally, the adults are sought as food by birds. Fungal, viral, and bacterial diseases may strike in any stage. But in spite of these normal and natural controls, an insect often becomes a pest when introduced into an area without its usual parasites or diseases or when we use methods of cultivation that may favor certain insects.

The life histories of our moths and butterflies are all much alike. The tiny larvae or caterpillars hatch from eggs deposited by the females near their food plant. The caterpillars may eat the egg

shells as their first meal or go directly to the leaves of their host. Some caterpillars can feed on almost any plant with green leaves; others survive only if they can obtain leaves of one particular species of a plant. Most are in between: they feed on several different, though related, plants.

A caterpillar spends most of its time eating and growing. Several times during its development it stops to shed its skin—its only "skeleton". As the old skin is discarded, a new one (a larger size) is formed, and the caterpillar grows until it fills the new one, then repeats the shedding process. When it reaches its full size, it prepares for a resting or pupal stage. Many moths spin silk cocoons in which to pupate; others go into the ground. A butterfly makes no cocoon; instead, it uses a few silk threads to hang its pupa (chrysalis) from the host plant or in some more protected spot.

In any case, during the pupal stage, a complete remodeling takes place. The result is an emerging adult that looks entirely different from the larva. Whereas the larva is designed for feeding, the adult is designed for reproduction and dispersal, and many of these adults do not have mouthparts that permit them to feed at all. They survive for the weeks of their adult life on fats stored in their bodies during the larval stage.

Most of our larger moths and butterflies spend the winter in the pupal stage. Some overwinter in the egg state; a few overwinter as caterpillars; and a smaller number overwinter as adults either hibernating in a sheltered spot or flying south to a warmer climate.



Caterpillar



Chrysalis



The popularity of insect collecting as a hobby lies partly in the ease with which insects can be preserved. Ethyl acetate is a good killing agent. It is not dangerous to the collector, it kills insects quickly, and it does not discolor the specimen or make it brittle. A simple killing jar can be prepared by putting a few drops of killing agent on a wad of cotton or tissue paper in a fruit jar. A killing bottle that will be effective for a much longer period can be made by pouring a half inch of plaster of paris into the bottom of a jar and allowing it to set and dry thoroughly. After the plaster of paris is completely dry, saturate it with ethyl acetate, pouring off any excess fluid. Do not wet moths or butterflies with the fluid or you will have a messy-looking specimen. The fumes in a tightly covered jar will do the job quickly. An alternate killing jar can be made using a 1-inch square of a Vapona "No-Pest" strip. The square is glued to the bottom of the fruit jar and covered with a cardboard disc. As in the case above, the fumes in a tightly covered jar kill the insect.

Once killed, insects can be preserved by drying. Since they are very brittle when dry, they should be spread soon after death and held in the desired position during the drying period. Moths and butterflies should have their wings spread to give a pleasing appearance.

Spreading boards may be purchased from any of the biological supply houses, or they can be made at home. One simple design is a half-inch board of soft wood or piece of plastic foam, 6 to 8 inches wide, with a series of cavities drilled or cut down the middle to accommodate the bodies of insects. Each cavity should be 2 to 3 inches long. They should be of varied widths from a quarter to a half inch to accommodate moths and butterflies of different sizes. A sheet of

thick cork or balsa wood is placed underneath the cavity to hold the pins that keep the body of the insect in place.

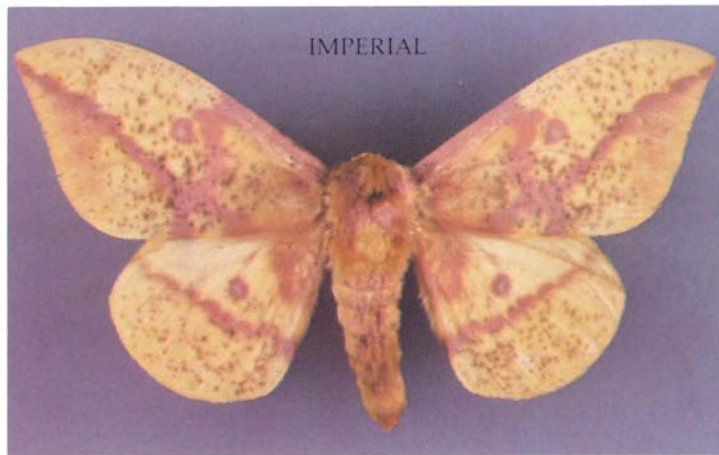
To spread a moth or butterfly, place the body in the cavity using pins to hold it steady, or pin directly through the insect's body between the wings with special insect pins. Move a front wing into position on the board by means of a pin. **Do not** touch the wings with your fingers or you will rub the scales off. Then move the hind wing into position. Pin a narrow strip of paper across the wings near the body to hold them in position. The same procedure is used for wings on the other side. Finally, place a wide strip of paper across the uncovered part of the wings and remove the pins that were used to place the wings into position. The insect should be left on the spreading board for a week or two, depending on its size. The large moths require a longer time to dry.

After mounting and fixing, nonpinned moths and butterflies can be stored in shallow boxes filled with cotton and covered with glass. The glass cover should rest lightly on the insects to hold them in place. If the insect is pinned (suspended in mid-air by a pin through its body), the collector can handle the specimen and examine both the upper and lower sides. A different type of storage box must be used for pinned insects. It should be deeper (a cigar box will do) with a quarter-inch sheet of cork, plastic foam, or balsa wood in the bottom to hold the pin. The insect is pinned at the time it is spread and should be placed on the upper half of the pin, which pierces the body between the wings. Special insect pins are almost a necessity. Household pins will rust in a few years and destroy any insects mounted on them.



Spreading board





Family Saturniidae

Imperial (*Eacles imperialis*). The soft brown and yellow of its wings make this one of our most attractive moths. The larvae feed on many trees and shrubs. It pupates in the ground and does not spin a cocoon.

Cynthia moth (*Samia cynthia*). This large moth was brought to America from Asia for the purpose of commercially producing silk from its cocoon. The commercial enterprise soon failed, but the moth has become "naturalized" in several areas in New York. Larvae may completely defoliate *Ailanthus* or tree of heaven.

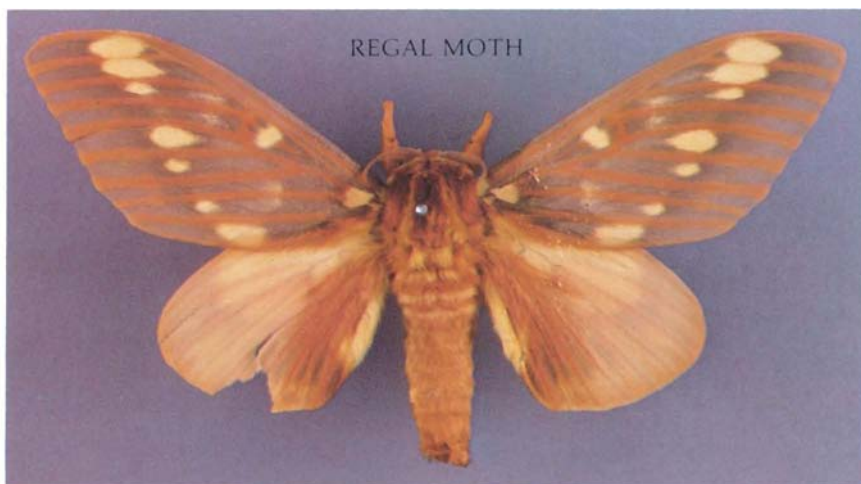
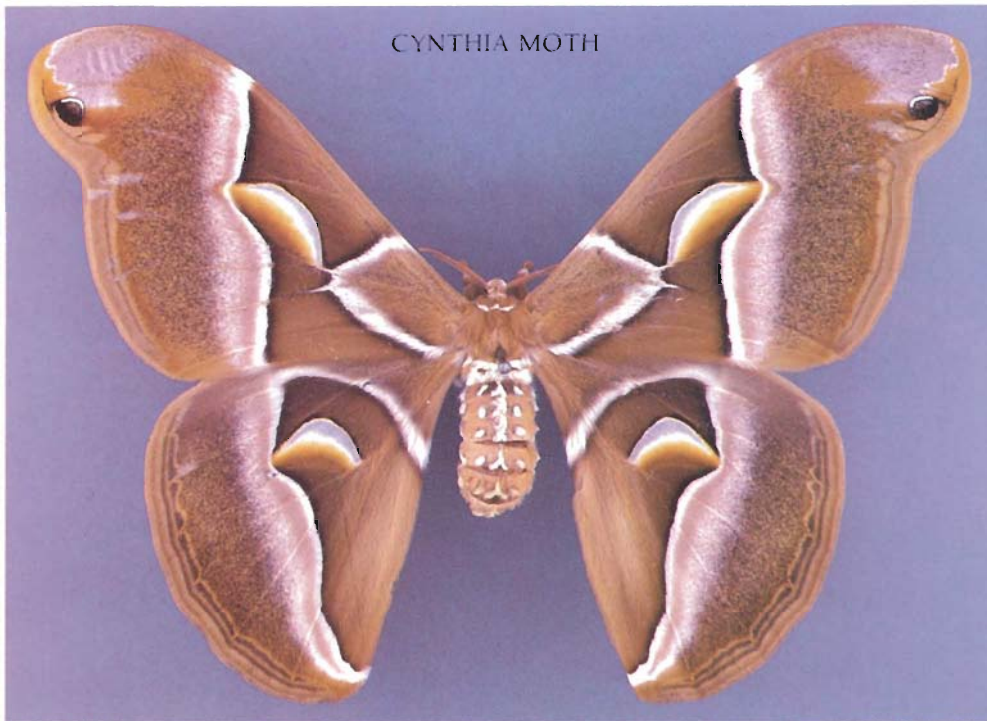
Regal moth (*Citheronia regalis*). Also called the hickory horned devil, this moth is usually rather rare. The larva has several long curved horns near the head. It feeds on many different trees.

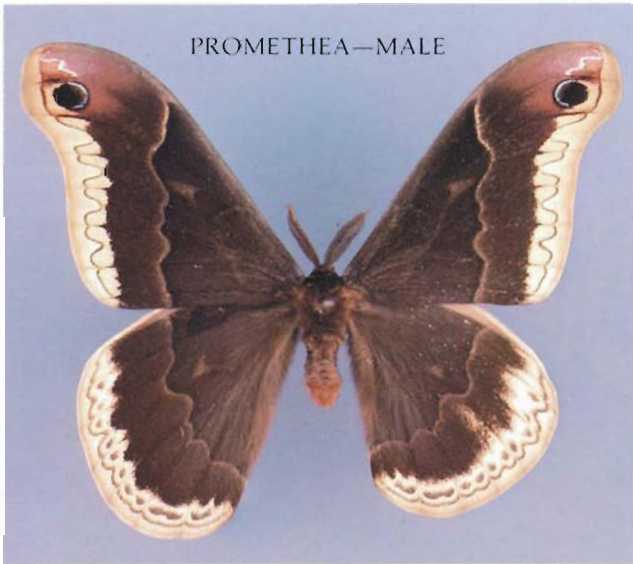
Promethea (*Callosamia promethea*). Male and female promethea moths differ greatly in appearance. Their caterpillars feed on spicebush, wild cherry, and tulip tree.

Luna (*Actias luna*). Sometimes called moon moth, this is one of our most beautiful moths. The delicate green and lavender fade after death. The caterpillar feeds on walnut, hickory, and many other trees.

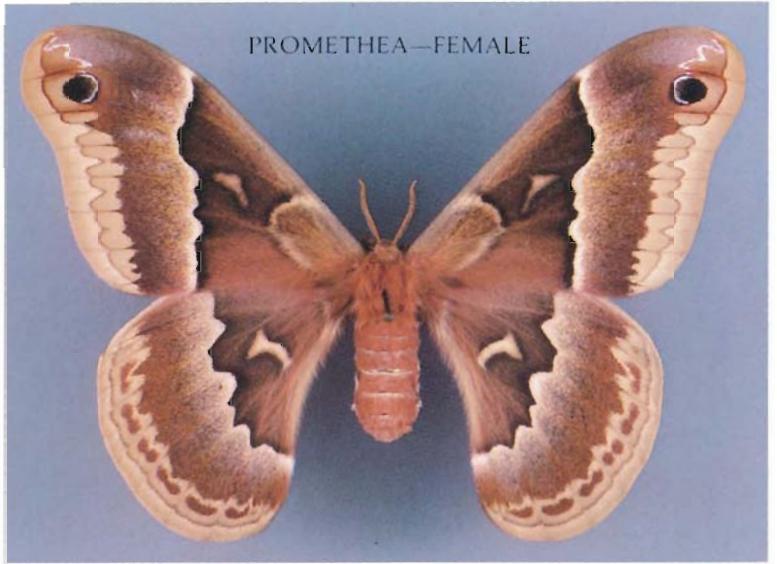
Buck moth (*Hemileuca maia*). The buck moth gets its name from the fact that it flies during deer season. It may be seen flying throughout the day. Host plants include oak, willow, cherry, and hazel.

Io moth (*Automeris io*). Sometimes a common moth, its larvae can live on a wide variety of trees, shrubs, and smaller plants. One of the few caterpillars that can "sting", its spines carry a fluid that can be very irritating to the skin. The caterpillar is entirely green except for a narrow red and white stripe along its side.

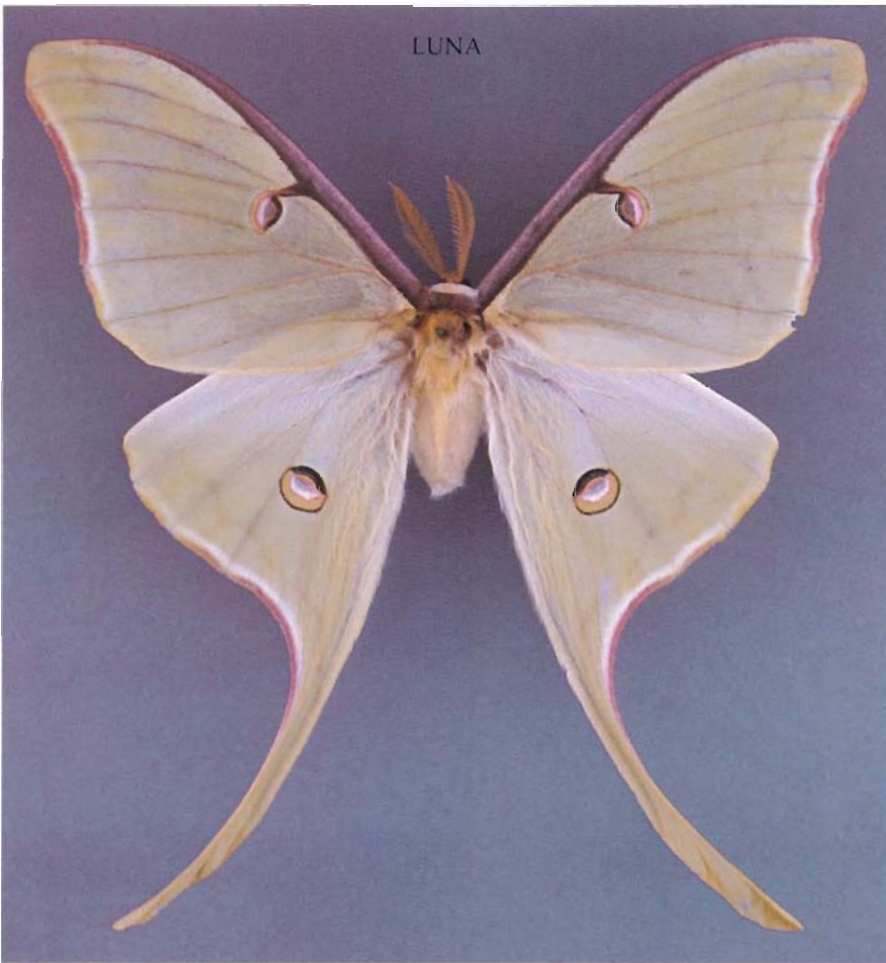




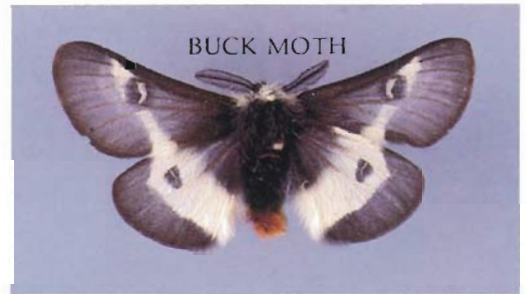
PROMETHEA—MALE



PROMETHEA—FEMALE



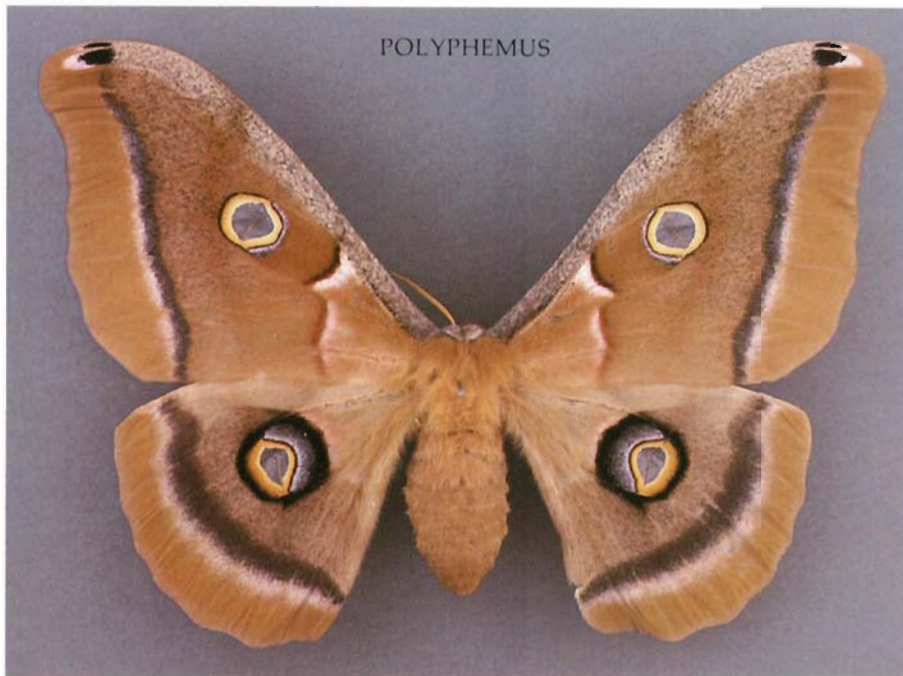
LUNA



BUCK MOTH



IO MOTH



POLYPHEMUS

Polyphemus (*Antheraea polyphemus*). This large moth is most often seen flying around lights at night. Its larvae feed on oak, birch, and other trees. The pupa is sometimes very active, twisting violently inside its cocoon.

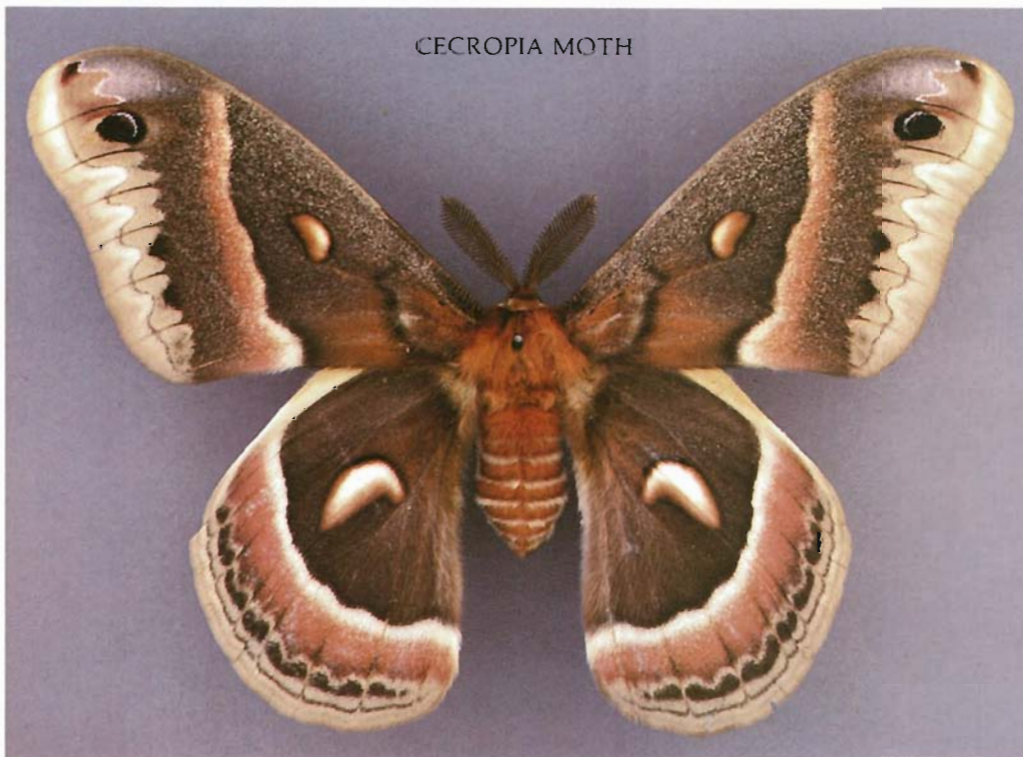
Cecropia moth (*Hyalophora cecropia*). Cecropia is our largest moth. It is fairly common but not often seen unless it comes to lights at night. It is frequently the cornerstone of an amateur's collection. Larvae of the cecropia eat the leaves of many deciduous trees and shrubs including cherry, willow, elm, maple, and lilac.

Family Sphingidae

Sphinx moths. Graceful and powerful in flight, sphinx moths are frequently attracted to lights. The caterpillars are provided with a sharp though harmless horn or an "eye-spot" on their tail end. They do not spin a cocoon, but enter the ground to pupate. The larvae of the twin-spot sphinx (*Smerinthus geminatus*) feed on wild cherry; larvae of the modest sphinx (*Pachysphinx modesta*) feed on poplar and willow. Achemon sphinx (*Eumorpha achemon*) (not illustrated here) and pandora sphinx (*Eumorpha pandora*) feed on grape and Virginia creeper.

Clear wing sphinx (*Hemaris thysbe*). This moth also is a frequent visitor at flowers during the day. The larvae feed on viburnum.

Tomato hornworm sphinx (*Manduca quinquemaculata*). A serious pest of tomato and tobacco, the adult is frequently mistaken for a hummingbird hovering over flowers. Since its tongue is as long as its body, it sucks nectar from flowers without alighting. In the pupa the tongue is free from the rest of the body and looks like a jug handle.



CECROPIA MOTH



MODEST SPHINX



TWIN-SPOT SPHINX



PANDORA SPHINX



CLEAR WING SPHINX



TOMATO HORNWORM SPHINX



White lined sphinx (*Hyles lineata*). One of the most common sphinx moths, it flies day and night and is often seen at flowers. The larvae feed on many plants, including purslane and evening primrose.

Family Lymantriidae

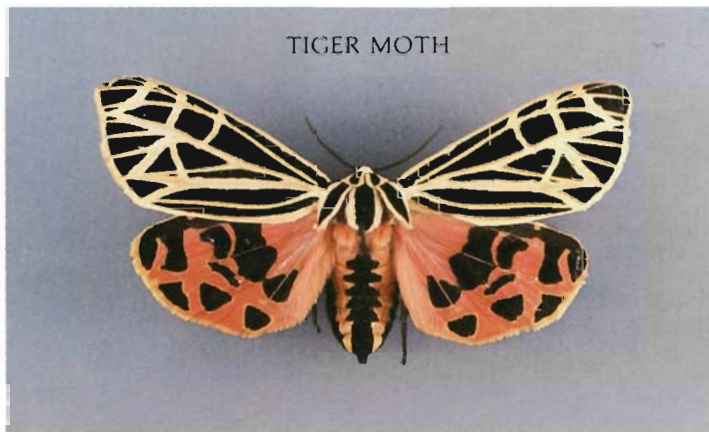
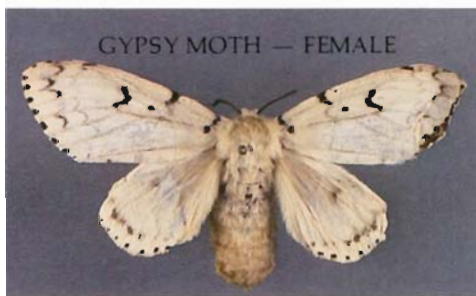
Gypsy moth (*Lymantria dispar*). An undesirable alien, the gypsy moth provides one of the greatest insect dangers to our forests. The larvae feed on more than 500 different kinds of plants and can completely defoliate large tracts of woodland.

Family Arctiidae

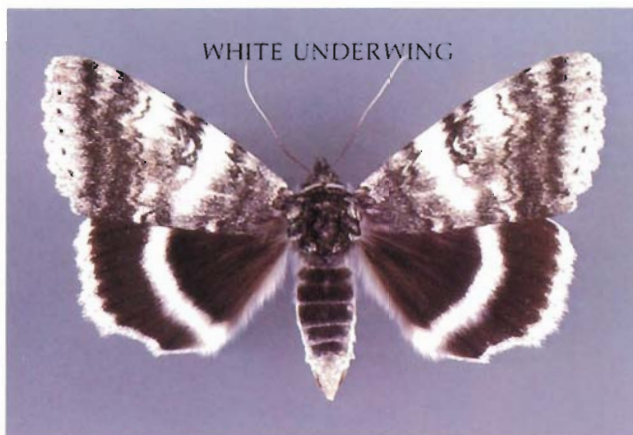
Tiger moth (*Apantesis virgo*). This moth is a representative of a rather large family, all of which are called tiger moths. The fuzzy caterpillars are usually called "bears"—woolly bear, yellow bear, etc. They feed generally on herbaceous plants.

Family Noctuidae

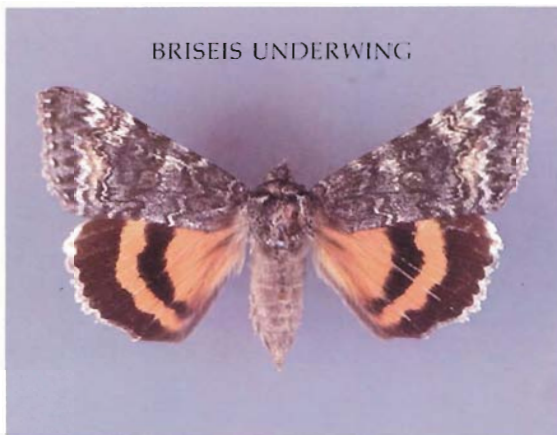
Underwing moths are some of the larger and certainly the most brightly colored members of the cutworm family. At rest the hind wings are completely covered by the front wings, which look much like the bark of the trees on which they rest. The white underwing (*Catocala relictata*) and briseis underwing (*Catocala briseis*) both feed on birch, poplar, and willow. Black witch (*Ascalapha odorata*) is a visitor in New York State. Its caterpillar feeds on trees related to the acacia in tropical America and the states bordering the Gulf of Mexico. It is a strong flyer and occasionally wanders as far north as Rochester and Plattsburgh.



WHITE UNDERWING

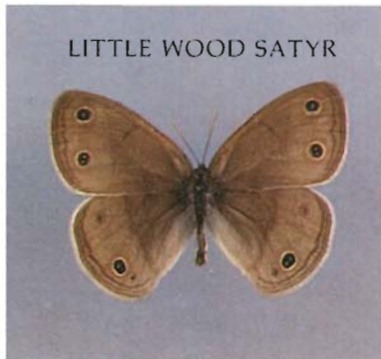


BRISEIS UNDERWING



BLACK WITCH





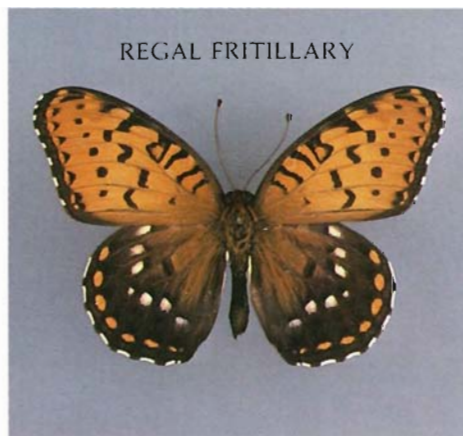
Family Satyridae

Little wood satyr (*Euptychia cymela*) and **wood nymph** or **grayling** (*Cercyonis pegala*). These dull-colored little butterflies are usually seen in open woods or wet meadows flying near the ground. When disturbed they flit through the tall grass or shrubbery. Their larvae feed on grasses.



Family Danaidae

Monarch (*Danaus plexippus*). One of our best-known butterflies, the monarch can fly great distances. Individuals, which reach maturity in late summer, band together and fly to the warmer climate of the Gulf states for winter. The following spring they migrate northward again. The caterpillar, with black, yellow, and white stripes around, feeds only on milkweeds. Birds leave the monarch alone, apparently because it tastes bad.



Family Nymphalidae

Fritillaries or **silverspots**. Several species of fritillaries are commonly seen flying or visiting flowers in open meadows. They are easily recognized by the distinctive spots on the underside of the wings. Their larvae feed on violets. The great spangled fritillary (*Speyeria cybele*) is one of the largest and most common. The regal fritillary (*Speyeria idalia*) is less common, most often seen in wet meadows.

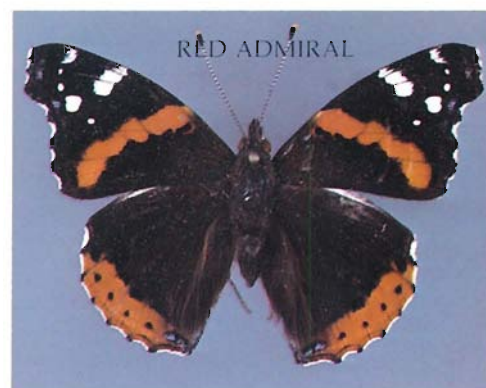
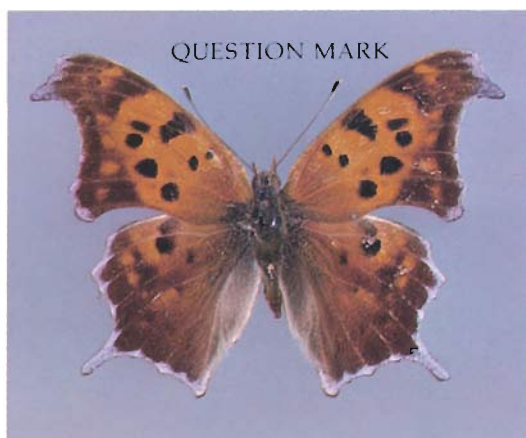
Question mark (*Polygonia interrogatilis*). The small silver mark on the underside of the wings gives this butterfly its name. These butterflies are often seen feeding on rotting fruit, flowers, or carrion. The larvae feed on elm, hackberry, nettle, and hops.

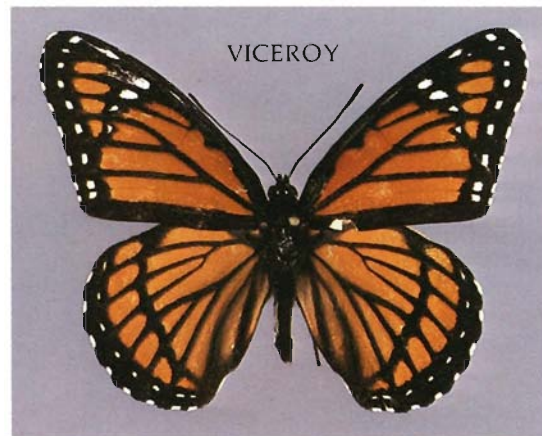
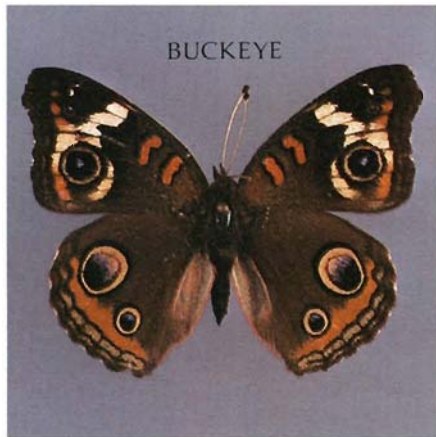
Compton tortoise shell (*Nymphalis j-album*). This butterfly sometimes is found on woodland roads in early spring. Its larvae feed on birches.

Baltimore (*Euphydryas phaeton*). This butterfly usually is seen in wet meadows near its host plant, turtlehead.

Red admiral (*Vanessa atalanta*). This butterfly frequently is seen on thistle flowers. The larvae eat leaves of nettle, hops, and related plants.

Mourningcloak (*Nymphalis antiopa*). This is one butterfly that spends the winter in the adult stage, hibernating in hollow logs or other sheltered places. It may be seen flying on warm days during winter. The caterpillars feed on elm, willow, poplar, and rose.





Banded purple (*Limenitis arthemis*) and **red-spotted purple** (*Limenitis astyanax*). Considered to be different races of the same species, the banded is more common in the northern part of New York, while the red-spotted purple occurs mainly south of the Mohawk River. Caterpillars are found on birch, poplar, cherry, and willow.

Buckeye (*Precis coenia*). The buckeye is a frequent visitor to flowers and mud puddles. Larvae feed on various plants including plantain, snapdragon, and sedum.

Viceroy (*Limenitis archippus*). Closely related to the purples, this butterfly mimics the monarch in color—a similarity that offers it some protection from birds. Larvae feed on willow, cherry, poplar, and apple.

Family Pieridae

Dog-face butterfly (*Colias cesonia*). This butterfly is rather rare in New York, but is common further south. Its caterpillar feeds on clover and false indigo.

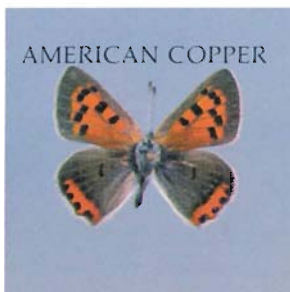
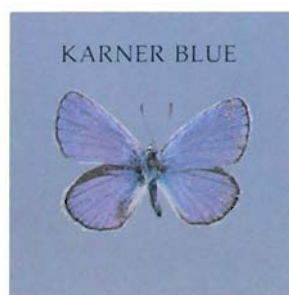
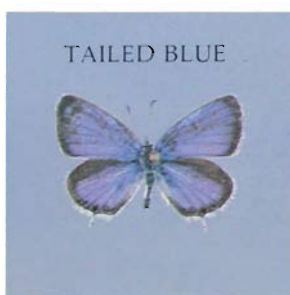
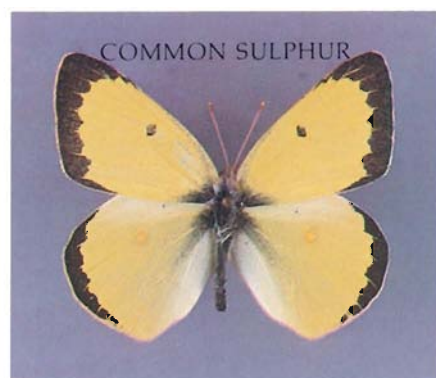
Imported cabbageworm butterfly (*Pieris rapae*). Brought to North America in 1860, this butterfly has spread across the continent and has become a pest on cabbage and other crucifers. These butterflies can be found almost everywhere in open areas in the spring.

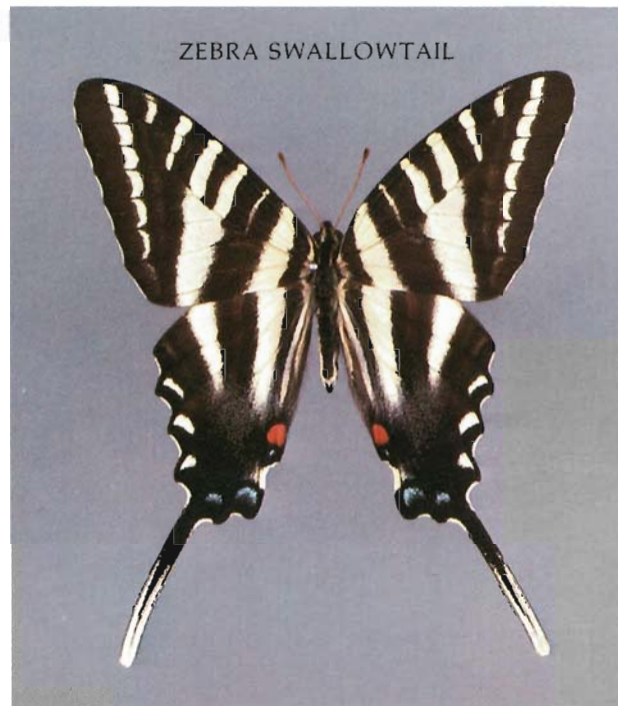
Common sulphur (*Colias philodice*). This butterfly is often seen swarming around mud puddles. The larvae feed on clover, alfalfa, and related plants.

Family Lycaenidae

Tailed blue (*Everes comyntas*) and **karner blue** (*Lycaeides melissa samuelis*). Our smallest butterflies, they are usually seen in open meadows where their host plants grow. The larvae eat legumes such as bean, bush clovers, and lupine. The karner blue is on the endangered species list because much of its habitat is being destroyed.

American copper (*Lycaena phlaeas americana*). Seeming to carry a chip on its shoulder, it will attack larger butterflies and other insects flying near it and drive them away. Klots reports that it will "dart at birds, dogs, and even butterfly collectors."





Family Papilionidae

Zebra swallowtail (*Graphium marcellus*). This insect is found in the southern parts of the Northeast where its host, pawpaw, occurs.

Giant swallowtail (*Papilio cresphontes*). Our largest butterfly, the giant swallowtail is found in the southern parts of New York. The caterpillar, known as the orange dog, is sometimes a pest of citrus trees. Prickly ash is its host in this state.

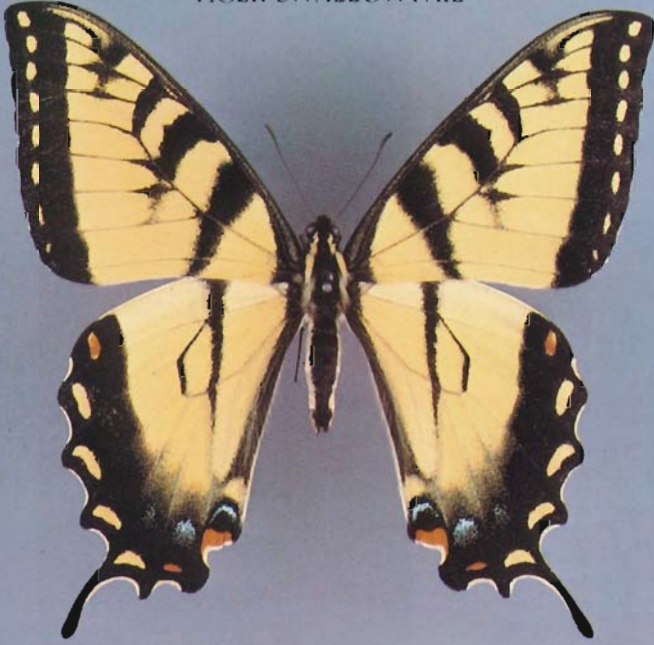
Tiger swallowtail (*Papilio glaucus*). This swallowtail frequently is seen visiting garden flowers. Its larvae feed on many trees.

Black swallowtail (*Papilio polyxenes asterius*). The black swallowtail is commonly seen in meadows and along open roadsides. Its larva, also called parsleyworm and sometimes considered a pest, feeds on carrots, celery, and related plants.

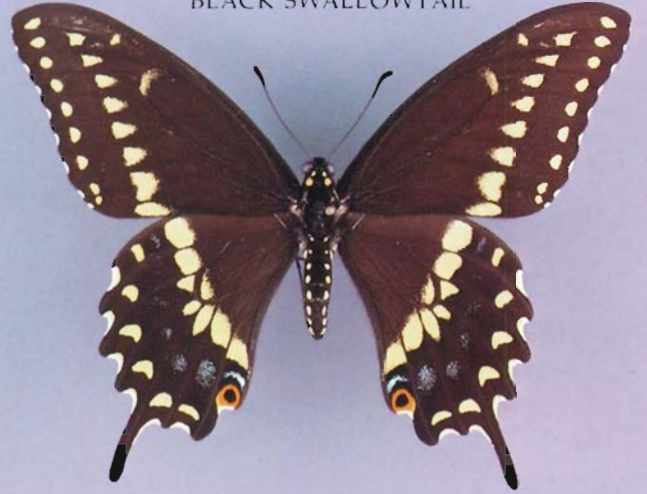
Spicebush swallowtail (*Papilio trolius*). Another swallowtail seen at flowers, the larvae feed on spicebush, sassafras, and tulip tree.

Pipevine swallowtail (*Battus philenor*). Larvae of this butterfly feed on wild ginger and pipevine. It is often a migrant to the southern parts of the Northeast from states farther south.

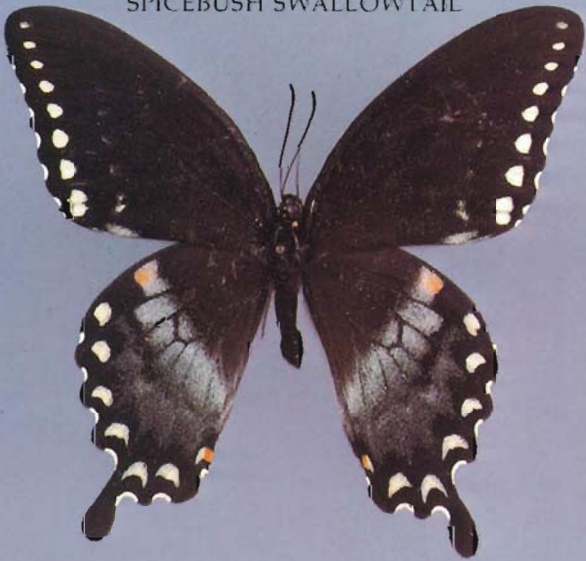
TIGER SWALLOWTAIL



BLACK SWALLOWTAIL



SPICEBUSH SWALLOWTAIL



PIPEVINE SWALLOWTAIL





Skippers are not considered to be true butterflies, but are placed between the butterflies and the moths. They often exhibit a somewhat jerky flight pattern.

Family Hesperiidae

Silverspotted skipper (*Epargyreus clarus*). More common in western and southern New York, this skipper often strays into gardens. Larvae occur on young black locust trees.

European skipper (*Thymelicus lineola*). Spreading rapidly across the state, this skipper is expected soon to be found in all counties. The larvae feed on timothy and can become a minor pest in hayfields.

Longtailed skipper (*Urbanus proteus*). A southern skipper, the longtailed skipper is known from the New York City area and south. Its larva is a pest of beans and related plants.