

Butterfly Life Cycle

Adult female butterflies seek out specific host plants on which to lay their eggs. Some species of butterflies will lay eggs on many kinds of plants, while other butterflies require one certain plant species. The caterpillars (larvae) hatch from the eggs, feed on the host plant, and eventually form chrysalises (pupae). Inside the chrysalis, a caterpillar metamorphoses (pupates) into an adult butterfly. The butterfly then emerges and seeks mates, food, and host plants to continue the cycle.

Host Plants in Duke Forest

Many different kinds of plants in the Duke Forest are used as host plants, including oak and hickory trees (hairstreaks, duskywings), hackberry trees (emperors, snouts, anglewings), milkweeds (Monarch), violets (fritillaries), and various grasses and sedges (browns, pearly-eyes, satyrs, many species of skippers).

Nectar Plants in Duke Forest

While many species of butterflies breed in the Duke Forest, others simply pass through in search of flower nectar or other resources. Here are some examples of flowers that are good nectar sources for butterflies in the Duke Forest:

Spring

Eastern Redbud (*Cercis canadensis*)
Blackberries (*Rubus spp.*)

Summer

Elephant's-foot (*Elephantopus spp.*)
Dogbane (*Apocynum cannabinum*)
Coreopsis (*Coreopsis spp.*)
Mountain-mint (*Pycnanthemum spp.*)
Milkweeds (*Asclepias spp.*)

Fall

Asters (*Aster spp.*)
Blazing-stars (*Liatris spp.*)
Sneezeweeds (*Helenium spp.*)
Goldenrods (*Solidago spp.*)

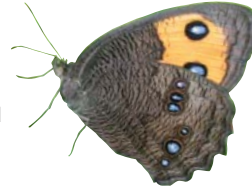
Flight times

Different species of butterflies are found at different times of the year. Some butterflies complete their life cycles multiple times in a single year, having several broods. Adults of these species (Eastern Tiger Swallowtails, for example) can be found from spring into fall as one brood blends into another.

Other species may have only one (e.g., Banded Hairstreak) or two (e.g., Red-banded Hairstreak) broods per year and, therefore, will be found only during specific times of the year. This checklist shows these "flight times" for all species found in the Duke Forest. This information can help you distinguish between two confusing species if their flight times differ (e.g., Juvenal's and Horace's Duskywings).

Warm Winter Days

While most butterfly species spend the winter as eggs, caterpillars, or chrysalises, a few butterflies actually overwinter as adults, hibernating under loose tree bark until warm sunny days appear. On such days, you may take a stroll in the Forest and look for species like American Snout, Mourning Cloak and the "anglewings" (Eastern Comma and Question Mark).



Identification Tips

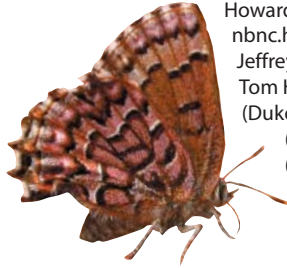
A good pair of close-focusing (to 6 feet or less) binoculars are very helpful for watching butterflies. Note the overall size, shape, colors, and pattern of the markings on the upperside and underside if possible. Then consult a good field guide such as *Butterflies Through Binoculars: The East* by Jeffrey Glassberg, or *The Kaufman Focus Guide to Butterflies of North America* by Jim Brock and Kenn Kaufman. Be sure to also note the time of year and consult this checklist to see which species are expected that season.

Butterfly Collecting

Collecting in Duke Forest is by permit only. Please contact the Office of the Duke Forest at 919-613-8013.

Acknowledgements

Designed, developed and edited by Jeffrey S. Pippen (Nicholas School of the Environment and Earth Sciences, Duke University). Data compiled from *Notes of the Butterflies of North Carolina, 12th Approximation* by Harry LeGrand and Tom Howard <<http://www.ncsparks.net/butterfly/nbnc.html>> with additional field surveys by Jeffrey S. Pippen. Contributing consultants: Tom Howard (NC State Parks), Will Cook (Duke University), Amy Chapman-Braun (Duke University) and Harry LeGrand (NC Natural Heritage Program).



All photos in this brochure by Jeffrey S. Pippen.

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Please report any noteworthy butterfly sightings to the Office of the Duke Forest at 919-613-8013. <<http://www.dukeforest.duke.edu>>



DUKE FOREST
Teaching & Research Laboratory
ESTABLISHED 1951



Butterflies of the Duke Forest

Butterflies (and moths) are classified by scientists as insects in the order Lepidoptera (meaning "scaly-winged"). At least 81 species of butterflies have been recorded in the Duke Forest, nearly half of all butterfly species regularly occurring in the State of North Carolina! Butterflies depend on plants, and the diversity of vegetation and habitats in the Duke Forest results in a high diversity of butterflies.



Tips for finding butterflies in Duke Forest

•**Warm and sunny** -- Look for them on warm, sunny days. Because butterflies cannot generate much body heat on their own, they are generally active only when it's warm and at least somewhat sunny.

•**Flowers** -- Look closely at flowers. Many species of butterflies can be easily observed while they're sipping nectar from flowers ("nectaring").

•**Mud, stream banks, scat, and rotting fruit** -- Some species of butterflies prefer to get their food and moisture requirements from these alternate sources.






•**Dirt roads & trails** -- During the morning hours, butterflies are often found basking on sunny patches on dirt roads.































































































•**Open areas** -- Butterflies are most often found where the sun shines in open areas such as wide trails, roadsides, powerline corridors, fields, and stream banks. They are found less often in shade.


















































































































































































Duke Forest Butterfly Checklist

Abundance Designations: determined monthly and based on proper habitat

-  Abundant: Easily seen and often in large numbers
-  Common: Usually seen
-  Uncommon: Usually present in low numbers, but not always seen
-  Rare/Local: Not usually seen; may be known from only 1 or 2 locales
-  Very Rare: Known only from less than ten records

SWALLOWTAILS	FebMar	AprMay	Jun Jul	AugSep	OctNov
Pipeline Swallowtail (<i>Battus philenor</i>)					
Zebra Swallowtail (<i>Eurytides marcellus</i>)					
Black Swallowtail (<i>Papilio polyxenes</i>)					
Eastern Tiger Swallowtail (<i>Papilio glaucus</i>)					
Spicebush Swallowtail (<i>Papilio troilus</i>)					
WHITES & SULPHURS					
Cabbage White (<i>Pieris rapae</i>)					
Falcate Orange-tip (<i>Anthocharis midea</i>)					
Clouded Sulphur (<i>Colias philodice</i>)					
Orange Sulphur (<i>Colias eurytheme</i>)					
Cloudless Sulphur (<i>Phoebis sennae</i>)					
Little Yellow (<i>Eurema lisa</i>)					
Sleepy Orange (<i>Eurema nicippe</i>)					
GOSSAMER-WINGS					
Harvester (<i>Feniseca tarquinius</i>)					
Great Purple Hairstreak (<i>Atlides halesus</i>)					
Coral Hairstreak (<i>Satyrium titus</i>)					
Banded Hairstreak (<i>Satyrium calanus</i>)					
Striped Hairstreak (<i>Satyrium liparops</i>)					
Oak Hairstreak (<i>Satyrium favonius</i>)					
Henry's Elfin (<i>Callophrys henrici</i>)					
Eastern Pine Elfin (<i>Callophrys niphon</i>)					
Juniper Hairstreak (<i>Callophrys gryneus</i>)					
White M Hairstreak (<i>Parrhasius m-album</i>)					
Gray Hairstreak (<i>Strymon melinus</i>)					
Red-banded Hairstreak (<i>Calycopis cecrops</i>)					
Eastern Tailed-Blue (<i>Everes comyntas</i>)					

	FebMar	AprMay	Jun Jul	AugSep	OctNov
Spring Azure (<i>Celastrina ladon</i>)					
Summer Azure (<i>Celastrina neglecta</i>)					
BRUSHFOOTS					
American Snout (<i>Libytheana carinenta</i>)					
Gulf Fritillary (<i>Agraulis vanillae</i>)					
Variiegated Fritillary (<i>Euptoieta claudia</i>)					
Great Spangled Fritillary (<i>Speyeria cybele</i>)					
Silvery Checkerspot (<i>Chlosyne nycteis</i>)					
Pearl Crescent (<i>Phyciodes tharos</i>)					
Question Mark (<i>Polygonia interrogationis</i>)					
Eastern Comma (<i>Polygonia comma</i>)					
Mourning Cloak (<i>Nymphalis antiopa</i>)					
American Lady (<i>Vanessa virginiensis</i>)					
Painted Lady (<i>Vanessa cardui</i>)					
Red Admiral (<i>Vanessa atalanta</i>)					
Common Buckeye (<i>Junonia coenia</i>)					
Red-spotted Purple (<i>Limenitis arthemis</i>)					
Viceroy (<i>Limenitis archippus</i>)					
Hackberry Emperor (<i>Asterocampa celtis</i>)					
Tawny Emperor (<i>Asterocampa clyton</i>)					
Northern Pearly-eye (<i>Enodia anthedon</i>)					
Appalachian Brown (<i>Satyrodes appalachia</i>)					
Gemmed Satyr (<i>Cyllopsis gemma</i>)					
Carolina Satyr (<i>Hermeuptychia sosybius</i>)					
Little Wood-Satyr (<i>Megisto cymela</i>)					
Common Wood-Nymph (<i>Megisto cymela</i>)					
Monarch (<i>Danaus plexippus</i>)					
SPREADWING SKIPPERS					
Silver-spotted Skipper (<i>Epargyreus clarus</i>)					
Long-tailed Skipper (<i>Urbanus proteus</i>)					
Hoary Edge (<i>Achalarus lyciades</i>)					

	FebMar	AprMay	Jun Jul	AugSep	OctNov
Southern Cloudywing (<i>Thorybes bathyllus</i>)					
Northern Cloudywing (<i>Thorybes pylades</i>)					
Confused Cloudywing (<i>Thorybes confusus</i>)					
Sleepy Duskywing (<i>Erynnis brizo</i>)					
Juvenal's Duskywing (<i>Erynnis juvenalis</i>)					
Horace's Duskywing (<i>Erynnis horatius</i>)					
Zarucco Duskywing (<i>Erynnis zarucco</i>)					
Common Checkered-Skipper (<i>Pyrgus communis</i>)					
GRASS SKIPPERS					
Swarthy Skipper (<i>Nastra lherminier</i>)					
Clouded Skipper (<i>Lerema accius</i>)					
Least Skipper (<i>Ancyloxypha numitor</i>)					
Fiery Skipper (<i>Hylephila phyleus</i>)					
Tawny-edged Skipper (<i>Polites themistocles</i>)					
Crossline Skipper (<i>Polites origenes</i>)					
Southern Broken-Dash (<i>Wallengrenia otho</i>)		