

# HUDSONIA HARLEM VALLEY BIODIVERSITY MANUAL SUPPLEMENT

## Rare Butterflies

This profile covers butterflies generally, with an emphasis on rare and vulnerable, habitat-dependent species. Selected species are discussed here as examples, but many other butterflies occur or could occur in the study area. NYNHP (2008) lists 34 species of butterflies as rare in New York State, at least ten of which might occur in the study area. Regionally rare or regionally scarce species are roughly equal in number in the Harlem Valley.

## Habitats in the Study Area

Because butterflies are dependent upon plants (as nectar sources for adults and food plants for caterpillars) their habitats are vegetation-based, and in turn moisture- and substrate-based. Flying adults are more likely to be seen in open habitats than in forests. For several reasons, butterfly caterpillars tend to feed on herbaceous rather than woody plant species. Open wetlands such as fens, wet meadows and marshes, and open uplands such as barrens, meadows and grasslands are important habitats for butterflies, including rare species. Edge habitats are especially productive, having resources for both adults and caterpillars. Fens and marshes are limited mainly to the flat, central Harlem Valley, on calcareous soils. Sedge meadows and shallow marshes may be found on a variety of substrates, in lowlands, and to a lesser extent on ridges. Bogs are more frequent in the study area at the margins of lakes and ponds, or on the summits of ridges. Wet meadows on agricultural land tend to have fewer native plant species and less potential for rare butterflies.

Certain parts of the study area have potential for particular species. The northern Taconic mountains and Mt. Riga uplands have potential for northern butterflies such as arctic skipper, salt-and-pepper skipper, and green comma (all regionally rare). Conifer-hardwood forests, woodlands and grasslands are the most common crest habitats in the northern Taconics, which lack the rock barrens characteristic of the crests south of Mt. Fray (McVaugh 1958). The Dover Furnace ridges west of NYS Rt. 22 (Towns of Dover and Pawling), eastern Hudson Highlands (Town of Beekman, Dutchess Co., Town of Kent, Westchester Co.) and the few open ridges of northeast Westchester County (e.g. Ward Pound Ridge Reservation, Town of Pound Ridge, Westchester County) have patches of pine-oak barrens with potential for butterflies of southern affinity such as northern oak hairstreak, eastern pine elfin and Horace's duskywing. The marble hills of the central valley in Dover have potential for falcate orangetip, pink-edged sulfur, frosted elfin and red-banded hairstreak.

## Study Area Distribution

The distribution in the Harlem Valley of most of the species included here (See Table X.) is poorly known. Falcate orangetip (NHP S3S4), occurring on calcareous crests in the Hudson Valley, was found by a Hudsonia biologist in the Town of Fishkill, Dutchess County, a few miles west of the study area (Barbour 2000). In 2007 James Utter (SUNY Purchase) discovered northern metalmark (S1 E), a butterfly of calcareous crests and ledges, in southeastern Dutchess County (see species profile). Hudsonia scientists found regionally-rare salt-and-pepper skipper in the Mt. Riga uplands (Barbour 1994). Early hairstreak (*Erora laeta*), a regionally-rare resident of high-elevation beech forests, is known from Mt. Graylock (Robert Dirig, personal communication) and may occur in similar habitat in the study area (e.g. Austerlitz, Columbia County). Bog copper (*Lycaena epixanthe*) RR is known from cranberry bogs in adjacent New England (Connecticut Natural Heritage Program, Massachusetts Natural Heritage Program, David Wagner, personal communication) and may be found in nearby bogs in the study area. Glassberg

(1993) reports bog elfin (*Callophrys lanoraieensis*) in a bog near Syracuse, and this species could occur, perhaps in the Rensselaer Plateau, in bogs with its caterpillar host plant, black spruce (*Picea mariana*).

### **Other Relevant Aspects of Ecological Niche and Behavior**

Topography and geology are good guides to locating potential butterfly habitats. Different species live in different microclimates at different elevations and aspects in the landscape. Some species prefer calcareous bedrock, or rocky places with sparse vegetation. Some caterpillars (e.g. Baltimore) build shelters of silk or silk and plant materials, which protect them from weather and predators. Butterflies of open habitats typically fly low, and tend to dip down into dense vegetation to evade pursuers. Forest butterflies gravitate toward sunny openings and edges, such as utility rights-of-way. Flowers, as nectar sources, are important for many species, but a number of forest species (e.g. commas) feed on sap and other liquids within the forest.

### **Description and Identification**

Most guides to butterflies have good descriptions and general information on habits, habitats and seasonal appearance. Illustrations may not help much to distinguish between similar species. Regional guides that do not include similar-appearing non-regional species help avoid confusion in identification except for stray individuals outside their natural ranges. In the field it is fairly easy to distinguish butterflies of different groups (even small blues, coppers, hairstreaks, elfins and skippers), but species within each group tend to be similar in appearance. Caterpillar host plants are good field indicators of species likely to be observed. Knowing the flight seasons of adults of different species is also helpful. Good, close-focusing binoculars are essential for seeing subtle, salient wing markings and other small features. A close-focusing, medium telephoto lens is required for getting photographs of sufficient quality for identification. Local researchers may have more detailed information regarding a butterfly species' habits and preferences in the study area. Knowledge of host plants is essential for identifying potential habitats.

### **Threats and Conservation**

Lack of water in summer does not pose a problem for most butterflies unless conditions are so dry that caterpillar host plants may lose water and nutrients, becoming unable to support caterpillars. Flash floods in summer may drown caterpillars if host plants become rapidly submerged (personal observation). Insecticides, mowing, grazing animals, and invasive plants may threaten butterflies, especially in agricultural areas. The most serious human-caused threats are habitat destruction, both from development and excess manicuring of maintained grounds. Conservation measures include habitat preservation and restoration by government agencies and non-governmental organizations. The recent popularity of butterfly gardening is a welcome trend, but of limited value to rare species of special habitats.

### **Survey Technique Constraints**

Knowledge of a species' flight season is essential to searches and studies. Skill in recognition/identification of caterpillar host plants helps to focus search efforts, as does a good eye for locating small, cryptic caterpillars. Look for eaten leaves (leaves with holes, stems or partial leaves), droppings on the ground, and silken shelters or rolled up leaves. To thwart predators caterpillars are often cryptically colored, or in contrast, brightly marked as a warning to predators of their toxicity. Some caterpillars feed after dark, especially in hot weather, so night visits to suitable habitats may yield success in finding caterpillars. Overcast days are usually poor for seeing butterflies, which require sunlight to heat their bodies sufficiently for flight. However, it may be productive to look for resting butterflies, especially if numbers are high. Basic counts of individuals may not require marking butterflies if an observer is

careful not to count the same individual twice. High numbers of a species often can be determined reasonably by visual estimate, though it should not be assumed that all butterflies present are flying at the same time.

### **References to Identification Literature**

Cech, R. and G. Tudor. 2007. *Butterflies of the East Coast: An Observer's Guide*. Princeton University Press. Princeton NJ. 360 p.

Glassberg, J. 1999. *Butterflies through Binoculars: The East*. Oxford University Press. New York, Oxford U.K. 242 p.

Pyle, R.M. 1981. *The Audubon Society Field Guide to North American Butterflies*. Knopf, New York. 915 p.

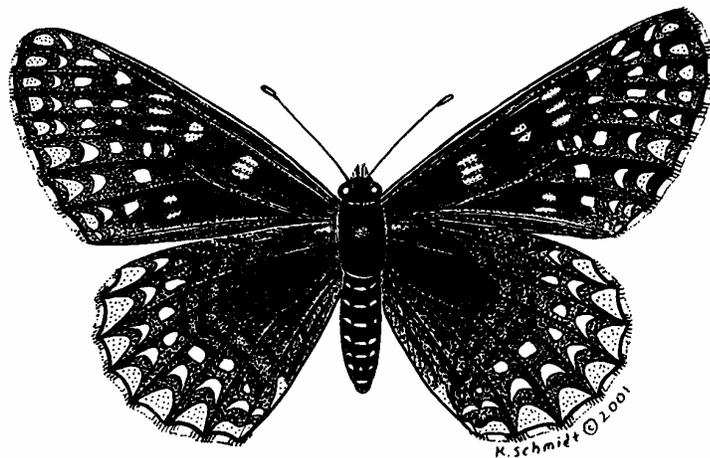
Opler, P.A. and Krizek, G.O. 1984. *Butterflies East of the Great Plains*. John Hopkins University Press. Boston. 294 p.

Wagner, D. L. 2005. *Caterpillars of eastern North America: A guide to identification and natural history*. Princeton University Press. Princeton, New Jersey. 512 p.

### **References cited**

Barbour, S. 1994. *Biological reconnaissance of the Mount Riga uplands*. Report to New York State department of Parks, Restoration and Historic Preservation. Hudsonia, Ltd., Red Hook, NY. 11 p.

Barbour, S. 2000. *Biological reconnaissance of North Fishkill Ridge, Town of Fishkill, Dutchess County, NY*. Hudsonia, Ltd., Red Hook, NY.



<b>Species</b>	<b>Rarity Rank</b>	<b>Habitat</b>	<b>Host Plant</b>
falcate orangetip	S3S4	rocky woodlands	rock cresses
pink-edged sulfur	S3S4	sand barrens	lupine, wild indigo
Hoary elfin	RR	heath barrens	bearberry
Frosted elfin	S1S3	sand barrens	lupine, wild indigo
Bog elfin	S1	spruce bogs	black spruce
Hessel's hairstreak	S1	Atlantic white cedar swamp	Atlantic white cedar
Edwards hairstreak	S3S4	oak-heath barrens	scrub oak
Northern oak hairstreak	S1S3	oak woodlands	oaks
red banded hairstreak	SU	with host plant	winged sumac
White-M hairstreak	SU	oak woodlands	white oak group
Early hairstreak	RR	beech groves on hilltops	beech, hazel
Appalachian azure	S3	rich forest edges, slopes	black cohosh
		rocky sites with host and nectar	
Northern metalmark	S1	flowers	roundleaf ragwort
bog copper	RR	cranberry bogs	cranberries
eyed brown	RS	sedge meadows, marshes	sedges
Baltimore	RS	wet meadows, fens	turtlehead
Green comma	RR	northern forests	birches
		river corridors, floodplains,	
Tawny emperor	S3	woodlands	hackberry
Silver-bordered fritillary	RR	wet meadows, fens	violets
Arctic skipper	RR	high-elevation wet meadows	grasses
Pepper-and-salt skipper	RR	grassy streamsides	grasses
Dion skipper	S3	fens, marshes, open swamps	lakeside sedge
Dusted skipper	S3	dry grasslands, grassy barrens	little bluestem