COLUMBIA COUNTY NY OPENLAND BUTTERFLIES: A DRAFT ECOLOGICAL CLASSIFICATION.

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Except for wetlands, sand/coastal plains, and some thin-soiled mountain tops, extensive tracts of open herbaceous vegetation have probably not been part of the Northeastern landscape since shortly after the last glaciation. Human activity, initially in relation to agriculture and subsequently associated with gardens and landscaping, has created the largest blocks of Northeastern fields. To a substantial degree, these are botanically novel lands and are unlike the herbaceous areas that most species have co-existed with during the past millennia. They include both native plants and numerous introduced exotics. This situation is distinct from the case further west where prairie forms a native grassland or in Europe where grasslands have been a major part of the land's habitat mosaic for thousands of years.

Our fields can nonetheless harbor "prairie birds" whose occurrence is more dependent on the structural, rather than botanical, similarities between our fields and the Prairies. Butterflies, on the other hand, are 'looking for' more exact botanical similarity due to the intricate evolutionary interactions of caterpillars and their food plant. Non-native plants are used by adults as nectar sources, but the caterpillars of only a few species have expanded their diets to include these newly-abundant plants.

Given this context, as we think about the management of our openlands for butterflies, it is useful to split the butterfly species into several ecological groups. (These groups are just based on personal observations in and around Columbia County and a review of the literature – *they are very 'soft' groups*, and some species can arguably be placed in several different classes). The proposed categories are the following:

1) **Visitors** who raise their caterpillars elsewhere but which, as adults, take advantage of the nectar resources of fields.
2) Butterflies of **Intensively Managed Fields and Lawns** whose caterpillars feed on widespread field crops or field weeds (e.g., alfalfa, vetch, mustards).
3) Butterflies of **Old Fields and Mature Hayfields** whose caterpillars feed on non-grass herbaceous plants or on an array of grasses and which thus occur in and around hay fields and old fields (Pearl Crescent and Eastern Tailed Blue are two of the most common examples). Some of these (e.g., Common Wood Nymph, Common Ringlet) seem to show some association with scattered woody vegetation and semi-savannah conditions.
4) Butterflies of **Dry, Thin-soiled Fields and Openings** whose caterpillars feed primarily on native grasses and which, prior to extensive modifications of grassland habitats, occurred in those dry hilltop or sand plain habitats; some of these are 'prairie butterflies' which are abundant in Midwestern prairies (e.g. Leonard's Skipper and Delaware Skipper), others seem to be more species of savannahs and dry woodland openings (e.g., Cobweb Skipper and Little Wood Satyr). They are now perhaps most common on semi-exhausted pastures and hayfields.
5) **Wetland** butterflies whose caterpillars are often sedge eaters.
6) **Riparian** butterflies found primarily along the edges and open banks of streams and rivers. The caterpillars of these species feed upon plants such as Nettles, Elms and Hackberry which favor these areas.

The ecological groupings of the openland butterfly species were derived from an analysis of more than 350 such surveys done primarily on current or former farmland around Columbia County. The habitat of each survey site was grossly characterized, and then average species counts and percent occurrence was calculated for each habitat. The habitat categories showing the highest counts and occurrences for each species were identified. This was a crude analysis but together with consideration of personal observations and reference to the literature may provide a working categorization.

Table 1 lists many of the local butterflies falling into each of the ecological groups. This is a ***regional*** list of ***openland*** butterflies – habitat affinities vary in other areas and forest butterflies are not considered. A few additional species have been left off of this list because they are relatively uncommon and because in the literature and in our observations their preferences were not distinct. The table also provides information on regional trends derived from a survey of the historic literature together with official conservation status and select ecological information for easy reference.

It is easy to consider all fields as roughly homogeneous, cultural habitat. In fact, from a butterfly's perspective, farm fields can vary radically in quality. In a landscape that still has a large agricultural component (the County is currently about 20% openland) understanding the ecological nuances of different field types can be important for conservation planning. Certain of these field types (e.g., wet open meadows and dry, thin-soiled fields) have high conservation value for butterflies and plants, and yet they play only a secondary agricultural role. Direct recompense to farmers for the maintenance of such fields may be appropriate.

Conversely, we should be clear about the relatively low conservation value of intensively managed crop fields and lawns. While crop fields play a central role in our food system and asking them to also provide direct conservation benefits may be unrealistic, lawns are a matter of fashion and effort should be focused on encouraging the conversion of lawns into ecologically more valuable openland types. Observations of two local examples of residential openlands which have been managed for native plant species have demonstrated the potentially high value of such lawn alternatives for native butterflies.

Agriculture is changing in the County, and the trend is for smaller, more intensive, market-vegetable farms. Simultaneously, residential development is increasing. In the face of these changes, an understanding and appreciation of the potential conservation value of openland habitats is becoming increasingly important.

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Table 1. A categorization of most of our openland butterflies into ecological groups

	Butterfly Species	Conservation Ranking (Global, National, State)[1]	Regional Conservation Status[2]	Regional Trends[3]	Caterpillar Food Plants[4]
VISITORS (visit for nectaring, caterpillars develop elsewhere)	Juvenal's Duskywing	G5, N5, S5		Not Distinct	Oak
	Occasional Hairstreak	G5, N5, S5		Not Distinct	Various trees
	Red Admiral	G5, N5, S5		Not Distinct	Nettles (a riparian resident, but regular field visitor)
	Red-Spotted Purple	G5, N5, S5		Not Distinct	Cherry, etc
	Spring/summer azure	G5, N5, S5		Not Distinct	Various woody plants
	Tiger Swallowtail	G5, N5, S5		Not Distinct	Cherry, etc
	Viceroy	G5, N5, S5		Not Distinct	Willow
INTENSIVELY MANAGED FIELDS AND LAWNS	Cabbage White	EXOTIC		UP	Mustard family
	Clouded Sulphur	G5, N5, S5		UP	Legumes
	Common Sootywing	G5, N5, S5		Not Distinct	Lambs Quarters
	Orange Sulphur	G5, N5, S5		Not Distinct	Alfalfa, etc
	Silver-Spotted Skipper	G5, N5, S5		Not Distinct	Locust and herbaceous legumes, etc
	Wild Indigo Duskywing	G5, N5, S4		UP	Vetch
OLD FIELDS & MATURE HAYFIELDS	American Copper	G5, N5, S5		Not Distinct	Docks
	American Lady	G5, N5, S5		Not Distinct	Pussy Toes, Pearly Everlasting
	Black Swallowtail	G5, N5, SNR	S, D	DOWN	Umbles
	Common Checkered Skipper	G5, N5, S5		UP	Mallows
	Common Ringlet[6]	G5, N5, S5		UP	Little Bluestem, Kentucky Bluegrass
	Common Wood Nymph[6]	G5, N5, S5		Not Distinct	Tall Red Top, Little Bluestem, Kentucky Bluegrass, Purple Top
	Delaware Skipper	G5, N5, S5		UP	Little Bluestem, Switch Grass
	Dun Skipper	G5, N5, S5		Not Distinct	Sedges, esp. *Carex lacustris*
	Eastern Tailed Blue	G5, N5, S5		Not Distinct	Legumes
	European Skipper	EXOTIC		UP	Orchard Grass, Timothy, etc
	Great Spangled Fritillary	G5, N5, S5		Not Distinct	Violets
	Hobomok Skipper	G5, N5, S5		Not Distinct	Little Bluestem, Kentucky Bluegrass, Panic Grass, Orchard Grass
	Meadow Fritillary[6]	G5, N5, S5	R, D	DOWN	Violets
	Monarch	G5, N5, S5		Not Distinct	Milkweeds
	Northern Broken Dash	G5, N5, S5		Not Distinct	Panic Grasses, Switch Grass
	Painted Lady	G5, N5, S5		Not Distinct	Various herbaceous plants
	Pearl Crescent	G5, N5, S5		Not Distinct	Asters
	Peck's Skipper[6]	G5, N5, S5		Not Distinct	Little Bluestem, Kentucky Bluegrass, Rice Cut Grass
	Tawny Edged Skipper	G5, N5, S5		UP	Panic Grasses

DRY, THIN-SOILED FIELDS & OPENINGS (with abundant native grasses)	Cobweb Skipper	G4, N4N5, S4	R	Not Distinct	Little Bluestem, other Beard Grasses
	Indian Skipper	G4G5, N4N5, S5		UP	Little Bluestem, Kentucky Bluegrass, Red Fescue, Panic Grasses, etc.
	Leonard's Skipper	G4, N4, (S5)	R	DOWN	Little Bluestem, Poverty Grass, etc
	Little Wood Satyr	G5, N5, S5		Not Distinct	Little Bluestem, Kentucky Bluegrass, Orchard Grass, Sedges?
WETLANDS (inc. pond edges)	Appalachian Brown	G4, N4, S5		Not Distinct	Tussock & Other Sedges
	Baltimore Checkerspot	G4, N4, S4	S?	Not Distinct	Turtlehead & Plaintain
	Black Dash Skipper	G4, N4, S3S4	R	Not Distinct	Tussock Sedge
	Broadwing Skipper	G5, N5, SNR		UP	Common Reed
	Bronze Copper	G4G5, N4N5, S4	R	Not Distinct	Dock
	Dion Skipper	G4, N4, S3	NR	Not Distinct	*Carex lacustris*
	Eyed Brown	G4, N4, S4	S	Not Distinct	Tussock & Other Sedges
	Harvester	G4, N4, S4		Not Distinct	Alder Aphids
	Least Skipper	G5, N5, S5		Not Distinct	Little Bluestem, Kentucky Bluegrass, Rice Cutgrass, Foxtail, etc
	Little Glassywing	G5, N5, S5		UP	Purple Top and other grasses?
	Mulberry Wing	G4, N4, S4	S?	Not Distinct	Tussock Sedge
RIPARIAN AREAS (semi-open banks of streams & riversides	American Snout	G5, N5, -		Not Distinct	Hackberry
	Eastern Comma	G5, N5, S5		UP	Nettles, Elm
	Hackberry Emperor	G5, N5, S3S4	NR	Not Distinct	Hackberry
	Question Mark	G5, N5, S5		Not Distinct	Elm

[1]- Derived primarily from the NatureServe web site in early January 2011.

[2]- Derived from Kiviat and Steven's *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* ; "S" = Scarce, "R"= Rare, "D"= Declining, "NR" means that a species was listed in their table of rare species, but was not given a rank, no ranking means the species was not listed in their table

[3]- Trends data are derived from various published butterfly reports from around the Northeast dating back to the mid 19th century. Some species, such as Black Swallowtail, are not rare but do appear to be decling; others, such as Mulberry Wing are currently rare but apparently have never been common duirng this period.

[4]- Caterpillar food data is derived from regional butterfly guides: Cech and Tudor's *Butterflies of the East Coast* , the Mass Audubon butterfly atlas (www.massaudubon.org/butterflyatlas/), and *The Connecticut Butterfly Atlas* by O'Donnell *et al.* ; the lists are not exhaustive.

[6]- The 'Old Field and Mature Hayfield' group is a conglomerate that includes species occuring in a variety of field types; these species are rarely all found together. One apparent division is that certain species (indicated by *) seem to be most common in fields with at least some invasion by woody plants, one might term these semi-savannahs. Other species, such as the Common Checkered Skipper, seem most common in very short grasslands.