Massachusetts Butterflies

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Officers of the Massachusetts Butterfly Club

President: Bill Benner
53 Webber Road
West Whately, MA 01039
(413) 665-3806
BillB55@aol.com

Treasurer: Lyn Lovell
198 Purchase Street
Milford, MA 01757
(508) 473-7327
jhlovell@comcast.net

Vice President-East:
Stephen E. Moore
400 Hudson Street
Northboro, MA 01532
(508) 393-9251
barb620@theworld.com

Vice-President-West:
Barbara Walker
33 Woodland Road
Auburn, MA 01501
(508) 754-8819
barbara.walker@umassmed.edu

Secretary: Wendy Miller,
508 Edgebrook Drive, Boylston, MA 01505
(508) 869-6039
wmiller29@verizon.net

Massachusetts Butterflies Staff

Editor: Sharon Stichter 108 Walden St., Cambridge, MA 02140
sharonstichter2@comcast.net

Records Compiler: Erik Nielsen 47 Pond Plain Rd., Westwood, MA 02090
(781) 762-7708 erik@massbutterflies.org

Webmaster: Dale Rhoda 330 Blandford Drive, Worthington, OH 43085
(614) 430-0513 daler@alumni.duke.edu
Web address: www.massbutterflies.org

Submission of Articles, Illustrations, and Season Records

We encourage all members to contribute to *Massachusetts Butterflies.* Articles, illustrations, butterfly field trip reports, garden reports, and book reviews are all welcome, and should be sent to the Editor by September 15 for the Fall issue, and January 15 for the Spring issue.

Send Fourth of July count results to Erik Nielsen by August 1 for inclusion in the Fall issue, and your season sightings and records to Erik by December 31 for inclusion in the Spring issue. Records may now be submitted via the online checklist and reporting form, which is available for download from http://www.massbutterflies.org/club-publications.asp or from http://www.massbutterflies.org/downloads/massbutterflies.xls

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Cover Photo: Variegated Fritillary (Euptoieta claudia), by Frank Model, Northampton Community Gardens, September 23. 2007

Why Do Butterflies Overwinter at Different Life Stages?

A Reflection on the Power of Lifestyle

Rick Cech

New England is, by reputation, the land of steady habits (Connecticut bears that title formally). Its butterflies, on the other hand, exhibit an innovative and opportunistic range of lifestyles. One aspect of their biology that inevitably puzzles the serious observer is how (and why) particular northern butterfly species elect to overwinter at just one of their four available life stages (egg, caterpillar, chrysalis, adult). Most species do use just one stage (rarely two), and each of the four available stages is used by at least some species.

In a northerly location such as Massachusetts, surviving winter cold is among the most critical ecological challenges facing non-migratory butterflies. Massachusetts has rather few migratory species, moreover, so the question is one of primary concern within the state's lepidopteran circles.

How can we explain this ecological selection process? When I first considered this question in the mid-1990s, some of those I consulted offered mere chance as an explanation. Others suggested that modern-day preferences might reflect habits formed eons ago (butterflies have existed for at least 40 million years, after all). Such primordial preferences might not have any contemporary adaptive significance at all.

Neither of these viewpoints seemed to illuminate the topic much, nor did they quiet my curiosity. Pure chance seldom explains the driving forces of natural selection, and even if modern-day habits do have ancestral origins, what caused them to form as they did?

I eventually sided with those who view overwintering stage as an expression of a butterfly's ecological lifestyle. Indeed, this small but essential bit of adaptive strategy is often a central defining point in a successful lifestyle, i.e., one that reliably works.

Before proceeding, we need to say a few words about diapause itself, the insect equivalent of mammalian hibernation. To be honest, a few words really are not enough, since diapause is a highly complex and variable phenomenon—an apt embodiment of the complexities of insect evolution generally. Still, even among mammals hibernation is not a unitary phenomenon. Chipmunks undergo "true hibernation," with drastically reduced respiration rates and body temperatures. Black Bears meanwhile fall into a prolonged, winter sleep that involves neither of these features.

On the butterfly side, it is important to recognize that no Massachusetts species are known to be *freeze tolerant*, that is, able to survive having their bodies frozen solid, then later reviving when thawed as though nothing unusual had happened. Rather, our temperate zone species are merely *cold hardy*, using internal chemicals such as glycerol and sorbitol to lower their freezing point and deter the formation of damaging ice crystals within their cells. These chemicals (the same type used in commercial antifreeze) allow a diapausing butterfly to *avoid* freezing solid in all but the harshest winters.

Diapause involves a virtually complete cessation of normal life activities, including reproduction, feeding, growth, and

development. It is induced by hormonal changes, triggered by a combination of internal and external cues. Among New England butterflies, day length (or *photoperiod*) is the commonest external trigger of diapause, followed by low temperatures, change in day length, and other factors. The exact mechanism varies with species, and not all aspects of the process are well-understood. A combination of triggers often seem involved, including potentially some that are poorly documented; even changes in humidity have been suggested. The hormones that induce diapause differ from case to case, largely as a function of the diapause life stage. (Reduced juvenile hormone drives adult diapause; lowered eclosion hormone plays the same role in diapausing pupas and caterpillars, and presence of a specially produced subesophageal hormone plays serves the purpose for eggs).

The signals relied upon to end diapause are at least as varied and complex as those that initiate it, and a single individual may have different triggers at either end of its winter quiescence. If the "end diapause" trigger fails, the resting butterfly may continue to be torpid until its internal fat resources are exhausted.

Not all butterflies that are inactive during winter are technically engaged in diapause. In warmer climates to our south, we often see a long, mostly inactive adult generation in which full diapause is absent (only sexual maturation may be delayed, in what is referred to as *reproductive diapause*). Closer to home, Dale Schweitzer recently detailed the manner in which Orange Sulphur caterpillars in New Jersey continue feeding throughout the winter in a state of reduced activity, but without true diapause. (Whether they can do this as far north as Massachusetts is unknown, though the recent escalation of average temperatures associated with global warming may increase its likelihood.)

Having reviewed diapause as a phenomenon, we return to the initial question: why should a particular butterfly species elect one (or rarely two) specific life stages at which to overwinter? The best apparent explanation is that a butterfly's hostplant lifestyle and overwintering strategy are closely related, and must work in tandem if the species is to succeed. Over the millennia, this results in an optimal stage selection.

But first, what is a "hostplant lifestyle"? Everyone knows that the caterpillars of particular butterflies are limited to feeding on certain hostplants (either one or a fixed set of such plants). But that is not the whole story—not even for butterflies specializing on individual toxic plants that render them unpalatable to predators. Rather, we must focus on the broad, strategic considerations associated with adopting a particular class of hostplants in preference to all others. Such a lifestyle commitment, once made, constrains many peripheral aspects of a butterfly's biology.

Herb Feeders: The first butterflies most likely were herb-feeders, consuming non-woody plants that frequent open or disturbed areas. Various pea-family relatives (recently reorganized taxonomically) epitomize this hostplant group. Herbs, as we are presently defining them, are generally low-growing and "non-apparent," meaning that once they have finished fruiting they die away and decompose. Unlike some other hostplant classes, herbs tend to be opportunistic and fast-growing, diverting less energy into producing toxins and more into rapid growth and opportunism. (Those that do produce toxins, such as milkweeds, aristolochias, and passionvines, fall into a distinct and highly specialized class, but even here a number of the biological generalizations that surround herb feeding may apply.)

Butterflies that specialize on herbs tend, like their hosts, to be opportunistic generalists, relying on rapid growth and mobility for survival. By focusing on nutritious, easily digested hostplants, they are able to proliferate and disperse, hopefully before predator concentrations can develop. (The caterpillars of some open-space pierids, such as Cabbage Whites, are covered with hairs that produce deterrent chemicals, just in case the predators do catch up.)

Grass Feeders: Grass is a highly specialized plant group. And although they do not produce toxins, grasses are composed largely of coarse, indigestible cellulose. They provide comparatively little accessible nutrition to herbivores. Organisms that feed on grass must evolve specialized adaptations, or else accept certain ecological trade-offs. For example, among mammals, ungulates have developed multi-chambered stomachs and other intestinal modifications to support cellulose digestion (assisted by microorganisms that produce digestive cellulase), and specialized molars to break through thick cell walls (which are often fortified with silica).

Grass-feeding caterpillars exchange the benefits of an abundant food supply for slower growth and a reduced ability to produce multiple large-adult generations per year. While they are less conspicuous in their open habitats than large mammalian grass-feeders, they lack toxicity and address their vulnerability by being fast (skippers) or by flying erratically and being cryptic at rest (most satyrs).

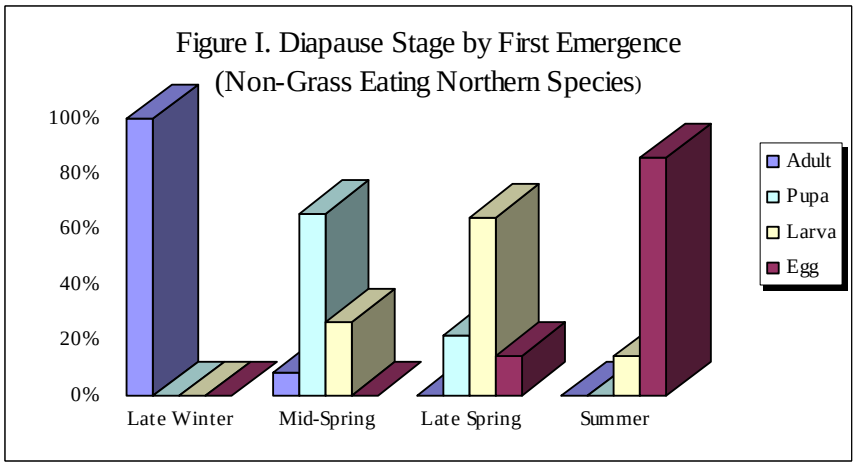
Tree Feeders: Large and permanent, trees would seem to be "sitting ducks" for a range of herbivores. But they fight back by producing a broad range of toxins and deterrent anti-herbivore chemicals. An example is tannin, which, while not toxic per se,

deters digestion. (Bird chicks fed on caterpillars with high tannin concentrations grow more slowly than chicks fed on tannin-free larvae.) Butterflies that specialize on tree hosts must be adept at difficult feats of detoxification and digestion. Caterpillars of the Eastern Tiger-Swallowtail produce multiple digestive enzymes, which can digest leaves from trees of multiple families, including some that do not grow where they live. From a defensive standpoint, arboreal butterflies use adaptations such as "false heads" to avoid predators that frequent their home environments, such as birds and lizards.

Flower Feeders: Flower-feeding is a specialized practice, prominent among Lycaenids (coppers, blues & hairstreaks). Females oviposit on still-closed flower buds, timing their approach so that the hatching caterpillars can move directly onto opening blossoms to feed. The plants selected often have multi-blossomed flowerheads, in which the caterpillars may hide (and which will not be prevented from reproducing by the loss of some flowers). Few flower-feeding caterpillars appear to derive toxins from their food: to protect themselves from local predators, they have developed sophisticated symbiotic mechanisms whereby marauding ants are placated by sweet secretions of "honeydew" from larval abdominal nipples; the ants, in turn, provide protection to the caterpillars (rather than consuming them).

In adopting one of the common ecological lifestyles discussed above, a butterfly gains adaptive benefits, but at the same time limits its options in coping with other life challenges—such as surviving winter cold. A butterfly's diapause strategy must integrate comfortably with everything else that the butterfly is doing. And in this context, as it turns out, this "add-on" is often far from incidental in a northern butterfly's adaptive style, and often ends up being its centerpiece.

To illustrate briefly some of these lifestyle strategies, let us compare the first adult flight date of non-grass-feeding diapausers in the New York City area (not Massachusetts, but close enough for present purposes), versus the overwintering stage selected. *See* Figure I. (Note: We exclude grass-feeders, since their slow digestive process throws off the timing and clouds comparison; most of our grass feeders overwinter as caterpillars.) As we will see, there is a discernible pattern to this image.



Late Winter (pre-March 15): All of the butterflies in our area that fly before March 15 overwintered as adults. Nymphalids such as Mourning Cloaks, Compton Tortoiseshells, anglewings, etc. spend the winter months in a dry crevice. In truth, this adaptation has less to do with larval feeding than an emerging adult's ability to sustain itself. The only food supplies reliably available to adult before March 15 at northern latitudes are non-floral: sap, dung, winter-killed carrion, thawing scat, etc. And the species that emerge as adults in late winter crave such goodies. Their subsequent caterpillars may dine on a variety of hostplant types.

Early to Mid- Spring (March 16 – May 15): Early spring in New England is a time of woodland wildflowers and forest leaf-out. Fully two-thirds of the butterfly species whose adults first emerge during this period each spring spent the winter as pupas. A strategy that stands out in this group is that of single-brooded flower-feeders, notably the elfins and members of the Spring Azure complex. As already noted, females of flower-feeding species deposit their eggs on unopened buds. To do this, of course, they must be in the adult stage. Yet as nectar feeders they are not well suited to adult overwintering. Thus the pupa is an ideal stage for diapause, as it allows them to emerge, mate and be ready to oviposit with the rush of spring flowers. Eastern Tiger-Swallowtails likewise emerge early, allowing their caterpillars to feed on newly emerging leaves. These "strategies" lead to a concentration of pupal diapausers among early spring species.

Late Spring (May 16 – June 15): By this time in the year, the first rush of leaf-out and flowering is complete, replaced by more lush and mature plant growth. Most of the species that first emerge as adults during this period (nearly two-thirds) passed the winter as caterpillars. This is a heterogeneous group, difficult to characterize in broad strokes. It consists in significant part of more northerly tree and herb feeders. Many fritillaries and crescents/checkerspots first emerge in late spring. The violet-feeding fritillaries spend the winter as first-stage caterpillars, on seemingly bare ground (yet actually located above the location of a fibrous clump of violet roots). Because they are first-instar, they take some time to develop once feeding has commenced. The ability of certain larvae to withstand relatively severe cold also may have a bearing on their selection as an overwintering stage in some circumstances. Also in this group are the Viceroy and Red-spotted Purple, both of which overwinter as third instar caterpillars.

Early Summer (June 16 and later): This specialized group consists mainly of single-brooded tree-feeders. The ecological strategy here is relatively apparent. These small butterflies (mainly hairstreaks) need to be at the base of a budding leaf just as it opens in the spring. Since the fresh-hatched caterpillars will be small, newly opened leaves are easiest for them to negotiate. But how can they arrive at this location at precisely this time? A caterpillar would be conspicuous and exposed on a tiny leaf-tip, likely to be blown off or consumed by a foraging bird. The same would be true of a pupa, and the harsh, cold days of early spring would be a poor time for a small adult (newly emerged or otherwise) to try and fly into the bare canopy to deposit eggs. Much better if the eggs were deposited the summer before, after an early summer emergence, then remained unhatched until the proper moment the following spring. And while eggs are not as cold-hardy in the extreme as caterpillars, they can survive the rigors of twig-end conditions during a typical northern winter.

It is impossible, in a short discussion, to examine all the intricacies of hostplant lifestyles and their relationship to overwintering. Indeed, we do not have adequate knowledge to account for all of what we observe. Personally, I will continue to marvel at the winter prowess of Massachusetts butterflies each January when, at dawn, I stand at Halibut Point in Rockport, swept by frigid winds, scanning for seabirds. It is hard enough to comprehend how alcids and sea ducks can paddle and fly in this gelid environment with apparent abandon. How equally astonishing it is to think that colonies of azures and elfins are tucked away somewhere underfoot, and that they can survive to be on the wing just a few brief months later.

Selected Sources

Cech, R.B. & G. Tudor, 2005. *Butterflies of the East Coast: An Observer's Guide*. Princeton University Press. [Includes other detailed references.] Fig. 1 above appears as Fig. 2.4 on p. 27, and is reprinted here with permission.

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MBC Trip to Errol, NH, and Western Maine

Steve Moore

Intrigued by a May 1994 article in American Butterflies by Brian Cassie, which recounted an early foray by the Massachusetts and New York City Butterfly Clubs to the Errol, New Hampshire, area, where the featured butterflies were Jutta Arctic and Bog Fritillary, the MBC scheduled a trip to that area for the weekend of June 15 – 17, 2007. Club members who joined the trip included Ron and Sue Cloutier, Barbara and Rick Walker, Elise Barry, Frank Model, Barbara Spencer, Barbara Volkle, and Steve Moore. All of us found our way to Errol, New Hampshire, on Friday, with Ron and Sue arriving early enough to do some helpful scouting. It is about a five hour trip from the Boston area.

Saturday morning, the 16th, greeted us with warm, sunny weather. After a good breakfast in Errol Center, we arrived at the black spruce bog on Route 16 about 8:30am. The bog is on the right about 1.4 miles after we passed into Maine, just after the trading post. We got our rubber boots on and walked about 30 feet into the bog, trying to stay near the root systems of the black spruce trees so as not to sink into the muck. Within 10 minutes, the Bog Fritillaries began to fly around us, with one eventually landing very close to us allowing pictures of the upperside. Later in the morning another landed in a bush and allowed pictures of the underside. Careful observation is necessary as this small bog also holds Harris' Checkerspots and Silver-bordered Fritillaries.

We then entered the larger bog on the west side of the road across from the small bog. It was tough sloughing through the dense black spruce following a trail(?) made by moose. After about a hundred

or more yards in the thick spruce, we came to a clearing and walked along a treeline between the cleared area and another large bog to our north. In the cleared area just inside the treeline we came across our first Jutta Arctic. This butterfly posed for us about a foot off the ground on a stick for over 10 minutes. It was now 9:30am and we had seen our two target species! We then continued our walk back to Route 16 a bit south of where we had walked in. This was fortunate as we were on higher ground and the trees were much larger in diameter. Near a tree with an old ribbon (placed there in 2004 by Hank Golet from Connecticut who had joined us for this morning's hike) we found three more Jutta Arctics. Later we would find out that others had seen the Arctics in the small bog the following week. These were classic Arctics with one showing the orange spots with the black eyes through the closed wings when it had the sun behind it.

We headed back toward New Hampshire, and turned into a dirt road on the left which was still in Maine. We parked fairly close to Route 16 and walked in for a ¼ of a mile. Here Sue found a Common Roadside Skipper. Other butterflies of note included Harris' Checkerspots, one very worn Eastern Pine Elfin, an American Lady, some Red Admirals, a Mourning Cloak and two Dreamy Duskywings.

Back in New Hampshire, we stopped at the entrance to the Lake Umbagog National Wildlife Refuge, which has wild-flowers on both sides of a footpath to the Lake. Here we found Tawny-edged Skippers, Pepper and Salt Skippers, a Silver-bordered Fritillary and Dreamy Duskywings.

Next stop was the Mt. Dustan Country Store on the west side of Route 16 in New Hampshire, where we got refreshments and a chance to sit for a minute. Frank and Elise checked out a large field

across from the Store and found Silvery Blues, Northern Crescents, Common Ringlets, Spring Azures and, of course, the Canadian Tiger Swallowtails that we found everywhere (122 in total).

Our last stop for the day was the Dead Diamond Road, a dirt road on the west side of Route 16 which is a forest research preserve owned by Dartmouth College. This road was very productive and had a swamp on the left that contained an active Osprey nest and a calling American Bittern first spotted by Rick. Along this road we found two Harvesters, a second Common Roadside Skipper (also found by Sue), Hobomok Skippers, Canadian Tiger Swallowtails, Harris' Checkerspots, at least five Arctic Skippers, Silver-bordered Fritillaries and other butterflies. We also met a butterflier from Philadelphia who had seen Mustard Whites and Eastern Commas, both of which eluded us.

Saturday evening we all shared a good meal at the Bull Moose Restaurant, about eight miles east of Errol on Route 26 in Maine. On Sunday the 17th we decided to skip the bogs and revisited the dirt roads along Route 16 discussed above. The only new species added was a Peck's Skipper at the Lake Umbagog NWR path. We lost the sun about 9:30am, and most of us headed for home.

All of us stayed at the Errol Motel in the center of town which is a small (only 11 rooms) but comfortable motel close to the breakfast place in town.

And yes, all of us saw at least one Moose. And yes, we will run this trip next year, most likely on the weekend of June 14-15, 2008. Pray for sun. It is key. On Saturday we had an 82 degree high temperature which certainly helped us.

The trip list for Saturday and Sunday:

Bog Fritillary – 7
Jutta Arctic – 4
Common Roadside Skipper – 2
Hobomok Skipper – 27
Canadian Tiger Swallowtail – 122
Arctic Skipper – 22
Pepper and Salt Skipper – 10
Harris' Checkerspot – 10
Northern Crescent – 19
Eastern Pine Elfin – 1
Silvery Blue – 14
Tawny-edged Skipper – 3
Red Admiral – 5
Little Wood Satyr – 2
Dreamy Duskywing – 2
Viceroy – 2
Silver-bordered Fritillary – 7
Spring Azure – 26 (all 3 forms)
Mourning Cloak – 1
Harvester – 2
American Lady – 1
Common Ringlet – 7
Peck's Skipper – 1

Finally, I would like to acknowledge the very helpful advice I received from Brian Cassie, Dick Hildreth, Alex Grkovich, Hank Golet, Tom Dodd and Tom Murray, each of whom had visited the site and were willing to take the time to share their experiences.

Bog Fritillary, 6-16-07 Wilsons Mills, Maine *photo*: Barbara Spencer

Jutta Arctic, 6-19-07 Wilsons Mills, Maine *photo*: Frank Model

2007 Fourth of July Butterfly Counts

Compiled by Tom Gagnon

Looking over the species list, the one that gets my attention is the Two-spotted Skippers on two counts this year. And considering all the other reports of this species in late June and early July, I think we could say it was the summer of the Two-spotted Skipper. It certainly was nice to see so many reports of them. On the counts there were also good numbers of the Hairstreaks, with 53 Acadians on the Central Berkshire count. The Northern Berkshire Counters were not permitted to travel on Mt. Greylock this year, and thus several species were missed there. We welcome to the counts this year, the Springfield Count. Held on August 19 as a 'Seasonal' rather than a 'Fourth of July' Count, it was the last count in the western area, and thus we were able to get Zabulon Skippers and Hackberry Emperors to the list. Nice finds on the Northampton count were the White M Hairstreak and Juniper Hairstreaks, plus the usual high count of Common Sootywing. The Martha's Vineyard count came through with the only Cloudless Sulphur.

Congratulations to all who participated on the counts. Whether it was one count or SEVEN counts like Barbara Walker and Elise Barry did, it was great to see so many in the field. And a big THANK YOU to all the compilers and organizers of the counts.

Editor's Note: The Butterfly Count Program is administered by the North American Butterfly Association, 4 Delaware Rd, Morristown, NJ 07960. Official reports for all counts held in the U.S., Canada and Mexico are available from NABA for $10.00. The unofficial tallies for Massachusetts counts are reported below.

	Pipevine Swallowtail	Black Swallowtail	Eastern Tiger Swallowtail	Spicebush Swallowtail	Mustard White	Cabbage White	Clouded Sulphur	Orange Sulphur	Cloudless Sulphur	Harvester	American Copper	Bronze Copper	Bog Copper	Coral Hairstreak	Acadian Hairstreak	Edwards' Hairstreak	Banded Hairstreak	Hickory Hairstreak	Striped Hairstreak	Oak Hairstreak	Gray Hairstreak	Juniper Hairstsreak	White M Hairstreak	Eastern Tailed-Blue
Total																								
Northern Berkshire		1	7			196	12	8						1	1				2					2
Central Berkshire	1	16	1		18	98	59	36			1			11	53		5	1	9					3
Southern Berkshire		4	11	1		187	75	33							5		2	12	1					12
Central Franklin		6	19	8		365	133	53			26		1069	36			39		6		2			19
Northampton		119	21	7		340	243	146			83						15	8	4		3	2	1	31
Northern Worcester		5	14	7		1968	19	16		1	3		36			45								8
Concord		1	3	1		177	20	5				3	5				1							7
Northern Essex		5	17	2		696	74	26			6			2										13
Springfield			3	3		12	3	2		2														3
Blackstone Corridor		26	26	29		41	72	66			111		3	13			5	1	9		1			30
Middleboro		2	2	3		467	21	6			1													1
Bristol				14		8		7											2					6
Falmouth		3	3	19		33	14	24			56					4					3			16
Brewster			2	9		96	15	9			98			9			2							1
Barnstable			4			24	35	25			1													5
Truro			2	9		96	15	9			98			9			2							1
Martha's Vineyard		3	20	53		578	6	51	1		231		2	3		40	2		1					19

Total																								
Northern Berkshire	13		11	1						47	5	12	2	1		3		25		11		29	1	
Central Berkshire	15		9		4				9	49	8	3		1		10		22		3		1	1	
Southern Berkshire	9		38	1		2	21			33	3	6				1		57				1	3	
Central Franklin	53		76	10		18			3	44	10	6		2	1	7	1	101				8	4	
Northampton	7	1	35	3		31			945	32	25	21			15	20		166				2	28	
Northern Worcester	2							24	7		2	3		2		2				1		5	10	
Concord	26		19							1	4	6	3	1		3		50			3			
Northern Essex	56		39							307	9	6		3		7	1	50						
Springfield	1								1			8											1	
Blackstone Corridor	29					9			104	37	2	10			1	16		103	3			2	16	
Middleboro			10						11			1				2v	1					1		
Bristol	2		5						40									8					7	
Falmouth									19	19								12						
Brewster									26			1		1		34		19				1	1	
Barnstable									206									7				7		
Truro									26			1		1		34		19				1		
Martha's Vineyard	2								51	2	1			1		8	5	45	2					
	"Summer' Spring Azure	Variegated Fritillary	Great Spangled Fritillary	Aphrodite Fritillaryy	Atlantis Fritillary	Silver-bordered Fritillary	Meadow Fritillary	Harris' Checkerspot	Pearl Crescent	Baltimore Checkerspot	Question Mark	Eastern Comma	Compton Tortoiseshell	Mourning Cloak	Milbert's Tortoiseshell	American Lady	Painted Lady	Red Admiral	Common Buckeye	White Admiral	Red-spotted Purple	Red-spotted Admiral	Viceroy	Hackberry Emperor

Total																				
Northern Berkshire	3	1	1		6	4	43	2							2	229			1	1
Central Berkshire	6	4	7	2	1	324	43	13							3	89			25	1	3
Southern Berkshire	15	1	6	14	1	120	28	18								333			13	3	1
Central Franklin	7	6	9	17	1		61	107	5	4				2	4	164				10	4
Northampton	3		5	25	9	296	323	63					5	106			1		3	1	3
Northern Worcester	1	3	5	52	18		27	57			3				3	1420				3	1
Concord			4	19	1		9	60		10	1				16	30		3	5		
Northern Essex		12	15	48		6	63	33		4					5	44					
Springfield			22				20	10							49				1		
Blackstone Corridor	3	7	38	172		436	73	92				8	6	10	7	6				2	18
Middleboro		1		3		8	8	2			1					2				3	
Bristol			8	1		11	3	2				1	13			3			2		
Falmouth						104	44	7		2					1						
Brewster				11		3	39	4			4				1						1
Barnstable						32	61														
Truro						3	39	4			4		9		1						1
Martha's Vineyard			5	9		243	99	15					1		4	2			1	3	4
	Northern Pearly Eye	Eyed Brown	Appalachian Brown	Little Wood-Satyr	Common Ringlet	Common Wood Nymph	Monarch	Silver-spotted Skipper	Hoary Edge	Southern Cloudywing	Northern Cloudywing	Horace's Duskywing	Wild Indigo Duskywing	Common Sootywing	Least Skipper	European Skipper	Fiery Skipper	Indian Skipper	Peck's Skipper	Tawny-edged Skipper	Crossline Skipper

Total													
Northern Berkshire		3	1	1							10		
Central Berkshire	3	8	4	5				3			63		
Southern Berkshire	1	1	33	2							13		
Central Franklin	6	19	33	25					2	1	23		
Northampton	1	28	12	1	27	2		8	2		62		
Northern Worcester	22	4	17	7		2					7		
Concord			18	2		2							
Northern Essex	1	10	36	5	6	1					5		
Springfield							1						
Blackstone Corridor		42	63	41	15			1	7	1	84		
Middleboro	7	5	1	4	1				1		4		
Bristol		8						1	2		2		
Falmouth		2		10									
Brewster		6	1	2							8		
Barnstable		5									1		
Truro		6	1	2							8		
Martha's Vineyard		1									96		
	Long Dash	Northern Broken Dash	Little Glassywing	Delaware Skippeer	Mulberry Wing	Hobomok Skipper	Zabulon Skipper	Broad-winged Skipper	.Black Dash	Two-spotted Skipper	Dun Skipper		

Summary	No. of Individuals	No. of Species	No. of Participants	Party Hours	Date	Compiler
Northern Berkshire	699	37	4	14	7/8	Tom Tyning
Central Berkshire	1054	46	10	33	7/15	Tom Tyning
Southern Berkshire	1124	40	14	27.5	7/6	Rene Laubach
Central Franklin	2637	49	14	45.75	7/7	Mark Fairbrother
Northampton	3349	50	16	65.5	7/22	Dottie Case
Northern Worcester	3837	42	13		7/1	Carl Kamp
Concord	559	34	17	12	6/30	Dick Walton
Northern Essex	1613	34	13	17.5	7/8	Sharon Stichter
Springfield	153	17	12	5.25	8/19	Roger Pease
Blackstone Corridor	1958	48	12	39.5	7/14	Tom Dodd
Middleboro	581	29			7/22	Karen Holmes
Bristol	163	23			7/21	Mark Mello
Falmouth	395	20	5	7	7/14	Alison Robb
Brewster	412	27	12	11	7/21	Alison Robb
Barnstable	409	13	11	6	7/28	Alison Robb
Truro	412	26	12	11	7/21	Alison Robb
Martha's Vineyard	1610	36	8	23	7/15	Matt Pelikan
Total						

Great Summer Finds 2007

Among the many interesting moth and butterfly discoveries of the 2007 field season were the following:

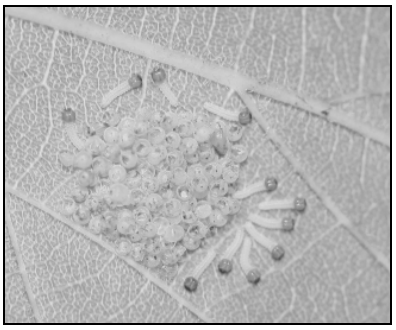
Hessel's Hairstreak, relocated on 5/26/07 at Ponkapoag Bog in Canton, on a Massachusetts Butterfly Club trip led by Erik Nielsen and Tom Murray. Twelve individuals were seen by many observers. Cobweb Skippers (8) were also found at nearby Myles Standish State Forest.

Ponkapoag Bog, 5-26-07 photo: Tom Murray

Leonard's Skipper, found by Ron Hamburger on 8/25/07 along the Sherborn Power Line, as described in MBC's Guide to Good Butterfly Sites. "Lenny" was also found in good numbers by Frank Model on the Norwottock Rail Trail near Belchertown. Frank's photo shows a female (determined from a dorsal photo).


photo: Ron Hamburger 8-25-07 *photo: Frank Model 8-30-07*

Tawny Emperor, laying eggs on Hackberry in early August, was found by Ron and Sue Cloutier at Forest Park, Springfield. These same eggs were actually seen hatching on 8/18/07, by the Cloutiers and others on an MBC field trip led by Tom Gagnon.

Forest Park, Springfield, hatching 8-18-07 *photos by Sue Cloutier*

White M Hairstreak: On September 4 Judy Holland visited Polly Hill Gardens in West Tisbury, MA, where she counted 8 White M Hairstreaks, including one in the clutches of an assassin bug. The White Ms were nectaring on boneset and other late blooming flowers, as shown in the following photo:

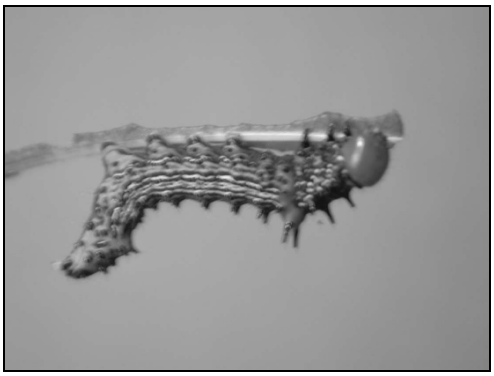
West Tisbury, 9-4-07 photo: J. Holland

Primrose Moth (*Schinia florida*) caterpillars were found by Deedee Minear on 8/13/07 on Evening Primrose plants in her yard in Amherst, camouflaged along the terminal buds. These caterpillars are green, with a deeper green middorsal stripe, two other green stripes, and red bumps on the head.

Amherst, 8-27-07 photo: Frank Model

An adult Primrose Moth was found on 8/07/07 by Mardi Mauney on upper Cape Cod. The moth is often found sleeping in the yellow primrose flower, where it's pink color makes it stand out.

Red-Humped Caterpillar Moth (*Schizura concinna*) eggs and larvae were found on Black Cherry at Parker River National Wildlife Refuge on 9/4/07 by Sharon Stichter. They were identified by Jeff Boettner of U-Mass Amherst. With Refuge permission, a few were taken home and raised for identification purposes, then returned to the Refuge. Below is the colorful last instar, with a bright red head, red hump over A1, and yellow, white, black and brown stripes.



Newbury, 9-11-07 photo: Sharon Stichter

Spotted Apatelodes (*Apatelodes torrefacta*) The winsome caterpillar of this moth was found by Alison Robb and other members of the Botanical Club of Cape Cod and the Islands. It was photographed on 9/16/07, at Crane Wildlife Management Area, the southern portion, south of Rte 151, which can be reached by Hayway Rd. off Sandwich Rd. The hairy caterpillar can be white or yellow (this one was yellow), and was identified by Tom Murray and others on the masslep listserve.

Crane WMA, Falmouth, 9-16-07 photo: Pam Polloni

The season's notable butterfly sightings also included Cloudless Sulphur, Fiery Skipper, Sachem, Common Checkered-Skipper ovipositing, Variegated Fritillary ovipositing, and many Pipevine Swallowtails. Pipevine caterpillars were found and raised by Madeline Champagne and by her friend Maureen Osolnik. The Pipevine eggs were found in mid-July by Maureen on a Dutchman's Pipe (*Aristolochia*) vine in her yard in Wrentham. The chrysalises are overwintering.

A wonderful Pandorus Sphinx caterpillar was photographed in Northampton Community Gardens on 10/9/07 by Frank Model and by Barbara Spencer. Virginia Tiger Moth and Hickory Tussock Moth caterpillars were found on Cuttyhunk Island on 9/23/07 by Alison Robb and company.

The full report of the season's butterfly sightings will appear in the Spring 2008 issue.

Now available!

The Connecticut Butterfly Atlas, edited by Jane E. O'Donnell, Lawrence F. Gall, and David L. Wagner. This definitive guide includes accounts of Connecticut's 117 species, maps with historic and recent distributions, photos and descriptions of all life stages, and the history of butterfly study and conservation in the state.

The Atlas can be ordered on line at http://www.ctdepstore.com , under the "butterflies and wildflowers" link. The price is $19.95. Orders can also be mailed to CT Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106.

Also available are the 2007 updated Checklist of Butterflies of Connecticut, a trifold on heavy card stock, listing flight periods, and Life Histories of Connecticut Butterflies, a 28-page booklet. To order both, send your name and address and a check for $3.50 to Connecticut Butterfly Association, P.O. Box 9004, New Haven, CT 06532.