

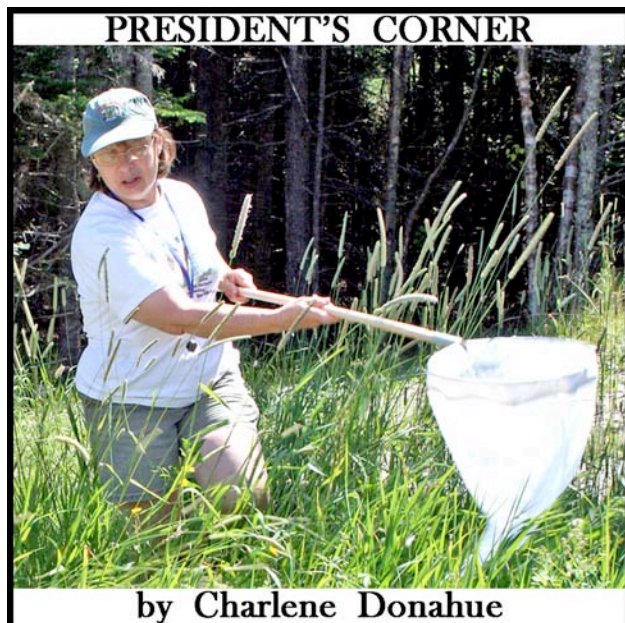
The Maine Entomologist

A forum for students, professionals and amateurs
in the Pine Tree State

The Official Newsletter of the Maine Entomological Society

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PRESIDENT'S CORNER

by Charlene Donahue

Part of my job at the Maine Forest Service is extension-type work. People send photos and insects – both live and dead – or stop in, call, write or e-mail my office asking about insects. The amount of outreach we do as part of our invasive insect programs has increased our visibility, as has the internet. And of course when there are news stories about an insect, usually a problem, the volume of calls goes up. There are times when there are so many inquires, I want to throw the phone and computer out the window - but my boss says I can't do that. But most of the time I like seeing what catches someone's eye.

Some of the requests for assistance are from people concerned that they have found an invasive insect. I play '20 questions' with them and can often determine what they have over the phone. E-mails usually require a request for a photo or a phone call. Occasionally a site visit is needed as follow up. Every one of these calls needs to be carefully considered and people responded to quickly and politely. As funding dollars shrink, it is the concerned public who may find a problem on their land or at their favorite camp site.

The next category of calls is people with forest pest problems. Same routine as above to determine the cause and then a discussion of the severity of the problems and possible remedies. Some of this is routine and takes just a few minutes to provide the needed information. Other times, research is required for unusual pests or conditions. Luckily, there are lots of resources online, in our library and colleagues in other states and provinces who are very knowledgeable.

Of course, there are occasionally problems that require time and experimentation to solve. Some of this can be done out of our lab, other times we collaborate with the University, USDA-Forest Service or other states to come with solutions.

Next are the 'What is it?' calls. Someone finds an unusual insect and wants to know what it is. At certain times of the year I can almost pick up the phone and say 'snow fleas' or 'western conifer seed bug' and be done with the call. This year, an unusual number of calls came in where people had found dog-day cicadas. These are commonly heard but not often seen. This year for some reason they were more visible. And then there were the hickory tussock calls - and more calls. Clay Kirby from the Pest Management office in Orono and I were interviewed for an article in the Bangor Daily about the hickory tussocks. If you check online that article has had 6,000 Facebook recommendations, that is A LOT. Check other articles and you will find few that have that kind of exposure.

When insects are unusual or odd behavior has been observed, or knowledgeable people share their experiences, it is what makes up for all the oh-hum calls. Often MES members share specimens and observations with me. These are always welcome. It can revitalize me and send me exploring in a new directions. Often, when an unusual specimen or photo comes in we will show it around the lab and race to see who can identify it first. Then we share how we took that path to an identification. We are always adding to the insect collection, so feel free to send insects to me.

Finally there are the imaginary insect calls – to be avoided at all costs. These are the calls from people convinced that they, or their homes, are infested with insects, though they've never actually *seen* them. They are very time-consuming and rarely have a satisfying conclusion. After checking a sample for insects, these calls are referred to Maine Center for Disease Control, as we can not do any more to help the person.

Enjoy the rest of fall and I hope to see you at the Winter Workshop!

In this issue:

- ☛ Woolly Bear Winter Prognosis (p. 2)
- ☛ Big Migratory Moths Downeast (p. 2)
- ☛ Tigers on the Beach (p. 4)
- ☛ Ailanthus Webworm Moth Downeast (p. 5)
- ☛ Bug Maine-ia Blows 'Em Away! (p. 7)
- ☛ Migrant Leps & Odonates DownEast in 2010 (p. 8)
- ☛ Book Review: Evil Bugs! (p. 11)
- ☛ Annual Meeting Report (p. 11)
- ☛ Calendar of Coming Events (p. 12)
- ☛ Dues submission form: see insert
- ☛ Calendar order form: see insert

IMPORTANT DUES REMINDER!

M.E.S. dues are payable on a calendar-year basis. If you haven't already done so, please renew now for 2011; you'll find a clip-out form in the insert inside this newsletter, and Treasurer Dana Michaud's name and mailing address are also at the bottom of the back page for your convenience. Dues are \$10 per year, and may be paid up to two years in advance. If the year on your mailing label is "2011", please contact Dana to renew for 2012 or correct the record.

What Say The Woolly Bears? by Dick Dearborn

The familiar banded woolly bear, larva of the Isabella Tiger Moth, *Pyrrharctia isabella*, has been a source of enjoyment for more than 100 years. Children enjoy making pets of these "cute" caterpillars, their parents are pleased to know that they're safe to handle and many chuckle about the forecast accuracy. Whatever your stand, most enjoy seeing them and enjoy talking about something other than politics. There are even festivals around the country featuring the woolly bear that draw thousands to enjoy parades, games, costume contests and woolly bear races.



Figure 1. Though the mild September weather almost made them a no-show for Bug Maine-ia, woolly bear caterpillars have been particularly plentiful in some areas as the weather has chilled. This unusual specimen displays six orange segments.

Not to be outdone - we have made *P. isabella* a feature in Bug Maine-ia since its inception in 2003! It's been fun and I have enjoyed feedback from "kids" both young and old who have their own experiences to relate. Several years ago a young lady came to Bug Maine-ia with a bug cage containing her pet woolly bear called "Fluffy." This year another young lady proudly announced to me that *her* name was Isabella! Another came from the Midwest where she said that the length of the red band was used to forecast the weather. One teacher wanted to know why we called them "bears?" I had no answer! They are called "woolly worms," however, in some parts of the country. Many who stopped at our table simply wanted to know the winter weather forecast.

This year was a tough one to catch woolly bears for Bug Maine-ia, as it was scheduled earlier in September and the weather was still mild, keeping the woolly bear activity down. It was two days before Bug Maine-ia and I had none of the fuzzy creatures to show! Just one day before the big day and my son John and his wife Diana "struck it rich," bringing me the first of 18 of the little devils from recently mowed lawns in Manchester and Mount Vernon. So the day was saved and I had enough woolly bears for kids to handle, although they were tired by the end of the day having covered many "caterpillar miles." We also had an exhibit of other caterpillars which are not safe to handle as a comparison. None of the woolly bears began crossing the road for another two weeks by the way. Woolly bears have a habit of crossing the road in the fall. The crossing is almost always perpendicular to the side of the road!! Why?

Now for those of you who have been waiting for our forecast -- here goes!! The woolly bear that is the focus of our attention here should have three distinct color bands, a black one at each end and an orange/red one in the middle.

With each band equal to one third of the body length, a normal weather is likely. As the red band increases above one third of the body length, milder weather is indicated. As the total length of the black bands grows longer than two thirds, the winter will be more harsh. You will have to figure out what this means in terms of snowfall!

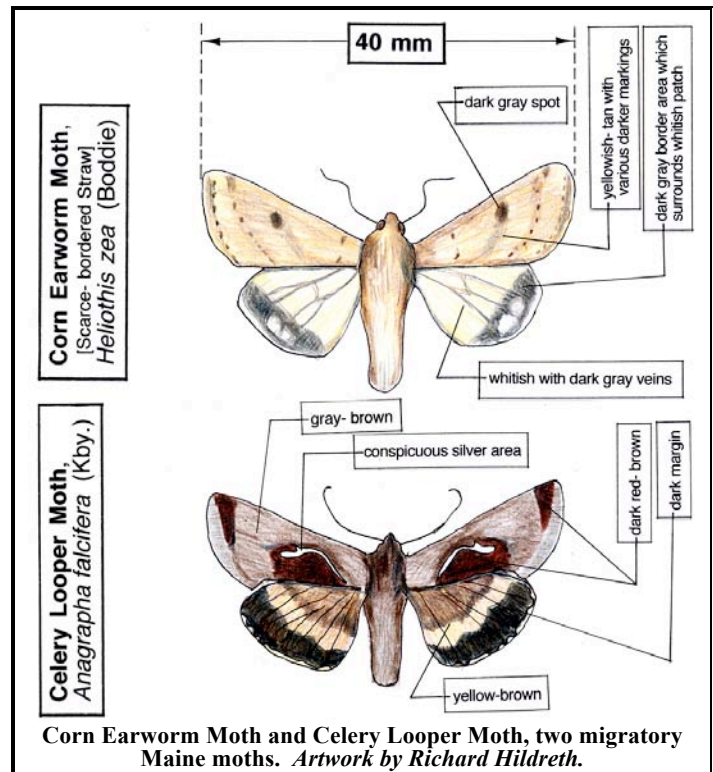
To make my calculations easier, I relate the band length to the number of colored segments to the whole. Each caterpillar has 13 body segments. A normal winter is indicated if there are 8.66 black segments and 4.33 red. For the upcoming 2011/2012 winter the woolly bears are averaging 4.97 red segments, or more than a third, predicting a milder winter, the mildest since 2000/2001!! We will see!

* * * * *

Three Species of Conspicuous Day-flying Migratory Moths in Downeast Coastal Maine by Richard W. Hildreth

Background: Besides at least eight species of butterflies and five species of dragonflies which make annual flights [migrations] through Maine [see p.], there are also some migratory moth species (possibly many species) on the move through the state. I have personal experience with three species of moths which make annual flights through Maine. All these moths are large, conspicuous, day-flying moths which make annual spring flights on a NE track and annual autumn flights on a SW track through Maine.

The first is the Corn Earworm Moth [Scarce-bordered Straw], *Heliothis zea* (Boddie). This is a large (wingspan of 40 mm), light-colored tan moth (see figure 1). This species has a nearly world-wide range. The caterpillars eat a great variety of plants, including several crop plants. It is at times a serious pest species.



Corn Earworm Moth and Celery Looper Moth, two migratory Maine moths. Artwork by Richard Hildreth.

The species flies north in spring, and in Maine there is a strong autumn flight in the opposite direction. During migration it is commonly seen making "fuel stops," busy nectaring on a great variety of flowers. It is very wary and difficult to approach without alarming it. This makes
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Migratory moths (cont.)

photography difficult. Even if you are handy with a net, you will find it difficult to catch. When in migratory flight and especially when alarmed, it flies very fast.

The second migratory moth is the Celery Looper Moth, *Anagrapha falcifera* (Kby.). This is another large (wingspan 40 mm) moth with a bold upper wing pattern (see Figure 1). The range of this species is essentially all over North America. The caterpillar eats a great variety of plants including several crop plants, and is sometimes a pest species. There is a spring NE flight through Maine in May-June and a very strong autumn flight in September-October.

The behavior of this species in migration is essentially the same as that of *Heliothis zea*. *Anagrapha falcifera* and *Heliothis zea* are often seen nectaring together during the autumn flight. The Corn Earworm Moth and the Celery Looper Moth don't seem to be attracted to mercury vapor lights; I have never seen any at my lights in Steuben, Maine.

The Army Worm Moth, *Mythimna [Pseudaletia] unipuncta* (Haworth) is another large migratory moth that annually passes through Maine in both spring and autumn. There is an excellent illustration of this species in Wagner's wonderful caterpillar book (*Caterpillars of Eastern North America*, by David L. Wagner; Princeton Univ. Press, 2005). This species has a worldwide range.

In Asia there is a population that migrates NE from southern China along the coast to an area NW of North Korea. In that region there is also an autumn flight SW.

I see this species in Maine in small numbers during the spring flight along the NE track and in the autumn flight along the SW track. The behavior of this species in migration is similar to that of the two previously mentioned species. While this species is active in the daytime, it also flies at night and is sometimes attracted by mercury vapor lights.

On 23 August, 2001, I saw an interesting interaction between this species and the Common Green Darner (a migratory dragonfly). I visited the Petit Manan Point Division of the Maine Coastal Islands National Wildlife Reserve (NWR) in Steuben, and hiked south along the east shore of the peninsula. Common Green Darners were on the move flying SW along the beach. I saw one of the darners flying toward me; it seemed to be carrying some large prey item. As the darner flew by, I managed to net it. The darner was a fresh male Common Green Darner; I released it. The prey item was a large plain brown moth, which turned out to be an Army Worm Moth which the darner had caught (in spite of the moth's fast flight). The darner had bitten the thorax of the moth and killed it. I collected the moth.

This species eats a great variety of plants including many crop plants. It sometimes is a serious pest species. In the late 19th century, a series of insect pests seriously attacked the crops in the western USA and created a major national calamity. There were major locust plagues. After the locusts, the Army Worm was considered the most serious pest species.

The name army worm refers to the behavior of the caterpillars. When a great mass of the caterpillars had eaten all the vegetation in a field, they would then march in a great mass off to the next area with plants.

During that period came the beginning of government entomological science. The U.S. Entomological Commission was founded, employing the great entomological triumvirate - Charles Valentine Riley, Alpheus Packard and Cyrus Thomas. The Third Report of the Entomological Commission for the years 1880-1882 devoted 58 pages to the Army Worm (written by Riley). If you can find a copy of this publication in a library somewhere, you will find some great entomological writing and some great insect illustrations.

While the commission assembled a great amount of information about the species, they didn't seem to know that the adult moths were migratory. They looked at the many sites where the caterpillars were active and the many dates when they occurred and tried to figure out how many broods the species had. They were somewhat confused by this issue and many fierce arguments resulted.

The 2010 field season in downeast coastal Maine: I spent September, 2010, mostly in coastal Maine areas looking at insect migration. Since good numbers of Corn Earworm Moths and Celery Looper Moths seemed to be passing in migration, I decided to count the ones I saw. Most of the observations were made at Petit Manan Point Division of the Maine Coastal Islands NWR in Steuben (east shore), the Schoodic District of Acadia National Park at Winter Harbor, ME (Blueberry Hill parking Area), T19 SO (summit of Schoodic Mountain) and in Steuben (along Village Road, near my cabin).

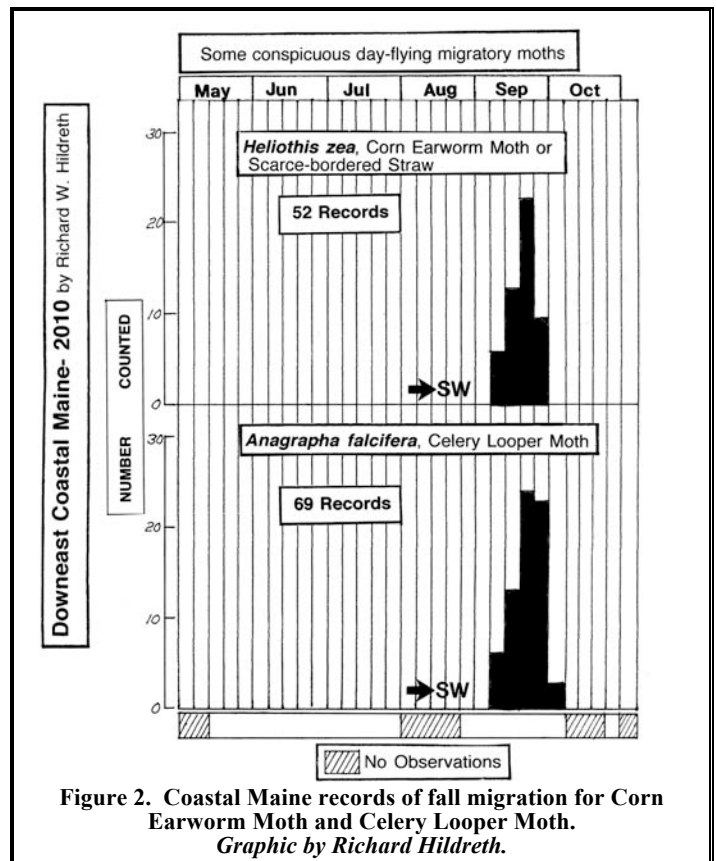


Figure 2. Coastal Maine records of fall migration for Corn Earworm Moth and Celery Looper Moth. Graphic by Richard Hildreth.

Figure 2 shows my 2010 Maine records for Corn Earworm Moth (52 records) and Celery Looper Moth (69 records). The moths passing at the more inland sites were moving along the usual SW migration track. Those counted at Schoodic were flying in off the sea from the SE [from Nova Scotia?] (see figure 3). When the moths made landfall at Schoodic, they began nectaring on New York Aster and various goldenrod species. After the moths had nectared a while, they flew on W-NW across the Schoodic Peninsula.

It would be great if MES members would get out and find, count, photograph, etc. these interesting migratory moths. More spring records are needed. My records all come from coastal sites; records for inland sites are needed. During the autumn flights in coastal areas I have noticed several day-flying moths which are almost surely migratory; as yet I haven't collected and identified any of them. I think there is much to be done regarding the migratory moths.

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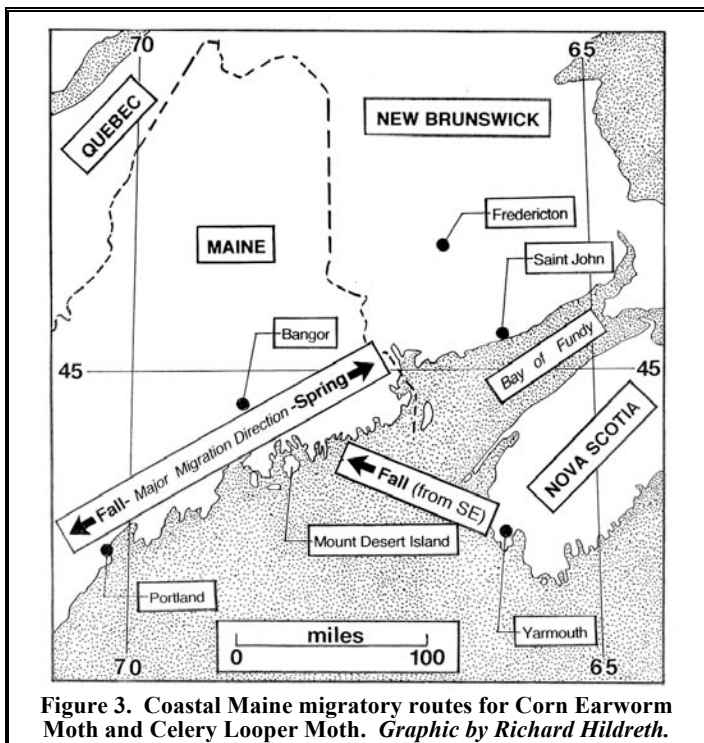


Figure 3. Coastal Maine migratory routes for Corn Earworm Moth and Celery Looper Moth. Graphic by Richard Hildreth.



Fig. 1. An adult Salt Marsh Tiger Beetle, *Cicindela marginata*. Photo by Jonathan Mays

We targeted both the historic sites for this species as well as promising habitat identified using aerial photos. From late-June to mid-August of 2010, we visited 28 sites and observed *C. marginata* adults at 12 locations in eight townships extending from York (in York County) to Georgetown (in Sagadahoc County). Adults were observed between June 29th and August 1st.

At some sites, the observed number of individuals was relatively high (twenty or more at six of the sites), while at others only one or two individuals were observed. Other tiger beetle species observed during these surveys included the Hairy-necked Tiger Beetle (*C. hirticollis*), the Common Shore Tiger Beetle (*C. repanda*), the Punctured Tiger Beetle (*C. punctulata*), the Oblique-lined Tiger Beetle (*C. tranquebarica*), and the Big Sand Tiger Beetle (*C. formosa*).

Cicindela marginata was reconfirmed at the four historic sites and documented at eight new coastal sites. This represented an increase in the known distribution of this species in Maine, but not an expansion of its known range in the state. The northernmost sites for *C. marginata* in the state continue to be locations in midcoast Maine. We were intrigued by a recent report of a single individual of this species in Nova Scotia (Neil and Majka 2008), but our searches at the best apparent habitat locations farther downeast in Maine in 2010 were unsuccessful at detecting *C. marginata* (Ward and Mays 2011).

Cicindela marginata adults were observed in a variety of microhabitats. These habitats were generally characterized by sandy substrates and unvegetated or lightly vegetated areas associated with coastal dune-marsh ecosystems. The most common microhabitat was on the sandy strand that marks the margin between the back dune and the high tide line on the salt marsh side of a barrier beach associated with a river system (Figure 2). However, *C. marginata* adults were also occasionally observed on ocean-facing beaches and at one of each of the following microhabitats: a sparsely vegetated artificially restored salt marsh, a small tidal lagoon not associated with a river system, a lightly vegetated salt marsh well removed from a barrier beach, and a heavily developed and human-impacted back dune beach. The variety of microhabitats suggests that the ecological amplitude for *C. marginata* adults may be greater than previously suspected.

As is true for many insects, tiger beetles spend a relatively brief portion of their life cycle in the adult stage. A much greater percentage of *C. marginata*'s life cycle is spent as larvae. Tiger beetle larvae are unable to fly and thus are relatively sedentary; hence the ultimate success of some tiger beetle species may be strongly dependent on the abatement of threats to larval habitat.

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Tigers on the Beach

By Mark Ward and Jonathan Mays

Tigers on the beach in Maine? Well, not tigers exactly, but tiger beetles! And who doesn't love a tiger beetle? Members of the tiger beetle family (Cicindelidae—sometimes considered a subfamily of the ground beetles or Carabidae) are some of the showiest insects around and have fascinated the entomologically inclined for a long time. Favorites among collectors, they represent one of the best-studied groups of insects.

You can imagine our surprise then when we discovered that state records showed that only four locations for the Salt Marsh Tiger Beetle (*Cicindela marginata*) had been documented in Maine, and that most of these records were quite old. When coupled with the suggestion that this species was in decline in our region (Leonard and Bell 1999), we were prompted to gain a better understanding of its current status in the state in the summer of 2010.

Adults of this attractive species are green-bronzed (sometimes crimson) above and metallic green below with red trochanters. The middle band of the elytra is distinctive and appears to be broken up by a series of interruptions similar to the holes in Swiss cheese (Figure 1). These features make it relatively easy to distinguish from other tiger beetle species. In addition, females show a deflexed elytral apex, while males possess a prominent mandibular tooth.

As its name implies, the Salt Marsh Tiger Beetle inhabits salt marshes, especially those associated with sandy barrier beaches. This habitat is somewhat limited in Maine, and is subject to a variety of potential threats from human development, coastal oil spills, rising sea level, and tidal erosion. The latter two threats are likely to be exacerbated under current climate change models, so we wanted to establish a better baseline for this species to see what, if any, effects future changes might have on it and other organisms associated with these vulnerable habitats.

Salt Marsh Tiger Beetle (cont.)



Fig. 2. Most common microhabitat for *C. marginata*.
Photo by Jonathan Mays.

Like other tiger beetles, *C. marginata* larvae occupy subterranean burrows from which they opportunistically feed. This species seems to require very particular substrates and moisture conditions to construct its burrows. While the characterization of larval habitat was not an objective of our 2010 study, we did gain confidence in our ability to distinguish the shiny blue-headed larvae of this species (Figure 3) from those of the Hairy-necked Tiger Beetle (*C. hirticollis*)—the other species with the greatest likelihood of occupying similar larval habitat. Identification of larval burrows may provide clues as to whether small numbers of adults observed at some sites were simply transients from elsewhere or part of an actual breeding population.



Fig. 3a. The head of a *C. marginata* larva at the top of its burrow.
Photo by Jonathan Mays.

We believe that the long term monitoring of invertebrate populations offers an excellent tool to examine the impacts of climate change and other events on the integrity of vulnerable coastal habitats like beaches and salt marshes. We hope to develop a relatively simple protocol for estimating and monitoring *C. marginata* population sizes using numbers of adults and/or numbers of larval burrows at sites in Maine.

We encourage you to become better acquainted with the tigers on Maine's beaches. *If you should come across this species, especially farther downeast than Sagadahoc County in Maine or outside of the known adult flight dates (June 29-Aug 1), we would love to know. Please take a photo and*

document the location and habitat and contact us at maward@midcoast.com or Jonathan.Mays@maine.gov.



Fig. 3b. A *Cicindela marginata* larva in the palm of the hand.
Photo by Jonathan Mays.

Acknowledgements

Derek Dawson, Stewart DesMeules, and Rob Lambert all made significant field contributions to the 2010 surveys. Kate O'Brien of Rachael Carson National Wildlife Refuge and Sue Bickford and Hannah Wilhelm of the Wells National Estuarine Research Reserve were very helpful in assisting with federal research permits and field site logistics. We are especially grateful to past work by Richard Dearborn that identified three of the four historical *C. marginata* sites and served as the primary motivation for this work.

Financial support for this project was provided by the Department of Environmental Protection's Oil Spill Fund and the Maine Endangered Species Fund via the Department of Inland Fisheries and Wildlife's Reptile, Amphibian, and Invertebrate Group.

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The Ailanthus Webworm Moth, *Atteva aurea* (Fitch) in Downeast Coastal Maine by Richard W. Hildreth

In August, 2010, I interrupted the field season in Maine and returned to Massachusetts to attend to some pressing projects. I was in Massachusetts, 1-29 August, but this time in Massachusetts was not without natural history adventure.

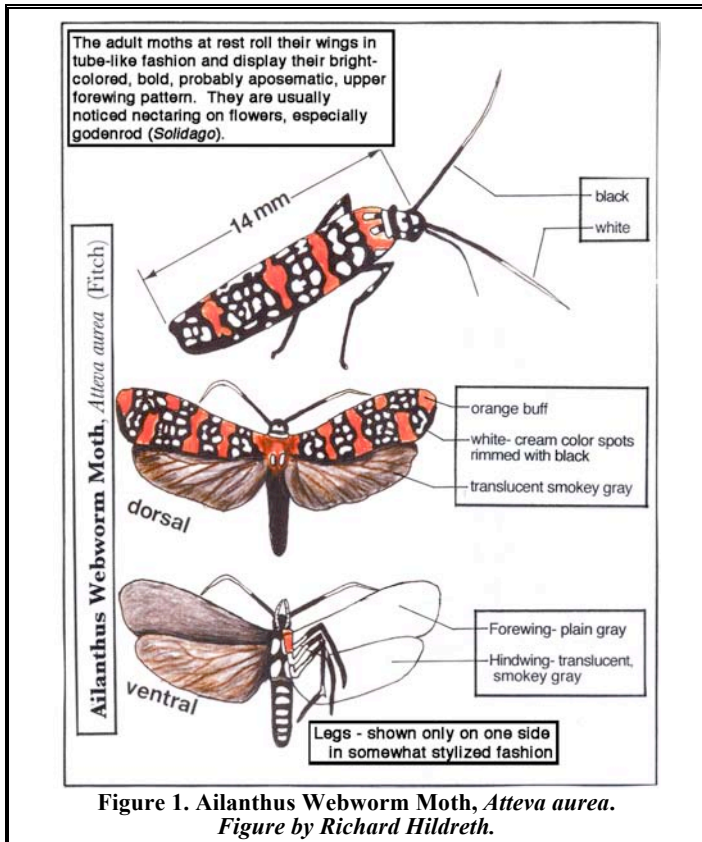
In my yard in Holliston, I found the Ailanthus Webworm Moth, *Atteva aurea* (Fitch). This beautiful, tiny (14 mm), Ermine Moth [family Yponomeutidae] is usually noticed nectaring on flowers, especially goldenrod, *Solidago*.

The adult moths at rest roll their forewings in tube-like fashion. The upper forewing of *A. aurea* is boldly patterned and brightly colored; orange bands with white to cream spots outlined in black. From moth to moth the pattern varies

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Ailanthus Webworm moth (cont.)

considerably. The hind wing (top and bottom) is translucent, smoky gray. The lower side of the forewing is plain gray (see Figure 1).



The moth in flight is rather drab-looking, but at rest, busy nectaring on flowers, it presents a dramatic appearance of pattern and color. This display of warning colors, plus the non-wary behavior of the moth at rest, suggests that it is aposematic. At first glance, the moth at rest on a flower with its long white-tipped antennae constantly flicking as it nectars, strongly reminds you of some small colorful Long-horned Beetle. In Massachusetts in August, a nectaring associate of *A. aurea* on the goldenrod flowers was in fact a long-horned beetle, the Locust Borer, *Megacyllene robiniae*.

The caterpillars of *A. aurea* and other *Atteva* species which occur farther south in the Americas, eat the leaves of plants in the Quassia Family (Simaroubaceae). The Quassia Family contains >100 species of tropical woody plants (new and old world). *A. aurea* is thought to be a native American moth species which formerly used a native Quassia Family tree, the Paradise Tree, *Simarouba glauca*. This tree occurs in the U.S.A. in south Florida, and the moth formerly only occurred from the extreme southern U.S.A. southward.

However, in 1784 a Quassia Family tree from China, *Ailanthus altissima* was introduced into the USA. By the 1800s it was being widely planted. *Atteva aurea* now uses *Ailanthus* as its caterpillar food plant and the moth is now widely distributed all over the USA. The moth is now called the Ailanthus Webworm Moth.

The *A. aurea* caterpillars build a silk tent over some *Ailanthus* leaves; these tents are seldom larger than ~30 cm. The caterpillars then eat the leaves inside the tent, seldom venturing beyond the tent.

The last instar caterpillars are ~25 to 30 mm long, but are only ~3 mm in diameter; thus they look long and thin. These caterpillars have a fairly wide, greenish brown to pinkish,

dorsal strip bordered by a narrow, dark, side stripe. Pupation takes place inside the tent. The chrysalids remain in the tent, clearly visible through the tent wall, until hatching. The adult moths crawl out through the tent wall. A few don't make it through the tent wall and perish inside.

On 29 August, I returned to Maine and resumed my field work, with Ailanthus Webworm Moths far from my thoughts. But on 15 September 2010, I visited the Schoodic District of Acadia NP in Winter Harbor. At Schoodic Point, right in the big parking lot, was a big patch of goldenrods in full flower (probably *Solidago rugosa*). I stopped to check out these flowers to see if any migratory butterflies are present. No butterflies were seen, but many pollinators were present; the plants are buzzing with bees, wasps and beetles. As I am carefully searching the flowers with my close-focus binoculars (8.5X), I am astonished to see an Ailanthus Webworm Moth. I am astonished because there are very few *Ailanthus* trees in Maine and I know of none anywhere near Schoodic Point.

I found seven *A. aurea* at this site and three at another Schoodic site, all nectaring on goldenrod. Alas, my camera had a dead battery, so that day I got no photographs. I returned on 18 September and managed to find three *A. aurea* still nectaring on goldenrod. This time I got some fine photographs. I later visited Schoodic several times in September-October, but never found any more of the moths, in spite of the fact that there are still many good nectar plants flowering and attracting various pollinators.

Locating these moths in downeast, coastal Maine is an exciting find which brings many questions to mind. At my primitive cabin in Steuben, I don't have the needed references to answer my questions. I called Richard G. Dearborn (my good entomologist buddy), and Dick quickly sent off what references that were available to me. In Brower (*A list of the Lepidoptera of Maine*, part 2 of section 2, by Auburn E. Brower, 1984) there are two records of *A. aurea* for Maine; one record at Vassalboro on 16 June, and one record from Isleford (an island off Southwest Harbor) from A. H. Napier who found a pupa wrapped in a sumac leaf and reared it to obtain the adult moth.

Dick sent me a record of four *A. aurea* specimens collected in Nova Scotia (*vide* C. J. Majka). Dick also found a very useful Wikipedia article which mentions that *A. aurea* does not survive cold winters, but migrates north each year, sometimes north of where the *Ailanthus* food plant occurs.

The weather in downeast coastal Maine in late September was very mild; 29 September, 2010, was cloudy in the morning, but cleared by noon and was very warm in the afternoon. All along Village Road, near my cabin, there were many good nectar plants in flower. One species especially attractive to butterflies was the New York Aster, *Symphotrichum novi-belgii*.

A good number of insect migrants were passing along westward (along the usual autumn migration track). I saw the following on the move: ~20 Clouded Sulphurs, four Orange Sulphurs, five Cabbage Whites, two Red Admirals, and six American Ladys. I also saw one Common Buckeye (a rare southern stray): I attempted to catch it and failed - when alarmed, it flew off to the west. I also saw ten Celery Looper Moths and three Common Green Darners (dragonflies) on the move, headed westward.

The evening was very warm, so I decided to turn on my mercury vapor lights and see what might be attracted. Quite a few insects came flying in: two Giant Water Bugs, one Carrion Beetle, and several species of moths including *Catocala relida*. Just before I decided to go to bed, I spotted a tiny moth near the light. When I "got on it" with my 8.5x

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Ailanthus Webworm moth (cont.)

close-focus binoculars, I saw that it was an *Ailanthus Webworm Moth*. I collected it.

I left the lights on all night, and in the morning I found another *Ailanthus Webworm Moth*, which I also collected. I passed along to David Manski one of the photographs I took on 18 September of *A. aurea* at Schoodic Point. I pass along to Charlene Donahue, for the Maine Forest Service collection, the two specimens of *A. aurea* I collected at the lights in Steuben.

I returned to Massachusetts on 6 October 2010. All the *Ailanthus altissima* plants that I had mowed to the ground in August have sprouted up to 20-35" tall. Almost every one of these "new growth" plants has a *Ailanthus Webworm Moth* tent on it. The tents are full of late instar caterpillars or chrysalids. By 13 November, all the "new growth" *Ailanthus* plants were frozen, but a few of the last chrysalids in the tents were still hatching.

During my autumn exploration of the front field and environs, I found some *Ailanthus Webworm Tents* on the leaves of Smooth Sumac, *Rhus glabra*. Some of these tents contained *Ailanthus Webworm* chrysalids. I collected some of these chrysalids alive and brought them in to rear, and they soon hatched into normal-looking moths. In some cases it looks like the caterpillars actually ate the sumac leaves before pupating.

It is interesting to note that one of the two records for *A. aurea* in Maine, given in Brower, was a chrysalis found wrapped in a sumac leaf and reared to the adult moth. Smooth Sumac, although in a different family (Cashew Family, Anacardiaceae), strongly reminds me of *Ailanthus altissima*. The Smooth Sumac stems have brown pith and a strong odor when broken, much like *Ailanthus*. In Maine the sumac involved was probably Staghorn Sumac, *Rhus typhina*.

In both cases when I found the *Ailanthus Webworm Moth* in Maine, I did so by using my close-focus binoculars. I never would have seen these tiny moths without them. See: *The Maine Entomologist*, Vol. 11, No.1, February 2007, equipment review by Richard W. Hildreth, *Papilio* 8.5 x 21 binoculars.

* * * * *
Bug Maine-ia Wows 'Em Again
by Joanna Turow

Bug Maine-ia is one of the most popular events at the Maine State Museum. On Monday, September 12th, the Maine State Museum education staff began to prepare the museum for its annual Bug Maine-ia transformation. Bug Maine-ia was scheduled for Wednesday, September 14th, and there was a lot to do. Tables and chairs needed to be gathered and distributed. Historically, we've used over 30 tables for the event, so we needed to beg and steal every table in the museum. We were expecting 22 exhibitors spread throughout the Cultural Building Atrium, museum lobby, and exhibit galleries - and over 1000 visitors.

On Tuesday, signs were hung, extra lights distributed, and extension cords wrangled into order with duct tape. The Bug Photo Gallery was artfully hung and most importantly, a trail of large ants printed on label paper were cut out, peeled, and stuck to the floor to form an ant trail leading to all the presenters inside the museum. This is a student favorite. Staff and volunteers get a kick out of watching small children leaping from ant to ant.

Finally, the big day arrives. I get up early (very early) and drive to work listening to my favorite station on the radio. They are big fans of the museum and plug the event all morning. Later, educator Gigi Hutchins will stop by the studio for a live interview.

Now the excitement is mounting and there is still so much to do. No need to worry, an army of museum staff and volunteers appear and we are ready for exhibitors to start arriving. By 7:30, exhibitors are energetically unloading and setting up. They have been warned: school buses will begin arriving promptly at 9:00 a.m.



Edie King was one of numerous M.E.S. members who shared her expertise and enthusiasm at Bug Maine-ia 2011. Maine State Museum photo.

When we see the first flash of yellow in the distance, we all rush to our places – we are ready. And boy, did they come, and come, and come! We had 850 visitors in the first hour! Oh no, could there be too much of a good thing? We start directing students to begin downstairs and outside where they can collect bugs and have them identified. No one is complaining about the crowds they are too busy looking through microscopes, writing their name in oak gall ink, identifying water insects in various stages of life, finding the queen bee, learning how to predict the severity of the coming winter, and some very brave students were even finding out



Dave Bourque and Bill Urquhart had their hands full with eager new field entomologists at Bug Maine-ia 2011! Maine State Museum photo.

(Continued on next page)

Bug Maine-ia (cont.)

how insects taste! The students are completely engaged and focused, many coming prepared with questions that show how thoughtfully their teachers have prepared them for this day. In all we had 1,913 students, teachers, chaperones, parents, and homeschoolers experience Bug Maine-ia.

To all the Maine Entomological Society members who exhibit, volunteer and support Bug Maine-ia at the Maine State Museum, thank you for sharing your time and knowledge with the state's students.

Next year's event is planned for Wednesday, September 12, 2012, so mark your calendars now. If you have any suggestions or ideas about how to continue making Bug Maine-ia better, please contact Joanna Torow, Chief Educator at the Maine State Museum, at 207-287-6608 or joanna.torow@maine.gov.

* * * * *

Observations of Migrant Insects in Downeast Coastal Maine During the 2010 Field Season
by Richard W. Hildreth

Eight species of butterflies: Alfalfa Butterfly (Orange Sulphur, *Colias eurytheme*), Cabbage Butterfly (Cabbage White, *Pieris rapae*), Question Mark (*Polygonia interrogationis*), Mourning Cloak (*Nymphalis antiopa*), Red Admiral (*Vanessa atalanta*), Painted Lady (*Vanessa cardui*), American Lady (*Vanessa virginiensis*), and the Monarch (*Danaus plexippus*) all make annual flights [migrations] into and through Maine. At least four species of dragonflies: Common Green Darner (*Anax junius*), Wandering Glider (*Pantala flavescens*), Spot-winged Glider (*Pantala hymenaea*), and [in very small numbers] Black Saddlebags (*Tramea lacerata*) also make annual flights through Maine. The Autumn Meadowhawk (*Sympetrum vicinum*) (towing pairs), makes at least annual fall flights SW through Maine.

In addition, several species of moths, such as Army Worm Moth (*Pseudaletia unipuncta*), Celery Looper Moth (*Anagrapha falcifera*), and Corn Earworm Moth (*Heliothis zea*) [and probably many others – see story on p. 4] make annual flights through Maine. There is a spring flight in late May-June on a northeast track, and an autumn flight in late August-October on a southwest track.

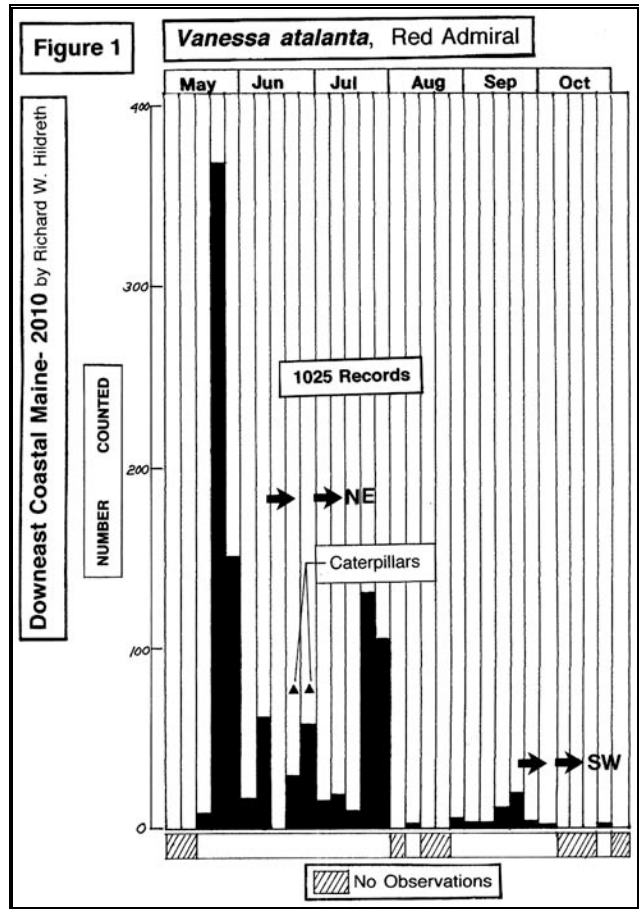
At least in the autumn, there is also a flight from the southeast, coming in over the sea from southern Nova Scotia (see Figure 3 in the article on migratory moths, p. 4 in this issue). There is great year to year variation in the abundance of these migrant species. During the 2007 field season there was a great abundance of Red Admirals on the move through Maine (see "2007-The year of the Red Admiral" by Richard W. Hildreth, *The Maine Entomologist*, Vol. 12, No. 2; May 2008).

During the 2010 field season in downeast coastal Maine, there was again a great abundance of Red Admirals. Here I will attempt to describe the migrant insect activity during the 2010 field season in downeast coastal Maine. A few words of caution, however: most of the migrant insect records are sight records made by me in downeast coastal Maine, mostly in Hancock and Washington Counties, and almost none are from farther inland than Bangor. My practice is to try to identify to species and count all migrant species that I see, but my efforts at counting migrants in Maine are not consistent (either temporally or spatially) from year to year, so the number of records per species per year is only a vague suggestion of actual abundance.

Butterflies:

Red Admiral: Figure 1 shows my 2010 Maine Red Admiral records (1025 records). The spring flight along the NE track in May and early June was strong. In Ontario, the

strong spring flight was also noted. ("Spring 2010 Red Admiral Migration," by Don Davis, *Ontario Insects*, Vol. 16, No. 1, November 2010). The autumn flight along the SW track was more modest, far less than during the big Red Admiral year 2007.



American Lady: This species was abundant during the 2010 field season. Figure 2 shows my 2010 Maine American Lady Records (138 records). The spring flight along the NE track was modest, but by June and early July many caterpillars were busy feeding on the Pearl Everlasting. Many new hatched adults were flying in late July. Unfortunately, I was not in Maine most of August, so what happened then is unknown to me.

There was a strong autumn flight. I saw many flying in off the sea from the SE at the Schoodic District of Acadia National Park in Winter Harbor. Many were also following the usual SW track.

Painted Lady: This species was barely detected in 2010 (6 records). See Figure 3.

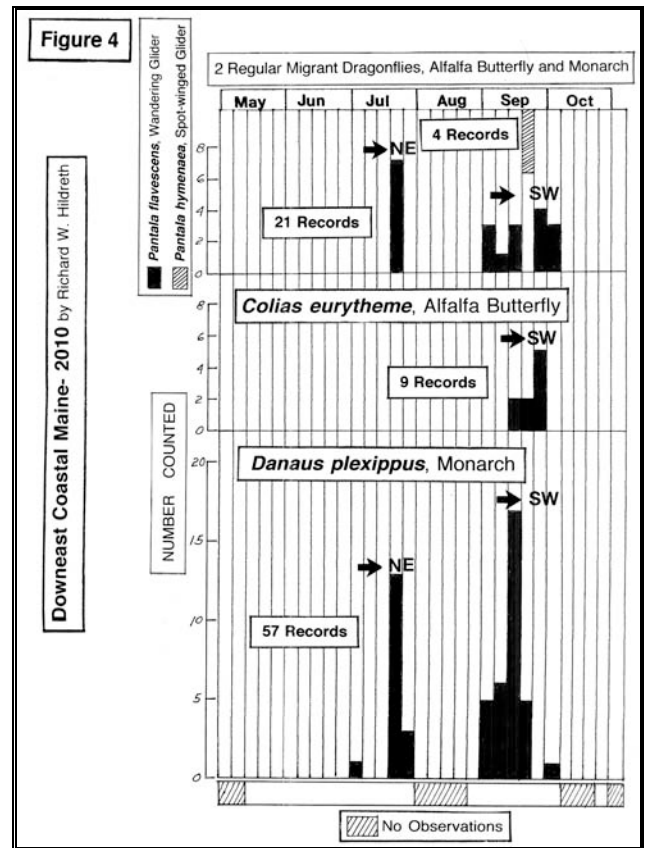
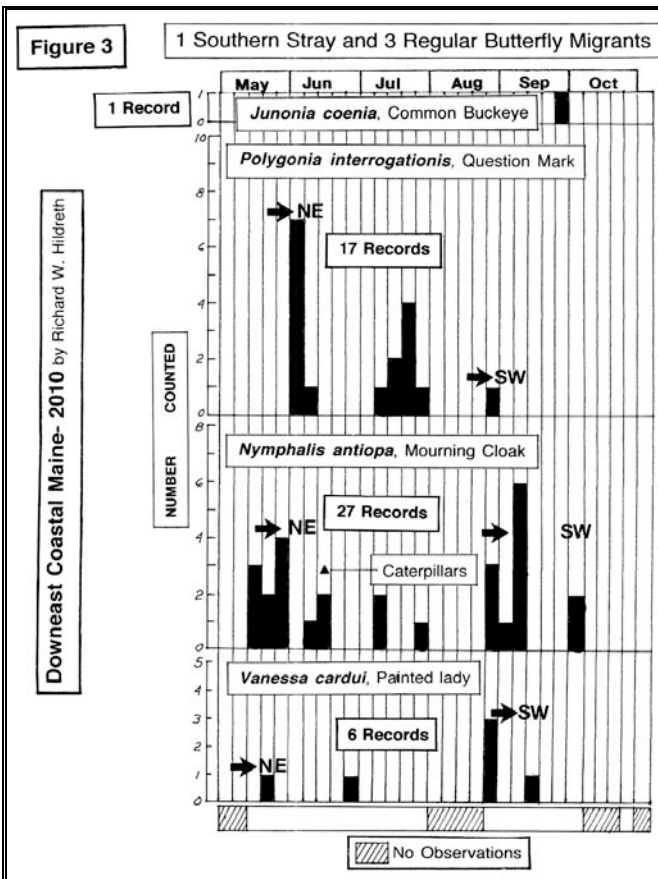
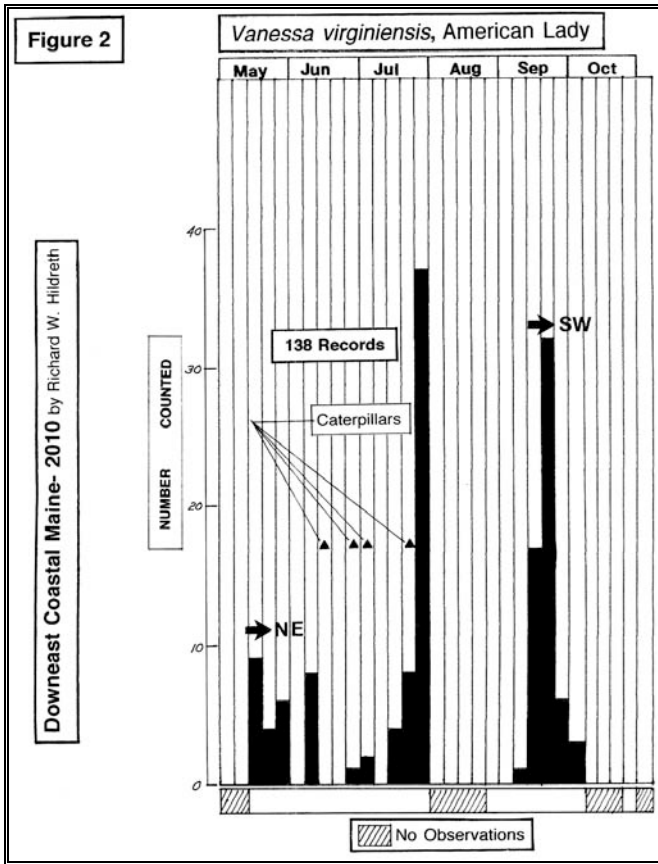
Mourning Cloak: Figure 3 shows my 2010 Maine Mourning Cloak records (27 records). It was not a big year for this species, but with a typical temporal distribution.

Question Mark: Figure 3 shows my 2010 Maine Question Mark records (17 records). This is never a very abundant species in Maine or anywhere in New England. The last big year in Massachusetts was 1998; 2011 is the biggest year I have seen for this species in Maine with 48 records.

Monarch: It was not a big Monarch year. Figure 4, above, shows my 2010 Maine Monarch records (57 records). The small NE flight passed at the usual time in July.

Alfalfa Butterfly [a.k.a. Orange Sulphur] A usually conspicuous migrant, during the 2010 field season was barely detectable with 9 records, all in the autumn (see Figure 4).

(Continued on next page)



Cabbage Butterfly [a.k.a. Cabbage White] This species was abundant during the entire 2010 field season. Figure 5 shows my 2010 Maine Cabbage Butterfly records (229 records). A very strong autumn flight along the SW track was seen. Also, many were seen flying in over the sea from the SE at the Schoodic District of Acadia NP in Winter Harbor.

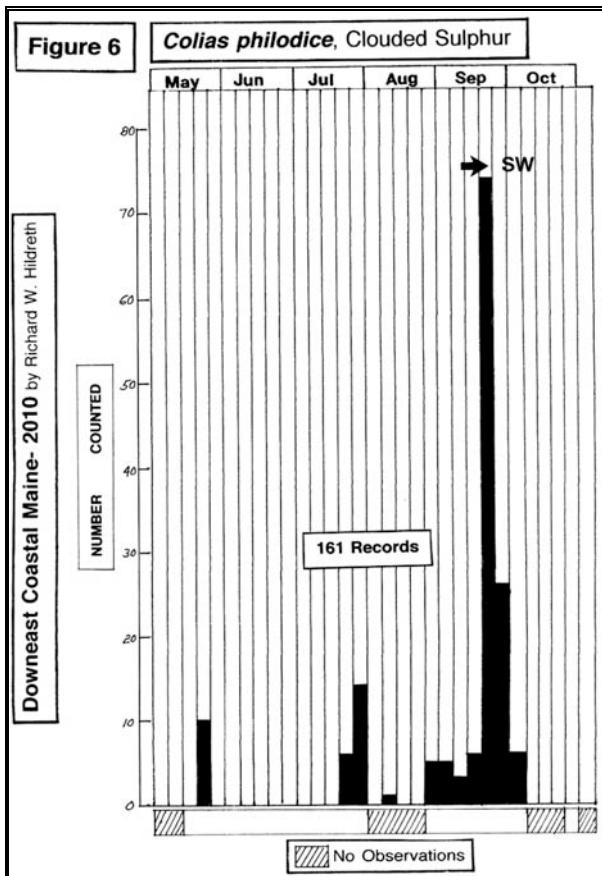
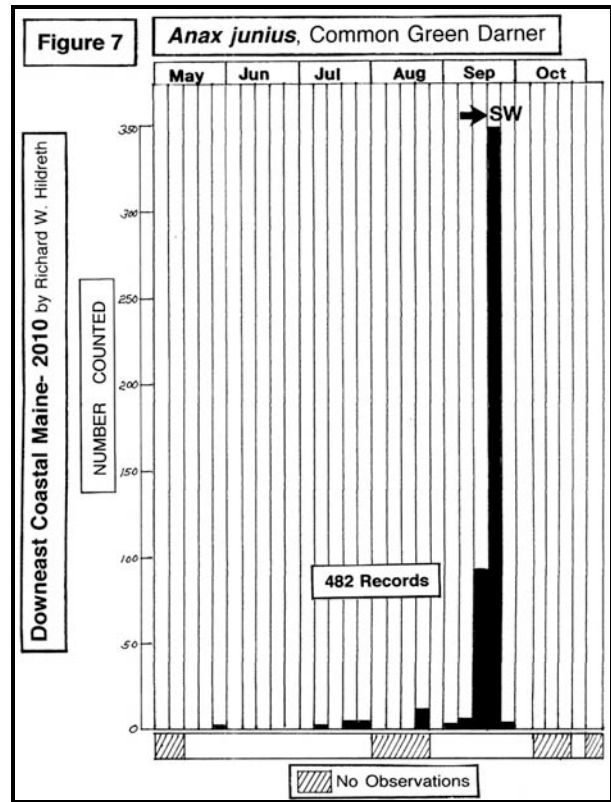
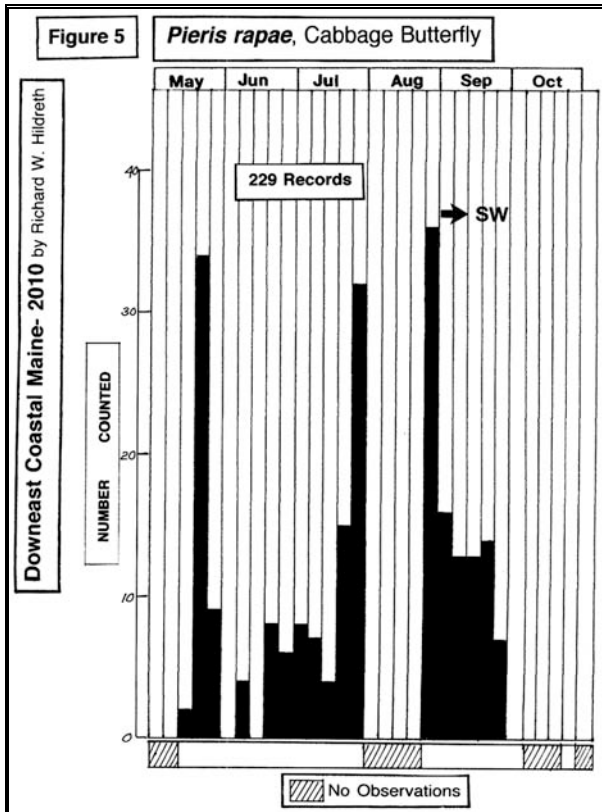
Clouded Sulphur Never before the 2010 field season did I ever consider this species to be in any sense migratory. In the several years that Brian Cassie and I studied migratory butterflies in SE Massachusetts, we saw plenty of Alfalfa Butterflies and Cabbage Whites on the move, but the rather large breeding population of Clouded Sulphurs in the nearby hay fields never seemed to move at all. I was convinced that they were totally non-migratory.

In downeast coastal Maine clouded sulphurs are infrequently found — I have very few records or specimens. Farther inland in the Downeast area there are some Clouded Sulphur breeding populations. During the 2010 field season, they became unusually abundant along the coast. Figure 6 shows my 2010 Maine Clouded Sulphur records (161 records). The autumn flight along the SW track was very strong. They were definitely on the move. I also saw many flying in off the sea from the SE at the Schoodic District of Acadia NP in Winter Harbor.

Dragonflies:

Common Green Darner: Figure 7 shows my 2010 Maine Common Green Darner records (482 records). The spring flight and summer activity was barely detectable for this conspicuous and highly migratory species, but the autumn flight in September was very strong. At the Schoodic District of Acadia NP in Winter Harbor, and at the Petit Manan Point Division of Maine Coastal islands NWR in Steuben, many were seen flying in off the sea from the SE. Others were seen flying along the SW track.

(Continued on next page)



Wandering Glider and Spot-winged Glider: It was not a big year for either of these sometimes common migratory dragonfly species. Figure 4 shows my 2010 Maine glider

records (Wandering Glider - 21 records, Spot-winged Glider - 4 records)

Many more observations in many more places over many years will be required before we understand much about the considerable insect migration going on in Maine. Observations are badly needed inland. Observations are also needed out in the Gulf of Maine (on islands and at sea). Many of my best migrant records have been made along the downeast coast during the autumn flight period. Many more spring flight records are needed.

I hope MES members can be persuaded to get out and collect records of migratory insects passing through Maine. To collect useful records of migratory insects it is essential that you learn to identify, on the wing, the various species I have mentioned. Luckily, these species are conspicuous, fairly large and mostly easy to ID. Close-focus binoculars can often help the ID process (see "Equipment Review" on these binoculars by Richard W. Hildreth, *The Maine Entomologist*, Vol. 11, No.1, p. 5; February 2007).

Essential field observations to make and field notes to collect are: Date, Time (clock time and delta time, e.g. 0935-1146), location (township and local details), latitude and longitude (in decimal degrees; if you have a GPS unit - use it), Delorme Map Page, USGS topographic map quadrangle (if known), species of migrant insects seen, numbers of migrant insects seen, direction migrant insects are coming from and heading toward, behavior observations (e.g. nectaring on --, laying eggs on --, etc.), weather (air temperature, wind direction and velocity, cloud cover, precipitation). Get photographs of the migrant insects if you can (be sure to carefully label the photos, just as you would label specimens).

Useful equipment to carry: a notebook, mechanical pencil, close-focus binoculars, thermometer, wind meter, compass, GPS unit, camera gear, collecting gear.

Be sure to make your records available to people interested in insect migration!

* * * * *

Book Review:

WICKED BUGS by Amy Stewart reviewed by Dana Michaud

Wicked Bugs, written by Amy Stewart and published by Algonquin Books in 2011, is a follow-up to her *Wicked Plants*, which was a New York Times bestseller in 2009.

This time Stewart, a naturalist and non-entomologist, delved into the amazing world of Arthropods (including spiders, ticks, millipedes, centipedes and insects) and others (mostly parasitic worms) and the various ways that these "bugs" affect humans. After defining "bug" as a slithering or crawling creature in her introduction, she recounts to the reader a litany of facts she's learned about insects and relatives, and how they affect humans, realizing the "dark side" of so many are detrimental to so many of us. Stewart's 50 short chapters covering nearly 100 "bugs" will unnerve many who read her book, particularly the timid and squeamish.

Her introduction sets the stage for all of the following chapters, where she reveals a series of "bugs" that invade our homes, carry diseases or parasites, or are themselves venomous or destructive to crops or buildings. Weaving through chapter after chapter, revealing what she's learned about each subject, Stewart portrays, rightfully so, Mankind as a victim of so many harmful insects and their kin. Starting off with a household infested unexpectedly with bat bugs (*Cimex adjunctus*), the author jumps to a new "bug" and story revealing odd facts and behaviors that caught her attention.

In Chapter 3, for example, Stewart deals with the Asian hornet, *Vespa mandarina*, a 50-mm-long killing machine, that notoriously raids European honeybee hives, killing all the bees inside. Once the scout hornet finds a hive, it returns to its nest and relays where the hive is. A gang of 30 or so hornets then raids the hive, occupying it for over a week, killing the bees, stealing the honey, and taking the honeybee larvae back to feed to their own.

Japanese honey bee hives have evolved a counter-attack that thwarts the hornet invasion. Luring the hornet scout into the hive, the honeybees engulf it by surrounding the hornet with an army of 500+ bees. Beating their wings furiously, the honeybee ball causes the temperature around the hornet to rise to 116°, killing the hornet in about 20 minutes. Although some bees die as well in the process, the hive prevents the scout's escape.

Stewart's informative book continues through the many chapters on parasite carriers (various worms), and a variety of biters and stingers. Her chapter on lice ("What's Eating You?") was interesting, once you stop scratching! The revelations about what evolutionary biologists have discovered about the three major groups of lice (head, body and pubic) were unusual. First, head lice date back to about seven million years ago, when humans and chimps shared a common ancestor. Body lice evolved from head lice about 100,000 years ago, when humans began wearing clothes. The pubic louse, a separate species altogether, is closely related to a gorilla louse ... transferred to humans somehow. Speculation aside, the connection of man to the other apes is reinforced by the lowly lice.

At almost \$20, the small (5-1/2" x 7-1/4"), 272-page book is well-illustrated by a wonderful artist, Briony Morrow-Cribbs. Her drawings complement the subject matter, depicting Stewart's "Wicked Bugs" in each chapter. Stewart's revelation that there's an estimated ten quintillion insects alive, or as she puts it, 200 million insects for every human, is amazing. We are seriously outnumbered!

Although her book touches on 100 or so "Wicked Bugs," those 100 will either make your skin crawl or alter the way you look at that bug on the wall, wondering if IT is carrying

something. As she succinctly puts it, "After all I've learned, I still can't bring myself to squash a bug. But I watch them now with more amazement – and alarm – than ever."

After reading her book, *so will you!*

* * * * *

Checklist of the Beetles of Maine, U. S. A.

by C. G. Majka, D. S. Chandler and C. P. Donahue

The first comprehensive listing of the 2,871 beetles recorded in the State of Maine is still available from the Maine Forest Service. Perhaps a gift for a special entomologist?

Price is \$50, tax included, with shipping \$3 extra. Make checks payable to: Treasurer, State of Maine.

Send your request to:

Charlene Donahue; Insect & Disease Laboratory;
Maine Forest Service; 168 State House Station;
Augusta, Maine 04333-0168

(207) 287-3244 — e-mail: charlene.donahue@maine.gov

* * * * *

Annual Meeting Held Beneath Sunny September Skies

by Bob Nelson

The 2011 Annual Meeting of the M.E.S. was held on Saturday, 10 September, at Rock Ridge in Clinton, hosted by Nettie and Bob Nelson. President Charlene Donahue had arranged for spectacularly clear and sunny, warm weather, for which all were appreciative. A dozen M.E.S. members showed up and actively participated, after collecting and dining on the banquet brought by all.

The previous fiscal year ended with a net account balance of about \$1561, with nearly an additional \$1000 in the Scholarship Fund. Since no current officer had requested to be relieved of duties, and no one else indicated a desire to contest any officer's position, all current officers were re-elected for 2012.

There were suggestions that the November newsletter should include a coupon for dues submission (see inside!), and that back issues should be made available on-line. (This is coming!) Peter Darling volunteered to look into setting up a Google Group on the Internet for M.E.S. members.

The increase in the number of people receiving the newsletter digitally has helped us maintain costs, so dues will be remaining constant at \$10 per year. M.E.S. calendars for 2012 will be available (see below), at \$12 for picked-up copies, or \$15 for mailed copies. Information on these will be found on the insert in this issue of *The Maine Entomologist*.

There were extended discussions on M.E.S. events for 2012. The Winter Workshop will be held on Saturday, January 14th, and will focus on aquatic insects – those taxa that are intimately associated with aquatic habitats either as larvae or adults (or both). This will be the subject of the 2012 Entomological Bio-Blitz at Acadia National Park. Charlene Donahue added a delightful new early Spring event in volunteering to host an M.E.S. event at her place in Whitefield, during maple sugaring season. This will be Saturday, March 17th. A complete listing of coming M.E.S. events in 2012 can be found on the last page of this newsletter.

Bob Nelson checked with Black Dog Graphics in Clinton, and found that it will be possible to get the popular full-color M.E.S. "Insects of Maine" T-shirts produced on heavy cotton, such that they can be sold at \$15 each. Monica Russo forwarded up the original artwork, but these will have to be re-scanned and incorporated into a new master design

(Continued on next page)

Annual Meeting Report (cont.)

plate for the printing process. Black Dog Graphics has been in business over a decade and is the area's leading producer of silk-screened textile products.

There was additional talk of updating the M.E.S. brochure, as well as of possible outreach events, though nothing definitive was decided on either beyond "it should be

Annual Meeting Report (cont.)

done." Color for the brochure is certainly an option.

However, a very serious suggestion was made to revisit the M.E.S. by-laws, with a look to revising them in accordance with current practices and the direction the Society wishes to proceed. Copies of the current M.E.S. by-laws can be downloaded from at <http://www.colby.edu/MES>.

YES! There WILL be 2012 M.E.S. Calendars!



Beautiful color photos of a common spider and insects from the Lepidoptera, Hymenoptera, Coleoptera, Orthoptera and Hemiptera are featured on the 2012 M.E.S. official calendar. The calendar also includes dates of all summer field events, Bug Maine-ia, full and new moon dates, month-by-month guides to what's active in the insect world, and important historical dates and holidays. See the enclosed insert for an order form!

COMING M.E.S. EVENTS in 2012:

- 14 January Winter Workshop (Aquatic Insects); contact person: Charlene Donahue [207-287-3244]
- 17 March Maple Syruping Day, Whitefield; contact person: Charlene Donahue [207-287-3244]
- 19 May M.E.S. field day, Pownal; contact person: Domenica Vacca [207-967-6159]
- 16 June M.E.S. field day, Belgrade; contact person: Bob Nelson [207-426-9629]
- 13-16 July Acadia Entomological BioBlitz [Aquatic taxa]; Schoodic Education and Research Center, Acadia National Park; contact person: David Manski [207-288-8720]
- 11 August M.E.S. field day, Otisfield; contact person: Charlene Donahue [207-287-3244]
- 8 September Annual Meeting, Clinton (Kennebec Co.); contact person: Bob Nelson [207-426-9629]
- 12 September Bug Maine-ia, Maine State Museum, Augusta; contact person: Joanna Turow [207-287-6608]

(See <http://www.colby.edu/MES/> for more detailed information; new information on any event will be posted as it is received.)



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Please visit our website at <http://www.colby.edu/MES/>

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