



FFEM Newsletter

October 2010

Volume 9, Issue 2

President's Message
by
Wanyi Zhu



Dear Friends of the Frost Entomological Museum:

As the seasons change it's a great time to reflect on the amazing transformation that has taken place here at the Friends of the Frost Entomological Museum over the past year. If you haven't visited recently we encourage you to come in and experience our beautifully renovated facility as well as our outstanding and engaging exhibitions.

This past year has been very successful under the leadership of our past president, Dan Schmehl. I would like to thank those who have dedicated large amounts of time to the Museum accomplishments. And I look forward to starting and continuing an anticipated expansion and renovation we accomplished. Our entomologists, exhibitions staffs, educators and entomology students will continually work together to develop and improve exhibitions towards a common goal for

the museum to reach out to many people both regionally and nationally, inspiring people to enrich their lives and build a better community.

In the past year, we have rapidly added new members, new insect models, new interactive displays and monitors, and renewed exhibitions. Our partnership with the Penn State Entomology Department has been integral to the success of the museum. The Penn State Department of Entomology has endorsed \$2500 to be devoted to museum improvements, together with \$2500 approved by Friends of the Frost Executive Committee, giving us a total of \$5000 towards the improvements with the goal to bring our museum into the community. In addition, Amber Brunskill, FFEM Vice President, is leading efforts and compiling a 5-year strategic plan for the museum, including a mission statement, space and collection requirements, and current problems/challenges facing the museum in order to allow museum members and public to better understand what improvements we can make for the museum. As part of our strategic plan for the museum, Denise A. Piechnik, FFEM Member-at-large, has made ongoing efforts on conducting the Firefly Exhibit project. New lighting-bug costume has been modified. New web-based interactive program has been developed for display. I am especially thrilled with this aspect of the project. This

interactive display can be a promising conduit of insect-related information and linkage between local activities like the Butterfly Garden at Tudek Park and other outreach programs. I am also thrilled to announce the addition of Maryann Frazier as a new FFEM board member who is Senior Extension Associate of Penn State University and have great experience in the areas of apiculture extension, public science education and teaching.

As we enter into the next year, I am very excited about the partnership between FFEM and the community. We are going to continue the well-established partnership with the Master Gardeners and collaboratively support the construction of the Observation Deck at Tudek Park. Our education programs and tour offerings will continue to be available to

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schools and community organizations. The new insect exhibitions and interactive displays will afford the opportunity to engage and educate area students through the presentation of entomology students and professors. Both the performances and audience insights will be documented then shared through an innovative and interactive web program. Additionally, we will redesign pamphlets for “how to become members”, posters for history of the museum and museum T-shirts with our new logo. Additionally, the improvements currently have been made underway for the FFEM website. Please be sure to review upcoming newsletters or visit our website for more details as they become available.



**Friends Renovating the Public
Display Area of the Frost Museum**

FFEM Mascot Now Found on U-Haul Trucks by Beth Brobst

When students moved in this fall, did you notice a firefly in a large graphic on the side of U-Haul trucks? U-Haul's Supergraphics Team prefers to use a design that serves as an educational and promotional tool. In order to highlight the science of bioluminescence, the team decided to use the emission of light by fireflies as an example of this complex biochemical phenomenon. They asked Dr. Bruce Branchini, professor of biochemistry at Connecticut College, to consult on their project. Branchini, a leading researcher in bioluminescence, was recently awarded a \$225,000 Air Force Office of Scientific Research grant to continue his cutting-edge bioluminescence research.

The final result is a graphic of a large glowing firefly with Branchini's bioluminescence equation in the background. It asks, “Did you know...A firefly converts chemical energy into light. What advancements have been made by researching the science behind the glow?”



Who knew that the recent selection of the firefly as FFEM's mascot would coincide with the firefly being featured on those ubiquitous U-Haul trucks!



Molly Sturniolo wearing the firefly mascot costume at the Great Insect Fair

The Emerald Ash borer in Pennsylvania

by

Gregory A. Hoover , Ornamental Extension Entomologist
Department of Entomology Pennsylvania State University

The emerald ash borer (EAB), *Agrilus planipennis*, is an invasive, highly destructive wood-boring insect that attacks all species of ash trees in the genus *Fraxinus*. To date this pest has killed more than 40 million ash trees in Michigan, Ohio, Indiana, Illinois, Maryland, Virginia, Pennsylvania, West Virginia, Missouri, Wisconsin, Minnesota, Kentucky, New York, and Iowa.

The EAB is believed to have arrived in North America on solid wood packing material from China. The native range of the EAB is eastern Russia, northeast China, Japan, Korea, Taiwan, and Mongolia. Before June of 2002, this species had never been found in North America, and very little was known about it.

The EAB adult is a flatheaded, metallic wood-boring beetle in the insect family Buprestidae that's slender, elongate, dark metallic green, 1/2 inch-long and 1/8 inch-wide (12 mm long and 3 mm wide) (see picture). The cream-colored EAB larvae feed beneath the bark and typically pass through four stages, eventually reaching a length of 1 to 1.25 inches (26-32 mm). Larvae have a 10-segmented abdomen with a pair of brown pincer-like appendages (called urogomphi) on the last segment. Some abdominal segments of the larval stage are bell-shaped which is unique to the EAB and not evident on our native species in the genus *Agrilus*. Left undetected, the EAB larvae will girdle the vascular system of an ash tree eventually causing the tree to



Emerald Ash Borer

die. Recent research shows that the EAB can have a one- or two-year life cycle. Adults begin coming out of ash trees in mid-to late May. EAB adults may begin to emerge during mid-May described by a growing degree day (GDD) range of 450-500 GDD (using a threshold air temperature of 50°F) with peak emergence in late June and early July. Adults may be active through August. Adult EAB emergence peaks from mid-June to mid-July that occurs around 1000 GDD based upon research conducted in Michigan. After emerging, adults eat ash foliage around the leaflet margins for about two weeks.

Females usually begin laying eggs about 2 weeks after emergence. Eggs hatch in 1-2 weeks, and young larvae bore through the bark and into the cambium (the active growing area between the bark and wood where nutrient levels are high). Larvae feed beneath the bark for several weeks, usually from late July or early August through October.

Most EAB larvae overwinter in a small chamber in the outer bark or in the outer inch of wood. Pupation occurs in spring and the new generation of adults will begin to emerge in May or early June, to start the cycle again.

We know EAB adults can fly at least 1/2 mile from the tree where they emerge. Many new infestations, however, are started when people unintentionally move infested ash firewood, ash nursery trees, or logs into un-infested areas. Shipments of ash nursery trees and ash logs with bark are now regulated, and transporting firewood outside of the quarantined areas is illegal, but transport of infested ash firewood remains a problem. The EAB was detected for the first time in western Pennsylvania in Cranberry Township, Butler County and in Marshall Township, Allegheny County in late June 2007. In June 2008 the EAB was found in West Middlesex, Mercer County on trees at a rest area off of the eastbound lanes of I-80. In February 2009 the EAB was identified in Granville in Mifflin County. In June 2009, with assistance from survey crews from the Pennsylvania Department of Agriculture deploying purple panel sticky traps as part of a national EAB sampling protocol, the EAB was confirmed in Allegheny Township, Westmoreland County and several other western Pennsylvania counties. To date the county records where the EAB has been confirmed in Pennsylvania include Butler, Allegheny,

The Emerald Ash borer in Pennsylvania Continued

Mercer, Beaver, Lawrence, Westmoreland, Washington, Armstrong, Indiana, Mifflin, Juniata, Bedford, Centre, Somerset, Fulton, Union, Cumberland and Clinton counties. The EAB has now been confirmed in 18 counties in Pennsylvania.

The foliage in the crown of EAB-infested trees begins to thin above infested portions of the trunk and major branches because the larval stage of this wood-boring insect destroys the water and nutrient conducting cells and tissues beneath the bark. Heavily infested trees exhibit canopy die-back usually starting at the top of the tree. One-third to one-half of the branches may die in one year. Most of the canopy will be dead within 2 years of when symptoms are first observed. Sometimes ash trees push out sprouts from the trunk after the upper portions of the tree dies. Although difficult to see, EAB adults leave a capital "D"-shaped emergence hole in the bark. This exit hole is approximately 1/8 inch in diameter.

Federal, state, and local authorities are working together to educate the citizens of Pennsylvania about the accurate identification of ash trees and EAB, options for protecting valuable shade trees, and locations where dead or dying ash trees can be taken for proper disposal. Since 2002 federal agencies, and state educational institutions have been conducting research to learn more about the biology of EAB, its rate of spread, methods for detection

of the EAB, and natural enemies that may attack the EAB, and how insecticides may be applied to protect ash trees in infested areas.

For more information, consult the Pennsylvania Emerald Ash Borer Web Site - <http://ento.psu.edu/extension/trees-shrubs/emerald-ash-borer>.



"A purple panel sticky trap in an ash tree that was hung by an Emerald Ash Borer Survey Team. These traps will be inspected for the presence of emerald ash borer adults in mid-summer and will be removed in mid- to late August."



The green ash tree in a non-residential landscape where the first emerald ash borer was found in Butler County, Cranberry Township, Pennsylvania.



The characteristic D-shaped emergence hole left behind by the adult stage of emerald ash borer on a green ash tree.

SHOULD THERE BE A TAX ON TAXONOMY?

by
Robert Snetsinger

The Queensland Museum (PO Box 3300, South Brisbane BC, Queensland 4101) has come up with an innovation way are raising funds for their taxonomic research, you pay to choose the name for a new species. The Bank of Queensland was the first customer and bought a new species of Ant Spider, *Habronestes boq.* The price for this "honor" is slightly less than \$5000 US. Carolus Linnaeus, the father taxonomy is renowned for classifying some 7,700 species of plants, some 4,400 species of animals. What this new approach to nomenclature means that a lawyer for the decedents of the Linnaeus family will demand a payment of \$60,500,000 plus back interest for 250 years for the 12,100 species he described.

Recently a species of lichen was named for President Obama, *Caloplaca obamae*. This species produces a thin thallus arranged in orange granules that are 30–50 µm in diameter and form patches that can be 0.2–1 mm in diameter, ultimately covering an area on the soil up to 6–7 cm. The species was discovered in 2007 by Kerry Knudsen on Santa Rosa Island in California and described in March 2009. Knudsen states that he chose to honor Obama for "his support of science and scientific education".

Agathidium bushi is a species of slime mold beetles named for President George W. Bush; *Chesapectin jeffersonius* is Pliocene scallop and *Mammuthus jeffersonii*, a mammoth both named for Thomas Jefferson; *Lincolna girault*, a pteromalid wasp, named for Abraham Lincoln; *Muntiacus rooseveltorum* is a barking deer named for president Theodore

Roosevelt; and *Neomegamphopus roosevelti* is a marine amphipod named for FDR, and there are more political species. As far as I know, none of these species have been paid for and country is developing a sizable national debt from none payment for these nomenclature honors, probably some kind of tax will be necessary.

America is not the only country that has a nomenclature debt: *Khruschewia ridicula*, a flower "worm", is named for former Soviet Premier Nikita Khrushchev; *Maxillaria gorbachowii* a Bolivian orchid named after Mikhail Gorbachev; *Equus grevyi*, a zebra for Jules Grevy, a former president of France; *Anophthalmus hitleri*, a blind cave beetle, etc. What it boils down to is that there is an unpaid international debt on the currently described 1.7 million species or \$850,000,000 and only \$5000 has been paid off. Personally I owe \$5000 on a tarantula and am fortunate that the gall mite of hackberry that bore my name has been reduced to a synonym.



Musca domestica L.

White House Housefly

by
Robert Snetsinger

President Barack Obama recently was widely condemned by members of PETA for swatting a fly (tentatively identified as *Musca domestica*) during a 16 June of 2009 CNBC Interview and has since developed a less aggressive dipterous strategy as illustrated his tolerance during a second fly attack on 22 June 2010 while he was making a TV address from the White House. I think that the FBI should be faulted for their lack of entomological knowledge and PETA needs to study a medical entomology text. As we learned in our medical entomology class, House Flies are responsible for the spread protozoan, bacterial, and virus pathogens as well as being nuisance problems. I find it hard to believe that it was just accidental and that two of his speeches are remembered for nuisance fly attacks rather than the contents of his speeches. Rarely do you see similar fly problems on interview shows nor should they be a problem in the White House. Perhaps the FBI needs to be armed with fly swatters, or the President needs a different brand of after shave lotion!



To Know a Fly

By
Dick Byers

Sometimes insomnia is a good thing. When I am plagued by it I get up and read until I can no longer hold my eyes open. On this last occasion I became more wide awake because of the subject matter. One of my hobbies is photographing the various species of flies on my property and trying to identify them from the pictures. Neither the photography nor the identification is easy. They often do not hold still long enough for me to get my tripod and close-up lens set up and there aren't many non-professional books covering fly taxonomy. Although I own well over 20 volumes on insects, there's only three that treat the flies to any degree and I'm usually happy if I can get it placed in the right family, overjoyed if I identify it to genus and thrilled if I am actually certain I have the correct species. Getting a fly identified to the species level is an accomplishment for an amateur since the proper way to identify an insect is under a dissecting microscope with a professional taxonomic key that only specialized PhD entomologists can use. My main reference is Stephen Marshall's 718 page "*Insects, Their Natural History and Diversity.*"

On this sleepless night I was reading a book by William Burger where he was trying to explain why there are so many species on this planet. One of his stories is about the rapid evolution of the Apple Fly Maggot. There is in this country the American haw fly, a small fruit fly that feeds on hawthorn apples. Hawthorns are those small thorny trees resembling crab apples that you encounter in fields. The adult flies only court and mate on the surface of the fruit after which the female deposits her eggs under the skin of the apple. The hatched eggs (fly larvae are called

maggots) feed on the flesh of the apple, pupate in the ground beneath the tree and the adults emerge in mid-summer to once again mate on the ripening fruit and repeat the cycle.

In the early 1800's the domestic apple was introduced into America from Eurasia and apple trees were planted in the same fields where our native hawthorn resided. Some members of our native haw fly began feeding on the domestic apple. Since the adults only mate on the host plant these flies became reproductively isolated from their ancestor population. In evolution, when members of a population become separated for any reason, the door is wide open for the development of new species, a well supported fact if you understand how the theory works. Incredibly, in less than a hundred years, we saw the appearance and rapid establishment of *Rhagoletis pomonella*, the apple fly maggot that is a serious pest of American apple orchards.



It did not exist when apples were brought to this country and does not exist today in its native Eurasia. It evolved here.

Three of my books had pictures or paintings of this small quarter inch fruit fly and it looked very familiar. Since I have both domestic apple and hawthorn trees growing on my property, I headed for my computer at 2 A.M. in the morning to spend an hour pouring through my hundreds of unidentified fly pictures to see if I had photographed it. A fly of this small size is difficult for even my close-up

lens to get a sharp picture. I found lots of fruit flies of a related genus, the picture-winged flies, but I found only one picture that strongly resembles the new apple maggot species. Unfortunately, the fly is posed broadside and I cannot see the distinctive marks in the wing venation that would clinch the identification, so I'm not sure. I have since spent some time near my hawthorn and apple trees trying to get a picture of either species of this fly genus, but the period of adulthood had already passed and I will have to wait until next July to search for them. Finding them and getting a sharp picture showing the identifying marks of these little guys will prove a real challenge, but a lot of fun.

Wing banding patterns of deciduous fruit flies



Cherry fruit fly



Black cherry fruit fly



Apple maggot

Minutes of FFEM Executive Committee Meetings

Several meetings of the Executive Committee have been held since the last newsletter.

July 6, 2010

Pres. Dan Schmehl called the meeting to order at 11:05 AM. Also present were Pam Ford, Amanda Bachmann, Amber Brunskill, and Dan and Beth Brobst.

The minutes from the last meeting were read silently. A. Brunskill moved to accept the report as written. B. Brobst seconded. Motion passed.

D. Schmehl went over the financial report. There was \$8.23 earned in interest from June. A. Bachmann moved to accept the financial report. A. Brunskill seconded.

Pres. Schmehl called for Old Business. He said that he still needs to talk to Karen about setting up a budget for the FFEM improvement fund. He also looked into the cost of replacing the insect heads and found that they are \$600 - \$700 each.

Pres. Schmehl called for New Business: P. Ford is looking into the availability of the Tudek part pavilion for the annual meeting picnic on September 12 from 4-6. August 29 is the alternate date.

Pres. Schmehl called for potential nominations for the next President. Molly Sturniolo, Amber Brunskill, and Ian Grettenberger were all suggested. The Board hopes that R. Byers will continue his term as Secretary/Treasurer.

The next board meeting is scheduled for Aug. 10 at 11 AM in the Headhouse.

Pres. Schmehl called for a discussion about the minutes from the planning meeting held on June 10, 2010 at the museum. D. Schmehl is going to purchase a monitor. Beth and Don Brobst suggested updating the wasp exhibit at the end of the hall, but Pres. Schmehl said that our current priority is filling the empty space. He would like to have most of the new exhibits in

place by the date of Great Insect Fair on Oct. 2. P. Ford agreed to paint a bee mural under the observation hive. She will bring mock ups to the next meeting for approval and suggestions. Pam also said that there will be a large monarch that kids can take their picture with and a butterfly life stage activity for the FFEM table at the GIF. A. Bachmann is going to purchase black fabric for the background in all of the display cases. A. Brunskill found a source for inflatable insect lifecycles (Insect Lore) and will order them. She is also meeting with her father soon to discuss the interactive display (flaps, sliding doors, wheel? Etc)

Amber Brunskill reported that OPP is opening the museum in the morning. The PSU Police are checking in the evening to make sure that it's locked.

Amber Brunskill moved to adjourn. Amanda Bachmann seconded. Meeting adjourned at 12:05 PM.

Respectfully submitted,
Amanda Bachmann – acting Secretary

August 10, 2010

Pres. Dan Schmehl called the meeting to order at 11:05 AM. Also present were Denise Piechnik, Molly Sturniolo, Wanyi Zhu and Robert Byers.

The minutes from the July 6 meeting were summarized by R. Byers. D. Piechnik moved to accept the report as written. M. Sturniolo seconded. Motion passed.

R. Byers went over the financial report. Income for July was from interest (\$7.99) dues (\$20.00) and a grant from the Entomology Department (\$2500). Expenses were \$1500 transferred to the entomology Department account for the Museum improvements. Other expenses were purchase of computer (\$678.96) Computer parts (\$37.37) and a CD (\$20.00). The yearly balance was \$660.25. Total assets were \$13,293.81. There was considerable discussion of the report. Pres. Schmehl thought the \$2500 from the

Department should be kept in a separate budget. M. Sturniolo agreed and suggested a separate column be added to track the funds in the department account. The \$1500 will be added to the account to total \$4000. Expenses will be deducted from the total. R. Byers agreed to make the changes. D. Piechnik moved to accept the report with the changes. M. Sturniolo seconded. Motion passed.

Pres. Schmehl called for Old Business. R. Byers said we may consider submitting a form to the Bureau of Charitable Organizations in Harrisburg to renew our registration to solicit funds from the Commonwealth of Pennsylvania. There was some discussion about whether it would be desirable to keep the registration. It was agreed that R. Byers submit the form and a copy of our 2009 tax return with a \$15 fee.

R. Byers passed around a copy of the insurance policy from State Auto. We will be assessed \$251 if we accept the changes in the policy. Pres. Schmehl agreed to continue the policy and instructed the Secretary to pay the fee when the invoice arrives.

R. Byers asked if we wanted to order more Butterfly guides from Waterford Press to sell at the Great Insect Fair. After some discussion Pres. Schmehl tabled the idea until the next meeting. In the meantime the board will visit the online site www.waterfordpress.com and suggest what we should order and present their ideas at the next executive meeting.

R. Byers reported that Nick has placed all the latest Newsletters on our website. We are now current.

President Schmehl reported that Kerry Mauck is making sketches for a FFEM mascot-Lightning Bug. This concluded the Old Business. Pres. Schmehl called for New Business: D. Piechnik found an insect costume of a cockroach online that she thinks could be modified to look like a Lightning Bug. She moved we buy the .

Minutes of FFEM Executive Committee Meetings Continued

costume for \$100. After some discussion M. Sturniolo moved to buy the costume from the Museum account. D. Piechnik seconded. Motion passed.

The next board meeting is scheduled for Sept. 7 at 10:00 AM the Headhouse III.

Pres. Schmehl said the TV monitor we purchased will be mounted on the wall in the museum. R. Byers said he saw them working on it this morning. There was some discussion if the computer we bought will be sufficient to run programs on the monitor. D. Piechnik will bring the computer in and connect it to the monitor for the next Exec meeting.

D. Piechnik gave an update on the firefly interactive display. The engineer is meeting with her today. She will scan a firefly flight pattern from a publication "Lloyd, J. T. 1966. Studies on the flash combination system in *Photinius* fireflies. Museum Zool. Univ. Michigan". The map will be on a board and lights will be installed to simulate the flashes of the firefly.

R. Byers called for a discussion of plans for the picnic on August 29. R. Byers will buy hamburgers, hotdogs, charcoal and drinks. D. Piechnik will bring onions and buns. The members will bring a potluck casserole or dessert.

This concluded the New Business. Meeting adjourned at 12:11 PM. Respectively submitted,
Robert A. Byers, Secretary-Treasurer

Sept. 9, 2010

Pres. Wanyi Zhu called the meeting to order at 1:09 PM. Also present were Amanda Bachmann, Scott Blakeslee, Amber Brunskill, Don and Beth Brobst, Denise Piechnik, Dan Schmehl, Robert Snetsinger, Molly Sturniolo, and Robert Byers.

The minutes from the August 10, 2010 meeting were summarized by R. Byers. D. Piechnik moved to accept the report as written. A. Bachmann

seconded. Motion passed.

R. Byers went over the financial report. R. Byers presented a financial statement for the fiscal year 2010. Balance from 2009 was \$12,898.55. Income for the year to date was \$72.07 from interest, \$695 from member dues, and \$35 from sale of a book and butterfly guides. Expenses were \$1,850.82 which included costs for publishing the Newsletters, greenhouse supplies, and expanses in upgrading the museum public area. Yearly balance was - \$1,131.19. Net assets were \$11,502.37. The report was accepted.

Pres. Zhu called for Old Business. A. Brunskill presented the group with an insect model purchased for the museum. The purchase was made from the Penn State account for \$91.50.

President Zhu called for New Business. D. Piechnik and S. Blakeslee presented the group with a computer to run CD's and interactive programs for the museum public area. S. Blakeslee said the Audio CD from Ohio State has been loaded into the memory. The computer specs were 1 Gig RAM and 2 Gig processor. The price was \$36.04 for the computer and cables. R. Byers moved to purchase the computer. B. Brobst seconded. Motion passed.

D. Piechnik said Richard Allen is volunteering his time to develop an interactive display (on the computer just purchased) for the Frost Museum. This interactive display can be a conduit of insect-related information which might include local activities like the Butterfly Garden at Tudek Park. Richard has provided us with a flash program to demonstrate what flash programming is. She is sure you will agree that the interactive display is a great start to a new direction in the museum, and Richard's sample will stimulate more ideas for the interactive display.

D. Schmehl discussed the pros and cons of internet access in the public area. The IT tech Bruce Grinder said

no internet access in a public area is allowed. However, students and staff could access it from a wireless site. No action was taken.

D. Piechnik thought a file could be made on the computer for visitors to leave name and addresses for information requests, membership in Friends etc. Some discussion followed this idea. M. Sturniolo said files could be moved from extension publications on butterfly gardening, pests etc. D. Piechnik thought video-sound bites could be created about museum programs such as the Butterfly Garden at Tudek Park started by R. Snetsinger. She thought a taped interview with R. Snetsinger describing his passion for this activity could be made and put on the computer. Other interviews could also be made such as the History of the Museum started by Dr. Frost and brought to dedication in the 1980's through the efforts of Dr. Kim.

R. Snetsinger gave a report on the Tudek Park activities. The observation deck has been approved by Ron Woodhead, Director of Centre Region Park and Recreation. The Tudek family may donate some money for the project and fund raising activities are planned for the future. Mark Kunkle, Ferguson Twp. Supervisor, spoke with Doug Ford about the fact that a proposed water line is going to be installed for the horses and that they could probably extend it to the Butterfly Habitat if we needed it. D. Ford told him this was essential for Butterfly Habitat going forward and so they are looking into building that into the current water line project.

A. Brunskill reported that the board with insect questions has been completed. She thinks the project needs an insect theme. Her father needs to know what type handles for the doors that flip up. There were several styles including a caterpillar. After some discussion it was decided to get three caterpillars and three plain back handles.

Minutes of FFEM Executive Committee Meetings Continued

Pres. Zhu called for a discussion of Field Guides. It was decided that the Secretary should order three guides as follows: Pennsylvania Butterflies and Moths-40 copies; Pennsylvania Wildlife and House and Garden Pests -25 copies each. They should be available for the Great Insect Fair in October.

Pres. Zhu called for a discussion of T-shirt design and purchases. After some discussion it was decided to table the discussion until Doug Ford is able to get some prices and designs. This concluded the New Business.

R. Byers moved to adjourn. A. Brunskill seconded. Meeting adjourned at 2:12 PM.

Respectively submitted,
Robert A. Byers, Secretary-Treasurer

Butterfly Garden to be named after Robert Snetsinger

The board of Tudek Park has decided to name the butterfly garden in honor of Robert Snetsinger who has spent many hours working to make the garden a success. There will be a bronze art work naming the garden and an observation deck built in the near future. Congratulations Bob! A well deserved honor.

Minutes of the Ninth Annual Business Meeting

August 29, 2010

Former President, Robert Snetsinger called the meeting to order at 5:15 PM. Current President Dan Schmehl was unable to attend. Also present were as follows: Beth and Don Brobst, Doug and Pam Ford, Denise Piechnik, Amber Brunskill, Wendy and Bob Snetsinger, Molly Sturniolo, Wanyi Zhu, Shi Chen, Nancy Phillips and Bob Byers. Pres. Snetsinger called for the Secretary's report. R. Byers passed out copies of the minutes of the Eighth Annual Business Meeting of the Friends of the Frost Entomological Museum (FFEM) held at Tudek Park, State College, PA on Aug. 30, 2009. W. Zhu moved to accept the minutes as presented. W. Snetsinger seconded. Motion passed.

Pres. Snetsinger called for a treasurer's report. R. Byers presented a financial statement for the fiscal year 2010. Balance from 2007 was \$12,898.55. Income for the year to date was \$72.07 from interest, \$585 from member dues, and \$35 from sale of a book and butterfly guides. Expenses were \$1,814.78 which included costs for publishing the Newsletters, greenhouse supplies, and expanses in upgrading the museum public area. Yearly balance was -\$1,205.15. Net assets were \$11,428.41. R. Byers also presented a separate budget accounting of the improvements to the Museum. Expenses included TV and mounting hardware, TV cable lock, and Cockroach costume (\$825.78), Audio CD and a Question and Answer Board (\$120). There was \$3174.22 remaining in the Penn State Budget and \$880.00 remaining in the Friends budget. Pres. Snetsinger said there were several checks mailed to R. Byers one month ago which he never received. There was some discussion on what happened. W. Snetsinger will check to see if the checks cleared the bank.

Amber Brunskill moved to accept the treasurer's report. W. Snetsinger seconded. Motion passed.

Pres. Snetsinger called for Nominations for Officers for the next year. The following were nominated:

Dan Schmehl – Past President

Wanyi Zhu – President

Amber Brunskill – Vice President

Robert Byers – Secretary-Treasurer

Members-at-Large: Amanda Bachmann, Douglas Ford, Beth Brobst, Pam Ford, Don Brobst, Molly Sturniolo, Mary Ann Frazier, Denise Piechnik, Robert Snetsinger and Shi Chen. R. Byers moved to cast a unanimous vote for all candidates. Motion passed.

Pres Snetsinger turned over the meeting to Wanyi Zhu. President Zhu said she was happy to see everyone and called for New Business.

The first item was the discussion of T-shirts for sale to raise money. After some discussion it was decided a white T-shirt with chest pocket with the FFEM logo should be sold for around \$15. W. Snetsinger said we should offer two sizes M and XL. M. Sturniolo said we should order T-shirt that are pre-paid and some extra to sell. A design should be made available by the next Executive meeting. Once the T-shirt is designed it should be advertised on our web site. It was hoped they would be ready by Oct. 2 the date of the Great Insect Fair.

P. Ford said she will bring the butterfly board to the Great Insect Fair. A suggestion was made to take pictures and charge \$1.00 per picture. D. Piechnik suggested a minimum donation of \$1.00 to the Friends to benefit the Observation Deck at Tudek Park.

P. Ford said she would work on the bee observation hive area in the museum soon. The Friends museum account will pay for supplies.

The cockroach costume will be brought to the next executive board meeting.

Annual Meeting Minutes Continued

There was some discussion on modifying the costume into a firefly with lights.

Pres Zhu asked A. Brunskill for an update on the strategic plan for the Friends. A. Brunskill is still working on it and will ask questions of the board via email and report at a later meeting.

President Zhu proposed we recruit new members to the friends. She suggested sending emails to College of Agriculture students.

President Zhu thought we may want to make changes to the web site to make it easier to use. There was some discussion on setting up a button for the Friends. D. Ford said we need a link. A facebook page was also mentioned. No action was taken.

R. Byers announced an October 1 deadline for newsletter articles. The Newsletter will come out later in October.

D. Ford described the Observational Deck planned for Tudek Park. The deck will have multiple uses such as Photography, Research, Music Performances, Butterfly Releases and Memorial Services. He is working with County and Township Governments for permits. There will be requirements for wheel chair access, and low maintenance materials in the construction. He thinks the "Wings in the Park" was so successful in July that the Township called a meeting at Tudek Park to discuss the deck. A site has been cleared since July 15th. D. Piechnik asked how the deck will be financed. D. Ford says fund raisers will be planned in the future. M. Sturniolo moved that the FFEM support the construction of the Observation Deck at Tudek Park. A. Brunskill seconded. Motion passed.

R. Snetsinger moved to adjourn. R. Byers seconded. Meeting adjourned at 6:15 PM.

Respectfully submitted,
Robert A. Byers

R. A. Byers, Secretary-Treasurer



Attendees at the Business Meeting

Front Row: Doug Ford, Molly Sturniolo, Amber Brunskill, Wanyi Zhu, Shi Chen
Second Row: Wendy Snetsinger, Bob Snetsinger, Pam Ford, Bob Byers, Don Brobst, Beth Brobst, Nancy Phillips, and Denise Piechnik.



2010 Annual Meeting Picnic



The Great Insect Fair 2010



Doug Ford, Master Gardner

The GIF continues to provide the public with fun for the whole family and most importantly, delivers the message of the wonder of arthropods. This year, we may have had the largest crowd yet - surpassing the 8,000 projected to visit the 2009 GIF.

The weather was beautiful, the large crowd remained fairly constant throughout the day, and the enthusiasm of all of you came through - making the GIF a truly enjoyable and fascinating experience for our visitors.

Each of you should be very proud of the outstanding level of creativity, ingenuity and commitment to this, the flagship of PSU Departmental outreach efforts.

Entomology students, staff, faculty, retirees and spouses, PSU personnel from other units and Colleges - especially the Department of Nutritional Sciences, PSU undergraduate student volunteers, State College High School students and advisors, PA Integrated Pest Management, PSU Cooperative Extension, 4-H Entomology Clubs from Fayette, Monroe, Westmoreland, York and Frederick (MD) counties, PSU Pesticide Education, PA Department of Environmental Protection, vendors, musicians and countless other behind the scenes participants such as the College of Agricultural Sciences Communications and Marketing and Farm Services units, The Centre County Convention and Visitors Bureau, The J.C. Ehrlich Company and all our other sponsors and supporters collectively make the GIF one of the (if not the) premiere event of its kind.

Thanks to each and every one of you for making 2010 another Great Insect Fair!

Steven B. Jacobs,
Urban Entomologist
Penn State Univ.
Department of Entomology



Butterfly Bob



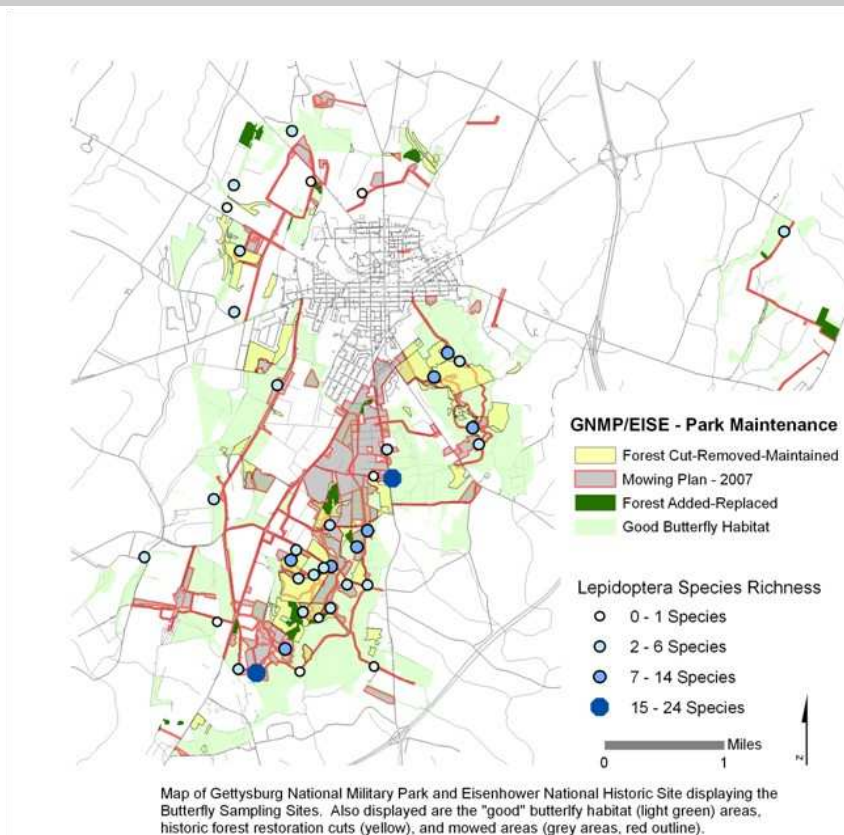
Butterfly Monitoring and Land Use Management in Gettysburg National Military Park and Eisenhower National Historic Site.

Denise A. Piechnik,
Post-doctoral Scholar at Penn
State Institutes for Energy and the
Environment

Gettysburg National Military Park & Eisenhower National Historic Site (hereafter GNMP/ENHS) underwent a historic restoration to sculpt the landscape back to what it was in the 1863 civil war battle. This restoration generated a need to describe and analyze park biodiversity, and to recommend a monitoring plan for potential impacts of the restoration. Such a monitoring plan is also applicable to monitor other management activities, such as mowing, which can disrupt species and life-stages that depend upon grassland habitats. Here I present a brief summary of my analysis of the butterfly survey data collected by RP Withington + crew as part of the park biodiversity survey effort in 1999-2000, which was led by KC Kim (PSU Professor, Emeritus). In the Fall 2009 FOFEM Newsletter I described the ecological assessment and monitoring plan that was developed for the GNMP/ENHS. The full technical report (Kim and Piechnik 2009) is published and available online. This report contains the ecological analysis, the butterfly and land use analysis, and the proposed monitoring plan (http://www.nps.gov/nero/science/FINAL/GETT-EISE_arthropods/GETT-EISE_arthropods.html).

Butterfly surveys at specific geographically referenced points within the park provided an insight into how land use at those specific sights might impact butterfly habitat. Butterflies change because of their four distinct life stages (egg-larvae-pupae-adult), which can require different and varied habitats and resources at each life stage. That said, it's easy to understand how land use changes might remove, reduce, or degrade butterfly habitat.

As shown by the accompanying map, my approach was to take detailed GIS-based data on land use and relate it to these specific butterfly survey sites. The land use information included the following data sets: vegetation type, plant



plant species, landuse, mowing activities, and cuts for forest restoration and health. This GIS-based approach defines habitat quality based on location-specific information, and then relate this site information to park management activities which may or may not impact the site.

Thirty-two species were observed across 36 monitoring sites, and on average most sites had between 6 and 8 species. The southern park had two sites with the greatest number of species recorded (see map). All park butterflies were from five families: Hesperidae, Lycaenidae, Nymphalidae, Papilionidae, Pieridae. The European Skipper (*Thymelicus lineola*) was the most common species, followed by the Little Glassy Wing (*Pompeius verna*) -- both of the Hesperidae family, and both prefer open habitats like meadows and forest edges. The species list for this survey effort is a mix of those butterflies that prefer open areas, and those that prefer forest areas and forest edges.

This is no big surprise because half of the park is open-fields/agricultural land, while the other half is wooded.

The map above summarizes the main messages from the landuse analysis: 1) the historic restoration that cut and restored forests, defined on the map by the yellow and dark green areas, would likely impact and possibly degrade some "good" butterfly habitats (map: light green areas); and 2) the extensive annual mowing practices, outlined on the map in red, will also impact butterfly habitats (map: light green areas) in some way, particularly if mowing is very early in the growing season.

Our main butterfly diversity management recommendation to the NPS for GNMP/ENHS was to, if at all possible, reduce mowing area and frequency, and DO NOT MOW before June 29. These recommendations may reduce the impact on butterfly populations by allowing many more butterflies to survive to their adult stage to reproduce.



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We are on the web
<http://www.ento.psu.edu/Frost/index.html>

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 - Molly Sturniolo**

Newsletter Editor:
Robert Byers

Thanks to contributors to this Newsletter!
Beth Brobst
Dick Byers
Gregg Hoover
Steve Jacobs
Denise Piechnik
Robert Snetsinger
Wanyi Zhu

MEMBERSHIP APPLICATION

Please enroll me as a member of the
Friends of the Frost Entomological Museum

Name _____

Address _____

Phone _____ (home)
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Membership Category

Yearly

Student (Ladybug) \$10.00
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Lifetime (over five years)

Silver Skippers \$500
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Please send completed application and check payable to: **Friends of the Frost Entomological Museum**
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Upcoming Events

Great Insect Fair Ag Arena Penn State
Sept. 17, 2011

Entomological Society of Pennsylvania
Early November
Fort Indiantown Gap, Annville, PA