The Ohio State University

Newsletter

Open House 2014

College of Arts and Sciences. Department of Evolution, Ecology and Organismal Biology

Dear Readers:

Welcome! This issue of the ***MBDNewsletter*** is dedicated to the **2014 Museum Open House**, held on a very frigid February 8. Despite the cold, we had a tremendous day. Our contributors relate here some of the highlights of the event, including great photos of the activities. Please enjoy, and feel free to send your comments to the Editor.☘

In this issue:

❖ Page 1 → "In Retrospect – the Museum Open House 2014", *by Norman Johnson*

❖ Page 2 → "Open House Activities: Not Just For Kids", *by Luciana Musetti*

❖ Page 3 → "Arachnids (Spiders & Mites)", *by Richard Bradley & Hans Klompen*

❖ Page 4 →
- "Microscopy On Focus", *by Steven Passoa*
- "Open House With The Clam Guys", *by G. Tom Watters*

❖ Page 5 →
- "The Herbarium Technology Toolbox", *by Mesfin Tadesse*
- "Live Animals - Aquatic Food Web", *by David Culver*

❖ Page 6 →
- "Live Animals - Amphibians and Reptiles", *by Angelika Nelson*
- "Live Animals - Insect Zoo", *by George Keeney & Luciana Musetti*

❖ Page 7 →
- "Borror Lab Of Bioacoustics" *by Angelika Nelson*

❖ Page 8 →
- "Fish Division" *by Marc Kibbey*

❖ Page 9 →
- "Tetrapod Collection" *by Angelika Nelson*

❖ Page 10 →
- "The Buzz At The Insect Collection" *by Luciana Musetti*

❖ Page 11 →
- "Visitors: Who, How Many, And What They Think" *by Luciana Musetti & Joe Cora*
- Thank you 2014 Museum Open House Volunteers! (volunteers list in alphabetical order)

❖ Page 12 →
- Thanks To The Contributors!
- Editor's Note

❖ Page 13 →
- A Gift Of Biodiversity

The **MBDNewsletter** is a publication featuring news and information on the collections at the **Museum of Biological Diversity**. The newsletter is produced by the Curators of the collections, with contributions from faculty, staff, students and associates of the collections. The **MBDNewsletter** is available **online** at ***mbd.odu.edu/newsletter***.

Cover – Buttons, *photo by Elizabeth Alvarez.*

Museum of Biological Diversity
Discovery · Documentation · Interpretation · Education
Newsletter
Editor: L. Musetti

In Retrospect – The Museum Open House 2014

by Norman Johnson

Sunrise as viewed from the Museum walkway on the day of the Open House.

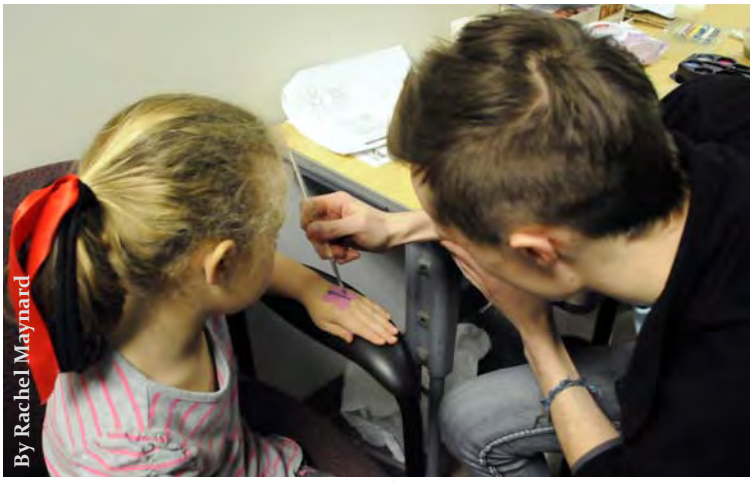
I have some wonderful memories of winter: hiking through hip-deep snow in the Adirondacks, getting a faceful of snow on toboggan runs, playing touch football in baseball spikes in the icy church parking lot. But sometimes enough is enough, right? After the introduction of the term "polar vortex," then followed by a review lesson, I think we all have a right to dream about shedding the scarf, mittens, boots, toque, and heavy jackets. That's one of the reasons I think that the community comes to visit the Museum during our annual Open House: it's a chance to forget the February weather, see some really cool things, and be around other folks who have the same interest.

After some heavy snow earlier in the week, the sun came out on Saturday, February 8, and so did people. The attendance at this year's Open House, our 10th anniversary, set another all-time record for us, up 72% to a total of 2,240 visitors! Guests had the chance to see the kind of tools we use to collect specimens, record and analyze their own voices, hold a salamander, and caress a millipede. The kids could have their favorite plant or animal painted on their cheek, build some edible "DNA," plant a seedling to take home, and who can ever resist a plankton race. Each of the collections brought some of their jewels out of the closet to share: fishes, plants, molluscs, fossil poop, a gigantic walrus hide, plant mites, and gorgeous insects. (I'm prejudiced, of course, to the bugs.) As a special treat this year, we had limited-edition buttons for each of the collections that could be gained by taking part in the treasure hunt.

Playing host to over two thousand guests is a monumental operation, and I want to take this opportunity to give a big round of applause to all of the friends, students, staff and faculty who gave their time to put the displays together, meet and talk with the visitors, and generally to share their knowledge and enthusiasm for biodiversity. We set another record this year, a total of 136 volunteers (79 of them students!) helped in ways large and small to put it all together (and to take it apart at the end of the day). And special kudos to Dr. Luciana Musetti, curator of the Triplehorn Insect Collection, who was the linchpin in all of these efforts this year. In the pages of the newsletter we can relive and hold onto the high points of the day: *please enjoy*!☘

Open House Activities: Not Just For Kids

by Luciana Musetti



Josh Diesel expertly painting a butterfly on a young visitor's hand.

Special thanks to our colleague Kim Landsbergen for the support, and to her students from the *Columbus College of Art & Design* (Alexis Schuknecht, Maddie Miller, Caitlin Watters & Josh Diesel), who, with help from Meghan Werth and Cynthia Dassler, made the face painting a success.

Another great Open House activity is the **Treasure Hunt**, designed to engage visitors by asking them to answer biodiversity and science-related questions. This year's Open House theme, **Biodiversity Toolbox**, highlighting the tools and equipment used by biodiversity scientists in their research, was the background for the game. Visitors were asked to help Museum graduate students to find tools and equipment they would need for a research expedition. Each student was associated with one of the Museum's collections, and each was missing three items to complete hers/his toolbox.

Hands-on activities are a part of the Museum Open House tradition, including **Bugs in Goo**, **Seedling Potting**, **Plankton Races**, **Peek-a-boo** cut-outs, the **Fishing Game**, and the **Bug Drawing Station**. These were originally developed with our younger visitors in mind, but many adults enjoy participating too. Parents regularly sit down with their children to draw an insect at the bug drawing station. It's a time of play and relaxation. Hands-on activities enhance the visitor's Open House experience and provide great learning opportunities.

This year we added **Face Painting** to our permanent activities, and it instantly became the thing to do. Children and adults waited in line to get a painting of a beetle, a worm, or a flower on their own faces and hands. A large number of volunteers took turns helping with all the hands-on activities during the Open House and to them we are grateful.

Drawing bugs at the insect collection.

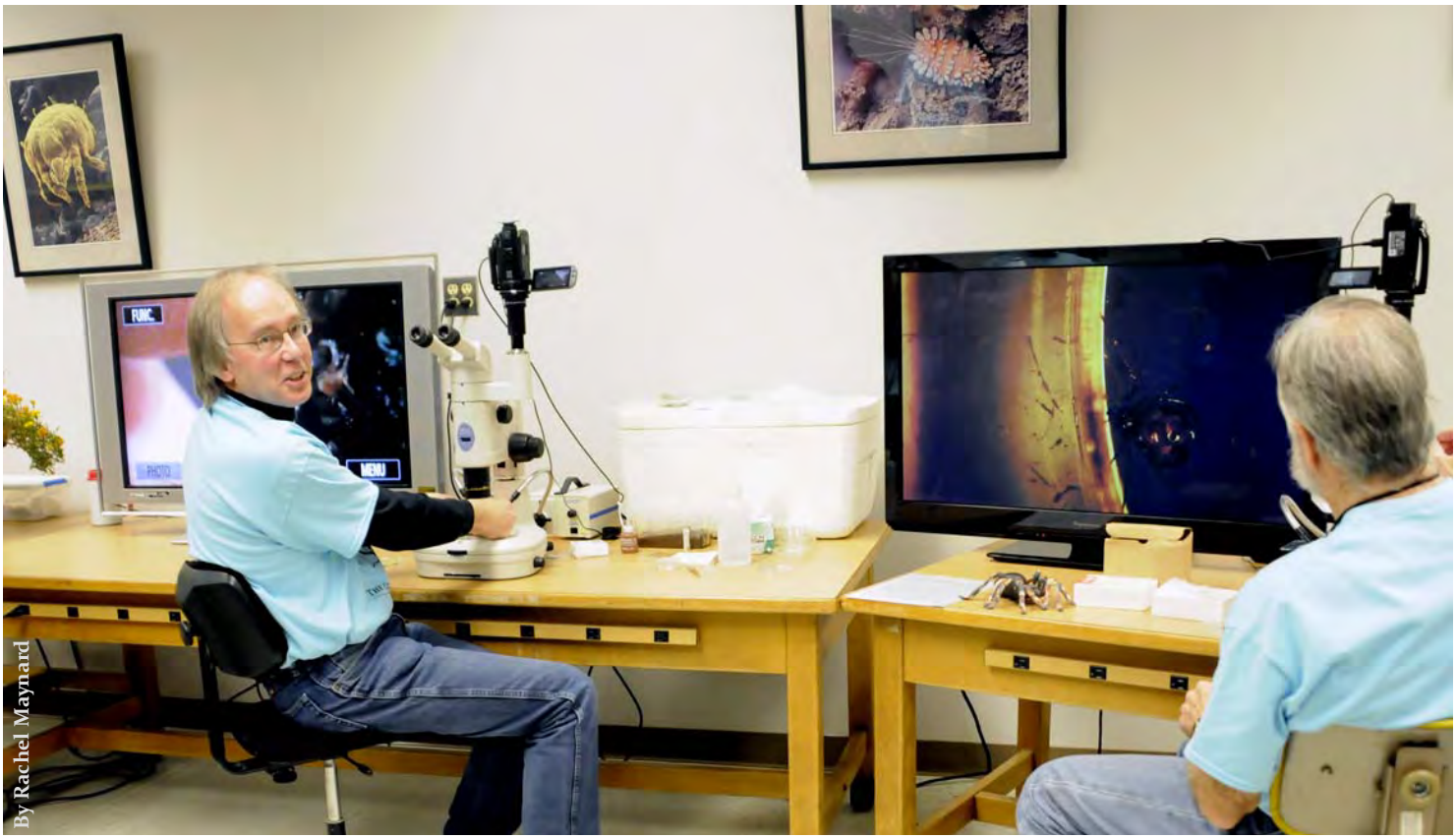
Stamping the correct answers for the Treasure Hunt.

Collecting buttons.

When visitors found the three items for one student they received a button from the collection the student was associated with. The buttons, one of the biggest hits of this year's Open House, were created by artist Elizabeth Alvarez, from original 19th century natural history drawings in the public domain. Liz also created the design for this year's t-shirt.☘

Arachnids (Spiders & Mites)

by Rich Bradley & Hans Klompen



Hans Klompen (*left*) and Rich Bradley (*right*), mites and spiders ready for the crowd.

The arachnids display in the "mites and arachnids" area was very popular and crowded. There were lots of children "oohing-and-ahing" about the live emperor scorpion (*Pandinus*) and the various spiders loaned to our area from the insectarium collection by George Keeney. One of the big hits was the direct comparison of a recent exuvium (molted exoskeleton) of a Chilean rose-hair tarantula and the actual beast (*Grammostola rosea*). She was cooperative and very beautiful! The adults seemed most impressed with the display about the spider species that have been found in Rich Bradley's 1.3 acre yard (>160 species and counting). The big-screen display of microscopic specimens was a real attention hog. As usual, the volunteers including Ryan Bell, Robin Taylor, Alice Vossbrinck and Rich Bradley answered many queries about "brown recluse spider bites" (not) and spider webs (beauty of). Visitors came away with more appreciation, and having lost a few misconceptions.

The contributions of the Acarology laboratory were divided between the auditorium (collecting gear) and the back classroom. Sam Bolton manned the collecting gear site, with most everybody else in the classroom. As in previous years, we could take advantage of two camera set-ups allowing visitors to see mites and spiders in great detail. Nothing like spider eyes filling the screen. And we did extract an extraordinarily active *Demodex* (another crowd pleaser).

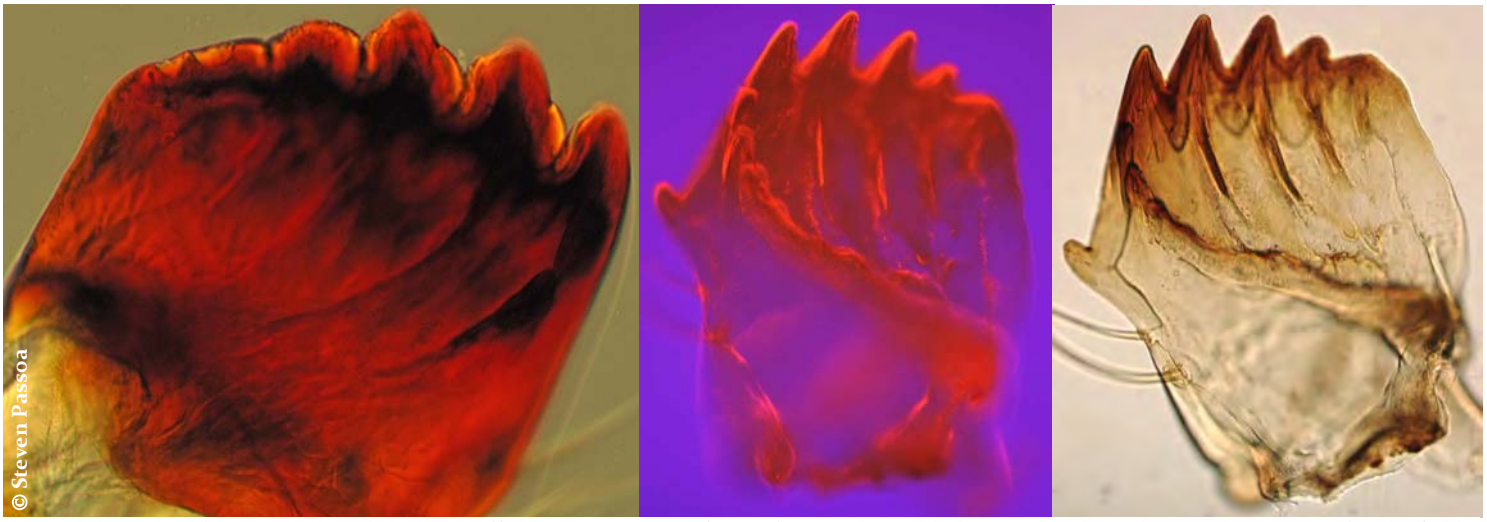
As part of the collecting equipment theme, we ran some Berlese funnels, and despite the fact that it was freezing outside, with a layer of snow, we did get some live mites. The big attraction in this area is microscopes, and Orlando Combita and Ana Ceballos manned a station where everybody (especially kids) could look through a dissecting microscope. Very popular, with a huge line forming at various times. Also thanks to Juliana Mendonça for managing stamps and buttons. Finally, thanks to George Keeney for bringing in a variety of live mites and spiders, Collembola, and of course, the Madagascar hissing roaches.☘

Volunteer Kim Landsbergen taking a peek at the mite cut-out.

Microscopy On Focus

by Steve Passoa, USDA

Almost everyone at the museum has used a microscope at some point in their career and for many researchers it is their most commonly used tool on a daily basis. Steven Passoa (US Department of Agriculture and Museum resident Lepidoptera specialist) gave a demonstration on how take pictures through a microscope. He showed various methods. The simplest method is just to put a camera (or phone) to the eyepiece. A better setup is to use a commercial digital camera with a trinocular head. The best, but most expensive, options involve a dedicated microscope camera system (either stand alone or using a computer). The advantages of each method were mentioned as well as differences in software or picture format (RAW, JPEG, etc.). The type of illumination is also very important.



A caterpillar mandible (jaw) imaged in three different ways. *From left to right*: in polarized light, in Rheinberg illumination, and in bright field. Mandibles are used in caterpillar identification. Photos were displayed during the Museum Open House.

Open House With The Clam Guys.

by G. Tom Watters

The Mollusc Division demonstrated the variety of collecting and monitoring gear that malacologists use, including SCUBA gear and Passive Integrated Transponders. Bob the Giant Clam was his usual draw to visitors to the Bivalve Range. This year also featured a selection of marine shells on display, including several species rarely seen in even the largest collections, like this *Tudicula zanzibarica* Abbott, 1958 (*below, right*), trawled in fishing nets at 50m, off Pemba Island, Tanzania, Indian Ocean. Visitors were suitably amazed at the beauty of these natural works of art. ☘

Visitors talk with volunteer Amy Barrett about the marine shells displayed by the Mollusc Division during the Museum Open House.

Tudicula zanzibarica Abbott, 1958. On display during the 2014 Museum Open House.

The Herbarium Technology Toolbox

by Mesfin Tadesse

Herbarium volunteer Marty Marlatt with visitor.

This year, the contributions from the Herbarium to the Open House displays were focused on four major areas of activities by its staff and associates. The first was demonstrating the processes of specimen mounting and accessioning which, although typical of herbaria and museums, may not be well-known by the casual observer or visitor. This included demonstrating the steps that need to be taken to check specimens before mounting (ensuring that labels are present), preparations for mounting (tools and items needed), the mounting process (gluing, stripping, sewing, placing loose pieces and leaves that may be needed for DNA studies in envelopes, etc.) and making the specimen ready for incorporation (stamping, assigning accession numbers, recording, etc.) into the collection where it will be ready for consultation by visitors, researchers, etc., and also for lending to other institutions that are actively engaged in systematic or other studies. This aspect of the display was done with the support and help of our esteemed volunteers, Donna Schenk and Marty Marlatt.

The second item was demonstrating the imaging and databasing project that was recently completed with financial support from NSF (2009-2013), with about 175,000 Ohio specimens now available on-line. The setup for this display included an imaging stage with fixed lights, a dedicated camera and several computers and monitors. The demonstration included setting up one specimen that was made ready for inclusion into the collection on a stage, taking a photograph of it and explaining the next steps using previously imaged and data-based specimens. This part of the demonstration was performed with the help of graduate students Brandon Sinn, Ryan Folk, and Steven Nagel (EEOB), as well as Mesfin Tadesse.

The third item was a demonstration on microphotography of plants with focus placed on the ultrastructural details of mosses, fungi and lichens. The setup was expertly managed and demonstrated by Robert Klips (EEOB) with support provided by Cynthia Dassler and Chris Richardson. The objective of the last display was a demonstration of identification of specimens in the herbarium using oaks of Ohio as an example and a discussion about the other activities (classification, cataloguing and providing new names to plants) that are normally associated with many herbaria. The instruments (microscopes, lenses, etc.) and information sources (published books, articles, manuals, etc.) used in identifying oaks in Ohio as well as the procedures applied were demonstrated using White and Black (or Red) Oaks of Ohio. Problems that could complicate identification and taxonomy due to hybridization in nature, again using oaks as examples, as well as the widespread cultivation of introduced oaks were also addressed. Mesfin Tadesse and Steven Nagel were largely engaged in this activity.

Special library collections volumes, such as one of the first volumes of *Curtis's Botanical Magazine* from 1797, Robert Thornton's *New Illustration of the Sexual System of Carolus von Linnaeus*, published in 1807 and the oldest known plant specimen in the herbarium, collected in 1837 from Indiana, were also on display.☘

Live Animals

Aquatic Food Web – Staff of the Limnology Laboratory and the Fish Division used the Biodiversity Toolbox theme collaboratively to illustrate how museum personnel study the functioning of aquatic food webs. Their display included equipment used to measure water quality, as well as items used to collect the algae, zooplankton, and fish present in aquatic systems. The algae (edible as well as toxic) and various zooplankton species were illustrated with large color photographs on the display boards behind aquaria containing algae, zooplankton, and juvenile fish. Many of the younger participants had already tried their hands at designing and building an algal model that would sink very slowly in an aquarium.

Particularly popular sampling equipment items were the multi-sensor aquatic probe that simultaneously measures light penetration, temperature, chlorophyll, dissolved oxygen, and pH with depth in lake water, and the very fine nets used to collect zooplankton. The microscope with the video display showed live zooplankton (water fleas), even allowing observers to watch the flea's beating heart. The favorite activity for all, however, was watching small fish (longear sunfish and steelcolor shiners) pursue and consume tiny zooplankters pipetted into their aquarium. (*by David Culver*)☘

Dave Culver, EEOB Emeritus professor, at the Aquatic Food Web display in the auditorium.

Amphibians and Reptiles **–** Visitors could marvel at some live amphibians and reptiles that two EEOB graduate students Rob Denton and Matt Holding with assistance of two undergraduates Meghan Parsley and Paul Hudson presented. The display included representatives of all the Ohio mole salamanders that interbreed with the unique "unisexual" salamanders that are being studied in Dr. Lisle Gibb's lab. Many guests were amazed at the unusual genetic makeup of these animals and Matt and Rob explained how they study and analyze these animals' genetics. Next to the salamanders, a live Western Hog-nosed Snake was admired by visitors.

In addition to the live animals, Rob and Matt showed minnow traps and dipnets which are commonly used to catch salamanders and frogs in the wild. Snakes, on the other hand, are caught and held with tongs and hooks, however proper training is essential to not hurt the animals. Catching venomous snakes is not recommended even though they rarely bite humans.

Visitors could also interact with the technology that is used to extract and analyze DNA. Following their tour through how evolutionary biology data transitions from the field to the lab, visitors participated in two quizzes with live wood frogs, green treefrogs, a rat snake, and a glass lizard that showed how DNA can answer challenging questions about evolution.

Seeing salamanders and snakes close-up was a first for most children and many adults. Often, the shift from caution, to interest, and finally excitement was evident on their faces. Everyone walked away with raised appreciation for these creatures.(*by Angelika Nelson*)☘

Matt Holding introduces visitors to his pet hog-nosed snake.

Insect Zoo – George Keeney (OSU Insectary & Acarology Lab) and a team of volunteers (Zeynep Benderlioglu, Leslie Creech, Cheryl Early, Dick Maxey, Mitchell Maynard, Megan Meuti, Jeni Ruisch, Clancy Short, Simone Chordas) once again wowed the public with a variety of insects and other arthropods. The most popular animals for the general public to hold are usually the Macleay's Spectre (aka Australian Spiny Stick Insects), the Giant Black East African Millipedes, and the Madagascan Hissing Cockroaches. Tarantulas always generate a lot of enthusiasm, even though those are not available for the visitors to hold. The tailless whipscorpion was referenced back to the 4th Harry Potter movie, "Harry Potter and the Goblet of Fire", as it was used by Mad Eye Moody to demonstrate the forbidden curses.

Macleay's Spectre, the Australian Spiny Stick Insect.

Madagascar Hissing Cockroaches.

The stick insects and the large millipedes are by far and away the most popular critters we have as they are among our largest, most easily handled, and probably most alien to the average visitor. Lots of people are fascinated by the way the firebrats reacted when gently blown upon.

The most frequent questions from the public to the Insect Zoo volunteers are usually: "What is that"? "Does it bite"? "Where can I find those"? and "Are those found in Ohio"? "What's up with all these stinkbugs"? and "How do I get rid of these stinkbugs in my house"? "Who do all these bugs belong to"? (*by George Keeney & Luciana Musetti*)☘

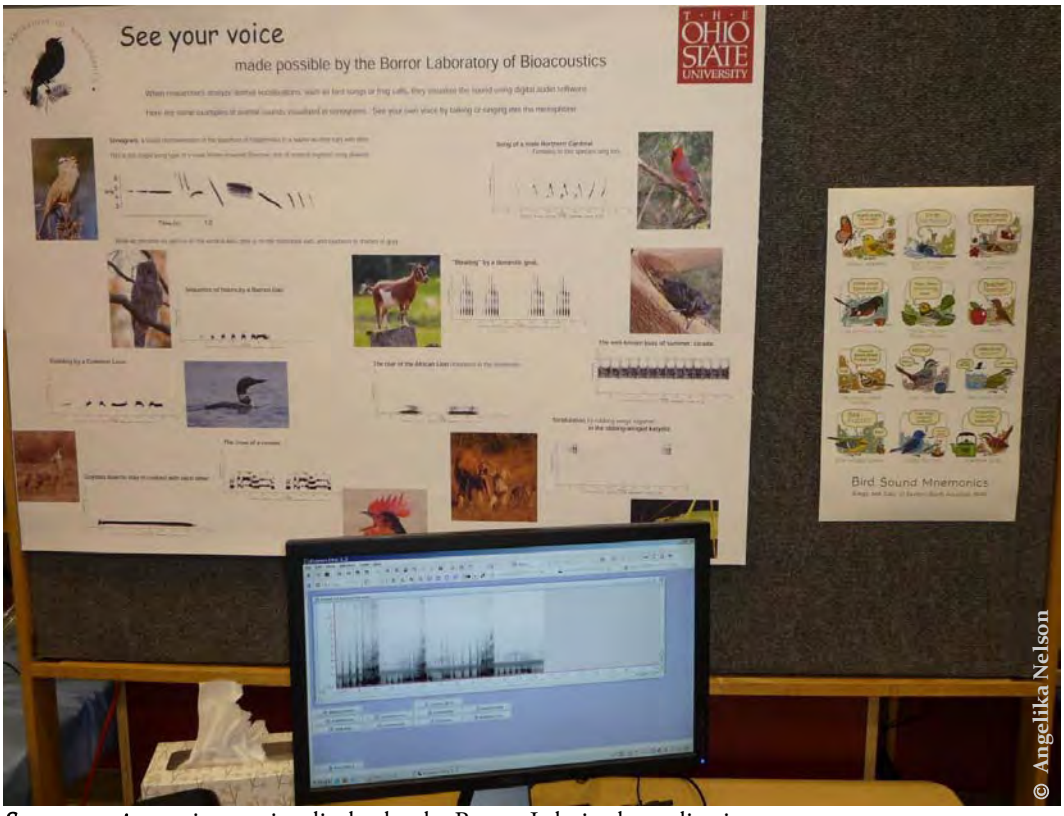
Borror Lab Of Bioacoustics

by Angelika Nelson

The Borror laboratory of Bioacoustics had several displays that illustrated how technology is used in the study of animal sounds.

Bat detectors - Because they are active at night and we cannot hear their echolocation calls, bats are a mystery to many people. Technology, however, allows us to make their calls audible. Researchers use electronic devices, bat detectors, to translate sounds at the very high frequencies, in the ultrasonic range, above the human hearing range into signals in the human hearing range, *i.e.,* below 20,000 cycles per second. The user tunes the detector to the frequency that a particualr bat species is known to produce, and records only signals with frequencies around the tuned frequency. Two EEOB undergraduate students are currently using bat detectors for a survey of bat species on OSU campus.

See your voice - Loons yodel, lions roar and roosters crow, what sound do you make? Visitors imitated numerous animal sounds and challenged each other to singing contests. The sounds were recorded on a computer and displayed in real time on a screen. Once saved they could be played back at different speeds. Speeding up the sound leads to a higher pitch similar to the squeaking of a mouse whereas a low pitch produced by slowing down the sound is similar to a lion's deep roar. Young visitors in particular enjoyed these alterations of their voice.



See your voice, an interactive display by the Borror Lab, in the auditorium.

How do you remember all the different sounds that songbirds make? Bird enthusiasts have come up ith some catchy phrases that describe the songs' rhythm, quality, pitch and tempo. When you hear "Drink your teeeea!!" from a nearby bush, an Eastern Towhee is most likely calling for a mate. "Sweet, sweet, I'm so sweet" is the Yellow Warbler's method of attracting females. The White-throated Sparrow tells you where it will soon be leaving to: "Oh sweet Canada Canada Canada." And if you have thought your school days are over, the Ovenbird will remind you of them with its repeated song of "Teacher! Teacher!" Visitors learned about these and more mnemonics on a poster.

Microphones & recording equipment - To capture bird songs on tape has been possible since the middle of last century. The devices, however, have changed dramatically and some steps of this development were on display: One of the early portable tape recorders, the Magnemite, had a heavy metal fly wheel. Sounds were stored on magnetic tape, either in the form of reels of tape or later on audio cassette tapes. In the 1980s, digital recording methods became available, and analog tape recording was gradually displaced by digital audio tapes and then memory cards and hard-disks. Recorders today weigh less than 2 lbs and are battery operated so that they can easily be carried to remote field sites.

Equipment from the past: a Magnemite tape recorder.

To capture sounds in nature, researchers use directional shotgun microphones and parabolic reflectors that emphasize sounds coming frontally. This is useful when focusing on a single animal, and helps to filter unwanted songs or noises from other directions. In contrast, when recording soundscapes, *i.e.*, all sounds of a specific environment, we use omnidirectional microphones. To minimize the effects of wind and noise from human activities recordists use wind shields on the microphones.☘

Fish Division

by Marc Kibbey

The Fish Division displayed several of the tools we use in our work, including those for stream trawling. As one would expect from the name this method employs a net dragged from the boat, but in this case the net is dragged with the boat facing backwards to avoid swamping the smaller johnboat type craft. With our 8' wide Otter Trawl setup we can sample large river bottoms to depths of 60', where methods historically used for rivers could only reach to depths of 6' or so. The bottom trawl explorations are revealing a wealth of new data on bottom dwelling species. Our sampling crew is utilizing stream trawling in concert with established methods (electroshocking, seining) to expand the picture we have of our rarer, lesser known fish species.

Justin Baker (*left*) & Brian Zimmerman (*right*), from the Fish Division, inspecting a net used for stream trawling.

An activity inspired by this year's Open House technology theme introduced one of the methods used in tagging fish. Tagging is widely utilized by researchers to track movements of animals, including studies of migratory patterns, measuring success of stocking efforts, and monitoring reintroduction of species extirpated from impacted areas. The Visible Implant Elastomer is a pliable silicone liquid that can be injected beneath an animal's skin.

Advantages of this technique include the relatively inexpensive cost of the system, since there are none of the electrical components involved with some of the more technological setups. Also although the tag is injected, it is pliable, doesn't interfere with movement of the subject, can be applied to small specimens, and is not likely to be lost unlike some other types of tags. We used the fluorescent version of the material that allows researchers to use an ultraviolet flashlight to more easily find the tag. The flashlight illuminates in the 405nm ultraviolet spectrum.

Injecting a fish with elastomer.

Our display included a 10 gallon aquarium on a table. Participants were able to place a length of black felt cloth over their heads and shine the flashlight on the aquarium where four sunfish (*below*) were swimming, one of which was marked with the fluorescent tag. Although the tagged sunfish decided to hide under the bottom of the sponge filter, it wasn't too hard to find.

A beautiful Longear Sunfish (*Lepomis megalotis*) specimen.

Tetrapod Collection

by Angelika Nelson

Our displays focused on methods for catching and marking animals as well as on birds that can be seen in Ohio in winter.

Volunteers at the Tetrapod Collection.

Catching animals: mammal traps and mistnets - Various-sized traps and a mistnet strung across the back wall illustrated how researchers capture wild animals, such as mice, voles, moles, and shrews as well as songbirds. To study fluctuations in the populations of animals, researchers take various measurements like weight, size, age, and release the animals. Winter is a good time for trapping small mammals: food is scarce and traps can be hidden under the snow. Voles and shrews make a tunnel system under the snow and traps can be placed strategically. As bait, crackers with peanut butter work well. To capture wild birds researchers put up a mistnet which ideally cannot be seen by the birds; they fly into it and bounce into a pocket formed by the net. Sun, rain and wind make the net visible, ideal conditions are fog and dark, gray days, hence the name mistnet.

Bird banding tools.

Bird banding - Once researchers catch a wild bird, they attach a small, numbered metal band to one of its legs. The unique number on the band is registered with the US Bird Banding Laboratory. This enables researchers to identify the individual bird should it later be recaptured or recovered, and get information about it. During capture, researchers take measurements of the bird such as molt, fat content, age, sex, wing and tail length. A subsequent recapture or recovery of the bird can provide information on migratory behavior, longevity, mortality, territoriality, and feeding behavior.

But how do you catch a walrus? - Visitors marveled at the size of the skin of a walrus and many were stunned by the ivory tusks in its skull. Harpoons in the background illustrated the hunting method. The Inuit traditionally hunt the walrus from a kayak and use harpoons. The walrus has played a prominent role in the cultures of many indigenous Arctic peoples. Every part of the animal is used: meat and fat to sustain the family through the Arctic winter, skin to make clothing, bones and tusks for crafts (Inuit art).

How to catch a walrus?

Do you fit in the whale's mouth?

Arctic visitors - A majestic white bird sweeps silently through your backyard at twilight. This may sound like a scene from a Harry Potter movie but do not expect the bird to deliver your mail! Every winter birds that breed in the Arctic spend the winter in Ohio. Among these are the Snowy Owl, Rough-legged Hawk, Lapland Longspur and Snow Bunting. In particular Snowy Owls seem to occur farther south than usual this year, with several sightings reported in Ohio. Food (in particular lemmings) was plentiful during the breeding season, many pairs raised chicks successfully and many young birds now venture south in search of food.

Do you fit in the mouth of a whale? - A whale baleen and a measuring tape turned out to be the most popular display in the tetrapod collection (*right*). Visitors measured their height against the size of a whale's baleen. Volunteers tirelessly explained that instead of teeth some whales (Blue, Right, Humpback, Gray) have **baleen** plates for filtering food from water. They open their great mouths and graze along the surface of the water, filtering krill (small, shrimplike crustaceans), copepods and other zooplankton from the water. By the end of the day it was clear, everyone would fit in the mouth of this whale.

From billions to none in a few decades.

Project Passenger Pigeon - For the Passenger Pigeon the impossible happened - from billions of individuals to none in less than a century. The last specimen, a female bird named Martha, died in the Cincinnati Zoo in 1914. But will the 21st century see a comeback of this species? Geneticists are attempting to bring the species back to life (de-extinction), by sequencing the genome of a museum specimen and comparing it to the genome of the Band-tailed Pigeon, the closest living relative; bio-engineering techniques may then allow researchers to convert viable Band-tailed DNA into Passenger Pigeon DNA; newly engineered birds may be bred in captivity and may eventually be released into the wild.

The Buzz at the Insect Collection

by Luciana Musetti

The staff of the insect collection led the organization of the 2014 Museum Open House. We started working back in July 2013, learning about what other organizing teams had done before us, planning activities, designing the t-shirt and the buttons, coordinating volunteers, providing logistic support for the staff of the collections as they prepared their displays, and so much more. All the planning and preparation paid off. We were ecstatic with the record attendance (2,240 people in 6 hours!) and the positive response of the visitors. But the success of a Museum Open House depends on the balance between those months of preparation by the Museum staff and the rush of enthusiasm brought in on the day of the event by the volunteers. It's that balance that makes the Open House the fantastic event that it is.

This year we had a record number of people helping on the day of the event (136), more than 30 percent of them (43) were first time Open House volunteers. It was a huge task to coordinate (and feed!) all these amazing people. (Many brownie points to Sara Hemly and Stephen Smith for their work here.) And let's not forget our target audience. There would be no Open House were it not for the visitors! As soon as the doors opened, visitors started streaming in, excited, curious, eager to learn about the Museum and about biodiversity. It went on like this until closing time.

With all the buzz of event organization, not much time was left for us to think of innovative activities or to prepare many new displays for our home, the Triplehorn Insect Collection. A nice new display this year was on the Monarch butterflies. Their numbers in nature have dwindled tremendously in recent years due mostly to loss of native habitats due to human activities and extreme weather. In total, we brought out 27 display drawers, including some of our all-time favorites: gigantic beetles, minute parasitic wasps, colorful grasshoppers, brilliant jewel beetles, and a series of displays of Ohio butterflies and other insects, to name a few. This year again we had a display of the fascinating Mexican jumping beans, which are not really beans, but seed pods containing the larva of a tiny moth. The "bean" "jumps" when the resident larva is disturbed, for example, by heat, and vigorously moves inside the seed.

To go with the ***Biodiversity Toolbox*** theme we exhibited, both in the auditorium and in the collection, an assortment of tools, traps and supplies regularly used in entomological research and curation. And of course, we had the ***Bug Drawing Station***. See the 2014 drawings at www.facebook.com/TriplehornInsectCollection.

Top to bottom: Carol Anelli, Andy Yoak, and Chuck Triplehorn were among the amazing volunteers in the Insect Collection.

Because the staff of the collection was busy with the event organization, we did not spend as much time in the insect collection as we usually do, but no one would have noticed as our fantastic group of volunteers had our backs all day. Thank you all so very much! We would not have been able to do this without your help and support.

Insect collection volunteers (in the collection and at our auditorium displays). *In alphabetical order:* Jessica Albright, Elizabeth Alvarez, Carol Anelli, Huayan Chen, Brian Crenshaw, Carlos Esquivel Palma, Kelsey Fultz, Josh Gibson, Riley Gott, Zach Griebenow, Scott Harrison, Dave Horn, Andrea Kautz, Laura Kenyon, Kim Landsbergen, Brandon Mabry, Devon Rogers, Tom Silver, Chuck Triplehorn, Liv Vincent, Andy Yoak.☘

Smashing! A sample of the insect art produced during the Open House at the ***Bug Drawing Station*** in the Triplehorn Insect Collection.

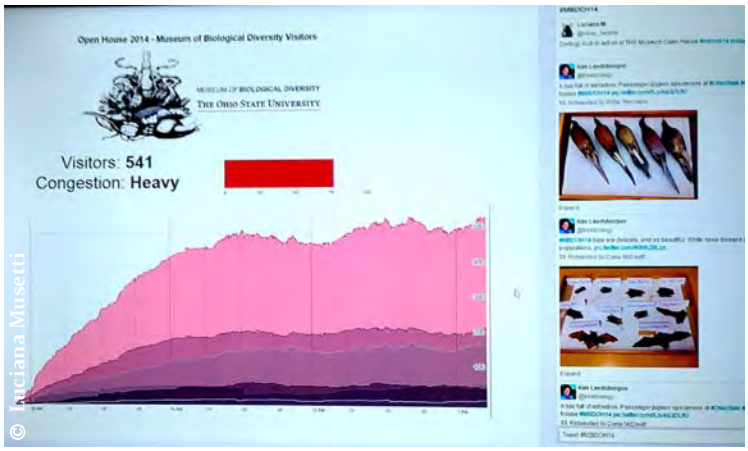
Visitors: Who, How many, and What They Think

by Luciana Musetti & Joe Cora

The overall premise of the Open House is simple: we invite the community to come in the Museum for one day to see what we do for the 364 days of the year when it's not Open House. Translating that idea into an interesting and fun event for a broad audience is not that simple. We really cannot show everything we do. First because it is a lot, second because a lot of what we do, like writing technical reports, preparing newly collected specimens, or examining specimens under a microscope for long hours, day in and day out, may not be *that* interesting for most people. Every year we strive to capture the essence of what we do in displays and activities that are interesting and fun. We work hard on our displays and we hope visitors enjoy them too, but we do not know for sure.

Butterfly display at the Triplehorn insect collection.

So this year we decided to ask our guests what they liked, and what they thought we could do better. We talked to more than 200 visitors, asking a set of 7 standard questions related to the event. To our delight, the vast majority of the people surveyed told us they liked the Open House and plan to come back next year. The survey provided a valuable insight for the planning of future events. Sara Hemly, Jessica Albright and Luciana Musetti prepared the survey. Surveyors on the day of the event were Jessica Albright, Tom Silver, Luciana Musetti, and Sarah Gutzwiller.



Web interface with real-time attendance data, and social media activity.

We also wanted to have a better understanding of the age demographics of our visitors. Using a computer app developed by Joe Cora, a couple of tablet computers, and some dedicated volunteers, we were able accurately and reliably quantify the size of the Open House crowd and assign visitors to broad age categories. Thanks to the assistance with counting from Kelsey Fultz, Victor Zeinner and Jessica Albright, we now have a rough age-based demographic breakdown of visitors with each entry and exit timestamped. Victor showed a particularly adept skill at identifying the constituency of a group.

The data we collected are an empirical foundation for future display planning and crowd management activities. A super cool thing about this app is that it allows access to the results online and in real-time. ☘

Thank You 2014 Museum Open House Volunteers!

In alphabetical order: Katie Albanese, Jess Albright, Elizabeth Alvarez, Carol Anelli, Emily Archibald, Bill Ausich, Justin Baker, Amy Barrett, Ryan Bell, Amber Bellamy, Zeynep Benderlioglu, Clarissa Bey, Paul Blischak, Sam Bolton, Ashley Bowers, Sarah Bowman, Rich Bradley, Ruth Briland, Michael Broe, Liz Calhoon, Kellen Calinger, Travis Calkins, Ana Ceballos, Chi Chang, Huayan Chen, Simone Chordas, Katie Clemons, Lena Cole, Orlando Combita, John Condit, Joe Cora, Leslie Creech, Brian Crenshaw, Dave Culver, Meg Daly, Cynthia Dassler, Annelise Del Rio, Rob Denton, Josh Diesel, Ellina Dovgopolaya, Cathy Doyle, Cheryl Early, Carlos Esquivel Palma, Heather Fair, Ryan Folk, John Freudenstein, Kelsey Fultz, Kori Gasaway, Sandy Gaunt, Josh Gibson, Trisha Gibson, Dale Gnidovec, Riley Gott, Zach Griebenow, Sarah Gutzwiller, Jackie Halmbacher, Scott Harrison, Jennifer Hellmann, Sara Hemly, Matt Holding, Dave Horn, Paul Hudson, Norman Johnson, Andrea Kautz, George Keeney, Laura Kenyon, Marc Kibbey, Robert Klips, Hans Klompen, Kim Landsbergen, Roman Lanno, Paul Larson, Joan Leonard, Isaac Ligocki, Erin Linderman, Brandon Mabry, Jason Macrander, Stephanie Malinich, Marty Marlatt, Dick Maxey, Mitchell Maynard, Rachel Maynard, Juliana Mendonça, Megan Meuti, Maddie Miller, Jacob Miller, Charles Moodispaw, Stephen Murphy, Luciana Musetti, Jordan Myers, Steven Nagel, Doug Nelson, Angelika Nelson, Destiny Palik, Meghan Parsley, Steve Passoa, Jennifer Pfaff, Chris Richardson, Devon Rogers, Corey Ross, Kieran & Raya Ross, Ieva Roznere, Jeni Ruisch, Kaylina Ruth, Bill Schenk, Donna Schenk, Alexis Schuknecht, Clancy Short, Tom Silver, Brandon Sinn, Nick Skomrock, Ambria Small, Stephen Smith, Anna Smith, Tod Stuessy, Mesfin Tadesse, Robin Taylor, Ben Titus, Chuck Triplehorn, Liv Vincent, Alice Vossbrinck, Jessie Wallace, Qian Wang, Caitlin Watters, Tom Watters, Charles Wentzel, Meghan Werth, Bill Whan, Stephanie Wright, Davey Wright, Andy Yoak, Victor Zeinner, Yue Zhang, Brian Zimmerman, and Jamie Zumach.

Thanks To The Contributors!

In alphabetical order, by last name:

- Richard Bradley, Professor Emeritus, Acarology Laboratory
- Joe Cora, Museum Biodiversity Informatics Manager
- David Culver, Emeritus Professor, Limnology
- Norman Johnson, Professor, Director, Triplehorn Insect Collection
- George Keeney, OSU Insectary, Acarology Laboratory
- Marc Kibbey, Associate Curator, Fish Division
- Hans Klompen, Professor, Director, Acarology Laboratory
- Luciana Musetti, Curator, Triplehorn Insect Collection
- Angelika Nelson, Curator, Borror Lab & Tetrapod Division
- Stephen Passoa, USDA-ARS
- Mesfin Tadesse, Curator, Herbarium
- G. Tom Watters, Curator, Division of Molluscs

☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘

For more photos of the Museum Open House, visit us on Facebook!
www.facebook.com/MBDatOSU

☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘ ☘

Editor's Note: As I walked around the Museum during the Open House I saw lots of impressive displays, but my personal favorite was this fish skeleton at the Fish Division. It's a bowfin (*Amia calva*). Not very big, but impressive. Look at those teeth! I'm putting my request in right now with the Fish Division people: More of these next year, please!

Next issue of the MBDNewsletter coming up Fall Semester 2014

We greatly enjoy hearing from our readers!
Please send your feedback to the Editor
at *osuc-curator@osu.edu*

A Gift of Biodiversity

Please consider giving to the Museum of Biological Diversity at Ohio State. Your gift will help support the preservation of the collections, training of undergraduate and graduate students, community outreach, and more. To join our community of supporters, please contact: Samara Preisler, Associate Director of Development (preisler.7@osu.edu), (614) 292 6059 *OR*

Give online: *www.osu.edu/giving/collegeofartsandsciences.html*.

Funds Associated with the Museum of Biological Diversity:

- **George and Mildred Wharton Endowment for Acarology Fund** (607675): Supports the Acarology Laboratory.
- **The Hoogstraal Memorial Acarology Student Fund** (603280): Supports Acarology students at the OSU Acarology Summer Program.
- **Donald J. Borror Fund for Bioacoustical Studies** (600654): Supports bioacoustical research, teaching and service programs.
- **D.J. and J.N. Knull Fund in Entomology** (603756): Supports systematic Entomology research and curatorial work in Entomology.
- **The Josef N. Knull Memorial Fund in Entomology** (603759): Supports systematic Entomology research and curatorial work in Entomology.
- **The Ichthyology Research Endowment Fund** (603357): Supports research and publication in the Fish Collection.
- **Friends of the Herbarium Fund** (305104): Supports the OSU Herbarium.
- **The David H. Stansbery Bivalves Endowment Fund** (606910): For the enrichment and maintenance of the Bivalve Mollusc Collection, including expeditions, purchase of collections, and related expenses.
- **The Museum of Zoology Fund** (607989): Supports expeditions, purchase of collections and related expenses of the Museum of Zoology.
- **Tetrapod Collection Support Fund** (314614): Supports students, specimen acquisition and maintenance in the Tetrapod collection.

Mission

The **OSU Museum of Biological Diversity** houses all the university's biological collections, except fossils. We are part of the Department of Evolution, Ecology and Organismal Biology in the College of Arts and Sciences.

We are dedicated to the ***Preservation***, ***Documentation***, ***Scientific Study*** and ***Interpretation*** of the biological diversity of Ohio, the nation and the world.

We fulfill that mission by:

- building and maintaining extensive collections of specimens and information for future generations;
- creating and disseminating knowledge on evolution and biological diversity through the publication of cutting-edge collections-based research, books, online databases and websites;
- providing service to the broader scientific community through loans of specimens to qualified users for study and identification;
- training the next generation of biodiversity scientists.

The Ohio State University | College of Arts and Sciences | Department of Evolution, Ecology and Organismal Biology

Museum Units:

Acarology Laboratory
www.biosci.ohio-state.edu/~acarolog/collection

Borror Laboratory of Bioacoustics
blb.osu.edu

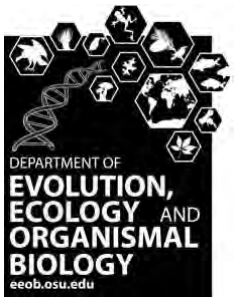
Fish Division
www.biosci.ohio-state.edu/~paleoich

Herbarium
herbarium.osu.edu

Mollusc Division
www.biosci.ohio-state.edu/~molluscs/OSUM2

Tetrapod Division
tetrapods.osu.edu

Triplehorn Insect Collection
osuc.osu.edu



Museum of Biological Diversity
1315 Kinnear Road
Columbus, OH 43212-1157
(614) 292-7773
mbd.osu.edu

Spring 2014