A Note From the Executive Director

The sciences of ecology and evolution have changed over the past several decades, becoming increasingly quantitative and theoretical. As such, the role of boots-on-the-ground observation and documentation has been obscured and downplayed, especially within academic circles. At times, the moniker of “naturalist” has taken on a somewhat pejorative tone within the “Ivory Tower” (Futuyma 1998). For those of us in academia, however, I do not think this means that we have gotten away from natural history. I would suggest that it is simply packaged differently. Today we are botanists or zoologists; mycologists, entomologists, ichthyologists, or herpetologists; systematists or taxonomists; ecologists or evolutionary biologists. With this repackaging comes an inevitable specialization, a loss of breadth, which some would argue is the hallmark of a naturalist. Perhaps, but while we may have lost breadth as individuals, we are collectively stronger than ever.

To me, this defines the Ohio Biological Survey (OBS): an organization built upon the collective knowledge of our membership, partners, and collaborators. Now more than ever, natural history is the backbone of new discoveries in the biological sciences and our basal understanding of the natural world is the driving force behind new, integrated disciplines. For example, biomimicry is an emerging focus that provided the inspiration. Returning to basics is often a useful technique in the progression of novel ideas. As a result, natural history is experiencing a resurgence of sorts. In a recent Presidential Address to the American Society of Naturalists, Robert Ricklefs (2012) extolled the virtues of the science of natural history:

I argue that natural history—observing the natural world and deciphering its patterns—is as essential today as it was in Darwin's lifetime to the continuing development of ecology and evolutionary biology...natural history observation and thinking are essential to understanding the origin, maintenance, and significance of biodiversity. Observation of nature remains an important source of new discovery, provides insight about pattern and process in biology, and makes possible critical tests of predictions from theory.

Rallying behind these ideas is the new Natural History Network (www.naturalhistorynetwork.org), a group dedicated to the promotion of natural history and natural history education. Among other things, they work to support education and to promote the academic study of natural history. These goals should be very familiar to anyone associated with the Survey. For the past century, OBS has supported and promoted a broader understanding of nature and we will continue to do so, buoyed by the support of our membership and all of the naturalists that form our own network. Natural history is not dead—it is alive and well. There remain large gaps in our knowledge; gaps that, once filled, will provide vital clues to the protection of biodiversity, teach us ways in which we might deal with a changing climate, and inspire innovations that will inform our own survival. It seems that the words of Marston Bates (1950) still ring true over 60 years later:
It is amazing enough to stop and look at a forest or a meadow—at the grass and trees and caterpillars and hawks and deer. How did all of these different kinds of things come about; what forces governed their evolution; what forces maintain their relations to each other and to the physical environment in which they live? These are the problems of natural history, problems that concern ourselves as animals and that concern us even more as originators of this thing we call civilization—which is, after all, merely a rather special sort of an animal community.

And our adventures in natural history continue…

A couple of final thoughts: I would once again like to thank all of the people that made the Ohio Natural History Conference such a success this year. Thanks to all of you who attended, to those who set up tables and displays, and to those who presented posters. I would especially like to thank our great slate of speakers: Brian Armitage, David Bonter, Rich Bradley, Matt Shumar (and Paul Rodewald), Bob Glotzhober, Dave McShaffrey, Mary Gardiner, Suzie Prange, Jim Bissell, and Dave Horn. They gave us a great deal to think about with regards to our theme of “Citizen Science.” This theme served us well because the Survey has had a number of citizen science projects, including our ongoing All Taxa Biotic Inventory of Deep Woods in Hocking County and our technologically driven State-wide BioBlitz with iNaturalist (www.inaturalist.org/projects/ohio-bioblitz).

Finally, you are currently reading the first issue of the new BioOhio. My thanks to Jessee Smith and Gene Kritsky for their great work with the redesign of the newsletter. This new style and format will allow us to take advantage of working in a digital medium and will also allow us the space to profile all of the great projects each of our members is doing. Please get this information to us and we will get it into a future issue of the newsletter; pictures and Web links are welcomed.

References


Evidence of Prehistoric Hunters in Ohio

Cut marks found on Ice Age bones indicate that humans in Ohio hunted or scavenged animal meat earlier than previously known. Dr. Brian Redmond, curator of archaeology at The Cleveland Museum of Natural History, was lead author on research published in the Feb. 22, 2012 online issue of the journal World Archaeology.

Redmond and researchers analyzed 10 animal bones found in 1998 in the collections of the Firelands Historical Society Museum in Norwalk, Ohio. Found by society member and co-author Matthew Burr, the bones were from a Jefferson’s Ground Sloth. This large plant-eating animal became extinct at the end of the Ice Age around 10,000 years ago.

“This research provides the first scientific evidence for hunting or scavenging of Ice Age sloth in North America,” said Redmond. “The significant age of the remains makes them the oldest evidence of prehistoric human activity in Ohio, occurring in the Late Pleistocene period.”

A series of 41 incisions appear on the animal’s left femur. Radiocarbon dating of the femur bone estimates its age to be between 13,435 to 13,738 years old. Microscopic analyses of the cut marks revealed that stone tools made the marks. The pattern and location of the distinct incisions indicate the filleting of leg muscles. No traces of the use of modern metal cutting tools were found, so the marks are not the result of damage incurred...
Ohio Bird Conservation Initiative Hires New Program Coordinator

OBCI is a diverse coalition of over 90 groups that seeks to more effectively conserve and manage birds in Ohio by fostering partnerships among state and federal agencies, conservation organizations, businesses, and the public. OBCI partners are voluntary, bringing their valuable time and energy to the table in support of the mission of integrated bird conservation. The OBCI Coordinator is a dedicated position with a directive to develop collaboration and provide guidance to OBCI partner organizations regarding the conservation of Ohio’s birds.

OBCI was founded in 2004 through the efforts of the Ohio Working Group of Partners in Flight. In 2005 and 2006, individuals involved in OBCI established the organization, its bylaws, Coordinating Council and standing committees, and hired OBCI’s first Program Coordinator, Suzanne Cardinal. After 2007, OBCI lacked funding to support a full-time coordinator, but members of the OBCI Executive Council continued to seek funding for the position. Recently, they secured funding from the USFWS and state wildlife grant funds from the Ohio Division of Wildlife to hire Amanda Conover as Ohio Bird Conservation Initiative Program Coordinator.

Before coming to OBCI in mid-September of this year, Amanda Conover received a B.S. in Environmental Resource Management from Penn State University in 2007 and an M.S. in Wildlife Ecology from the University of Delaware in 2011. Her research at Penn State was in biogeochemistry, examining the impacts of urbanization on greenhouse gas emissions from soils. She also interned with the PA Department of Conservation and Natural Resources and the U.S. Fish and Wildlife Service to monitor invasive species. Before returning to graduate school, she researched soil carbon sequestration at the University of Pennsylvania. For her graduate work at the University of Delaware, she studied the impacts of non-native plants on bird populations in suburban forest fragments using occupancy modeling of point count and vegetation data. Since coming to Ohio this year, she worked as a research assistant for Ohio State University and surveyed birds in a variety of habitats across the state as part of the Ohio Breeding Bird Atlas II.

In the coming months, Amanda Conover will focus on increasing public awareness for OBCI and reconnecting with OBCI member organizations. With assistance from OBCI partners, she will identify possible collaborations and conservation projects across Ohio. OBCI has recently completed an All-Bird Conservation Plan for Ohio (available at http://tinyurl.com/876k8mj), and this document will be used to identify priority species and habitats on which to focus our efforts. Future projects are expected to include habitat restoration for a variety of target species, as well as assisting partners with acquisition of priority lands for both migratory and breeding bird habitat.

Amanda Conover hopes that “by developing strong partnerships with a variety of organizations, OBCI can create the synergy needed to enhance and expand bird conservation efforts in Ohio.” For more information on OBCI projects and events, contact Amanda Conover at (614) 432-8489 or obcicoordinator@gmail.com, or visit our Web site at www.obcinet.org.
iNaturalist.org: A Novel Approach to Photo-Sharing, Field Guides, and Citizen Science

The extinction of plants and animals is widely recognized as one of the most pressing environmental challenges facing the globe. Species are currently going extinct 1,000 times faster than they would naturally, and ongoing land use and climate change are making things worse. To meet these challenges, iNaturalist is harnessing Internet technology to provide scientists with new streams of biodiversity data while simultaneously engaging and educating the public about the Earth's vanishing biodiversity and efforts to conserve it.

iNaturalist.org is a vibrant, rapidly growing community of over 4,000 naturalists sharing tens of thousands of citizen-science observations from around the globe. While Web sites like Facebook and Flickr are great places to share wildlife photos, iNaturalist lets you transform your photos into research-grade citizen science observations that directly contribute to conservation initiatives. In return, iNaturalist provides rich context for your photos within dynamic, interactive field guides across all species anywhere in the world.

How it works
Imagine you're backpacking in the mountains of California and you stumble upon a mysterious frog. You contribute the observation to iNaturalist by snapping a photo with your camera or the iNaturalist iPhone or Android app. In response, iNaturalist generates a field guide to the ten frog species thought to occur in the county. You see that three frogs have been confirmed with research-grade observations already contributed by others. Five are threatened, one is a non-native species, and one is a county endemic, meaning it is found nowhere else in the world. Browsing the photos and range maps, you decide that the endangered Yosemite toad is the best match, but your observation is slightly out of range. You flag your observation to signal you want identification help, and within hours two other naturalists propose ID's of Yosemite toad. Their comments convince you to agree, and your observation is confirmed as a research-grade data point. The toad is immediately “ticked off” in the Inyo County field guide, and you are rewarded with “first observer” status for Yosemite toad in Inyo County.

Through partnerships with international science organizations like the International Union for the Conservation of Nature (IUCN) Amphibian Specialist Group, your out-of-range observation is directly relevant to scientists working to assess the distribution and conservation status of the Earth's biodiversity. You've confirmed not only that the Yosemite toad persists in Inyo County, but that the species is found further east than previously thought.

These direct links to conservation, coupled with the interactive field guide that iNaturalist provides, have resulted in a unique and engaging citizen-science experience and a rapidly growing iNaturalist community. Each day, iNaturalist receives over 500 unique visitors, 12 new users, and 130 new contributions while powering over 80 specific projects. These include projects run by museums such as the Smithsonian Institution and the California Academy of Sciences, governmental organizations including 8 IUCN Specialist Groups, the
Researchers at Cleveland Museum of Natural History Discover That “Lucy” Was Not Alone

A team of scientists has announced the discovery of a 3.4 million-year-old partial foot from the Woranso-Mille area of the Afar region of Ethiopia. The fossil foot did not belong to a member of “Lucy’s” species, *Australopithecus afarensis*, the famous early human ancestor. Research on this new specimen indicates that more than one species of early human ancestor existed between 3 and 4 million years ago with different methods of locomotion. The analysis was published in the March 29, 2012 issue of the journal *Nature*.

The partial foot was found in February 2009 in an area locally known as Burtele. “The Burtele partial foot clearly shows that at 3.4 million years ago, Lucy’s species, which walked upright on two legs, was not the only hominin species living in this region of Ethiopia,” said lead author and project leader Dr. Yohannes Haile-Selassie, curator of physical anthropology at The Cleveland Museum of Natural History. “Her species co-existed with close relatives who were more adept at climbing trees, like ‘Ardi’s’ species, *Ardipithecus ramidus*, which lived 4.4 million years ago.”

The partial foot is the first evidence for the presence of at least two pre-human species with different modes of locomotion contemporaneously living in eastern Africa around 3.4 million years ago. While the big toe of the foot in Lucy’s species was aligned with the other four toes for human-like bipedal walking, the Burtele foot has an opposable big toe like the earlier Ardi.

“This discovery was quite shocking,” said co-author and project co-leader Dr. Bruce Latimer of Case Western Reserve University. “These fossil elements represent bones we’ve never seen before. While the grasping big toe could move from side to side, there was no expansion on top of the joint that would allow for expanded range of movement required for pushing off the ground for upright walking. This individual would have likely had a somewhat awkward gait when on the ground.”

The partial foot has not yet been assigned to a species due to the lack of associated skull and dental elements.

The fossils were found below a sandstone layer. Using the argon-argon radioactive dating method, their age was determined to be younger than 3.46 million years, said co-author Dr. Beverly Saylor of Case Western Reserve University. “Nearby fossils of fish, crocodiles and turtles, and physical and chemical characteristics of sediments show the environment was a mosaic of river and delta channels adjacent to an open woodland of trees and bushes,” said Saylor. “This fits with the fossil, which strongly suggests a hominin adapted to living in trees, at the same time ‘Lucy’ was living on land.”

All content ©Cleveland Museum of Natural History. Photos courtesy of Dr. Haile-Selassie.
Peregrine Falcons Begin Nesting Season in Ohio

The 2012 peregrine falcon nesting season is underway in Ohio, according to the Ohio Department of Natural Resources (ODNR) Division of Wildlife.

There are peregrine pairs at 25 to 38 sites and eggs are being incubated at eight sites in the state: Cleveland (three sites), Boston, Bowling Green, Aberdeen, Cleves, and Dayton. By April, most of Ohio’s adult breeding peregrine falcons will have paired with a mate and selected a nesting site.

Internet users can follow the progress of these and other peregrine nests at the Division of Wildlife’s peregrine falcon Web page at www.wildohio.com. As the nesting season progresses, key events such as egg laying, hatching and fledging will be noted on the Web site for each nest.

Because of successful restoration activities in Ohio and across the nation, the peregrine falcon was removed from the federal endangered species list in 1999, and in Ohio it was down-listed from endangered to state-threatened in 2008.

Along with several other Midwestern states, Ohio began reintroducing the birds in 1989. Several pairs were released in Ohio’s major cities between 1989 and 1992. Last year, Ohio had 39 territorial pairs of peregrine falcons, of which 32 were nesting pairs and were estimated to have successfully hatched and fledged 67 young.

Federal funds for the peregrine falcon project and other wildlife diversity efforts of the Division of Wildlife are provided through the State Wildlife Grant Program, which targets species with the greatest conservation need.

The division’s peregrine falcon management program has been supported by the sale of cardinal license plates, the Ohio Wildlife Legacy Stamp, and contributions to the state’s Wildlife Diversity and Endangered Species Check-Off Fund. Individuals wanting to donate directly can do so online at www.wildohio.com.

OBS Small Grants Donation Challenge

Dr. Ronald Stuckey has generously offered $250 in support of the OBS small grants program IF the membership can match his offer. Please join us in this effort to expand our small grants program by donating now. Continuously funded since 1994, the OBS small grants program has placed thousands of dollars on the ground to dozens of different investigators working in a variety of different fields that support the Survey’s mission. Please help us continue this core OBS program for many years to come! You can donate online by visiting our Web page (www.ohiobiologicalsurvey.org/) and selecting the “donate now” link. You may also donate by check. Please make your check payable to the Ohio Biological Survey and mail to P.O. Box 21370, Columbus, OH 43221-0370.

We would like to say a very big “Thank You” to Dr. Stuckey and to those of you that support OBS financially or in other ways.

Grants Available to Develop WILD School Sites

Ohio teachers who have successfully used Project WILD in their classrooms now have the opportunity to provide students with additional hands-on learning tools about wildlife and habitat through grants being offered through the Ohio Department of Natural Resources (ODNR), Division of Wildlife.

Grants totaling $500 each will be awarded on a competitive basis to 40 schools currently participating in Project WILD, a supplemental environmental education curriculum for grades K-12.

Project WILD uses wildlife and wildlife management techniques to teach traditional school subjects such as math, science, and language arts. Now in its ninth year, the grant program provides teachers with funding to purchase the materials, equipment, and activities needed to develop “WILD School Sites” on their school sites.

“A WILD School Site project allows teachers to take lesson plans outdoors, bringing conservation education concepts to life for students,” said Jen Dennison, wildlife education coordinator for the Division of Wildlife. “An added benefit is the improvement of schoolyard habitat for wildlife and people, which enhances outdoor learning experiences.”

The grants are awarded to applicants that best meet the WILD School Site criteria. Criteria includes participation in one of Ohio’s Project WILD programs, direct improvement of the habitat on the school grounds, involvement of the students in the projects as much as possible, and correlation of the projects to the school’s curriculum.

Funding for the WILD School Site grant program comes directly from the sale of Ohio hunting and fishing licenses.

Interested educators should submit an application by May 31 to the ODNR Division of Wildlife, Outdoor Education Section, 2045 Morse Road, Bldg. G, Columbus, OH 43229. Complete details of the grant program and an application packet can be found at our Web site. To learn more about Project WILD or to find an area workshop, go to www.ohioprojectwild.com or call 1-800-WILDLIFE.
The U.S. Fish and Wildlife Service announced recipients of the 2011 Recovery Champion award, which honors Service employees and partners for outstanding efforts to conserve and protect endangered and threatened species of fish, wildlife, and plants. Among the honorees is Dr. Carol Bocetti of the California University of Pennsylvania, who leads the recovery team for the endangered Kirtland’s warbler.

A total of 56 teams and nine individuals were honored as Recovery Champions for work to conserve species ranging from the polar bear in Alaska to the Appalachian elktoe mussel and spotfin chub in North Carolina.

“Recovery Champions are helping listed species get to the point at which they are secure in the wild and no longer need Endangered Species Act protection,” said Service Director Dan Ashe. “These groups and individuals have done amazing work in helping to bring dozens of species back from the brink of extinction, while improving habitat that benefits many other species and local communities.”

Dr. Bocetti was recognized for her work with the Kirtland’s warbler, an endangered songbird found only in Michigan, Wisconsin and Ontario. Dr. Bocetti’s research and recovery initiatives have been a key factor in the growth of the warbler population from near-record lows of about 200 pairs during the mid-1980s to the current estimate of more than 1,700 pairs, surpassing recovery goals. Her research also documented the link between the size of jack pine stands—the warbler’s nesting habitat—and warbler productivity.

A member of the Kirtland’s warbler recovery team since 1998, Dr. Bocetti became the team leader in 2006. Working with the National Fish and Wildlife Foundation, Michigan Department of Natural Resources, The Nature Conservancy, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and others, she spearheaded efforts to develop a conservation strategy and commitment to managing habitat, a significant step toward recovery and long-term conservation of the species.

“Thanks to Dr. Bocetti’s leadership and dedication, Kirtland’s warblers are making strides toward recovery,” said Tom Melius, the U.S. Fish and Wildlife Service’s Midwest Regional Director. “That is a remarkable achievement for a species that was once on the brink of extinction.”

From the bull trout in Washington, Oregon, and Montana to the red-cockaded woodpecker in Florida, Alabama, and Texas, Recovery Champions are taking action to benefit these species. Service employees and partners, including federal and state conservation agencies, tribes, universities, conservation organizations, private landowners, and zoos and botanic gardens, are making a difference through activities such as removing dams so that anadromous fish can reach their spawning grounds, restoring longleaf pine forests in the Southeast, and reintroducing an endangered bird species into its historical range.

For example, the Turner Endangered Species Fund (TESF) is being recognized for its work in endangered species recovery programs over several decades. Numerous species across multiple states have greatly benefitted from TESF’s continued support over the years and are on the road to recovery thanks in large part to these efforts, such as the black-footed ferret, red-cockaded woodpecker, Chiricahua leopard frog and Northern Aplomado falcon.

Notably, the TESF has been active and supportive in gray wolf recovery in the United States, both in the Northern Rocky Mountains and in the Southwest. Since 1997, the Ladder Ranch Wolf Management Facility, located on R.E. Turner’s Ladder Ranch in south-central New Mexico and operated by TESF, is one of the program’s three primary captive pre-release facilities and has been instrumental in housing and selectively breeding Mexican wolves for release to the wild.

Also this year, National Wildlife Refuges from Maine through Virginia are being honored for conserving more than 250 breeding pairs of piping plovers on refuge, state, municipal and private lands.

In the West, the Colorado Rare Plant Conservation Initiative, comprised of more than 22 organizations, after creating a strategy for needed actions such as best management practices for oil and gas development, is working with the industry to implement the practices.

In an unusual accomplishment, a team of biologists, avian husbandry experts and veterinarians captured wild Nihoa millerbirds (insect-eating songbirds on the Hawaiian island of Nihoa) and translocated them to Laysan Island, restoring millerbirds to the island after an absence of 100 years.

Restoring streams, releasing listed species into their historical ranges, and conducting field surveys and monitoring programs are among the diversity of initiatives by this year’s Recovery Champions. What began in fiscal year 2002 as a one-time award for Service staff members for achievements in conserving listed species was reactivated in 2007 and expanded to honor Service partners as well, recognizing their essential role in the recovery of threatened and endangered species.

Web Links

2011 Recovery Champions: http://tinyurl.com/7fjczx6

Recovery efforts for the Kirtland’s warbler: http://www.fws.gov/midwest/endangered/

USFWS Endangered Species Program: http://www.fws.gov/endangered/
Magee Marsh Wildlife Area Trail Closed for Nesting Eagles

One loop of the walking trail at Magee Marsh Wildlife Area has been closed to protect a newly established bald eagle nest, according to the Ohio Department of Natural Resources (ODNR), Division of Wildlife.

A pair of bald eagles has built a nest behind the Sportsmen's Migratory Bird Center at Magee Marsh Wildlife Area. The trail will be closed until further notice in order to eliminate human activity near the nest and provide the birds with a good chance of producing a successful nest. There will be signs and barricades posted at the trailheads. The other loop of the walking trail will remain open from the Bird Center to the observation blind.

Currently there is an eagle nest at Magee Marsh near Turtle Creek. Several years ago, another pair attempted to nest at Magee Marsh near the boardwalk, but the pair was unsuccessful. Bald eagle eggs take more than a month to hatch, and the pair at the Migration Bird Center has not laid eggs yet. The nest will be monitored to determine when the walking trail will be reopened to the public.

The Sportsmen's Migratory Bird Center is open Monday through Friday from 8 a.m. until 5 p.m. The trails are open during daylight hours.

The Ohio Department of Natural Resources ensures a balance between wise use and protection of our natural resources for the benefit of all. For more information, please visit the ODNR Web site at www.ohiodnr.com.

Ohio Natural History Conference Poster Presentations

The 2012 Ohio Natural History Conference included a range of exhibits and poster paper presentations on insects, amphibians, birds, bats, and natural areas. The poster abstracts are presented below; abstracts from the verbal presentations will appear in the next issue of BioOhio.

Genetic Differences in Tadpole Activity Affect Ecological Interactions

Michael F. Benard
Department of Biology, Case Western Reserve University

Studies of ecological interactions often assume that variation among individuals in phenotype and genotype do not affect the outcome of these interactions. For example, theoretical and empirical studies of metapopulations often assume that there are no differences between dispersing and non-dispersing individuals. I tested this assumption using two experiments on wood frogs (Rana sylvatica), a common Ohio amphibian. In the first experiment, I compared the offspring of adult males that had dispersed to new ponds with the offspring of adult males that remained at their home pond. There were significant differences in activity between the offspring of dispersers compared to the offspring of residents. In the second experiment, I tested whether genetic differences in activity interacted with density to affect competition and resource use. Genetic differences in activity did not interact with density. However, wood frog tadpoles from high-activity families had a stronger negative effect on algal growth than tadpoles from low-activity families. These results demonstrate that, in contrast to a key assumption of many ecological models, genetic differences among individuals can be strong enough to affect ecological interactions. This has important implications for population dynamics and conservation planning.

Limnology of Crystal Lake and Boating Lake at the Muskingum Valley Scout Reservation Located on Reclaimed Mining Land in Coshocton County, Ohio

Zachary Beres, Curtis Clevinger, and Jennifer Clevinger
Walsh University

Improved understanding of aquatic ecosystem dynamics can lead to improved management techniques. Boating Lake and Crystal Lake, on the Muskingum Valley Scout Reservation in Coshocton County, Ohio, are both manmade lakes built upon reclaimed strip mining land. Boating Lake was formed through the damming of a natural stream while Crystal Lake formed in a pit from the land’s previous mining use. The lack of Scout Reservation baseline data on these lakes provides the opportunity to be the first to analyze what is occurring in the water columns. Aquatic tests and measurements over a seven-week period from June to July 2011...
including dissolved oxygen levels, Secchi depth, temperature, pH, and chlorophyll concentration were performed three times a week while biological oxygen demand, limiting nutrients, and nutrient levels, such as nitrate, SRP, ammonia, DOC, and DN, were performed once every week. Initial observations from data collected indicate Boating Lake is a eutrophic lake while Crystal Lake is an oligotrophic lake. Boating Lake was slightly basic (=8.5 on average) and exhibited stratification resulting in a thermocline and supports a wide variety of aquatic life based on daily fishing observations. Crystal Lake exhibited low pH (=3.0 on average), low nutrient content, and supports very little aquatic life based on limited observations of wildlife interactions with the water. Once data analysis is completed, this information will be used by the Scout Reservation to develop a better plan to maintain its aquatic ecosystems and will serve as the foundation for future research on these lakes.

Microbial Testing of Baldwin Creek (Cuyahoga County, Ohio) Prior to the Removal of Three Low-head Dams

Lexi Bojansky, Kara Gawelek, Melissa Laska, and Chris Stanton
Baldwin–Wallace College

During the summer of 2012, three low-head dams will be removed from the lower 0.9 miles of Baldwin Creek. This creek empties into the east branch of the Rocky River in Cuyahoga County, Ohio. In order to help determine the impact of dam removal, microbial testing of the water was conducted above, below, and within the dam-impacted section of the creek from July to September, 2011. These tests calculated the colony forming units/milliliter (cfu/ml) of E. coli and fecal coliform at four dilutions (10 ml, 5 ml, 1 ml, and 0.25 ml). Results ranged from 1.0E+03 to 9.2E+02 cfu/ml of E. coli and 1.1E+03 to 9.2E+02 of coliform. Microbial testing will continue after the dams are removed to document any changes in microbial loading. This study also showed that it is possible to routinely monitor microbial contamination on a small stream. These tests are very important in determining water quality but are not often used as a typical water quality tool. More agencies should be aware of these procedures and incorporate them into their monitoring efforts.

Habitat Fragmentation and Its Effects on the Distribution and Abundance of Salamander Species on a Reclaimed Surface Mine

John Bourne
Muskingum University

Many recent studies have focused on habitat fragmentation as a result of agriculture and its impacts on salamander diversity (Weyrauch and Grubb Jr., 2003). However, relatively little is known about the effects of habitat fragmentation on salamander diversity on a reclaimed surface mine. The objective of this research was to survey the fragmented landscape of the Wilds (a reclaimed surface mine) for salamander diversity. Differing sizes of forest fragments were surveyed in an effort to understand the impacts of woodlot size and edge-to-area ratio on the diversity and abundance of salamander species. Ninety individuals of six species were found in the five fragments of forest surveyed. The six species include the red spotted newt (Notophthalmus viridescens), northern dusky (Desmognathus fuscus), northern two-lined (Eurycea bislineata), Jefferson (Ambystoma jeffersonianum), slimy (Plethodon glutinosus), and the red-backed salamanders (Plethodon cinereus). Woodlot size and edge-to-area ratio were calculated using GPS coordinates and the program ArcMap10. As expected, there was greater species abundance but not diversity in the larger fragments. The two largest fragments included the greatest number of individuals (all species); in terms of species diversity, however, one large plot included only two species, while the other included six species. This disparity in diversity may be due to the differing amounts of disturbance these forests underwent in the process of strip-mining. The results of this study provide some insights into amphibian habitat associations in a landscape fragmented by surface mining, where scattered, fragmented woodlots provide some of the only remaining habitat for salamander species.

Of Writers, Warblers and Woodlands: Examining Literature’s Influence on American Environmentalism

Kyle Carlsen
Ohio Valley University, West Virginia

The “green” movement is not a strictly new phenomenon in American society. The pages of history reveal environmentally conscious thinking in the earliest days of our nation’s existence. Ornithological pioneer John James Audubon scoured the untamed North American continent of the nineteenth century in search of bird life, documenting hundreds of new species. Transcendentalist author and activist Henry David Thoreau examined his relationship with the natural environment by intimately connecting with nature for much of his life. A century later, Aldo Leopold proposed that an “ethic” was needed to help govern society’s approach to natural resources. Finally, Rachel Carson sounded the alarm against the exploitation of the environment with Silent Spring, a book which altered the course of environmental history.

These individuals were fascinated with the natural world and immersed themselves in its study, contemplating mankind’s interactions with the environment. Most importantly, they were writing—producing numerous essays, journals, and books in which they recorded observations, developed opinions, and expressed ideas, many of which were original and even radical for their time. These ideas initiated and shaped the fields of ecology and wildlife management and led to the formation of organizations like the National Audubon Society and Ducks Unlimited. With each new generation, there developed a growing sense of concern about how mankind’s habits were producing lasting negative effects on the earth. By the time Rachel Carson penned her legendary Silent Spring in 1962, the stage was already set for America’s environmental consciousness.

The environmental movement was launched, moving, and on its way toward occupying a major presence in American thinking.

Today’s generation has much to learn from these early writers who were unafraid to voice their opinions and concerns. Now we must continue down the road less traveled and apply their ideas to our current environmental problems, thus sustaining the work they set in motion.
Determining Water Quality on Baldwin Creek (Cuyahoga County, Ohio) Prior to the Removal of Three Low-head Dams

Doug E. Dietzel and R. Chris Stanton
Baldwin–Wallace College

Baldwin Creek is a tributary of the Rocky River that drains a watershed of 10 square miles in Cuyahoga County, Ohio. This creek has multiple low-head dams that contribute to its poor water quality and low biological diversity. This coming summer, three of these low-head dams will be removed in order to improve water quality, physical habitat, and passage for aquatic species. In order to determine the impact of removing the dams, it is necessary to document the existing water quality and macroinvertebrate community of the creek as well as the influence of each dam. Therefore data have been collected on water temperature, salinity, dissolved oxygen, and conductivity above, below, and within the dam-impacted section of the creek. The macroinvertebrate community was also sampled using the MAIS method (Macroinvertebrate Aggregated Index for Streams). Results indicate that the dams currently have an insignificant impact on water quality but provide physical habitat for aquatic macroinvertebrates. Overall, the water quality in the dam-impacted section of Baldwin Creek is “Poor.” Monitoring water conditions and sampling macroinvertebrates can be taught to a variety of volunteers and could easily become an aspect of a community’s outreach or stewardship program. This skill may become increasingly important as more municipalities consider the removal of obsolete dams.

Herpetological Surveys of Armbruster Nature Preserve, Bull’s Run Nature Sanctuary and Arboretum, and Miami University Middletown Campus in Southwest Ohio

Aaron Fry and Alan B. Cady
Miami University

Conservation schemes seeking to conserve biodiversity must have a basic understanding of the distribution and abundance of organisms. In order to enhance herpetofauna conservation by providing baseline data for Bull’s Run Nature Sanctuary and Arboretum (BR), Armbruster Nature Preserve (AB), and the Miami University Middletown campus (MUM), surveys generating relative abundance, species richness data, and habitat associations for the reptiles and amphibians residing in these areas were conducted.

The results provide some insight into how small parks should be managed. As expected, the larger area (MUM) held the greatest species diversity and evenness, yet the significantly smaller Bull’s Run still had respectable levels of diversity and evenness. Intensive management to maintain a wide diversity of habitat types seemed to have helped support a fairly diverse herpetofauna. The relatively homogeneous habitat of Armbruster did not support the diversity of the other two sites. Thus, it could be possible to maintain a diverse herpetofaunal community in small areas if careful habitat management is practiced.

While these small parks do not maintain the levels of biodiversity desired, they do fulfill important functions by preserving populations where they might otherwise be extirpated, and by providing places where people may observe wildlife. However, continuous encroachment upon these nature sanctuaries threatens the surviving wildlife populations with genetic drift. Corridors connecting patches of habitat could benefit conservation efforts, but roads often dissect remaining areas. Without revision of current conservation techniques, reptiles and amphibians unable to adapt to an urban landscape may disappear.

Mapping Ash in High Public Use Areas: A Citizen Science Approach

Constance E. Hausman and Terry L. Robison
Division of Natural Resources, Cleveland Metroparks

Public land management agencies are among those coping with the effects of emerald ash borer (EAB) and the need to remove ash trees. Knowing the location, quantity, size, and condition of ash trees can help prioritize areas for tree removal. However, staff time to conduct ash tree surveys is limited because of budget restrictions and available resources. To assist with tree inventory, we designed and implemented a volunteer-driven ash tree survey of Cleveland Metroparks all-purpose trail (APT).

Volunteers participated in training to learn project goals, EAB biology, tree species identification, survey design, data collection techniques, and use of hand-held global positioning system (GPS) receivers. A field training component focused on winter tree identification, estimating tree size, and recognizing woodpecker feeding damage.

The survey design includes sample points at 50 meter intervals along the APT. At each point, observers surveyed both left and right sides of the trail. The sample area consisted of a 90° observation window where ash trees were tallied in each of 3 DBH size classes: 4-12 inches, 13 to 20 inches, and >20 inches. Signs of woodpecker feeding were recorded as affecting 0, 1-50, or 51-100 percent of ash trees in the sample area.

Data were entered into a geographic information system to summarize and display survey information by ash tree location, size, and woodpecker feeding activity. Maps were produced for each reservation and are being used by Cleveland Metroparks Divisions of Natural Resources, Forestry, and Park Operations to prioritize management and restoration areas.

Breeding Ecology of Northern Bobwhites in Southwestern Ohio

Marjorie Liberati and Robert J. Gates
School of Environment and Natural Resources, The Ohio State University

The Ohio bobwhite (Colinus virginianus) population experienced a 90% population decline after the severe winters of 1976-1977 and 1977-1978 and continued to decline 76% since 1984. We investigated survival, abundance, dispersal, and nesting on 4 private land sites in southwestern Ohio during 2008-11. Adult winter survival was 8.8% (95% CI = 5.1-14.6) and summer survival was 40.9% (95% CI: 30.5-52.2) in 2009-10. Whistle-counts and covey densities declined between 2008 and 2011 indicating that recruitment was unable to offset winter losses. Radio-marked birds dispersed 0-19 km during...
breeding. Apparent nest survival was 39.6% (n = 53) and females renested after failed and successful nest attempts. Nests were primarily located in grassy habitats such as CRP fields (56.6%), fallow fields (17.0%), pastures (5.7%), and hay fields (5.7%) but were also found in a woodlot (1.9%), fencerow (1.9%), corn field (1.9%), waterways (3.8%), and odd areas (5.7%). We established the sex of incubating individuals at 37 nests. Females incubated 75.7% of those nests, males 21.6%, and incubation by both sexes was only 2.7% (1 nest). Average clutch size was 14.4 eggs and 91.6% of eggs in successful nests hatched. Age ratios of captured birds (3.2 juv/ad) suggest low post-hatch survival. Nesting metrics for bobwhites in Ohio are comparable to populations in other states and are typical for a ground nesting species. Post-hatch chick survival may be an important factor depressing fall recruitment. Increasing adult winter survival to maximize spring breeding potential will be pivotal to increase and expand the bobwhite population in Ohio.

**UV Fluorescing Millipedes from Southeastern Ohio**

Katy Lustofin, Derek Hennen, and Dave McShaffrey
Barbara A. Beiser Field Station, Harla Ray Eggleston Department of Biology and Environmental Science, Marietta College

UV fluorescence by arthropods was first reported in the 1950s but little research has been conducted on this phenomenon. Much of the research on UV fluorescence in arthropods involves scorpions, although fluorescence has been reported in termites and other insects, horseshoe crabs, and millipedes. Different fluorescent components of the arthropod skeleton have been identified, and it has been hypothesized that fluorescence develops from tanning of the cuticle or is secreted after molting. The function of fluorescence in arthropods is unknown, although several hypotheses have been proposed. We became interested in this phenomenon after discovering that UV fluorescent millipedes can be found here in Washington County. Several species of millipedes collected at the Barbara Beiser Field Station have been found to fluoresce under UV light. These species have been identified and will be displayed.

**The Influence of Anthropogenic Resources on Nest Predator Activity and Nest Survival in Suburban Yards**

Jennifer S. Malpass and Amanda D. Rodewald
School of Environment and Natural Resources, The Ohio State University

In the face of increasing urbanization, understanding the influence of human development on wildlife in suburban areas is paramount for biological conservation. In addition to the effects of rapid land use transition, human behaviors regarding resource availability in suburban settings can directly or indirectly affect patterns of wildlife diversity, species interactions, and ultimately population viability. Our research investigates how human-mediated changes in food and vegetation resources in suburban neighborhoods influence avian population demography and predator-prey interactions between birds and their nest predators. Specifically, we aim to identify how resource availability affects breeding habitat suitability and nest predation risk for birds nesting in suburban yards. While anthropogenic food resources (i.e., trash, birdfeeders) may attract predators to yards, high predator numbers may not negatively impact nest survival if predators switch to anthropogenic foods. Alternately, nests in areas with high food resource availability may be at high risk of predation from increased predator activity. Working in >150 private yards across seven suburban neighborhoods in Franklin County, Ohio, USA, we examine the extent to which resource levels predict use by birds, activity levels by nest predators, and avian nesting success of two urban-adapted species, American Robin (Turdus migratorius) and Northern Cardinal (Cardinalis cardinalis). Between April and August 2011, we monitored avian nests (n = 238), surveyed predator activity and food availability, measured vegetation characteristics, and deployed miniature video cameras at a subset of nests to document nest predator species. Rates of daily nest survival varied across neighborhoods and species with American Robin at 0.970 (42.6% survival; 28-day nest cycle) and Northern Cardinal at 0.956 (37.1% survival; 22-day nest cycle). The number of anthropogenic food resources accessible to nest predators also varied widely across the season and among sites. Our data suggest important links between anthropogenic foods, predator activity, and avian nest survival. Activity of mammalian predators increased with availability of anthropogenic food. We also found that daily nest survival of American Robins was negatively associated with mammalian predator activity, availability of anthropogenic food, and the availability of bird feeders specifically. For Northern Cardinals, however, nest survival rates were not associated with food availability metrics but were negatively associated with activity levels of predators, pooled over both avian and mammalian species. Our continuing analyses will better resolve which factors are the most important determinants of nest survival. Our research will improve the understanding of how resident behaviors about food provisioning and vegetation management affect birds and predator-prey interactions at yard and neighborhood scales. Ultimately, by elucidating how human behaviors influence wildlife in suburban areas, this research will help identify effective strategies to conserve biodiversity in an urbanizing world.

**Communication Breakdown: Consequences of Song Variation for Urban Adapting Birds**

Desiree L. Narango and Amanda D. Rodewald
School of Environment and Natural Resources, The Ohio State University

Communication systems, which rely upon complex cognitive behavior, social contexts, and environments that permit effective transmission, are particularly vulnerable to disruption by urbanization. Indeed, recent studies have implicated anthropogenic noise as a cause of changing bird song in urban areas. For instance, within cities, some species sing at higher frequencies (Hz) and faster rates than their non-urban counterparts (Slabbe koorn and den Boer-Visser, 2006). Although urban-associated variation in the production, transmission, or reception of song can profoundly influence conspecific interactions in ways that affect fitness, the evolutionary and ecological consequences of altered songs remain poorly understood. In this research, we
hypothesized that relationships between song attributes, morphology and annual reproductive output would change with urbanization. We investigated this hypothesis by measuring song characteristics and monitoring the breeding behavior of 45 individually marked male Northern Cardinals (Cardinalis cardinalis) at nine sites distributed across a rural to urban gradient in Columbus, Ohio. We found that the largest males in the best condition sang songs with the highest minimum frequency and the fastest rates, but only in urban landscapes. Minimum frequency and song rate had no relationship with productivity in either landscape. Our results indicate that the usefulness of song as a signal of quality is landscape dependent and, importantly, may be changing in urban systems. Identifying the ways urbanization may alter communication signals in birds will advance our understanding of the impact development has on wildlife behavior and selective pressures operating within urban systems.

The Value of Citizen Science Data to Test a Model of Bat Presence and Increase Public Understanding of a Disliked Group of Animals

Jessica V. Sewald and Karen V. Root
Department of Biological Sciences, Bowling Green State University

Protected areas may function as islands of habitat in otherwise hostile environments for many species of North American animals. How to maintain suitable habitat for foraging bats within these areas is unclear. In 2009, we acoustically surveyed 32 sites within protected areas in the Oak Openings Region of Northwest Ohio, a biodiversity hotspot, using an Anabat acoustic monitor. We developed a spatially explicit model of bat presence at the intermediate macrohabitat scale. In 2011, a citizen science program, developed in conjunction with the Metroparks of the Toledo Area, was initiated. Volunteers walked along ten park trails within four protected areas and collected data with the acoustic monitors. This data was used to test the macrohabitat model. The models were successful at predicting the occurrence of little brown, tri-colored, hoary, and red bats. Northern long-eared and evening bats, however, appeared to be operating at different scales in habitat selection. Within these protected areas, it is important to manage for heterogeneous habitat composition at this intermediate scale to maintain potential foraging areas for all occurring bat species. Citizen science collected data is a useful way to gather data to test spatially explicit models and to potentially monitor long-term changes. Participants in the citizen science program were surveyed regarding their attitudes and knowledge regarding bats before and after participation in the monitoring program. We found that volunteers had significant and positive increases in overall attitudes towards bats. From this finding, it is hoped that citizen scientists become local ambassadors for bats.

Monitoring Adult Activity of the Emerald Ash Borer (Agrilus planipennis) on a Weekly Basis in Northeast Ohio

R. Chris Stanton and Mimi C. Ganzfried
Baldwin-Wallace College

Since its accidental introduction to Detroit in 2002, the emerald ash borer (EAB) has spread to 15 states and two Canadian provinces. This exotic beetle is estimated to have killed more than 20 million ash trees, which poses a threat to forest diversity as well as public safety. In order to detect the presence of EAB, various trapping methods have been deployed which result in a total number of adult beetles per season. However, very little trapping has been conducted to determine weekly totals during the adult flight season. During the summer of 2011, a purple prism trap, baited with manuka oil, was established in the crown of 21 ash trees. These 21 traps were set in groups of seven in areas of known infestation within the Cleveland Metroparks. The traps were lowered and adult beetles removed every 7 to 10 days in order to identify the peak adult activity. A total of 362 adult EABs were collected with numbers peaking on 6 July 2011. This trapping method was easily performed by a variety of volunteers and could be initiated as a form of “citizen science” as the EAB continues to spread throughout Ohio.

Herbert Osborn and Naturalist Awards Presented at ONHC

Greg Smith, Executive Director of the Ohio Biological Survey, presenting the Herbert Osborn Award to David Brandenburg.

Marilyn Ortt receiving the Naturalist Award from Greg Smith.

Greg presenting the Naturalist Award to Jim Davidson.

Details about nominations for the Herbert Osborn and Naturalist Awards can be found in the Organizational Contacts section of this newsletter.
Ohio Biological Survey Naturalist Award

The Ohio Biological Survey wishes to honor those individuals who have made significant contributions to our understanding and conservation of the natural heritage of Ohio.

Qualifications: An individual selected to receive the Ohio Biological Survey Naturalist Award will have worked energetically to acquire or disseminate knowledge, conserve natural areas, and/or foster our understanding of the fauna and flora of Ohio. The awardee will have been an active contributor over a period of years in pursuit of activities concerning the natural heritage of Ohio.

The Herbert Osborn Award

The Ohio Biological Survey, in honor of its founder, established the Herbert Osborn Award to recognize noteworthy accomplishments and service in the field of biology as pertaining to the objectives of the Ohio Biological Survey. The Award is presented on an annual basis, and was initiated in 1991.

Qualifications: Recipients of the Herbert Osborn Award will be individuals who have made an exceptional contribution through consistent research publications to the advancement of knowledge concerning the occurrence, distribution, taxonomy, and/or ecology of the flora and/or fauna of Ohio. The intent of the Award is to recognize relevant accomplishments and service over a period of years.

Please send your nominations to the Ohio Biological Survey, P.O. Box 21370, Columbus, OH 43221-0370.

Organizational Members: Contact Information

The University of Akron
Dept. of Biology
198 ASEC-W
University of Akron
Akron, OH 44325-3908
(330) 972-7155
fax: (330) 972-7155
www.uakron.edu/colleges/artssci/depts/biology/

ASC Group
800 Freeway Drive North
Suite 101
Columbus, OH 43229
(614) 268-2514
fax: (614) 268-7881
www.ascgroup.net/index.html

Ashland University
Dept. of Biology/Toxicology
(419) 289-5261
www.ashland.edu/departments/biology-toxicology/

Aullwood Audubon Center
and Farm
1000 Aullwood Road
Dayton, OH 45414-1129
(937) 880-7380
web4.audubon.org/local/sanctuary/aullwood/

Baldwin-Wallace College
Dept. of Biology and Geology
Life and Earth Science Bldgd.
Berea OH 44017-2088
(440) 826-2262
www.bw.edu/academics/bio/

Boonshoft Museum of
Discovery
2600 DeWeese Parkway
Dayton, OH 45414-5499
(937) 275-7431
www.boonshoftmuseum.org

Bowling Green State University
Dept. of Biological Sciences
Bowling Green, OH 43403
(419) 372-2332
fax: (419) 372-2024
www.bgsu.edu/departments/biology/

Brakner Nature Center
5995 Horseshoe Bend Road
Troy, OH 45373
(937) 998-6403
info@braknernaturecenter.com
www.braknernaturecenter.com

Case Western Reserve University,
Dept. of Biology
10900 Euclid Avenue
Cleveland OH 44106
(216) 368-3557
fax: (216) 388-4672
www.case.edu/artssci/biol/

Cedarville University
Dept of Science and Mathematics
251 N. Main St.
Cedarville OH 45314
(937) 766-7940
www.cedarville.edu/academics/science/math/

Central State University
Dept. of Natural Sciences
Benjamin Barneker Science Bldg.
Wilberforce, OH 45384
(937) 376-6357
fax: (937) 376-6585
www.centralstate.edu/academics/arts_science/nsmcs/biology/index.html

Cincinnati Museum Center
1301 Western Ave.
Cincinnati, OH 45203-1129
(513) 297-7020
1-800-733-2077
www.cincymuseum.org

Cincinnati Zoo and Botanical Garden
3400 Vine Street
Cincinnati, OH 45220
(513) 281-4700
1-800-94-HIPPO
www.cincinnatizoo.org

Clarion University
Dept. of Biology
Clarion, PA 16214
www.clarion.edu/art-sci/biology/index.html

The Cleveland Metroparks
4101 Fulton Parkway
Cleveland, OH 44144
(216) 351-6300
TTY (216)351-0808
www.clemetparks.com

The Cleveland Museum of Natural History
1 Wade Oval Drive
University Circle
Cleveland, OH 44106-1767
(216) 231-4600
www.cmnh.org

The Cleveland State University
Dept. of Biological, Geological, and Environmental Sciences
2121 Euclid Avenue
Cleveland, OH 44115-2214
(216) 523-7270
www.csuohio.edu/sciences/department/biology/

Columbus Audubon
P.O. Box 141350
Columbus, OH 43214
Julie Davis, President:
president@columbusaudubon.org
(614) 523-2180

Columbus Natural History Society
c/o Robert C. Glotzhober
Ohio Historical Society
1982 Velma Avenue
Columbus, OH 43211-2497
(614) 297-2633
bglotzhober@ohiosociety.org
www.columbusnaturalhistory.org

Columbus Zoo and Aquarium
9990 Riverside Drive
P.O. Box 400
Powell, OH 43065
(614) 645-3550
www.columbuszoo.org

Ohio Biological Survey - Individual Membership

The Ohio Biological Survey, an inter-institutional agency dedicated to the natural history and conservation of Ohio’s flora and fauna, has opened its membership to individuals. Individual members are entitled to a 20% discount on all Survey publications, will receive the Survey’s newsletter, BioOhio, can participate in hosted or co-hosted workshops, field trips, or lecture series, and are eligible to apply for research monies through the Survey’s Small Grant Program. All dues money will be returned to the membership through these benefits.

Dues schedule: Students and Retired Members: $10/year; Regular Members: $25/year; Lifetime Regular Membership: $500; and Lifetime Retired Membership (60 or older): $100. If you are interested in becoming a member, please send your name, address, and dues to Ohio Biological Survey, P.O. Box 21370, Columbus, OH 43221-0370.