Pennsylvania Chapter of The Wildlife Society

2017 Annual Conference & Workshop

Wildlife Management in the 21st Century – Dealing with Complex Conservation Challenges

March 31 - April 1, 2017
Raystown Lake Resort Conference Center
Entriken, PA

Raffle and Auction Donations

The following individuals, businesses, and organizations donated items for the fundraising raffle this year. Information on donors is located at each raffle bucket. Please consider patronizing these businesses and thank those individuals and organizations for their commitment to improving the profession of wildlife management in Pennsylvania. Thanks again to all the donors.

Bass Pro Shops
Bayer Bee Care Team
Boone & Crocket Club
Droll Yankees, Inc.
Pennsylvania Game Commission
Pennington Seed Inc./Penn Pak
Port's Sports Emporium, Bellefonte
Ron Beach Studios
Seven Mountains Wine Cellar, Spring Mills
Tussey Mountain Outfitters, Bellefonte
USDA-APHIS
Weaver's Store, Spring Mills
Wicked Joe Coffee Roasting Company
PA TWS Chapter Members

Sponsorship

Pennsylvania Trappers Association (Gold level)

Conference At-a-Glance**

Friday, 31 March 2017

8 – 9 a.m. **Sign In and Breakfast**

Workshops (Lunch provided with paid workshop registration)

9 a.m. – 5 p.m.* **Trapping Matters:** *River Birch Ballroom*

9 a.m. – 4 p.m.* **Wildlife, fish and forest management:** *Field trip Raystown Lake and Surrounding Area*

5 – 10 p.m. **Student - Professional Mixer:** *Full Moon Lounge*

Saturday, 1 April 2017

7 – 8 a.m. **Breakfast**: Coffee, pastries and fruit

8 a.m. – 12 p.m.* **Plenary Session:** *River Birch Ballroom*
Welcome and Introductions

Aaron Haines – Overview of strategies and approaches for dealing with current wildlife conservation challenges

Duane Diefenbach – Linking Research and Management to Solve Complex Problems

Greg Turner – Bats and White-Nose Syndrome: Managing Amidst Crisis

Bruce Kimball – What's that smell? Trained biosensors on the trail of avian influenza

Jeff Larkin – Overcoming the challenges associated with the implement of landscape-scale forest bird conservation across private and public lands in Pennsylvania

Panel Discussion

12 – 1 p.m. **Lunch:** *Lower Lobby*

12 – 1 p.m.* **Wildlife Leadership Academy Poster Session:** *Full Moon Lobby*

1 – 4:00 p.m.*	**Concurrent Paper Sessions:** *River Birch Ballroom, Pine Cone Room, Acorn Room*
4:30 – 5:30 p.m.*	**PA TWS Member & Business Meeting:** *Acorn Room* (Board Members required, all welcome)
5 – 6:00 p.m.*	**Poster Session:** *Full Moon Lounge* Presenters should be present and prepared to answer questions
6:00 – 10 p.m.	**Grand Banquet:** *River Birch Ballroom* Banquet Speaker: Dr. Tom Serfass – Frostburg State University Title: Restoring River Otters and Fishers in Pennsylvania – A Historic Journey of Animals, People, and Places

Sunday, 2 April 2017

8 a.m.	**Breakfast:** Light affair to grab and go.

*Continuing Education Credits Available through TWS

**Schedule subject to change.

********** Continuing Education Credits Available through TWS **********
The Wildlife Society will allow a maximum of 10.5 – 13.5 contact hours for the Certified Wildlife Biologist Renewal/Professional Development Certificate Program for participation in the 2017 TWS spring conference and workshop. SEE DETAILS AT REGISTRATION DESK.

Banquet Presentation

Saturday, April 1, 6:00pm
River Birch Ballroom

Restoring River Otters and Fishers in Pennsylvania – A Historic Journey of Animals, People, and Places

Dr. Tom Serfass

The restoration of river otters and fishers in Pennsylvania is a conservation success story well known among conservation enthusiasts throughout the Commonwealth, nationally, and internationally – especially pertaining to processes followed and outcomes achieved. However, there are many untold stories (many amusing, some unfortunate, but all will with conservation relevance) relating interactions among individual river otters and fishers, people, and places that shaped various positive outcomes that accompanied the restoration of these species . Tom Serfass will take us through a historic journey focused on these untold stories, beginning with the release of river otters in the Kettle Creek drainage in 1982 and ending with his current thoughts on the conservation of Pennsylvania's reestablished river otter and fisher populations, and carnivores in general.

Dr. Tom Serfass is a Professor of Wildlife Ecology in the Department of Biology and Natural Resources at Frostburg State University, and Adjunct Professor at the Appalachian Laboratory – University of Maryland Center for Environmental Science. Much of his research and conservation activities have focused on the design, implementation, and evaluation of wildlife restoration programs and recovering wildlife populations—particularly mesocarnioves. Tom conceived and coordinated the successful Pennsylvania River Otter (*Lontra canadensis*) and Fisher (*Martes pennanti*) Reintroduction Projects, and has authored over 50 journal, proceedings, popular articles, and book chapters dealing specifically with these two projects. During the past 16 years he has mentored 38 MS and PhD students, conducting research ranging from evaluating the fates of river otters reintroduced in western New York to assessing the natural history and conservation value (potential as flagship species) of spotted-necked otters (*Lutra maculicollis*) and other wildlife at Rubondo Island National Park, Lake Victoria, Tanzania. Tom is the North American Coordinator of the International Union for the Conservation of Nature and Natural Resources' Otter Specialist Group.

Wildlife Workshop

Friday, April 1, 8:00am – 5:00pm

Field Trip 1: Trapping Matters: River Birch Ballroom

Host: Samara Trusso, PA Game Commission

Time	Activity
8:00am – 9:00am	Coffee, Breakfast, Registration
9:00am – 9:15am	Opening Remarks & Objectives
9:15am – 9:45am	Let's Talk Trapping
9:45am – 10:45am	Audiences: who are we talking to?
10:45am	**Break**
11:00am – 12:00pm	Role of Trapping in Wildlife Management Trapping Best Management Practices
12:00pm	**Lunch**
1:00pm – 2:30pm	Trapping Techniques (Outdoors)
2:30pm	**Break**
2:45pm – 4:30pm	Communicating effectively about trapping
4:30pm – 5:00pm	Q&A about trapping, issues, communications
5:00pm	Evaluations, Wrap Up, Depart

Wildlife Workshop

Friday, April 1, 8:00am – 4:00pm

Field Trip 2: Wildlife, fish and forest management: Field trip Raystown Lake and Surrounding Area

Hosts: Tara Whitsel and Glenn Werner, Army Corp of Engineers

Time	Activity
8:00am – 9:00am	Coffee, Breakfast, Registration
9:00am – 9:15am	**Travel Time**
	Intro to Raystown
9:15am – 10:00am	Forest Mgmt (early successional habitat, bats vs. GWW)
10:00am – 11:00am	American Chestnut Restoration Program
11:00am – 11:45am	Food Plot Program, Deer Management
11:45am – 1:30pm	Travel Time and Lunch
1:30pm – 2:00pm	Forest Mgmt in Proximity to Recreation
2:00pm – 2:30pm	Sunoco Pipeline (right-of-way mgmt., pollinator habitat)
2:30pm – 3:00pm	Fisheries Mgmt, Shoreline Erosion, Aquatic Invasives
	Partnerships and Questions
3:30pm	Group Returns to Lake Raystown Resort

Plenary Schedule

Saturday, April 1, 8:15am – 12:00pm
River Birch Ballroom

Wildlife Management in the 21st Century

Moderator: Margaret Brittingham

Time	Title/Topic	Presenter	Affiliation
8:15am – 8:25am	Opening remarks	Margaret Brittingham	PA TWS
8:25am – 9:00am	Overview of strategies and approaches for dealing with current wildlife conservation challenges	Aaron Haines	Millersville University
9:00am – 9:35am	Linking research and management to solve complex problems	Duane Diefenbach	Penn State University
9:35am – 10:10am	Bats and white-nose syndrome: managing amidst crisis	Greg Turner	PA Game Commission
10:10am – 10:30am	**BREAK**		
10:30am – 11:05am	What's that smell? Trained biosensors on the trail of avian influenza	Bruce Kimball	USDA
11:05am – 11:40am	Overcoming the challenges associated with the implementation of landscape-scale forest bird conservation across private and public lands in Pennsylvania	Jeff Larkin	Indiana University of Pennsylvania
11:40am – 12:00pm	Panel Discussion		

Session Synopsis

*Paper titles have been converted to short-hand only to accommodate the side-by-side comparison chart.

Time	**Session 1**: Pine Cone Room Moderator: Jane Rowan	**Session 2**: Acorn Room Moderator: Margaret Brittingham	**Session 3**: River Birch Ballroom Moderator: Robert Blye
1:00 – 1:20	Begley-Miller – Soil chemistry and its effect on understory plant species	Sandercock - Threats impacting federally listed threatened and endangered species.	Williams – Managing ruffed grouse populations in the age of West Nile virus
1:20 – 1:40	Strange – Herpetofaunal abundance within small tropical cloud forests	Adams – Relationship of invasive berry producing plants on bird Communities	Serfass – The North American model of wildlife conservation: river otter
1:40 – 2:00	Davis - Linking data sources to inform spotted salamander abundance	Serno – The effects of roads on bird species occupancy in Pennsylvania's core forests	Crisfield – Regional Wildlife Action Plan opportunities: integrating species and habitat
2:00 – 2:20	Gingery – White-tailed deer fawn survival in North America	Toenies – Changes in bird community following eastern hemlock decline	Gross – Osprey recovery in Pennsylvania: a conservation success story
2:20 – 2:40	Miller – Evaluating the risk of chronic wasting disease in cervid populations	Williamson – Modeling habitat for pheasant population restoration in Pennsylvania	Yeany – A quantitative survey of bird SGCN in boreal peatlands in Pennsylvania
2:40 – 3:00	**Break**	**Break**	**Break**
3:00 – 3:20	Broderick – Genome sequence of the bobcat and patterns in polymorphism		Collins – Distribution and habitat associations of the northern long-eared bat
3:20 – 3:40	Miller-Butterworth – Population genetics of bobcats and management		Hart – The bats of Michaux state forest
3:40 – 4:00	Brown – Comparison of cytology and histopathology for avian pox in wild turkey		Hauer – The effects of forest stand type and prescribed fire on bat activity

Concurrent Session 1

Saturday, April 1, 1:00 – 4:00pm
Pine Cone Room

Moderator: Jane Rowan

Time	Title	Presenter	Affiliation
1:00pm – 1:20pm	Soil chemistry and its effect on the occupancy of understory plant species	Danielle Begley-Miller†	Penn State University
1:20pm – 1:40pm	Herpetofaunal abundance and diversity within small tropical cloud forests embedded in a human-dominated matrix	Victoria Strange†	Indiana University of Pennsylvania
1:40pm – 2:00pm	Linking multiple data sources to inform inference on spotted salamander population abundance	Courtney Davis†	Penn State University
2:00pm – 2:20pm	White-tailed deer fawn survival in North America	Tess Gingery†	Penn State University
2:20pm – 2:40pm	Evaluating the risk of chronic wasting disease infection in Mid-Atlantic cervid populations	William Miller†	Penn State University
2:40pm – 3:00pm	**BREAK**		
3:00pm – 3:20pm	Draft reference genome sequence of the bobcat and comparative analysis of genome wide patterns in polymorphism	Jennifer Broderick†	Duquesne University
3:20pm – 3:40pm	Population genetics of a reintroduced population of bobcats and its relevance for felid management	Cassandra Miller-Butterworth	Penn State Beaver
3:40pm – 4:00pm	Comparison of cytology and histopathology for diagnosis of avian pox in wild turkeys	Justin Brown	PA Game Commission

† Student presentation

Concurrent Session 2

Saturday, April 1, 1:00 – 4:00pm
Acorn Room

Moderator: Margaret Brittingham

Time	Title	Presenter	Affiliation
1:00pm–1:20pm	Quantifying threats that impact federally listed threatened and endangered species	Alexander Sandercock†	Millersville University
1:20pm – 1:40pm	Relationship of invasive berry producing plants on bird communities and an assessment of observer bias on avian transect studies	Zachary Adams†	Juniata College
1:40pm – 2:00pm	The effects of roads on bird species occupancy in Pennsylvania's core forested landscape	Kimberly Serno†	Penn State University
2:00pm – 2:20pm	Changes in bird community composition following eastern hemlock decline	Matthew Toenies†	Penn State University
2:20pm – 2:40pm	Modeling Potential Habitat for Pheasant Population Restoration in Pennsylvania	Lacey Williamson†	Penn State University
2:40pm – 3:00pm	**BREAK**		

† Student presentation

Concurrent Session 3

Saturday, April 1, 1:00 – 4:00pm
River Birch Ballroom

Moderator: Robert Blye

Time	Title	Presenter	Affiliation
1:00pm–1:20pm	Managing ruffed grouse populations in the age of West Nile virus: the case for adaptive management	Lisa Williams	PA Game Commission
1:20pm – 1:40pm	The North American Model of Wildlife Conservation: through the eyes of the North American river otter	Tom Serfass	Frostburg University
1:40pm – 2:00pm	Regional Wildlife Action Plan opportunities: integrating species, habitats, and threats to identify actions	Elizabeth Crisfield	Strategic Stewardship Initiative
2:00pm – 2:20pm	Osprey recovery in Pennsylvania: a conservation success story	Doug Gross	PA Game Commission
2:20pm – 2:40pm	A quantitative survey of bird SGCN in boreal peatlands throughout Pennsylvania	David Yeany	Western Pennsylvania Conservancy
2:40pm – 3:00pm	**BREAK**		
3:00pm – 3:20pm	Using maximum entropy modeling to approximate the distribution and habitat associations of the northern long-eared bat	Jason Collins	Normandeau Associates
3:20pm – 3:40pm	The bats of Michaux state forest: spatial and temporal use of public lands as revealed using mobile acoustic transects	James Hart	Wildlife Specialists
3:40pm – 4:00pm	The effects of forest stand type and prescribed fire frequency on bat activity at Fort Indiantown Gap, PA	Christopher Hauer	Temple University

Poster Session

Saturday, April 1, 5:00 – 6:00pm
Full Moon Lounge

Title	Presenter	Affiliation
The *RoarPlex* – a novel tetranucleotide microsatellite and sex-ID panel for accurate individual identification of felids and sharing of genetic data across institutions	Colton Ames†	Duquesne University
Surveillance for lymphoproliferative disease virus in wild upland game birds in Pennsylvania	Justin Brown	PA Game Commission
Quantitative food webs associated with recently metamorphosed Fowler's toads (*Anaxyrus fowleri*) in four habitat types	Rachel Berry†	Clarion University
Testing the effectiveness of small mammal identifiable markers in the field	Tyler Bridgehouse†	Millersville University
Variation in arthropod communities associated with native and nonnative vegetation at the Baker-Henry peace chapel and nature preserve in central Pennsylvania	Max Ferlauto†	Juniata College
Examining the influence of rodent abundance on the nest success of the golden-winged warbler (*Vermivora chrysoptera*) in managed habitats of central Pennsylvania	Teresa Illo†	Indiana University of Pennsylvania
Feeding ecology of the eastern red-backed salamander (*Plethodon cinereus*) in forest patches dominated by fern	Dylan McGlone†	Clarion University

Continued next page

Poster Session, continued

Saturday, April 1, 5:00 – 6:00pm
Full Moon Lounge

The regal fritillary butterfly (*Speyeria idalia*) reintroduction	Erika McKinney	Temple University
Barriers to managing for climate change: a case study	David Muñoz†	Penn State University
Spatial, morphometric, and reproductive characteristics of gray squirrels (*Sciurus carolinensis*) harvested in central Pennsylvania	Kyle Santerian†	Juniata College
Observations and potential trophic implications of the exotic fruit fly, *Drosophila suzukii*, on the Allegheny National Forest ecosystem	Scott Stoleson	USDA
Development of the *field isolation and amplification of DNA assay* (FIA-DNA) kit: a revolutionary method for species identification of unknown samples	Nickolas Walker†	Duquesne University
Susceptibility of ruffed grouse (*Bonasa umbellus*) to West Nile virus in Pennsylvania	Lisa Williams	PA Game Commission
Prevalence of West Nile Virus in Ruffed Grouse (*Bonasa Umbellus*) In Pennsylvania: Evidence of Population Impacts	Lisa Williams	PA Game Commission

† Student poster

Plenary Speakers

Overview of strategies and approaches for dealing with current wildlife conservation challenges

During the last twenty years, the wildlife profession has been facing unique challenges including global climate change, increased instability in funding and negative public sentiment in regards to science. Interdisciplinary approaches are needed to implement, test and validate new strategies to address these challenges. For example, with a warming climate, proactive decision making needs to be guided by models of landscape change and adaptive management to ensure the evolutionary potential of wildlife. Expanded efforts are needed to increase public understanding of the North American Wildlife Conservation Model, while also adapting this model to be more inclusive and diversified for wildlife conservation funding. Increased engagement with citizen science efforts and marketing the societal benefits of being in nature can improve public perception of the wildlife science field. The more we get people in nature, the more people will support wildlife, wild places and the efforts of wildlife professionals addressing conservation challenges.

Aaron Haines is a Certified Wildlife Biologist and Assistant Professor of Conservation Biology at Millersville University. Dr. Haines's research has involved many aspects of wildlife conservation and management including mapping migration pathways for birds of prey, management of bobwhite quail, population modeling of wild felids, GIS and conservation planning, conservation law enforcement and evaluation of the Endangered Species Act. Dr. Haines involves students in his research through his Applied Conservation Lab at Millersville.

Linking Research and Management to Solve Complex Problems

The wildlife profession is ideally set up for rapid learning of ecological systems because natural resource agencies make management decisions based upon a system of management units (e.g., water bodies or land areas), which readily provides opportunities for replication of treatments and controls. However, social and political challenges often make it difficult for administrators to support research via consistent regulations or policies (i.e., manipulating seasons and bag limits according to a pre-approved research design). Also, there is an inherent tension between researchers and natural resource managers: researchers would like to address testable hypotheses whereas managers oftentimes simply need information to make decisions or inform stakeholders (e.g, what is the deer density?). Despite these challenges, a variety of decision tools (structured decision making, adaptive management, and stochastic dynamic optimization) can effectively link research and management and, if embraced by decision makers, can separate values from science when making natural resource decisions. Furthermore, these decision tools provide an approach for tackling complex management problems, identifying research that results in the greatest reduction in decision uncertainty, and even test ecological theories while making management decisions.

Duane Diefenbach works for the U.S. Geological Survey as the unit leader for the Pennsylvania Cooperative Fish and Wildlife Research Unit at The Pennsylvania State University. Dr. Diefenbach's primary research interest is empirically evaluating models used to estimate wildlife population parameters and a secondary interest is the management of game populations. He has studied white-tailed deer for over 15 years and is currently co-leading a research project called The Deer-Forest Study, which is a multidisciplinary study on forest regeneration as influenced by deer herbivory, competing vegetation, and soil conditions (http://ecosystems.psu.edu/deer) with colleagues in Penn State's Department of Ecosystem Science and Management. He has also studied grassland songbirds population dynamics on reclaimed surface mines, wild turkey harvest rates, snowshoe hare habitat use, and bear population estimation.

Bats and White-Nose Syndrome: Managing Amidst Crisis

Pennsylvania's hibernating bats were introduced to a novel pathogen in 2008. Management challenges encountered with this new epizootic were immediately dire, spanned multiple fields of expertise, and required a multi-disciplinary approach. The Pennsylvania Game Commission was in a position to respond early to this disease, with many of the outcomes of this involvement as a focus of this presentation. Discussed in addition will be how shifts in scale of the problem, varied management responses past and present, the effectiveness of working collaboratively, and finally politics and management have all shaped the response and outcome of the future of bats.

Greg Turner is the Endangered and Non-Game Mammal Section Supervisor with the Pennsylvania Game Commission and is a certified wildlife biologist with research experience in disease ecology, behavior, genetic diversity, and metabolic and reproductive physiology. He works professionally toward the conservation and management of Pennsylvania's non-game mammals, including all listed species of concern. A significant priority in these duties has been directed toward monitoring and researching many aspects of bat ecology, including focuses on hibernation dynamics, behavior, and movement parameters of bats associated with migration, foraging, and mating activities. Since 2007 extensive efforts have focused on understanding the spread, impacts, abatement, and physiological parameters of White-nose Syndrome (WNS) in North American bats. Specific WNS related research including both published and works in progress include: development a new and non-lethal diagnostic and measurement technique for WNS infections, changes in hibernation physiology, microclimate influences on WNS progression, examining changes in infection load compared to length of time colony exposed to WNS, examining changes in body mass in response to WNS, and the use of antifungal agents to treat captive wild populations with WNS.

What's that smell? Trained biosensors on the trail of avian influenza

Human health is intimately linked with the health of our ecosystems and the animals that occupy them. Devastation of animal populations and transmission to humans (zoonoses) are frightening consequences of some infectious diseases. It has long been speculated that many diseases might be diagnosed in infected individuals on the basis of body odors which constitute the volatile metabolome. Odors associated with illness are often avoided by members of the same species, presumably acting to reduce the probability of disease spread. Conversely, it might be adaptive for the pathogen to induce chemosensory changes in the host that increase both inter- and intraspecific interactions, thereby increasing transmission rates. We previously demonstrated alteration of the volatile metabolome in waterfowl that had been experimentally infected with a low pathogenic avian influenza using two independent assays. In bioassays, mice were trained in a Y-maze to discriminate between feces derived from infected and healthy donors on the basis of volatile odors. In chemical assays, fecal samples were subjected to gas chromatography mass spectrometric analyses and chemometric modelling of the chromatographic data. These laboratory results gave rise to the prediction that service animals (e.g. dogs) could be trained to identify infected individuals or populations in natural systems. As a preliminary step toward demonstrating that our techniques could be transferred directly to dogs, we sought to train a domestic species (ferret) to identify infection with avian influenza. Our results clearly demonstrated the feasibility of deploying trained biosensors for avian influenza surveillance. When trained ferrets were presented with feces from four healthy mallards and one mallard infected with low pathogenic avian influenza, they identified the feces of the infected donor with high accuracy. This work provides a strong rationale for moving to the next step – use of trained dogs under field conditions to monitor diseases such as avian influenza.

Bruce Kimball is a research chemist with the USDA Wildlife Services National Wildlife Research Center (NWRC) and conducts his research at the Monell Chemical Senses Center in Philadelphia, PA. Bruce received his M.S. (Chemistry) from Arizona State University and his Ph.D. (Ecology) from Colorado State University. His research is conducted at the interface of ecology and chemistry, with a focus on animal behavior and the chemical signals that identify friend, foe, and food. The goal of his research is to better understand wildlife behavior and develop tools to minimize wildlife damage to agricultural resources.

Overcoming the challenges associated with the implement of landscape-scale forest bird conservation across private and public lands in Pennsylvania

Several studies have recently examined nesting and post-fledging habitat selection of many at-risk, forest-dependent songbirds. Collectively, this research provides a substantial body of evidence that suggests forest bird conservation is intimately tied to landscape context and configuration and within-stand structural complexity, regardless of nesting guild. As such, increasing forest age class diversity has become an important focus of many forest-bird conservation strategies. However, there are considerable economic, logistical, and ecological challenges that inhibit such efforts. In 2011, a multi-agency partnership was initiated with the intent to implement science-based habitat guidelines for Golden-winged Warbler and associated species across public and private forests in Pennsylvania. To date, this partnership has created over 20,000 ha of Golden-winged Warbler nesting habitat and continues to grow in membership and long-term vision. The Pennsylvania partnership is proving to be an example of forest-bird conservation that transcends ownership boundaries and operates at biologically meaningful spatial and temporal scales. This presentation will provide examples of successes and insight as to how a well-funded and well-organized partnership can overcome the many constraints that can often inhibit large-scale conservation implementation.

Jeff Larkin is a professor of Wildlife Ecology and Conservation at Indiana University of Pennsylvania and the Forest Birds Habitat Coordinator for the American Bird Conservancy. He received his B.A. in Biology from Ithaca College (NY) and his M.S. Forestry and Ph.D Animal Sciences from the University of Kentucky. His research often combines his expertise in forestry, wildlife ecology, and conservation implementation. His research findings are often synthesized into applied information used by natural resource agencies to enhance or develop management guidelines. Since 2011, he has worked closely with NRCS to deliver conservation programs to benefit forests, forest birds, and forest owners. In this position as American Bird Conservancy's Forest Birds Habitat Coordinator, he directs a team of conservation planners and foresters who assist NRCS with the delivery of private lands conservation programs that target forest wildlife including golden-winged warblers, American woodcock, and cerulean warblers throughout the Appalachian states. His position with ABC also enables him to serve as the science advisor for NRCS's Working Lands For Wildlife-Golden-winged Warbler program.