Waterfowl and Wetlands @ ESF

2021 Annual Report

Ecology and Management of Waterfowl class – Fall 2021 at Northern Montezuma Wildlife Management Area

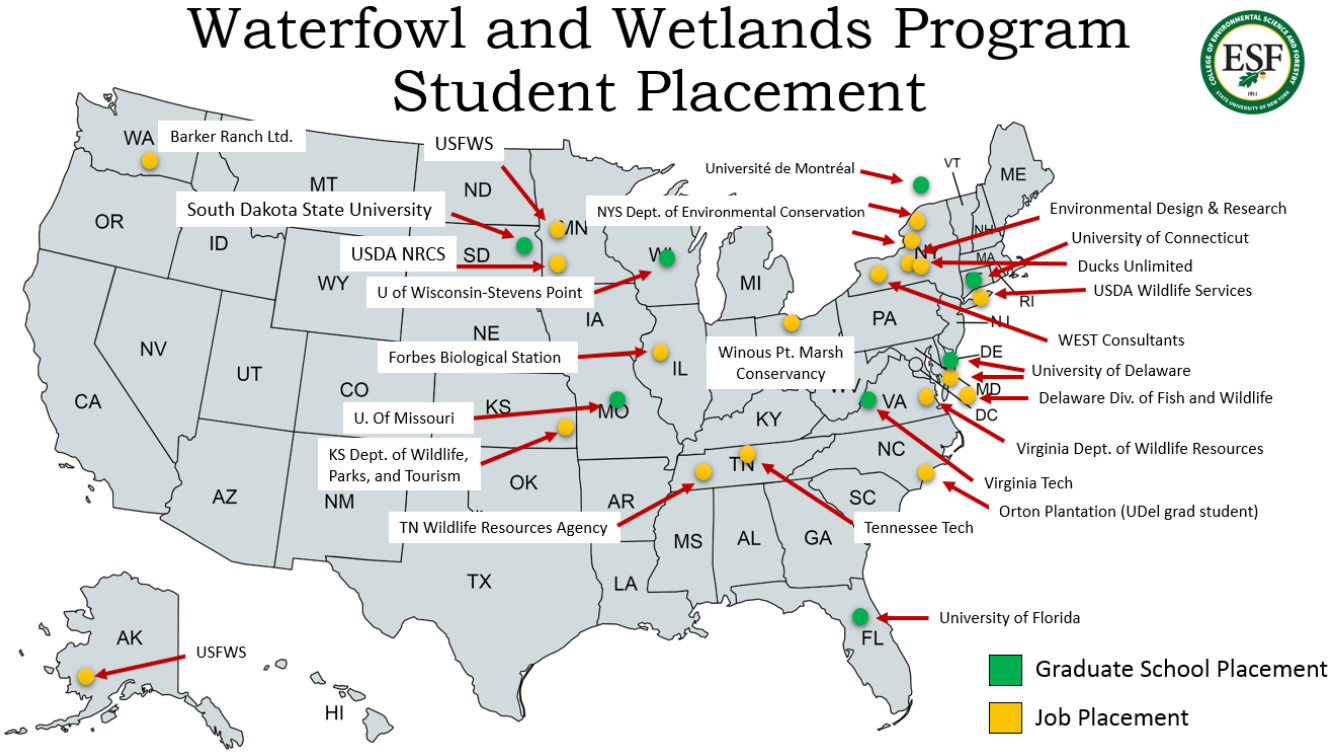
Our Mission and Vision are clear and we are meeting them with resounding success.

Mission: Train the next generation of waterfowl and wetlands scientist, conservationists, and managers while producing the robust science needed by our conservation stakeholders.

Vision: Populate the Atlantic region and beyond with highly-skilled young professionals that have a hunter-conservationist ethic to ensure the future of waterfowl, other wetland-wildlife, and people.

Years of success by waterfowl and wetlands scientists, conservationists, and managers included development of the North American Waterfowl Management Plan (NAWMP), one of the greatest conservation achievements of the last century, and the North American Wetlands Conservation Act – the primary mechanism to support habitat conservation actions outlined in NAWMP. Thereafter, greater than 40% of programs focused on waterfowl and wetlands were lost at North American universities after faculty retired or passed, and these positions were not filled with similar expertise. The years that followed saw a decline in well-trained students capable of sustaining these past successes.

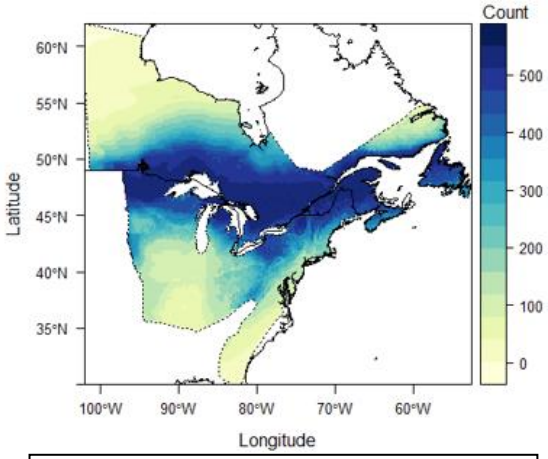
Waterfowl and Wetlands @ ESF is reversing this decline by training the next generation. We do this by teaching undergraduate courses in waterfowl and wetlands, conducting graduate student driven research with a diversity of collaborators, and mentor students beyond graduation to help ensure gainful employment or placement into graduate school.



COMPLETED PROJECT

Natal Origins and Breeding Habitat Associations of the Eastern Mallard Population

Sam Kucia completed his Master's degree in Fish and Wildlife Biology and Management in December 2021. The number of eastern mallards has been declining for 20 years but few studies existed to help inform management actions to recover this population. Sam's study is the first of many from our lab to address this information deficit. Sam used stable isotope analysis to determine where juvenile Mallards harvested in the Atlantic flyway were produced and investigated land cover associations of breeding Mallards in the region of Mallard decline.



Depiction of probable origins of juvenile Mallards harvested along the Atlantic flyway during the 2018-19 and 2019-20 hunting seasons.

From a sample of 1,254 wings feathers from the 2018-19 and 2019-20 hunting seasons, Sam determined that 64% of the sample had isotope signatures consistent with origins in Canada. Sam also detected that all states harvested Mallards that had origins from the United States and Canada throughout their entire hunting season. Results contrast long-term breeding population estimates which suggest the majority of breeding pairs of eastern Mallards occur in the U.S. He recommends further investigation into reasons for spatial disparities in eastern Mallard production. These results are also informative for ongoing population modeling activities by the US Fish and Wildlife Service and Atlantic Flyway Technical Section.

Sam also used Mallard breeding pair abundance from 1,322 1-km^2 plots surveyed in the Atlantic Flyway Breeding Waterfowl Plot Survey and detected that Mallards were strongly associated with areas of human development, but also woody and emergent wetlands. Fewer Mallard breeding pairs were found in areas with cultivated crops. Research is needed to investigate how human development is affecting breeding Mallard survival and productivity. Immediate land protection and conservation recommendations include restoring historical wetlands from agricultural lands to emergent and woody wetland which were positively associated with Mallard breeding pairs.

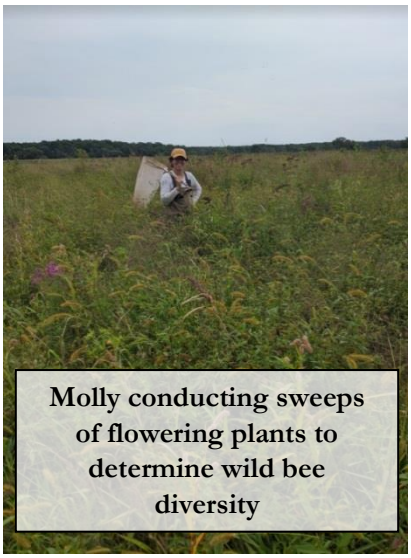
After completing his degree at ESF, Sam matriculated at South Dakota State University to complete his PhD in collaboration with Northern Prairie Wildlife Research Center.

Financial support was provided by Delta Waterfowl, Ducks Unlimited, Waterfowl Research Foundation, Long Island Wildfowl Heritage Group, Robins Island Foundation, and additional philanthropy. Technical assistance was provided by the Hobson Isotope Lab at Western University.

COMPLETED PROJECT

Response of Wild Pollinator Assemblages to Management of Restored Wetlands in Central New York, USA

Molly Jacobson completed her Master's degree in Conservation Biology in April 2021 (co-advised with Dr. Melissa Fierke). Her research project determined how management of restored wetlands influences flowering plant abundance and wild bee diversity. In 2019 and 2020, Molly sampled over 30 wetlands each month from June to September at Northern Montezuma Wildlife Management Area, Montezuma National Wildlife Refuge, and Seneca Meadows Wetlands Preserve. Most of these areas were previously drained wetlands that had been farmed for decades, largely at the expense of fish and wildlife. Funding to restore these wetlands came from the NY Department of Environmental Conservation, the North American Wetlands Conservation Act, and Ducks Unlimited with the focus of restoring habitat for migratory birds, especially waterfowl. While the benefits to birds have been widely studied by our lab and others, we needed information on the benefits to flowering plant and bee diversity to inform restoration and management actions. Molly conducted plant surveys, set pan traps, and conducted sweep-netting to quantify plant and bee diversity as well as understand pollinator-plant associations. She collected and identified an astonishing diversity and abundance of bees; 9,046 individual bees of ≥ 113 different species. Notably, Molly found several rare pollinators, and some that specialize on only one plant. She also detected that flowering plant diversity decreased with increasing amounts of open water and invasive cattail cover. Interestingly, two management techniques used to create food for hungry migrating waterfowl are 1) water removal to mimic seasonal drying and stimulate annual and flowering plant germination, and 2) controlling invasive cattail that competes with diverse, native plants. So, what is good for birds also seems good for bees.



Molly conducting sweeps of flowering plants to determine wild bee diversity

After completion of her degree, Molly joined the Restoration Science Center at ESF as a Pollinator Ecologist with generous philanthropic support.

Financial support was provided by Friends of Montezuma, Seneca Meadows Inc., Edna Bailey Sussman Foundation, Maurice M. & Annette B. Alexander Wetland Research Award. Leroy C. Stegeman Award in Invertebrate Ecology, Ducks Unlimited, Cargill Inc., Long Point Waterfowl and Wetlands Research Program of Birds Canada, Eaton Birding Society, and Sigma Xi Scientific Research Honor Society

COMPLETED STAFF PROJECT

Winous Point Marsh Conservancy

Origins and Genomics of Mallards Harvested in Northwestern Ohio

In collaboration with John Simpson and Brendan Shirkey of Winous Point Marsh Conservancy and Dr. Philip Lavretsky of the University of Texas – El Paso, we developed a concentrated, single-season case study to investigate the origins and genomics of Mallards harvested in Sandusky and Ottawa counties of northwestern Ohio. The region is a confluence of Mallards from the Mississippi and Atlantic flyways and enabled us to investigate the extent of game-farm genes farther west than the Atlantic Coast. We sampled 296 hatch-year Mallards from October to December 2019 to determine their origins by stable isotope analysis and applied genetic techniques to determine proportions of pure wild Mallards, pure game-farm Mallards, and filial categories (e.g. wild Mallard × game-farm Mallard = F1; F1 × wild Mallard = F2; and so on).

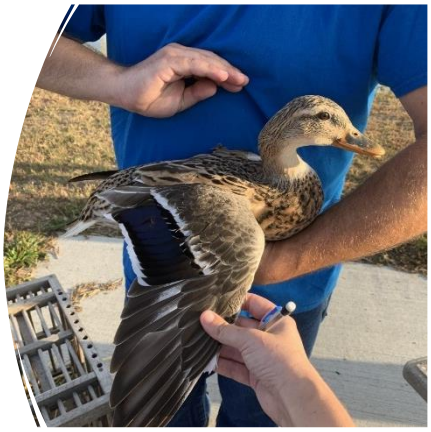
Nowadays, ~92% of Atlantic Coast Mallards have substantial game-farm gene input (≥ 10% assignment probabilities). In contrast, Dr. Lavretsky and colleagues previously detected that ~40% of sampled Mississippi and 3% of more western North American Mallards possessed substantial game-farm Mallard ancestry. Interestingly, these previous efforts working with Mallards randomly sampled across Mississippi flyway states a decade ago was nearly identical to what we detected, with 40% of Mallards from northwestern Ohio marshes possessing substantial game-farm Mallard ancestry. Further, the majority of Mallards at this location were categorized as hybrid swarm (82%) and only 10.5% were pure wild Mallards. F1 to F5 hybrids were 9% of our sample, 3 of which were F1 hybrids (pure game-farm × pure wild cross), indicating there is ongoing reinforcement of game-farm genes into the hybrid swarm of our sample. We also detected that wild Mallards originated from farther north than hybrid Mallards. These results suggest that game-farm introgression into the wild Mallard population is not isolated to the eastern population of Mallards in North America, but may be more widespread than previously detected. The stable percentage of game-farm genes for a decade also highlights potential for a barrier to game-farm introgression into mid-continent Mallards. Considering that game-farm Mallard introgression into the eastern Mallard population has been presented as a viable hypothesis for eastern Mallard decline, understanding movement of game-farm genes out of the Atlantic flyway into the core of the North American Mallard breeding region is important.

Funding was provided by the Long Point Waterfowl and Wetlands Research Program of Birds Canada and Waterfowl Research Foundation.

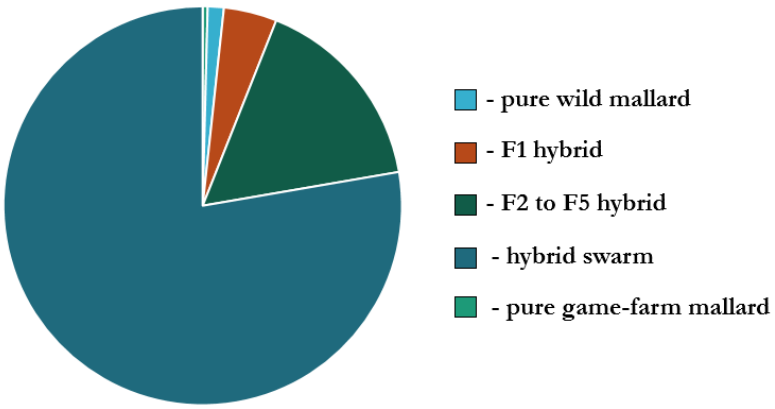
ONGOING PROJECT

Origin and Genetics of Pre-season Banded Mallards in the Atlantic and Mississippi Flyways

An important assumption of banding data is that populations do not move during the banding period and that recruitment is similar among breeding populations. Estimates using banding data suggest that nearly 80% of the mallards banded in the northeastern US are also harvested in those states. However, what if the assumption of movement of mallards during preseason banding was violated? This would have substantial consequences on how we interpret banding data and, if mallards in the Canada and US have different population trends, this could complicate our capacity to manage these two regions separately. This is the question that graduate student **Kayla Harvey** will answer. What are the origins of the hatch-year (juvenile) mallards that we band in northern portions of the Atlantic and Mississippi flyways? Kayla also aims to determine if the genetics of mallards varies by origin because mixing of game-farm mallard genes into the wild mallard population may have survival and reproduction consequences. Kayla sampled feathers (origin) and blood (genetics) from mallards during preseason banding to conduct stable isotope and genetic analyses in July to September from 2019 to 2021.



Preliminary results from 2019 and 2020 suggest that about 50% of mallards banded originated from that location and 50% moved into that location to be banded.



Similar to past studies in the Atlantic flyway, genetic analyses from 2019 and 2020 indicate that most mallards are part of a hybrid swarm of wild and game-farm genes and that pure wild mallards are relatively uncommon.

Samples from 2021 are currently being analyzed and the final dataset will include samples from Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, Pennsylvania, New Jersey, Quebec, Ontario, Ohio, Michigan, Indiana, Illinois, and Wisconsin. Kayla is expected to complete her Master of Science degree by mid-2022.

Financial support was provided by University of Texas El Paso, Long Point Waterfowl and Wetlands Research Program of Birds Canada, Delta Waterfowl, Ducks Unlimited, Waterfowl Research Foundation, and Camp Fire Conservation Fund. Technical support provided by the Atlantic Flyway Technical Section, Mississippi flyway biologists, Michigan State University, and Western University.

ONGOING PROJECT

Comparisons of Morphology and Feeding Efficiency Between Wild and Game-Farm Mallards

Susannah Halligan is a Master of Science candidate who is studying the feeding efficiency of wild and game-farm mallards on seeds of various sizes. She also is determining if differences in bill morphology and body size exist between wild mallards and game-farm mallards. Susannah predicts that wild and game-farm morphology will differ because game-farm mallards are selected based on human aspects that are different from natural pressures that affect survival and reproduction. During summer 2021, Susannah completed her first research season at the Forbes Biological Station with collaborator Dr. Auriel Fournier.

For autumn 2021, **Laura Wallace** (ESF 20' – BS Wildlife Science), continued the study through November. Studies of bill morphology in Europe detected that game-farm mallard bills are shorter, taller, and have fewer lamellae (the tooth like structures used to strain food) than their wild counterparts, but a similar study has not been conducted in North America. We also will obtain internal and external 3D imagery of duck heads using the CT scanner at the Smithsonian Institute to determine bill volume and other cranial measurements to estimate relationships with feeding efficiency. We suspect that game-farm mallards are efficient at feeding on corn and commercially available game-bird pellets, but less adapted to eat small native seeds like those from pigweed and barnyard grass. This study provides a critical investigation into potential mechanisms for mallard decline because limited reproduction in the US as detected by Sam Kucia (see above) could partially explain the mallard decline. Reduced duckling output could result from hen mallards of with substantial input of game-farm genes and morphology not acquiring adequate nutrients for reproduction because they have bills and body sizes artificially selected for by domestic breeders that are maladaptive in the wild.

This project is a collaborative effort with Dr. Philip Lavretsky (University of Texas – El Paso), Dr. Auriel Fournier (Forbes Biological Station), Dr. Brian Davis (Mississippi State University), and Dr. Helen James (Smithsonian National Museum of Natural History).

Funding is provided by the National Science Foundation.

ONGOING PROJECT

Estimating Origins of Greater and Lesser Scaup in the Atlantic Flyway Using Stable Isotope and Vector Mark-Recapture Techniques

Brittnie Fleming is a Master of Science candidate leading our study about the origins of Greater and Lesser Scaup that migrate to and winter along the US Atlantic coast. For scaup, banding data traditionally used to link breeding locations with migration routes and wintering areas of waterfowl are skewed towards western North America. Simply, areas of Quebec where scaup breed in eastern North America are relatively inaccessible and scaup densities are typically too low to justify the cost per band. Dr. Schummer and colleagues previously tracked scaup marked with satellite transmitters and established that traditional breeding ground surveys may underestimate numbers of breeding scaup by 50% in eastern North America. Further, Jake Chronister (MS 20') and Dr. Schummer established that recoveries of lesser scaup are occurring farther east through time. Combined these results may suggest that Quebec produced scaup contribute to harvestable populations of scaup in some areas of the Atlantic Coast more than previously detected.

Seasonal technician, Aaron Kleinhenz (BS 20'), releases a banded Lesser Scaup. *Aaron is currently employed by Virginia DWR*

This evidence prompted Brittnie to initiate a stable isotope project which included collecting feathers from scaup banded on Long Island in winters 2020 and 2021, collaborate with Maryland DNR to obtain feather samples from winter banding in 2021, and obtain scaup wings from the USFWS Parts Collection Survey from throughout the Atlantic flyway in 2021. Brittnie is using stable isotope approaches to produce estimates of Greater and Lesser Scaup origins and a novel vector band recovery approach to estimate proportions of Greater and Lesser Scaup migrating through and winter along northern, mid and southern portions of the Atlantic Coast that come from Quebec.

Cole Tiemann, senior technician on this project for 2-years, recently matriculated at the University of Delaware to study green-winged teal in North Carolina. Brittnie expects to complete her MS thesis by May 2022 with a manuscript for publication soon thereafter.

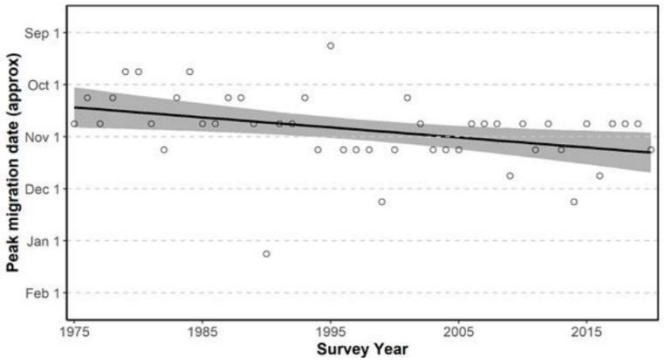
Primary financial support is provided by Long Island Wildfowl Heritage Group. Additional funding provided by Waterfowl Research Foundation, Camp Fire Conservation Fund, Central New York Wildfowlers Association. Technical assistance provided by the Hobson Isotope Lab at Western University, the USFWS Parts Collection Survey, and Maryland DNR.

ONGOING PROJECT

Analysis of Kansas Waterfowl Survey Data

Ben West is a PhD student in our lab focused on relating weather and climate change to waterfowl autumn migration, waterfowl-based recreation (including hunting), and the economic consequences of changing participation in waterfowl-based recreation. He is funded by Kansas Department of Wildlife, Parks, and Tourism (KDWPT) through Federal Aid in Wildlife Restoration (Pittman-Robertson funding). Kansas Bi-weekly Waterfowl Survey (KBWS), has long-term waterfowl migration monitoring program, 1959 to present. In the future, this project will include other North American datasets and including the community science platform - eBird.

Preliminary data summaries indicate that species such as Mallards, Canada Geese, and Snow Geese are wintering at many sites throughout Kansas nowadays, whereas diving and dabbling ducks primarily use Kansas as an autumn and spring migration stopover. For ducks, timing of migration is variable, and some of this variation is influenced by weather. Previous work by Dr. Schummer and colleagues have shown that movements of some dabbling ducks, especially Mallards, are strongly associated with cold temperatures, snow cover, and snow depth. These weather-related factors have been combined into a "weather severity index" or WSI. Decreases in WSI driven by climate change are expected to delay migration in these species. **Preliminary analyses of the KBWS show nearly a month delay in peak autumn migration timing for non-Mallard dabbling ducks between 1975 and 2020.**



Surprisingly, there was no statewide change in Mallard peak autumn migration timing in Kansas, but the timing of peak migration varied substantially among years, which might suggest greater flexibility in timing of migration of this foraging generalist species.

Ultimately, this work will enable the KWDPT to better serve their waterfowl hunting public. Serving waterfowl hunters is important because studies suggest that hunters are among the most active conservationists.

ONGOING PROJECT

Winter foraging ecology of birds and mammals on staghorn sumac in central New York and the Finger Lakes region

Sam Krebs is Masters candidate studying cues used by birds and mammals for foraging on staghorn sumac.

Staghorn sumac is considered a super-plant. Not be confused with poison sumac, staghorn sumac is beneficial to insects, wildlife, and people. Staghorn sumac is a common throughout the northeast and upper mid-west US and southeast Canada. All parts provide some benefit to wildlife. Deer, turkey, and songbirds eat the fruit. Rabbits and deer feed on the bark of the young plants during winter. Native bees collect pollen from the flowers and nest in the hollow stems. The eastern bluebird, the NY state bird, relies heavily on staghorn sumac seeds to survive winter.

Stem rabbit browse

Staghorn sumac berries

Staghorn sumac contains many beneficial compounds, including vitamins, minerals, proteins, unsaturated fatty acids, dietary fibers, and phenolic compounds (PCs). Phenolic compounds are ubiquitously distributed bioactive plant chemicals found in most plant tissues and are valuable antioxidants in small concentrations. These compounds are a defense mechanism to herbivory in plants and play a role in inhibiting seed germination. PCs also absorb ultra-violet (UV) light, so as these compounds decline seasonally and starches activate, birds that see in UV may be able to use this as cue for when foraging on sumac berries is most nutritious. Indeed, most birds do not feed heavily on staghorn sumac berries until late winter when PCs begin to decline. Rabbits also feed heavily on the bark during winter, but no prior studies have analyzed PCs to determine if there are antifeedant compounds to deter mammal foraging.

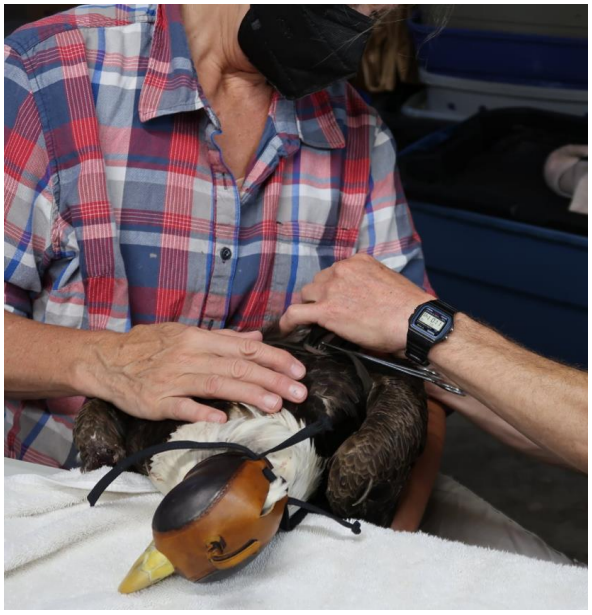
Sam is sampling staghorn sumac berries and bark from September to March to determine changes in PCs and UV reflectance while gathering observations of seasonal bird and mammals use of the plant to test his hypothesis.

Financial support is provided by the Friends of the Montezuma Wetlands Complex, Seneca Meadows Wetlands Preserve, and SUNY Oswego

ONGOING PROJECT

Assessment of extended chelation of lead-poisoned Bald Eagles

Alexa Blunck completed her Masters of Professional Studies internship this summer working with Bald Eagles in lead-poisoning rehabilitation at Friends of the Feathered and Furry Wildlife Center in Hunter, NY. Wildlife rehabilitators use a method called chelation that essentially "scrubs" the eagle's blood clean of lead before they are released back into the wild. However, the amount of chelation time and success rate of releases, post-chelation, are relatively understudied. The hypothesis is that current chelation time is too short and bald eagles released back into the wild that are later found dead, succumb to elevated lead levels. These lead levels may result from stress of release and mobilization of stored lead into the blood when the eagles metabolize tissues to survive. As such Alexa, will assist in chelation of bald eagles for extended periods of time at the facility before releasing them with a GPS backpack to track their movements and survival. She will compare these results with those of typical, shorter chelation times from other facilities and published research.



ONGOING PROJECT

Sean Peterson is a Post-doctoral Research Associate in our lab working collaboratively with the New York State Department of Environmental Conservation (NYS DEC) to fine-tune their survey methodology for secretive marsh birds. DEC has conducted annual secretive marsh bird surveys from 2010 – 2019 to document the occurrence and assess population trends of several species. The NYS DEC Marsh Bird Monitoring Program (MBMP) targeted Virginia rail, sora, king rail, American bittern, least bittern, black rail, clapper rail and pied-billed grebe as primary focal species. Secondary focal species included marsh wren, willow flycatcher, swamp sparrow, black tern, American coot, common gallinule, and Wilson's snipe. The MBMP is a combination of a long-term marsh bird conservation project (2004−2006) and New York's participation in the National Marsh Bird Monitoring Program Pilot Study coordinated by the U.S. Fish and Wildlife Service.

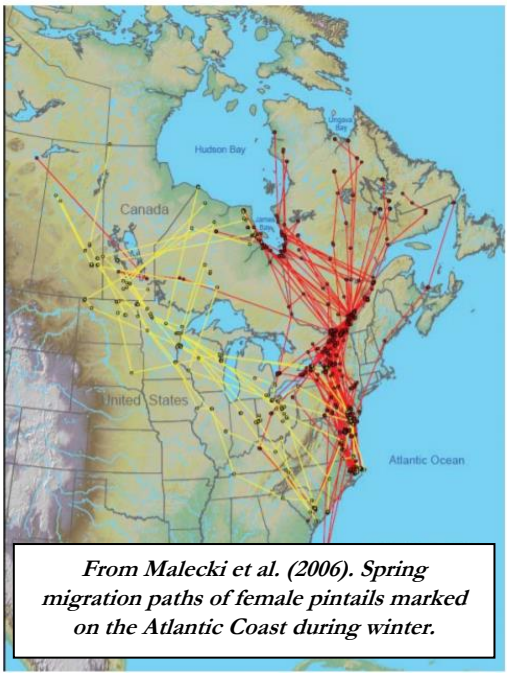
The goal of the MBMP was to determine population trends of the focal marsh bird species. The specific objectives included: (1) estimating temporal trends in marsh bird distribution and occupancy to inform management decisions regarding population status; (2) determining changes in the annual distribution and occupancy to inform regulator decisions for migratory game bird species; and (3) document species-specific habitat associations at multiple scales to inform habitat management on state-owned wetlands. In collaboration with NYS DEC, Sean is investigating analytical techniques able to estimate precisely the trends in occupancy and abundance of these marsh birds and provide additional options for methods (field and analytical) to attain the desired confidence in trends in occupancy and abundance estimates in NY State.

ONGOING PROJECT

Origins of Northern Pintails Harvested in the Atlantic and Mississippi Flyways

Pintails harvested in eastern North America come from 3 main breeding populations in the prairies, Alaska, and the east. In the east, pintails primarily breed around Hudson and James bays and northern Quebec. Apparent increases in the number of pintails observed in the east have people suspecting that the eastern pintail population may be increasing relative to pintail breeding populations elsewhere.

Further, prior research on pintails marked with satellite telemetry units on Atlantic Coast wintering areas revealed that 80% of these females (n = 55) used an eastern migration corridor and all but 2 settled in the southern James Bay lowlands of Ontario or farther east. This is further corroborated by counts of ~35,000 pintails during peak migration in the Montezuma Wetlands Complex of central New York alone. On opening week of waterfowl season, harvest of pintail in the Montezuma Wetlands Complex and elsewhere in NY is comprised largely of juveniles, although this percentage does fluctuate annually, presumably because of differences in annual production. However, where these ducks are produced and breed is difficult to determine using traditional banding because few pintails are banded in their eastern breeding region. Pintails breeding in eastern North America may contribute substantially to harvest in the Atlantic flyway and may have different productivity than those in the mid-continent and Alaska. Stable isotope analysis of feathers grown on breeding grounds provides a unique opportunity to sample pintails in abundance to determine summer origin and regional productivity.



From Malecki et al. (2006). Spring migration paths of female pintails marked on the Atlantic Coast during winter.

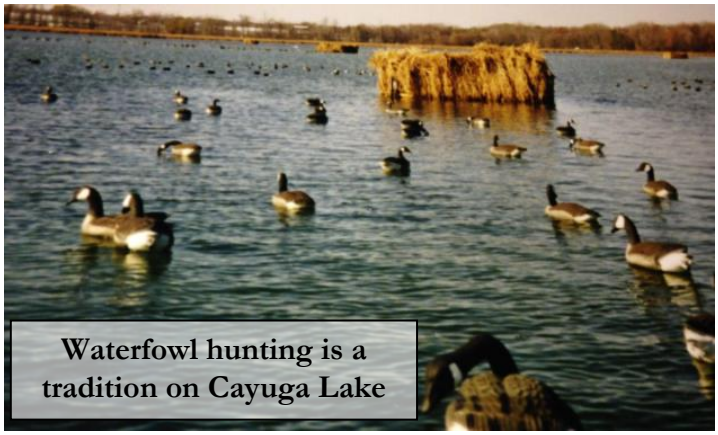
Dariusz Wojtaszek is leading this project while completing his MSc at Western University, London, Ontario, Canada. Our lab is providing financial, technical, and logistical support in collaboration with the Hobson Isotope Lab at Western University.

Funding is provided by the Long Point Waterfowl and Wetlands Research Program of Birds Canada and Waterfowl Research Foundation. Technical assistance provided by the USFWS Parts Collection Survey and Winous Point Marsh Conservancy.

ONGOING STAFF PROJECT

Nutrient and Microbial Source Tracking on Cayuga Lake

In collaboration with the Cayuga Lake Watershed Network and the Dr. Hyatt Green microbiology lab at ESF, we are determining nutrient inputs and conducting microbial source tracking on key streams entering the northern portion of Cayuga Lake. Nutrient loading and resulting harmful algal blooms in the Finger Lakes region threatens access to clean water and impacts the multi-billion-dollar recreation and tourism industry of the region. General degradation of water quality in the Finger Lakes region is ongoing with nutrients, pathogens, and sediments often exceeding acceptable levels. Levels are exceeded during storm and season runoff events, but chronic inputs can occur throughout the year from unabated pollutant sources. Cayuga Lake is relatively ice-free much of the winter and is a prime destination for migratory waterfowl in the Atlantic flyway. Situated directly south of the Montezuma Wetlands Complex that hosts > 2 million waterfowl use days each year (1 duck using the area for 1 day is 1 use day), Cayuga Lake is the next stop for waterfowl as shallow marshes freeze. Some of these ducks, geese, and swans stay the winter and others moving farther south. As such, Cayuga Lake water quality is important for migratory birds of the Atlantic flyway. The missing piece in water quality sampling has been microbial source tracking, which provides a new powerful tool to determine potential sources of nutrients entering the lake. Our team aims to determine links between nutrient-loading, that can lead to harmful algal blooms, and microbes such as *E. coli* bacteria. Microbial source-tracking will enable us to determine if bacteria associated with nutrient events primarily comes from humans, manure, or wildlife; important information for understanding how to preserve the pristine Finger Lakes waters for all users.

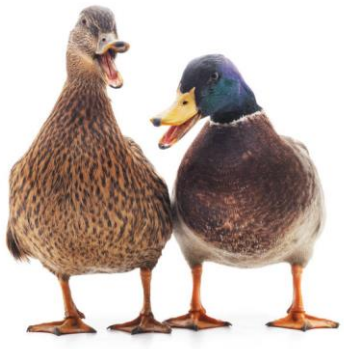


Waterfowl hunting is a tradition on Cayuga Lake

Redheads on Cayuga Lake

Funding for the project was generously provide by the Emerson Foundation through a grant to the Cayuga Lake Watershed Network and Seneca Meadows Preserve. **Annabelle Vogl** is an undergraduate technician on the project in her senior year. Annabelle will be attending Université de Montréal next year to start here PhD in Biology studying aquatic ecotoxicology and biochemistry. Thank you to all the volunteers that are making our extensive water and microbe sampling possible.

ON THE HORIZON



One of our favorite portions of the Waterfowl and Wetlands @ ESF Annual Report is highlighting our new and exciting students and projects starting in the next year or projects that we envision in the future.

We are certain that you haven't seen the end of our Mallard research in the Atlantic flyway.

We will continue to use novel techniques to produce robust, non-biased science to inform conservation of Mallards, other wetland-wildlife, and wild places.

NEW PROJECT STARTING WINTER 2022

Determining Habitat Selection, Behaviors, and Seasonal Movements of American Black Ducks and Mallards Wintering on Long Island

Riley Stedman (BS 20') previously worked with Team Duck at ESF and will lead this new project and matriculate as a Masters student in Fall 2022. Riley worked for West Consultants in NY and the USFWS in Minnesota before coming back to ESF for her graduate degree.

Welcome back Riley!

The lack of capacity to restore wetlands for waterfowl through traditional wildlife habitat programs on Long Island relative to other areas and recent black duck starvation events were the catalyst for the Long Island Wildfowl Heritage Group to investigate alternative approaches to meet the energy needs of wintering ducks on Long Island. LIWHG started a post-waterfowl hunting season, corn field chopping program in 2018 to provide supplemental food for waterfowl on eastern Long Island. This method chops about 5 acres of corn once every two weeks and places about 50-times the amount of food on the ground provided by a traditionally harvested corn field. The fields attract thousands of black ducks, mallards, and Canada geese, but to what extent they use these resources to meet their winter energy needs relative to freshwater and salt-marsh is unknown. Riley will track black ducks and mallards with GPS/GSM transmitters to determine relative contributions of these 3 habitats to foraging during winter on Long Island.

NEW PROJECT STARTING SUMMER 2022

Cody Sears currently works for the Adirondack Center for Loon Conservation (ACLC) and will matriculate at ESF in Fall 2022 as a Masters student. The project is a collaboration with Dr. Nina Schoch (ACLC) and Dr. Stacy McNulty (ESF-Newcomb).

Cody seeks to develop and publish protocols for nest raft deployment in the Adirondack Park.

He will evaluate the success of deployed nest rafts for use and nesting success, comparing that to the 20+ years of natural and platform nesting success data at ACLC. Published changes in the clarity of Adirondack Lakes, increases in tourism and lakeshore development due to the COVID-19 pandemic, and the documented decline in chick recruitment suggest this work is critical to the continued success of Common Loons in the Adirondack Park & beyond.

The sounds of loons will continue in the ADKs because of ESF students.

STAY TUNED! – NEW IDEAS and OPPORTUNITIES

Floodplains - Wetlands within floodplains have plant and wildlife communities adapted to seasonal flooding and drying events. These areas provide substantial foraging opportunities to waterfowl during flood events, but most sampling of food resources occurs within impoundments. After completing and publishing a 3-year study in the journal Wildlife Biology on wetland restoration in impoundment, we aim to to understand how seasonal flooding and a changing climate may affect carry capacity of wetlands in the central New York region.

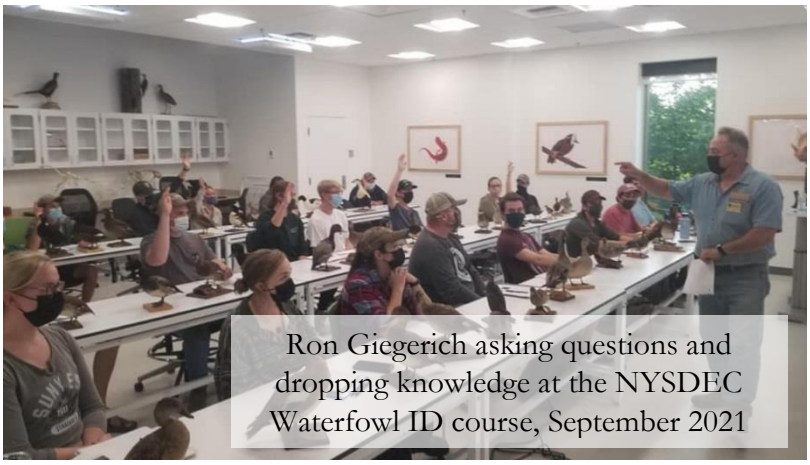
Pollinators – Waterfowl and Wetlands @ ESF is an integral member of the Restoration Science Center @ ESF. With the help of Pollinator Ecologist - Molly Jacobson (MS 21') we seek to understand how wetlands imbedded in diverse landscapes across NY provide pollinator benefits. Prior research at the Montezuma Wetland Complex suggested that wetlands provide unique and timely benefits to native bees. We aim to scale-up our focus to the larger NY region and beyond.

Food Plots for White-tailed Deer – Stay-tuned – our lab is strongly linked with the hunter-conservationist community at-large and we aim to have some exciting news in our 2022 ANNUAL REPORT. Who doesn't like a venison steak!

Ecology and Management of Waterfowl @ ESF

2021 was the fourth class of undergraduate and graduate students to complete Ecology and Management of Waterfowl at ESF under the Waterfowl and Wetlands Program @ ESF since Dr. Schummer revitalized this course.

The late Dr. Guy Baldassarre of ESF literally wrote the book for this course… and in 2017 we brought his course back to ESF. To date we've trained 73 students in this course, providing real-world application and preparing students for careers in waterfowl and wetlands conservation and preparing students for graduate programs studying waterfowl and their habitats. The student interest has been substantial - so much - that we now include Wetland Conservation and Management for Wildlife as a complimentary course during the Spring semester to provide expanded learning opportunities.



Ron Giegerich asking questions and dropping knowledge at the NYSDEC Waterfowl ID course, September 2021

To compliment this course, we also offered the New York Department of Environmental Conservation Waterfowl Identification course – a resume builder – but also required to hunt waterfowl on US Fish and Wildlife National Wildlife Refuges in New York. Retired Roosevelt Wild Life Collection Curator, Ron Giegerich, instructed the course.

Dr. Schummer explains the benefits of active wetland management for waterfowl, other wetland-wildlife, and people at Guy Baldassarre Memorial Marsh

Ducks Unlimited @ ESF

The COVID-19 pandemic made it increasingly difficult for students to engage in important extracurricular activities. We are happy to report that we have sustained our Collegiate Chapter of Ducks Unlimited @ ESF despite these challenges. In fact, student engagement has grown!

Find them on Facebook @ Ducks Unlimited at SUNY-ESF.

We look forward to our continued commitment to working with the Collegiate Chapter of Ducks Unlimited @ ESF.

Ducks Unlimited is the world's leader in wetlands and waterfowl conservation.

Delta Waterfowl University Hunt Program

Delta Waterfowl has not only supported our student-driven research program, but they also provide opportunities for students to become life-long hunter conservationists with their University Hunt Program. This program provides hunter safety and proper firearms handling prior to the hunt, enlists volunteers and regional guides to provide a quality hunt experience, completes the hunt with proper cleaning and preparation of game for the table, and teaches lessons about the hunter-conservation ethic. In 2021, our lab facilitated participation for 7 ESF students to successfully complete a Canada goose hunt in the St. Lawrence Valley of NY. We thank Delta Waterfowl – The Duck Hunters Organization – for making this experience possible for ESF students and college students throughout North America.

DUCKS UNLIMITED

DELTA WATERFOWL
The Duck Hunters Organization™

ESF State University of New York College of Environmental Science and Forestry

Waterfowl and Wetlands @ ESF grad student game dinner - 2021

CLOSING COMMENTS

Students are at the front of the Waterfowl and Wetlands Program @ ESF. They always have been.

It is because of your generous support and our diversity of collaborators that we can train the next generation of waterfowl and wetlands scientists, conservationists, and managers. Since 2015, we are approaching $4 million dollars in support of our students and we have partners and collaborators in every US flyway, in Canada, and "across the pond". We couldn't do it without you. Our quality mix of government, non-profit, industry, and philanthropic support provides us with substantial flexibility to answer the conservation questions of our time.

Grad students banding mallards – Sept 2021

If the conservation engine of the North American Model of Wildlife Conservation is science – the students are the fuel.

Everyone involved in waterfowl and wetlands conservation was once a student – these students went on to build one of the greatest conservation successes of our time – The North American Waterfowl Management Plan. Thereafter, the North American Wetlands Conservation Act was enacted as the mechanism to deliver conservation strategies developed by well-trained waterfowl and wetlands students. None of this happened in a vacuum.

We don't do this alone. Neither protection of critical habitats nor waterfowl population decisions happen by chance. They happen because we invest in the next generation, and the generation thereafter also invests, and so on. We are a community of conservationists with a well-defined goal to sustain wild places for waterfowl, other wetland-dependent wildlife, and people. We all seek to recreate in wild places, see wildlife abundant, and live full lives in our time. We also seek to secure the experiences of tomorrow through the students of today. Thank you for your support.

Yours in conservation -

Michael L. Schummer, PhD

COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY

ESF

1911

STATE UNIVERSITY OF NEW YORK

THANK YOU FOR YOUR GENEROUS SUPPORT