SUNY College of Environmental Science and Forestry Waterfowl and Wetlands Initiative

2020 ANNUAL REPORT







2020 was a year that tested us all. We are all a bit exhausted at this point, but the lessons from 2020 are numerous.

• We, as a world, realized that we are all in this together. Ecologists have been teaching us this for decades.

✓ We reconnected with our natural surroundings, getting ourselves and children out of the house and discovering the wonders of the natural world right in our backyards and nearby environs. It is my hope that some reconnected in a lasting way, with greater understanding that human health & environmental health are one health.

✓ We hunted more! With greater time available, hunting and fishing license sales surged, generating much needed funds for fish and wildlife conservation. Reports suggest this certainly created a strain on our public lands system, indicating what many of us suspect, access to quality public land opportunities is a topic we need to address with greater effort.

• Our ESF Family came together in 2020, and continued to create an atmosphere of success for our students, the scientific community, and conservation stakeholders. The lesson for our students is simply this, no matter the storm that brews, grows, and rains down on us, we will weather the worst of times together. ESF is a community of committed students, scientists, conservationists, philanthropists, and administrators.

Thank you to our students, your passion for our planet gives us life. Through our Lab at ESF, we train the next generation of waterfowl and wetland scientists, conservationist, and managers. In that process, we produce the robust science needed by our conservation partners. Science is the foundation of waterfowl and wetlands conservation and management; it is this foundation that continues to ensure abundant waterfowl in the marshes of our lives. Humanity needs our students, and they need us.

--Michael L. Schummer, PhD





## **COMPLETED PROJECTS**

Influence of water level management on vegetation and bird use of restored wetlands in the Montezuma Wetlands Complex – student completed May 2020

**Ed Farley** completed his MS degree in May 2020 and is employed with Ducks Unlimited as their Biologist for NY State. Ed studied how drawdowns of water in restored wetlands influenced vegetation and resulting bird use. It was discovered that vegetation type, % open water, invertebrate, and seed and tuber abundance differed between areas where a full or partial drawdown had been done compared to areas where managers had not changed the water level (i.e., "passive wetlands"). Secretive marsh birds such as Virginia

Rail and Common Gallinules were more common during the breeding period in the partially drawn down and passive wetlands compared to the wetlands that had been fully drawn down, but during the spring migration, ducks were most numerous where there had been full drawdowns. Further, in spring and summer, most passerines like marsh wrens used partial and passive wetlands to a greater degree but most switched to using full drawdowns during autumn migration. Interestingly, partial drawdowns were never the most used wetland management type by any bird group or species. It was concluded that management of these wetlands should focus on providing a mix of full drawdowns and passive wetlands to

provide habitat for the greatest number of bird species throughout the year.

Manuscripts from this work are currently in review with the Journal of Great Lakes Research and Wetlands.

Ed's project was *funded by Ducks Unlimited, NYSDEC, USFWS, Eddie and Jo Allison Smith Foundation, Friends of the Montezuma Wetlands Complex, and Eaton Birding Society.* 

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Montezuma pintails by Ed Farley. 25,000+ pintails migrate from the mid-Atlantic coast through Montezuma en-route to their breeding areas.



Ed Farley assisting with our scaup banding project on Onondaga Lake





# Effects of corn availability on diets, body condition and stress in American black ducks and mallards on Long Island, New York – student completed May 2020

Aidan Flores completed his MS degree in May 2020 and is currently employed as a fishing and hunting guide in coastal Texas. Aidan determined if standing corn fields that were chopped after waterfowl season were beneficial to foraging black ducks. It was determined that mallards and Canada geese used these fields to a greater degree than black ducks. Further, feeding on corn appeared to benefit mallards to a greater degree than black ducks; black ducks are adapted to feed in coastal marshes more than mallards. In fact, no mallards were encountered when sampling black ducks on coastal marshes. Our results do not suggest substantial benefits of corn supplements to black ducks wintering on eastern Long Island. However, black ducks feeding on corn were not in worse condition, potentially suggesting that loss of coastal marshes foods could be offset by supplementing wetland foods with agricultural grains during winter.



Manuscripts for this work are currently in development for Urban Ecosystems and the Journal of Fish and Wildlife Management.

Aidan Flores collecting data from a black duck on Long Island, New York

Aidan's research was generously supported by *The Long Island Wildfowl Heritage Group, the Central New York Wildfowlers, and Robins Island and Moore Charitable Foundations.* 

A traditional waterfowling boat for hunting black duck on Long Island, New York





# Ecological separation of black ducks and mallards in the Adirondack Mountains of New York – student completed January 2021

It may surprise many that mallards were relatively uncommon in New York State until the past century. In 1910, Elon Eaton in *Birds of New York* describes the mallard as a transient

visitor in most of New York and breeding pairs only occurring in a few counties in central New York. At that time, the black duck was the most common breeding dabbling duck in New York. In a study of the Adirondack Park (AP) of New York in the 1970s it was detected that black ducks, hooded mergansers, and wood ducks were common breeders, but not mallards. By the mid-1990s, mallards and black ducks were found breeding together with no detectable difference in reproductive parameters. Gary Macy defended his MS degree in December 2020, testing for differences in occupancy and brood sizes between mallards and black ducks in the AP. He detected that mallard occupancy was greater than black ducks on beaver-modified wetlands, undeveloped lakes, and developed lakes. The greatest difference in occupancy was on developed lakes. This suggests that mallards are no longer uncommon in



the AP and possibly replacing black ducks, potential with the help from people developing lakeshores. Further, mean brood size of mallards and black ducks were greater on lakes than beaver-modified wetlands and mean brood size of black ducks on wetlands was  $1.92 \pm 0.58$  SD less than mallards on lakes. This suggests an additional productivity advantage to mallards because they occupy these lake habitats to a greater extent than black ducks. This project was generously supported through Pittman-Robertson Federal Aid in Wildlife Restoration Funds through NYSDEC and NYSDEC staff and logistical support.









#### Assessing utility of Unmanned Aerial Vehicles (UAV; AKA drones) to assess breeding waterfowl populations in the Adirondack Mountains of New York

UAVs are increasingly applied in wildlife studies because they provide greater opportunity for detecting animals. Although UAVs have been used to count birds in grasslands and arid regions with sparse trees, their utility has not been assessed in densely forested areas such as

the Adirondack Mountains of New York. As part of **Gary Macy's** thesis, he also conducted paired UAV and ground-based surveys to estimate differences in detection of waterfowl during the breeding period in the Adirondack Mountains. Gary conducting these surveys at 16 beaver–modified wetlands and found no differences in detection probability between the



UAV and ground survey after accounting for differences in vegetation cover and wetland size. Further, simple application of the rough mean detection probability (i.e., 54 ducks/0.92 = 58.8 ducks) suggests the UAV/ground analysis model was appropriately estimating method–specific detection probability and total abundance from the larger study noted above (i.e., 57.7 ducks). Survey efforts were similar between methods, but UAV video includes additional viewing time.

This project was generously supported through Pittman-Robertson Federal Aid in Wildlife Restoration Funds through NYSDEC and NYSDEC staff and logistical support.



Department of Environmental Conservation

Photo credit: Gary Adam James Macy





# Development of a Land Protection Strategy for the Montezuma Wetland Complex – student completed December 2020

Matt Wagner completed his Master of Professional Studies (MPS) degree in December 2020. To complete requirements of his MPS, Matt worked with the USFWS, NYSDEC, Ducks Unlimited, Finger Lakes Lake Trust, and Montezuma Audubon to develop an objective decision-making framework for protecting conservation lands in the Montezuma Wetland Complex (MWC) of central New York. The MWC is one of the most important wetland complexes in the Atlantic flyway for migratory birds because it supports millions of waterfowl, shorebirds, neotropical migrant songbirds, and raptors annually, as wintering, migrating,



staging, and for some species, nesting habitat. Due to its diverse mosaic of habitats and importance as a migratory stopover for birds, the MWC has been recognized by the state and federal government as an area of conservation concern. The region's professional biologists estimate that at least 320 bird species are known to migrate or nest within the area every year, in addition upwards of 390 species of wildlife occupy the area either permanently or seasonally. Specifically, waterfowl use days in the MWC often exceed 2 million annually, making it among the most heavily used areas during migration in eastern North America. The MWC serves as an excellent opportunity in eastern North America to protect, restore, and manage extensive areas of wetland and associated upland habitats. These conservation actions will help sustain regional biodiversity and enhance the inextricable link between wetlands, wildlife, and people. Matt developed an objective survey to identify stakeholder priorities for land protection and worked with Ducks Unlimited staff to identify parcels using a unique GIS application. Matt's work is currently being developed for the journal Case Studies in the Environment.







Scaup population estimates and spatial distributions of recoveries using banding data from the Atlantic Coast – student completed May 2020 (related research ongoing)

Jake Chronister completed his Master or Professional Studies in May 2020 and is working as a Wetland Specialist for the USDA – Natural Resources Conservation Service in Minnesota. Jake initiated a banding station on Great



South Bay (GSB), Long Island, New York in winter 2019 and captured 925 lesser and 214 greater scaup during 17 trap days. He also had 178 recaptures of 142



Jake's project was made possible with the generous support of The Long Island Wildfowl Heritage Group and the Central New York Wildfowlers.

individual scaup (13 greater and 129 lesser Scaup). These captures enabled him to explore the utility of markrecapture analysis to estimate annual abundance of scaup at GSB. Capture bias of banded scaup may be substantial because he estimated 6,156 scaup on GSB, but regularly observed  $\geq$  30,000 near banding sites. Overall, it appears that a large portion of the population of scaup in GSB are not susceptible to capture during winter, reducing the utility of using banding to produce local population estimates. Jake also estimated temporal and spatial changes in scaup banded along the north, mid- and south Atlantic Coast regions during winter and

recovered by hunters within < 1 year. He did not detect a spatial or temporal influence on greater scaup recoveries. Lesser scaup recovery longitude differed by region and recoveries shifted 2.46° east, 1920–2019. Notably, it appears that lesser scaup banded in the northeast Atlantic region during winter may be coming from breeding areas farther east. Because of this result, Brittnie Fleming will be using stable isotopes to determine relative origin of scaup banded & harvested in the Atlantic flyway, fall - winter 2020 & 2021 (see below). A manuscript is currently in revision for the Northeastern Naturalist.







Monarch butterfly response to management techniques in restored wetlands in the Montezuma Wetlands Complex – student completed May 2020 (related research ongoing)

**Scott Kostka** completed his Bachelors of Science w/ Honors in Environmental Biology in May 2020. Scott detected that full draw down and passive wetlands had greater density of milkweed stems than partial draw down wetlands. Further, total nectar plant diversity for monarch butterflies was greater for full draw down wetlands than partial draw down or passive wetlands. Adult monarch abundance was positively associated with nectar plant frequency and diversity in wetlands. These results suggest that treatments aimed at

producing seeds and tubers (full draw down) and breeding habitat (passive wetlands) for waterfowl also produce abundant resources of monarch butterflies during summer.

In summer 2020, our lab collected a second year of data on this project to prepare it for publication and to continue to inform wetland managers of technique for sustaining the diversity of animals that use wetland in the Montezuma Wetlands Complex. This project was *generously supported by Cargill Inc. by way of Ducks Unlimited, Inc.* 





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## **ONGOING PROJECTS**

#### Response of wild bee diversity to management of restored wetlands

**Molly Jacobson** is completing her MS in Conservation Biology at ESF. She completed her final field season in September 2020 and is currently analyzing data to determine how flowering plants and wild bees respond to techniques traditionally used to produce abundant seeds and tubers for migrating waterfowl.

It has been estimated that over 87% of flowering plants depend on animal pollination, including 70% of the world's most important crop species, which accounts for more than a third of global food production. The economic value of pollination has been estimated at \$215 billion annually, and the majority of these services in temperate regions are performed by bees. Molly Jacobson is studying native bee assemblages and their plant-pollinator associations on over 3 dozen wetlands in the Montezuma Wetlands Complex and Seneca Meadows Wetlands Preserve of central New York.

Wetlands tend to provide late-summer blooms like pickerelweed, swamp smartweed, beggars ticks, and Joe-pye weed, which bees use when many upland plants have already gone to seed. The objectives include 1) determining presence and frequency of entomophilous plants (plants pollinated by insects) as resources for bees between wetlands with differing management treatments, 2) conducting surveys to describe bee assemblage diversity in the Complex, while collecting additional data on flower visitation, and 3) determining if these bee assemblages vary between treatments of passive, partial, and full water draw down. This information will help wetland managers determine the resources provided to native bees by their management actions.

This project is generously supported by Cargill Inc. via Ducks Unlimited Inc., Seneca Meadows Wetland Preserve, Friends of the Montezuma Wetlands Complex, Eaton Birding Society, Sigma Xi, Maurice M. & Annette B. Alexander Wetland Research Fund, and Friends of the Montezuma Wetlands Complex.





Molly conducting sweeps of flowering plants to determine wild bee diversity





#### Origins of lesser and greater scaup in the Atlantic flyway using stable isotopes

Following a successful scaup (AKA broadbill on Long Island) banding season last winter on Long Island, Brittnie Fleming matriculated at ESF in Fall 2020 and is starting her Master's degree in Fish and Wildlife Biology and Management in Winter 2021. Brittnie aims to understand if scaup migrating and wintering on the Atlantic coast are produced in their core breeding area of the western boreal forest, prairies, and Alaska, or if they come from eastern Canada. Preliminary results from banding data analyses by Jake Chronister (see above) and prior satellite telemetry studies suggest that scaup that winter in northern portions of the Atlantic coast may be more likely to come from eastern Canada. Densities of scaup in eastern Canada are likely low and banding data do not exist in eastern Canada to inform breedingwintering ground linkages. However, portions of the



Brittnie Fleming and technician, Cole Tiemann, collect a 1cm feather sample for stable isotope analysis.

Atlantic flyway may derive more scaup from eastern Canada than previously known. Stable isotope analysis of wing feathers grown on breeding grounds provides a powerful tool to help determine the relative contributions of different portions of the scaup breeding range to the abundance of scaup migrating through and wintering along the Atlantic coast. To sample scaup, Brittnie will use feather samples from scaup banded at Great South Bay and scaup wings contributed by hunters.

This project is generously supported by the Long Island Wildfowl Heritage Group, Central New York Wildfowlers Association, and Waterfowl Research Foundation. Technical assistance is provided by the Hobson Isotope Lab at Western University.







#### 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. View a video of this event by clicking here. 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.



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

This project is generously supported by Birds Canada, SUNY ESF, Winous Point Marsh Conservancy and Waterfowl Research Foundation







### **Eastern Mallard Population Dynamics**

This project a multi-part series of studies to determine why the eastern mallard population has declined by about 40% since 1998. Our multi-part study, currently includes, 1) origins of hatch-year mallards harvested in the Atlantic flyway to determine where most mallards are produced, 2) assessing landscape characteristics leading to increasing, decreasing, or stable numbers of breeding mallard pairs, 3) origins and genetics of mallards captured during

preseason banding in eastern North America, and 4) genomic consequences of gene flow between domestic & wild mallards.

For more information on these projects please see the videos at <u>https://fundly.com/rescue-</u> the-eastern-mallard and thank you to those that donated to this grassroots effort.

Studies 1 and 2 are ongoing and led by MS student, Sam Kucia. Preliminary estimates



suggest that the majority of mallard reproduction is coming from Canada despite that it estimated that only  $1/3^{rd}$  of the eastern population of mallards breeds there (the other  $2/3^{rds}$ are estimated to breed in the US).



Study 3 was initiated in 2019 and will be continued by MS student Kayla Harvey through 2022. Evidence suggests that movement of mallards may be occurring during the preseason banding period that occurs in the NE US from July to September. Our aim is to understand the potential for these movements during preseason mallard banding because they may inform population modeling efforts. We also will be able to determine where wild mallards are being produced using the combination of isotope (feathers) and blood sampling (genetics). These data are also critical to understand areas of greatest conservation need to sustain reproduction in the eastern mallard population.





### Eastern Mallard Population Dynamics (continued)

<u>Study 4</u> In collaboration with Dr. Philip Lavretsky of the University of Texas El Paso and Dr. Brian Davis of Mississippi State University and in partnership with Forbes Biological Station and the Smithsonian Institute we recently received a substantial National Science Foundation grant to understand the implication of introduced domestic mallards into the wild population of mallards. MS student **Susannah Halligan** will lead our ESF study of genomic consequences of gene flow between domestic & wild mallards.



Direct financial support for our series of Eastern Mallard Population Dynamics studies comes from Delta Waterfowl Foundation, Ducks Unlimited, Inc., Birds Canada, Long Island Wildfowl Heritage Group, National Science Foundation, Waterfowl Research Foundation, Moore Charitable Foundation, SUNY ESF, Camp Fire Conservation Fund, Barclay Damon, and the many contributors to our Rescue the Eastern Mallard Crowd-funder. In-kind support is provided by state agencies in Maine, New Hampshire, Vermont, New Hampshire, Massachusetts, Connecticut, New York, Pennsylvania, Delaware, New Jersey, Minnesota, and Wisconsin; and Western University (Ontario, Canada).

For more information on the eastern mallard projects, please request our full eastern mallard annual summary







## Analysis of waterfowl survey data in Kansas to inform hunting season dates and survey timing and methodology

Each year millions of waterfowl migrate from their breeding to wintering areas providing cultural and economic benefits along the way. Their migration provides opportunities to observe and legally harvest waterfowl and substantial economic stimulus. However, the timing and distributions of waterfowl can vary annually, leading to changes in opportunities to observe and harvest these birds. Long-term changes in timing of migration may necessitate modifications to timing of waterfowl hunting seasons to correspond with greatest opportunities to view and harvest waterfowl.

Preliminary analyses for the southern Mississippi flyway suggest that annual variation and longterm changes in weather influences harvest opportunities and participation in waterfowl hunting. Further, hunting participation was 1.6 days less during the mildest weather years compared to the

most severe weather years; at a conservative estimate of \$50 per trip multiplied by the number waterfowl hunters in the southern Mississippi flyway, we estimated a potential economic loss of \$7.56 million with declining weather severity. Formal analysis of how weather influences waterfowl harvest and hunter and birder participation would be useful in development of hunting season dates to help match season dates to peak waterfowl abundance.

In Kansas, 60 years of bi-weekly waterfowl survey data provide abundant opportunities to refine our understanding of factors influencing timing of waterfowl migration, determine long-term timing of peak waterfowl migrations, and use these data to match Kansas waterfowl hunting seasons with greatest opportunities for observing and harvesting waterfowl. Seeing an abundance of waterfowl and having the opportunity for harvest were identified by hunters as factors increasing satisfaction, which is important to retaining, recruiting, and reactivating waterfowl hunters (R3). Quality of experience, including seeing and harvesting waterfowl, may be more important to



In 2021, we welcome Benjamin West to our team. In partial fulfillment of his doctoral degree, Ben will analyze waterfowl survey data from Kansas and elsewhere to develop predictions of recreational and economic changes throughout North America under predicted climate change scenarios. These are critical analyses because they will provide conservation planners of where and when to spend resources to sustain conservation efforts for waterfowl and wetlands.

R3 than opportunity alone. As such, it may be increasingly important to understand how to provide a quality hunt on public land to R3 waterfowl hunters in the face of a changing climate.

This project is supported by the Kansas Department of Wildlife, Parks and Tourism through Pittman-Robertson Federal Aid in Wildlife Restoration Funds





#### Assessment of chelation techniques in Bald Eagles with lead poisoning



Bald eagles are an iconic animal in the United States for obvious reasons. Their success story of recovery, following decades of population decline from DDT, starts right here in central New York at the Montezuma National Wildlife Refuge where the first hacking-towers and "releases" occurred. With a growing bald eagle population also comes greater opportunity for them to be admitted to wildlife rehabilitation facilities after ingesting lethal amounts of lead from remains of post-harvest animal carcasses. 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. **Alexa Blunck** will be completing her Master of Professional Studies with our lab while assessing chelation time in bald eagles at Friends of the Feathered and Furry Wildlife Center in Hunter, NY. 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.



Bald eagles at Feathered and Furry Wildlife Center in Hunter, NY brought in for lead-poisoning are released after a period of chelation to clean their blood of lead. The mature bald eagle on the right, named "Schoharie", was released on 19 July 2019 following an extended period of chelation.

The Master of Professional Studies program with an emphasis in Waterfowl and Wetlands is aimed at retooling career professionals already working, year-round or seasonally, within federal, state, and non-profit entities. The graduate program's aim is to provide opportunity for wildlife biologists holding Bachelor's degrees to advance academically and professionally through an experiential, coursework-based program. The program promotes field techniques and face-to-face people skills. Positions are competitive. No more than 4 students are supervised at one time.







## **ON THE HORIZON**

## Linking nutrient run-off to sources using microbial source-tracking in the Cayuga Lake watershed

In collaboration with the Cayuga Watershed Network and Dr. Hyatt Green (ESF) and financial support from the Fred L. Emerson Foundation and Seneca Meadows, Inc. we will launch a new project in February 2021. The project will provide novel information vital to sustaining the water quality of Cayuga Lake for the people and wildlife that rely on clean water in this system. Cayuga Lake is one of eleven Finger Lakes region of NY. The region provides substantial economic and ecological benefits to the people of NY and is the lifeblood of the wine, fishing, and waterfowling communities. Unfortunately, toxic-algal blooms have become increasingly common in the region. Microbial source-tracking will enable the team 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.

### Assessment of the Atlantic Flyway Waterfowl Breeding Plot Survey

The Atlantic Flyway Waterfowl Breeding Plot Survey (AFWBPS) has been considered operational since 1993. The intent of this survey is to provide information on local breeding waterfowl. Although breeding pairs are less dense than in core breeding areas, local waterfowl can provide substantial hunting and viewing opportunities in the Atlantic flyway. Initial analyses of the AFWBPS suggest opportunities for refinement

and we currently seek philanthropic support of these efforts, as well as technical support and collaboration with the Atlantic Flyway Technical Section and USFWS.

### Marsh Bird Monitoring Program Assessment

ESF is in the process of hiring a post-doctoral Research Associate to provide an assessment of marsh bird monitoring efforts in New York in collaboration with NYSDEC. The aim is to evaluate existing data and refine current methodologies to meet information needs for conserving secretive marsh birds and marsh birds of conservation concern.







## **ON THE HORIZON Continued**

#### Harvest assessment of Resident, Atlantic, and North Atlantic populations of Canada geese in the Atlantic flyway using stable isotope analyses

Canada geese provide abundant hunting and wildlife viewing opportunities in the Atlantic flyway. However, several populations of interest live and migrate through the Atlantic flyway and they have different survival and reproductive metrics, making management decisions difficult. Our aim is to collaborate with partners, including state, Atlantic flyway, USFWS, non-profit, and academic entities, to develop a stable isotope method for estimating the relative contribution of these populations to harvest that is repeatable every 5 to 10 years.



Brittnie Fleming and Cole Tiemann duck banding on Long Island, Feb 2020

Cole Tiemann, pictured here banding black ducks, was a duck banding technician for us last winter on Long Island and will supervise that banding station this winter. He also will help us capture and sample pintails this spring in central NY. For his undergraduate research, Cole completed stable isotope analyses of Canada goose feathers to differentiate between Resident and North Atlantic Population geese. Cole currently seeks an MS research project focused on waterfowl.



Our lab regularly assists NYSDEC with banding, below are students learning to band Canada geese in June 2019







## **COURSES TAUGHT**

#### Wetlands Conservation and Management for Wildlife - Spring 2020

The intent of this course is to ensure students completing degrees in Wildlife Science, Conservation Biology, and related majors have the opportunity to learn the applied skills necessary to properly conserve and manage wetlands for wildlife; a skill very much needed

by our federal, state, and nonprofit partners. Due to COVID-19, we moved this course to an online-only mode following Spring Break in March 2020. Students remained engaged and produced quality work. At the conclusion of the course, they were challenged with developing real-life management plans for Otter Slough Waterfowl Conservation Area in Missouri which included a complete understanding of plants and animals of the area and how to apply the North American Wetlands Conservation Act and the North American Waterfowl Management Plan to meet the needs of waterfowl, wetlands, other wetland-life and people.

Answer 4:



Figure 2. An estimated outline infrastructure implemented if Parcel B was purchased and acquired by Otter Slough Conservation Area. The numerical value underneath each pond name is the acreage of the impoundment.

	Berm length (ft)	Berm length (yds)	cu yd berm	cu yd slope	Total (cu yd)	\$4.25/ cu yd
Berm 1	21266	7089	42532	31899	74431	\$316,332
Berm 2	2657	886	5314	3985.5	9299.5	\$39,523
Berm 3	3720	1240	7440	5580	13020	\$55,335
Berm 4	3658	1219	7316	5487	12803	\$54,413
Berm 5	3793	1264	7586	5689.5	13275.5	\$56,421
					Total Cost	\$522.023







### **COURSES TAUGHT**

#### Senior Synthesis in Conservation Biology – Fall 2020

The focus of this capstone course is on integrating knowledge from previous courses in biology, management, and policy for the wise use and conservation of biological diversity. For Fall 2020, the class focused on developing a Conservation Plan for unique Syracuse City Parks lands including the Rand Tract and Webster Pond. Rand Tract is a forested habitat with significant biological diversity. Webster Pond has a storied history of pollution, reclamation, and uses, but nowadays it is



oto credit: Sam Quir

a place that Syracuse city residents actively feed and interact directly with wild and domestic waterfowl. As a cornerstone of this Conservation Plan, students conducted a Bioblitz which is an effort to catalog as many species as possible in a geographic area over a limited period of time. The Bioblitz, recorded on iNaturalist included 1,278 species observations, 433 species

cataloged, and 169 identifiers. Students also investigated the history and current uses of these properties. Specifically, in a real-world exercise, students were asked to develop a Conservation Plan that would increase and sustain biodiversity of the Rand Tract and Webster Pond. At Webster Pond, they were challenged with communicating the negative impact of mixing domestic mallard genes into wild mallards. Students used this information to develop a Conservation Plan for The Syracuse Department of Parks, Recreation, & Youth Programs that outlined opportunities and challenges.









## Collegiate Chapter of Ducks Unlimited at ESF

COVID-19 in 2020 presented substantial challenges to all clubs at SUNY ESF, but it was impressive how the students of the Ducks Unlimited Chapter at ESF kept the energy alive. Safe, social interactions are important to the development of students towards becoming young professionals because they teach leadership skills and introduce students to opportunities not otherwise available in the classroom. In 2020, the students held two successful online fund-raising events for Ducks Unlimited, providing important support to wetland conservation and restoration efforts in NY and beyond. President, Laura West, organized duck banding opportunities on Onondaga Lake with our lab, trail maintenance at Finger Lakes National Forest, and invasive species management at Webster Pond. We deeply appreciate the support of Chad Norton with the Friends of Wildlife at Webster Pond for providing this special opportunity at Webster Pond. As the faculty supervisor of these dedicated conservationist, I could not be prouder of their efforts to make our world a better place. Thank you for all you do for waterfowl, other wetland wildlife, and people.







## Weekly Duck Migration Forecast

Important in science is communicating results of research to the public. For that reason, our lab has been producing a Weekly Duck Migration Forecast for several years during the waterfowl seasons in North America from October – January. The Weekly Duck Migration Forecast uses published science to produce a weekly prediction of the migration of dabbling ducks in the Mississippi and Atlantic flyways. We also take questions from the audience about factors influencing duck migration. For the 2020-2021 waterfowl season, we moved these weekly forecasts from digital pdf format to a video platform as a <u>YouTube channel</u>.



The reach of this effort has been substantial with 556 subscribers, over 3,700 unique viewers, and 873 public watch hours as of 12 January 2021. Feedback and questions from waterfowl enthusiasts have been substantial, providing opportunities to interact directly with those passionate about waterfowl and wetlands science, conservation, and management.

The Weekly Duck Migration Forecast uses published Weather Severity Indices (WSI) for mallard, black duck, pintail, gadwall, shoveler, wigeon, and green-winged teal and weather data to produce weekly predictions of migration towards southern latitudes. We also make comparisons among years to provide context to hunters interested in the timing of duck migration.



Mallards WSI 5-day moving average - Green Bay, Wisconsin

Episode 11\_14th to 20nd December 806 views · Dec 14, 2020





## **PRESENTATIONS**

**Chronister, J.** 2020. Atlantic coast scaup population estimates and recovery analysis. MPS Capstone. April 2020. SUNY ESF, Syracuse, NY.

**Farley, E.** 2020. Influence of water level management on vegetation and bird use of restored wetlands in the Montezuma Wetlands Complex. Thesis Capstone. April 2020. SUNY ESF, Syracuse, NY.

**Farley, E.** 2020. Influence of water level management on vegetation and bird use of restored wetlands in the Montezuma Wetlands Complex. Ducks Unlimited Great Lakes/Atlantic Regional Office – Brown Bag. June 2020. Dexter, MI.

Flores, A. 2020. Effects of corn availability on diets, body condition and stress in American black ducks and mallards on Long Island, New York. Thesis Capstone. April 2020. SUNY ESF, Syracuse, NY.

Jacobson, M. M. 2020 Apr 25. Plants and Pollinators: Gardening to Make a Difference. Guest speaker for the Seneca Meadows Education Center [Seneca Falls, NY]. Webinar.

Jacobson, M. M. 2020. How to build a garden for pollinators (NPR Radio broadcast episode). Connections with Evan Dawson (Mack M., host). WXXI News, Rochester, NY.

Lavretsky, M. L. Schummer, J. Brown, and S. Kucia. 2020. Update - Genetics of North American mallards. Atlantic Flyway – eastern mallard meeting. Online meeting of the Atlantic Flyway Technical Section. November 2020.

Macy, G. A. J. 2020. Ecological separation of black ducks and mallards in the Adirondack Mountains of New York, Thesis Capstone. December 2020. SUNY ESF, Syracuse, NY.

Schummer, M. L., P. Lavretsky, S. Kucia, K. Harvey, S. Halligan, and J. Brown. 2020. Update – Eastern mallard research. Atlantic Flyway – eastern mallard meeting. Online meeting of the Atlantic Flyway Technical Section. November 2020.

Wagner, M. 2020. Montezuma Wetland Complex land protection partnership. MPS Capstone. November 2020. SUNY ESF, Syracuse, NY.

Wagner, M. 2020. Montezuma Wetland Complex land protection partnership. MPS Capstone. December 2020. Ducks Unlimited Great Lakes/Atlantic Regional Office – Brown Bag. December 2020. Dexter, MI.

## STUDENT AWARDS

Roy E. Glahn Central New York Wildfowlers Award (Brittnie Fleming)

The Edna Bailey Sussman Award (Molly Jacobson)

Maurice Alexander Wetlands Research Award (Molly Jacobson)

Elon Eaton Memorial Award (Molly Jacobson)

The Edna Bailey Sussman Award (Gary Macy)





## **PUBLICATIONS**

Farley, E. 2020. Influence of water level management on vegetation and bird use of restored wetlands in the Montezuma Wetlands Complex. Thesis. SUNY ESF, Syracuse, NY.

**Jacobson, M. M.** 2020. Backyard pollinators – going native and providing a haven. New York Conservationist August/September:2-5.

Kostka, S. 2020. Monarch butterfly response to wetland management techniques in the Montezuma Wetland Complex. Honors thesis. SUNY ESF, Syracuse, NY.

Lamb, J. S., Paton, P. W., Osenkowski, J. E., Badzinski, S. S., A. M., Berlin, T. Bowman, C., Dwyer, L. J. Fara, S. G. Gilliland, K. Kenow, C. Lepage, M. L. Mallory, G. H. Olsen, M. C. Perry, S. A. Petrie, J.-P. L. Savard, L. Savoy, M. Schummer, C. S. Spiegel, and S. R. McWilliams. 2020. Assessing year-round habitat use by migratory sea ducks in a multi-species context reveals seasonal variation in habitat selection and partitioning. Ecography 43:1842–1858.

Lamb, J. S., Paton, P. W., Osenkowski, J. E., Badzinski, S. S., A. M., Berlin, T. Bowman, C., Dwyer, L. J. Fara, S. G. Gilliland, K. Kenow, C. Lepage, M. L. Mallory, G. H. Olsen, M. C. Perry, S. A. Petrie, J.-P. L. Savard, L. Savoy, M. Schummer, C. S. Spiegel, and S. R. McWilliams. 2020. Implanted satellite transmitters affect sea duck movement patterns at short and long timescales. Condor 122:1–16.

Macy, G. A. J. 2020. Ecological separation of black ducks and mallards in the Adirondack Mountains of New York, Thesis. SUNY ESF, Syracuse, NY.

Schummer, M. L., J. Simpson, J. B., Davis, B. Shirkey, and K. E. Wallen. 2020. Balancing waterfowl hunting opportunity and quality to recruit, retain, and reactivate. Wildlife Society Bulletin 44:391-395.

Schummer, M. L., A. B. Anthony, S. M. Kleespies, G. Ankenman, M. Ligouri, A. Bleau, J. Droke, J. Cohen, K. Kowalski, F. Morlock, and J. Eckler. 2020. Aggression and behavioural dominance in wintering Mallard *Anas platyrbynchos* and American Black Duck *A. rubripes*. Wildfowl 70:167-178.







## **Closing thoughts**

If you've been following our Annual Reports over the past few years you've likely noted that we've expanded our capacity to train the next generation of waterfowl and wetland scientists, conservationists, and managers. With your generous financial and technical support, we've expanded the breadth of our research and training. In that process, we are able to answer realworld questions needed by conservation stakeholders. University programs focused on waterfowl and wetlands have declined in North America, but through your actions, we have begun to reverse that trend and establish a presence at ESF focused on eastern North American waterfowl.

### Why is a waterfowl and wetlands program important in the northeastern US?

Relative to other important waterfowl areas, we know less about many eastern populations of waterfowl and substantial uncertainty can lead to conservative harvest policies. We test assumptions about these lesser studied waterfowl, not to challenge harvest policy, but because uncertainty leads decision-makers to conservative policies and also provides scientists opportunities to refine knowledge. Our current studies on eastern breeding mallard, scaup, and pintail, and our planned study of Atlantic flyway Canada geese may also be used to refine population modeling efforts and harvest policy to meet the needs of conservation stakeholders with greater confidence. Through this process students get real-world experience working with our federal, state, local government, academic & non-profit affiliates, as well as the community of waterfowl enthusiasts.

#### Where are our students now?

We are proud of our students who work across much of North America, from Minnesota to Texas, from New York to Florida and beyond. Students are working for federal, state, industrial, academic, and non-profit entities including USDA – Natural Resources Conservation Service, NYS Department of Environmental Conservation, Tennessee Wildlife Resources Agency, Ducks Unlimited, University of Wisconsin – Stevens Point, Virginia Tech, Winous Point Marsh Conservancy, University of Missouri, University of Florida, and Western Ecosystems Technologies. An aim of our training is to ensure students obtain the skills necessary to contribute, substantially to their profession. We will continue to place students into gainful employment after graduation.

### What can you do to sustain the ESF waterfowl and wetlands program in perpetuity?

Sustaining funding for our students in perpetuity is a primary goal of the Waterfowl and Wetland Initiative at SUNY ESF. If you wish to make a charitable donation to sustain the growth showcased in our 2020 Annual Report please contact us.

--Michael L. Schummer, Ph.D.





#### THANK YOU to our 2020 partners and sponsors:

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## THANK YOU FOR THE GENEROUS SUPPORT OF OUR STUDENTS AND INITIATIVE

