

SUNY College of Environmental Science and Forestry Waterfowl and Wetlands Program

Mid-season report

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from

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State University of New York
College of Environmental Science and Forestry



Wetlands Conservation and Management of Wildlife – In Spring 2019, we initiated a new course aimed at training the next generation of wetlands conservationists and managers. The goal of this new course is to prepare undergraduate and graduate students with a foundation in strategies used in conserving wetland-wildlife. Students gain the applied skills necessary to pursue careers in conservation where knowledge of wetland-wildlife and wetlands management are required or preferred. As part of the course, students develop management plans on state, federal, and private lands; learning the diverse value-systems of stakeholders in the process.



← Wetlands are one of the most threatened habitats on Earth and knowledge by biologists of active restoration and management are needed to sustain wetland-dependent wildlife.

The course provides the knowledge needed to sustain waterfowl and other wetland-wildlife through application of contemporary conservation, restoration, and management techniques used throughout North America →



Figure 1. Map of the Crusoe Creek management area, including the three management areas, berm along private farm field to prevent flooding and proposed water control structure (WCS) placement.

← Students develop wetland management plans for state, federal, and private lands partners. Learning the diverse value-systems of stakeholders is emphasized in this process.

Funded by WRF and SUNY ESF

Team Duck and Partners – 2019



Team Duck students at the annual
SUNY ESF Ducks Unlimited event

At the heart of everything we do are the student-conservationists of Team Duck and our research partners – we asked them to comment on experiences with Team Duck at SUNY ESF...

Tyler Hodges – (undergraduate lab technician and independent study student) –

“Being a member of Team Duck was truly a life-changing experience. Not only did I gain valuable lab, field, and research experience, but it helped to stoke my passion for birds and ornithology as well. I made many life-long friends through the lab, and I also started duck hunting. The research atmosphere of the lab is phenomenal, and there are ample opportunities to get involved in existing research projects or conduct your own independent research for credits or through the Honors program.”

Laura Wallace (undergraduate lab technician) – “I look up to everyone in Team Duck. They always encourage my obscene enthusiasm for waterfowl and inspire me to be the best person and wildlife professional I can be. I gained valuable friendships and experiences from Team Duck that I would have missed out on otherwise.”

Molly Jacobson – (MS candidate – Conservation Biology) – “Everyone here is passionate about conservation and their inspiring research will help protect our waterfowl and natural resources for future generations. Team Duck has been a wonderfully welcoming and generous community and I greatly look forward to the next two years with them.”

Mikayla Call – (undergraduate Honors student) – “Even though I wasn't part of the lab for very long, it was still one of the best experiences that I had during my time at ESF. I am forever grateful for the support that I got from every member of the lab, whether they were helping with GIS and data analysis, proof-reading part of my thesis, or helping me understand a new concept. I'm proud of the research that I was able to accomplish as an undergrad, and it wouldn't have been possible without Team Duck.”

Jake Chronister – (research technician and MPS student) – “An exciting time full of opportunity.”

Craig Kessler – (research sponsor and partner) – “The working relationship between ESF and the Long Island Wildfowl Heritage Group has been extremely beneficial in providing our future waterfowl professionals with a hands-on opportunity that has exposed these individuals to Long Island's rich historical waterfowling culture in a most unique way.”



Research sponsor Craig Kessler helps build
a duck trap on Great South Bay, Long Island

Lesser and Greater Snow Goose Migration Patterns in New York

Stephen Sliwinski successfully completed his Master of Professional Studies degree with a Waterfowl and Wetlands emphasis in Spring 2019. He is currently **employed by the U.S. Fish and Wildlife Service in**



Barrow, Alaska. During his tenure at ESF, Stephen was the recipient of the Central New York Wildfowling - Roy W. Glahn Memorial Scholarship and the Eaton Birding Club - Elon H. Eaton Scholarship. He used morphological measurements and genetic tests to determine that snow geese migrating through NY in spring are 80% greater and 20% lesser snow geese. His results **helped refine migration maps for snow geese used by the Arctic Goose Joint Venture.**

Surveys of Waterbirds in the Darkhad Depression, Mongolia During Summer and Autumn



Mikayla Call completed her undergrad Honors degree at ESF in December 2018 and was the Biology Scholar of the academic year, 2018 –2019. She is currently **employed with the National Park Service at Assateague Island National Seashore.** A manuscript from Mikayla's research is in review with the journal *Wildfowl*. She conducted the first large-scale survey for waterbirds in the Darkhad Depression of Mongolia and detected 37 species in spring and 24 in autumn. Six species were

on the IUCN Red List or Mongolian Red Book including falcated duck, common pochard, common crane, northern lapwing, Eurasian curlew, and horned grebe. The Darkhad Depression is classified as an Important Bird Area (IBA) by Birdlife International and our surveys provide baseline information for conservation planners.

Influence of Agricultural Grains on Diets, Body Condition, and Seasonal Stress in American Black Ducks and Mallards Wintering on Long Island



Aidan Flores is originally from the gulf coast of Texas and is **completing his Master's degree in Fish and Wildlife Biology and Management**. As an avid waterfowl hunter, Aidan was a perfect match for this project on Long Island where he captured black ducks and mallards at agricultural sites where corn was available and compared their diets, body condition, and seasonal stress with black ducks lethally collected in coastal marshes where these supplemental grains were not available. He also measured grain



depletion of chopped corn fields. As coastal marsh habitat declines in quantity and quality, there may be a benefit, particularly in prolonged freeze events, for black ducks to feed on a more reliable food source such as chopped standing corn fields. Results suggest that diets differed between agricultural and coastal sites for black ducks, but not between species at agricultural sites. Adjusted body mass of black ducks at coastal ($1,081.1 \pm 36.8$ g) and agricultural ($1,114.6 \pm 15.6$ g) sites were similar, but mallards ($1,180.7 \pm 26.0$ g) were 5.9% heavier than black ducks at agricultural sites. Red blood cell percentages were greater at agricultural ($53.1 \pm 0.9\%$) than coastal sites ($40.6 \pm 2.3\%$) for black ducks, whereas there was no difference between black ducks and mallards ($52.9 \pm 1.5\%$) at agricultural sites. There were no differences in heterophil to lymphocyte ratios by treatments or species. 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 *partially* be offset by supplementing with agricultural grains during winter.



Funded by the Long Island Wildfowl Heritage Group

Ecological Assessment of Wetland Management Techniques in New York



Ed Farley is from North Carolina and **currently employed with Ducks Unlimited, Inc. in their Syracuse, New York office** as he completes his Master's degree in Fish and Wildlife Biology and Management at SUNY ESF. Wetland managers need to understand how wetland management techniques influence food availability for waterfowl to help meet regional conservation goals. However, there is an information deficit on ecological returns on post-construction management of restored wetlands. **Ed and his “small army” of undergraduate research assistants** assessed the response of vegetation (summer), invertebrates (summer), seeds and tubers (autumn), and waterfowl (autumn and spring) to three wetland hydrology regimes (full water drawdown, partial water drawdown, and passive) on thirty randomly selected wetlands in the Montezuma Wetlands Complex, New York, 2016-2018. They detected 127% and 90% percent greater seed and tuber densities in full (3-year mean = 848.7 ± 126.0 [SE] kg/ha) and partial drawdowns (681.8 ± 62.5 kg/ha) than passively managed

wetlands (365.0 ± 20.5 kg/ha), respectively. Results suggest seed and tuber densities in managed wetlands central of New York are comparable to or greater than other parts of North America and moist-soil management should be considered an important technique to meet regional Duck-Energy-Day goals. Partial drawdown wetlands had greater submerged aquatic vegetation densities (3-year mean = $1,754.4 \pm 473.0$ kg/ha) than passively managed wetlands (3-year mean = $1,201.1 \pm 527.4$ kg/ha) across all years of the study. Partial drawdowns (3-year mean = $1,489.39$ macroinvertebrates/ $m^2 \pm 116.48$) also had 243% greater summer density of macroinvertebrates than passive drawdowns (3-year mean = 785.97 macroinvertebrates/ $m^2 \pm 50.94$) during the brood rearing period. During fall migration, passive wetlands had 367% and 182% greater waterfowl density than full and partial drawdowns respectively. In spring, waterfowl abundance was 216% and 156% greater in full and partial drawdowns than passive wetlands, with diving duck use 153% greater in both full and partial drawdowns and dabbling duck use 335% and 225% greater than in passive wetlands, respectively. These seasonal differences in waterfowl use result from dry autumn and wet spring flooding regimes. **Results reinforce the need for varying management techniques on wetland complexes to meet waterfowl needs throughout their annual cycle.**



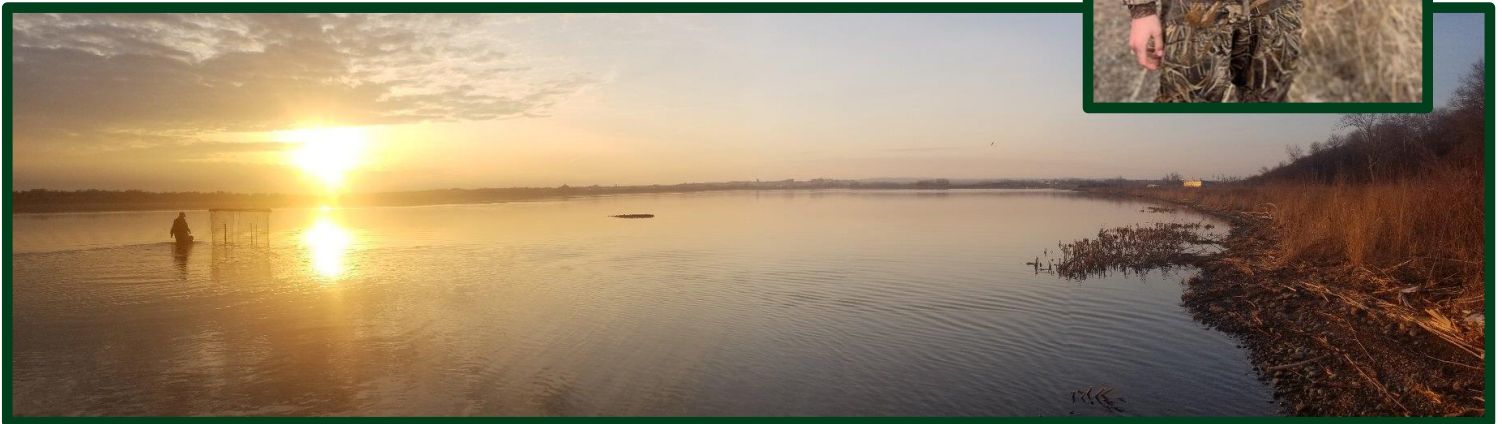
Lesser and Greater Scaup Banding on Great South Bay, Long Island

In collaboration with the Long Island Wildfowl Heritage Group, NYSDEC, and volunteers, Jake Chronister investigated the feasibility of establishing a scaup banding station at Great South Bay, Long Island, New York. The aim was to contribute to continental banding efforts for scaup and to use mark-recapture methodology to estimate scaup populations at Great South Bay. Jake and crew captured and banded 1,141 ducks over a 6-week period (923 lesser scaup, 216 greater scaup, and 2 ring-necked ducks). We will deliver scaup banding again in winter 2020 with the goal of banding 2,000 scaup. Jake will be presenting results of his work at the 8th North American Duck Symposium in Winnipeg, Manitoba in August.



Diving Duck Banding on Onondaga Lake, Central New York

In April 2019, we investigated launching a banding station at Onondaga Lake with the goal of contributing to continental scaup banding efforts and training students. With the clean-up of Onondaga Lake and restoration of wetland habitats, the abundance of diving ducks has increased substantially over the past 5 years which should provide abundant opportunities for banding ducks on the lake. We collaborated with Onondaga County Parks and Honeywell, Inc. and successfully captured and banded scaup, ring-necked ducks, and redheads.



Goose Banding 2019

Each summer, while adult Canada geese are molting flight feathers and goslings cannot yet fly, we work with NYSDEC to coral, capture, and band these birds. This is a great opportunity to introduce our students to techniques used to monitor waterfowl populations. Our efforts also help DEC meet regional banding quotas which are set at levels to have confidence in harvest estimates.



Ecological Separation of Black Ducks and Mallards in the Adirondack Mountains of New York

The American black duck population decreased by 50% since the 1950s and is a focal species of the U.S. Fish and Wildlife Service. Mallards have since replaced black ducks across much of their range in eastern North America. Black ducks and mallards are sympatric during breeding season in the Adirondack Park (AP), but also appear to segregate their habitat use between beaver-modified wetlands and human influenced areas, respectively. This segregation may favor mallards because wetland productivity is often greater in human influenced lakes relative to beaver-modified wetlands. Although studies of competitive exclusion between these ducks provide varying results, two species can't occupy the same niche indefinitely. **Adam Macy** is completing his Master's degree in Fish and Wildlife Biology and Management at SUNY ESF and **will test for differences in occupancy between black ducks and mallards in beaver-modified wetlands and human influenced lakes**. Multi-species occupancy modeling is useful in generating estimates of occupancy for rare species (e.g., black ducks) that co-occur with more common species (e.g., mallards). Adam adapted a multi-species occupancy model in a Bayesian statistical framework that uses a time to detection function for detection probability. He will apply this analysis method to waterfowl surveys of beaver-modified wetlands and lakes in the AP. Waterfowl surveys are ongoing in 2019 through August and his second field season will occur May – August 2020. Funded by NYSDEC.



Photo credit: Gary Adam Macy

Assessing Utility of Unmanned Aerial Vehicles (UAV; AKA Drones) To Assess Breeding Waterfowl Populations in the Adirondack Mountains of New York

An additional component of Gary Macy's graduate research also includes use of a UAV to survey for waterfowl in the forested landscape of the Adirondack Park. He aims to determine detection probabilities by using a double-observe approach with one observer on the ground and the second as the UAV. Results from this research may have broader application to waterfowl surveys in the future. Funded by NYSDEC.



Species and sex of black ducks and mallards are easily identifiable at 100 feet+ when zooming in on images.



Eastern Mallard Population Dynamics

SUNY ESF is working with our conservation partners to **determining why the population of eastern mallards is declining**. Several hypotheses exist, but there are few studies to help clarify if habitat, harvest, genetics, or a combination of these factors are to blame. Further, datasets do not provide a clear answer. To date, **biologists have been unable to determine why the decline has occurred**. A long-term decline may mean that survival, production, or survival+production are too low to maintain the population size. However, banding data indicate that eastern mallard survival rates are not measurably different now than they were in the 1990s, when the population was stable. Production estimates (juveniles/hen) obtained from the USFWS Parts Collection Survey have not decreased either. Our goal is work with partners to investigate these inconsistencies in critical data sets and determine mechanisms for the population decline.



As a first step, with funding from Delta Waterfowl Foundation, we are determining where mallards harvested in the Atlantic Flyway are produced using stable isotope analyses of feathers. Deuterium (ratio of $2H$ to $1H$) signatures vary and are related to local water values where mallards are produced. Mallard feathers grown during summer on breeding areas will tell us the origin of juvenile mallards; are they primarily Canadian or US hatched?

We also are **partnering with Philip Lavretsky at the University of Texas – El Paso** to understand eastern mallard genetics. Mallards entered North America from Eurasia as glaciers receded and grassland habitats developed throughout the mid-continent region (Prairie Pothole region of today). Human clearing of forests in eastern North America during the 1800-1900s enabled previously grassland restricted species to move east. Prior to the 1900s, mallards primarily occupied western grasslands and black ducks the eastern forests of North America. Landscape change favored expansion of the mallard range into eastern areas traditionally dominated by black ducks. In addition, from 1900-1960, up to 500,000 game-farm mallards of European genetic origin were released annually in the United States. Nowadays, a minimum of 210,000 game-farm mallards are released per year by private citizens in eastern North America. Recent **evidence suggests that eastern mallards** are now a hybrid-swarm of European decent. While these ducks may look just like wild mallards from the western US states, evidence suggests they **are invaders from Europe**. These are now our mallards of the Atlantic Flyway. Our question is about the distribution of these genes; are Canadian and US mallards different? Did mallards in Canada colonize from the west and remain 'wild' or are they just migrants from the population of released, hybrid swarm eastern US mallards?

We aim to tackle these monumental questions. In 2019, the mallard bag will be 2 ducks/day in the Atlantic Flyway; **the time is now to get some answers and our lab aims to disentangle many complex questions for the long-term conservation of waterfowl and waterfowl hunting**.

Response of Wild Bee Diversity to Management of Restored Wetlands in an Agricultural Landscape



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**

completing her Master's degree in Conservation Biology **studying native bee assemblages and their plant-pollinator associations among wetland management treatments in the Montezuma Wetlands Complex and Seneca Meadows Wetlands Preserve of central New York.** Her 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 drawdown. Funding from Friends of Montezuma, Seneca Meadows, and Cargill, Inc.

Evaluating Response of Milkweed, Nectar Plants and Monarch Butterflies to Management Techniques in Restored Wetlands of Central New York



Scott Kostka is an undergrad. Honors student assisting Molly Jacobson and concurrently **studying the abundance of common and swamp milkweed, nectar plants, and monarch butterfly larvae and adults among wetland treatments.**

Wetlands appear to provide abundant habitat for monarchs, but few assessments have been conducted. Wetland management aimed at providing resources for

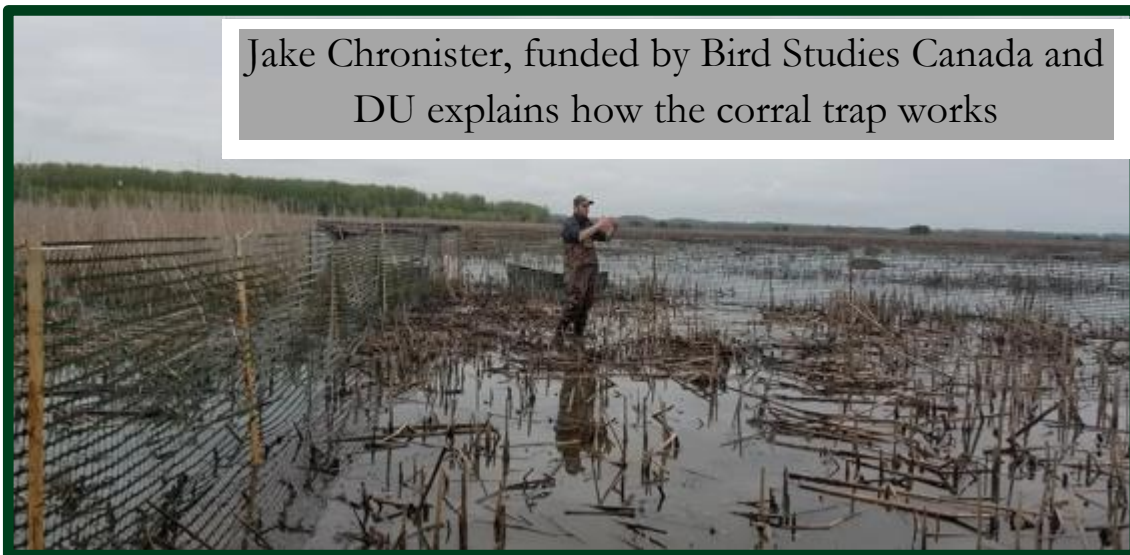
waterfowl may already be providing habitat for a diversity of insects, including monarchs. Scott aims to provide recommendations to wetland managers to optimize habitat for monarchs while ensuring the needs of all wetland-wildlife are met. Funded by Seneca Meadows and SUNY ESF.

Common Gallinule Captures and Nano-tag Tracking

In preparation for a new NYSDEC funded project starting in spring 2021, we are piloting how to capture, mark, and track common gallinules in summers 2019 and 2020. Previously, we captured and tracked Virginia rails and sora which are also part of this project. We aim to understand seasonal movements and detection probability of these secretive marsh birds. This project will help refine survey methodology to track populations and habitat use of these webless gamebirds. In 2019, we captured and banded 24 common gallinules using coral traps and night-lighting, and deployed 6 nanotags. Nanotags are trackable on MOTUS, a system of radio-towers throughout eastern North America which allows us to understand larger migratory movements of these birds if they emigrate from the central New York region. Funding through Bird Studies Canada & DEC.



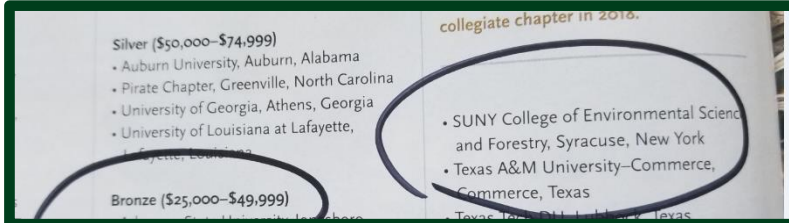
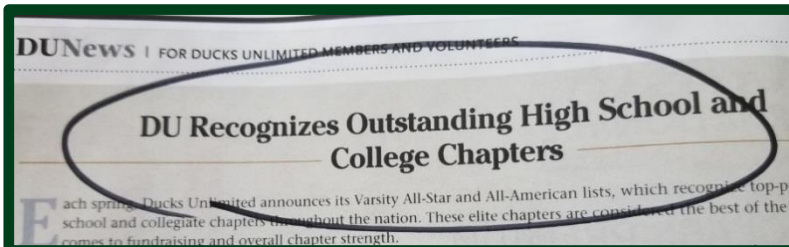
Jake Chronister, funded by Bird Studies Canada and DU explains how the corral trap works



Ducks Unlimited Collegiate Chapter at SUNY ESF



Our active Ducks Unlimited Collegiate Chapter at SUNY ESF had another amazing year! The fall fund-raiser & spring "Conservation Night Out" again gained them top honors from DU! Congrats!



ESF Ducks Unlimited Fall Fundraiser

Come out to the 14th Annual East Coast Lumberjack Roundup and support the SUNY-ESF Woodsmen's team while also supporting the ESF Ducks Unlimited chapter



Raffle tickets to win some awesome Ducks merchandise!

1 for \$10

3 for \$20

An arms length for \$50

Saturday, Oct. 20 @ 9am

US-11, Tully, NY 13159



Closing comments: Everything we do is about partnerships

It would not be possible to train our students without our diversity of partnerships. We always aim to provide quality experiential, real-life learning opportunities for our students while delivering robust science to our partners. As such, we partner with private, non-profit, academic, state, and federal stakeholders to meet the needs of a changing planet. Our approach enables us to place students into gainful employment following degree completion in a seamless manner, whereby they walk from campus and into a career with ease. The Waterfowl and Wetlands emphasis at SUNY ESF prides itself in ensuring that students can speak to waterfowl hunters, birders, and conservationists in general, they know how to manage a marsh properly for wetland-wildlife, and are trained in making ethical choices in the workplace.

Partnerships are the foundation of everything we do. Thank you. You make all of this possible.

As the field seasons and fall semester conclude, we will provide our Annual Report in early 2020.

THANK YOU to our 2019 partners and sponsors (January – July):

Waterfowl Research Foundation
Community Foundation of Central New York
New York State Department of Environmental
Conservation
US Fish and Wildlife Service
Atlantic Flyway Technical Section and Council
Delta Waterfowl Foundation
Ducks Unlimited, Inc.
Ducks Unlimited, Canada
Bird Studies Canada
Long Island Wildfowl Heritage Group
Barclay Damon
Moore Charitable Foundation
Suffolk County Parks
University of Texas - El Paso

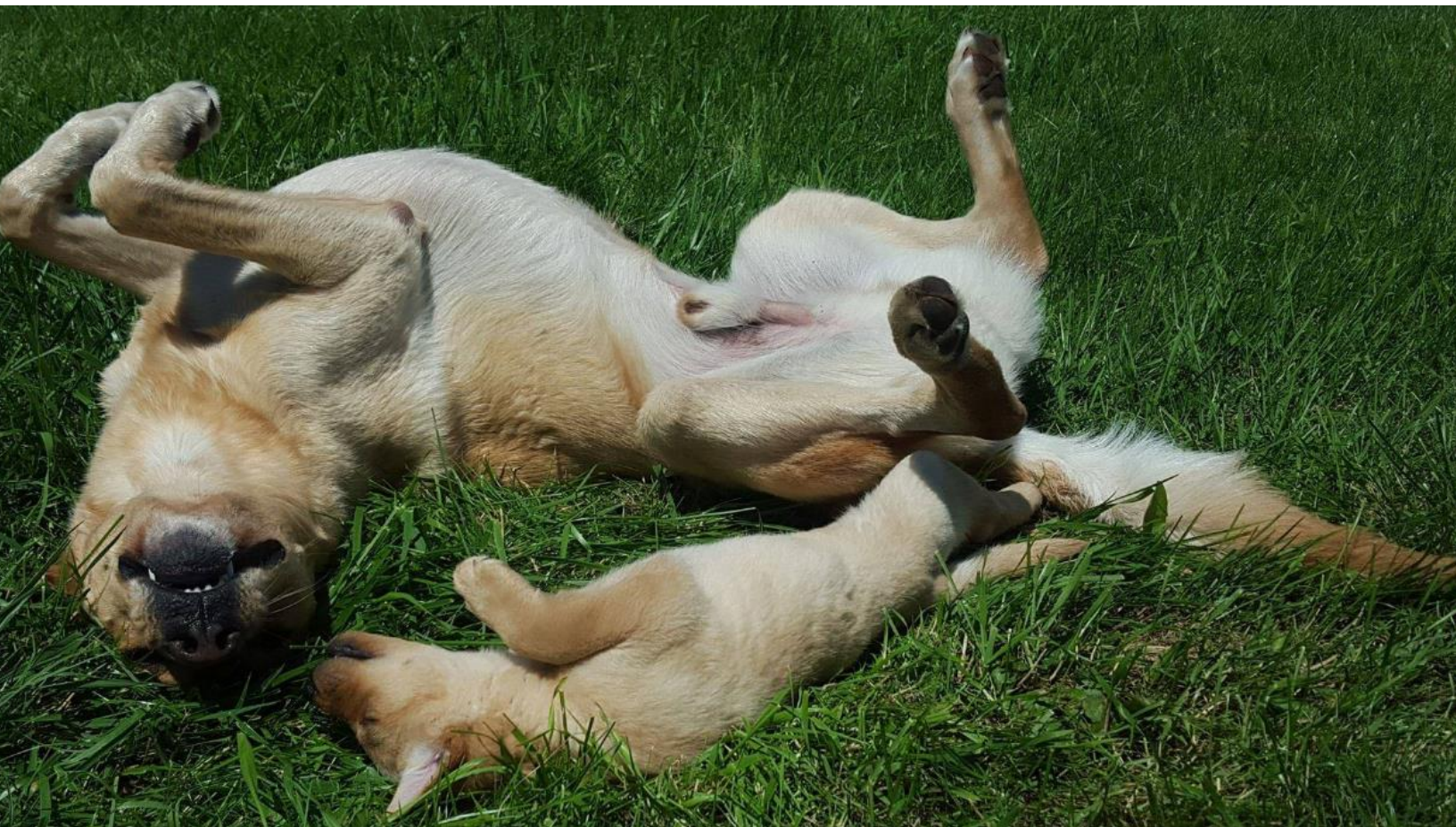
Mississippi State University
University of Arkansas at Monticello
Sigma Xi
Friends of the Montezuma Wetlands Complex
Seneca Meadows, Inc.
Onondaga County Parks
Honeywell, Inc.
Cargill, Inc.
Western University
Round River Conservation Studies
Central New York Wildfowlers
Eaton Birding Club
Winous Point Marsh Conservancy
SUNY Oswego
Land Trust Alliance



The SUNY ESF quad, May 2019



**THANK YOU FOR YOUR
GENEROUS
SUPPORT &
PARTNERSHIP!**



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