

A SPECIAL REPORT FROM DELTA WATERFOWL



# 2018 Research



Good waterfowl and wetland management should always be based on sound science. That philosophy has been at our foundation since Aldo Leopold first advised Delta's early conservation leaders. To this day, Delta carries on a strong research program focused on ducks and duck hunting issues in North America. Decades of research has shown that duck numbers are overwhelmingly influenced by breeding season events, so Delta continues to focus research and management on the breeding grounds — especially the Prairie Pothole Region. However, Delta conducts research and management projects that impact ducks and duck hunters across North America.

This report highlights Delta's active field work for 2018. The descriptions of each project are brief, but more information is always available. Feel free to contact me to discuss any of Delta's research.

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## Atlantic Flyway Mallards

### How to approach harvest regulations for a declining population.

► Atlantic Flyway mallards have been declining for some time. Specifically, the segment of the population that breeds in New York, Pennsylvania and other New England states is declining. Mallards nesting in eastern Canada are showing a small population increase. Biologists lack an understanding of the cause of the declining numbers in the Northeast, but the prescription by the U.S. Fish and Wildlife Service is for a dramatic reduction in daily bag limits — from four mallards (two could be hens) to a straight two-mallard limit. Delta is doubtful that such a drastic change will stem the decline of mallards. We also believe that alternative regulations, such as a bag limit of three mallards daily (one could be a hen) would better reduce harvest rates on the vital female segment of the population, and also be far more popular among hunters.

## Canvasback Project

### Testing predator management for over-water nesting waterfowl.

MICHAEL JOHNSON, M.S. STUDENT AND DR. TODD ARNOLD, UNIVERSITY OF MINNESOTA

► Canvasback, redheads, ring-necked ducks and other over-water nesting ducks are ignored species on the prairies. Predator reduction has been proven to be effective and efficient for increasing production of dabblers, but prior to this study, had never been tested in the parkland habitats of Canada where divers such as canvasbacks nest. This project tests whether seasonal predator reduction that focuses on both medium-sized mammals (especially raccoons)

and ravens, crows and magpies can result in higher nest success and brood counts of divers, and lead to increases in the population size on trapped sites in subsequent years.

## Canvasback Drone Project

### Drone and thermal technology focused on diving ducks — counting pairs, finding nests and detecting broods.

JACOB BUSHAW, M.S. STUDENT AND DR. KEVIN RINGELMAN, LOUISIANA STATE UNIVERSITY

► We will evaluate the effectiveness of a drone for three key segments of the Canvasback Project – counting pairs, finding over-water nests and detecting broods. We will expand upon 2017 work using a new drone that flies with a thermal-imaging camera and a normal video camera at the same time. This is particularly important because the thermal camera detects many warm objects in nesting and brood-rearing cover that cannot be identified from the heat signature alone. By toggling between the thermal camera and the video camera, we can quickly distinguish a canvasback nest from the abundant non-target muskrats or coot nests. In 2017, when we found a heat signature with the thermal camera, we were forced to visit the signature on foot to verify identity, which is dreadfully inefficient. Testing in 2017 suggests the thermal drone might greatly improve our success with counting elusive duck broods, many of which stay out of view in wetland margin cover. The dual-camera drone system could revolutionize waterfowl brood counts by enabling us to efficiently find and identify broods. This could be a huge breakthrough for waterfowl management.





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## Common Eiders in the Maritimes

### Evaluating new nesting structures for common eiders in Nova Scotia.

DR. MARK MALLORY, ACADIA UNIVERSITY, NOVA SCOTIA

► Common eiders regularly nest in colonies on offshore islands in Nova Scotia. Nest failure and mortality of incubating females appears to be rising, largely because of increased predation that might be associated with reduced nesting cover on the islands. In collaboration with the Nova Scotia Department of Natural Resources, this project will examine the use of a new A-frame nest structure. The research team will examine nest numbers, nest success, structure use rates and reproductive parameters for island nesting eiders. The team will also quantify nest microclimates for the new A-frames, for older barrel type structures and for natural nests.

## Drones for Upland Nests

### Using drone-mounted thermal cameras to find nesting dabbling ducks and pheasants.

ROALD STANDER, M.S. STUDENT AND DR. DAVID WALKER, UNIVERSITY OF MANITOBA

► The goal of this project is to test the efficacy of a heat-sensitive, thermal-imaging camera for detecting nesting birds. The primary focus will be on finding nests of

dabbling ducks and ring-necked pheasants. One day of pilot work on dabbling nests in 2016 provided very positive results. Detailed testing in 2017 with dabblers showed that non-target hotspots detected by the thermal camera may be the Achilles' heel of this nest-searching method. It takes a lot of time to track down all of the heat signatures that are merely rocks, ant mounds and other false positives. We will conduct detailed testing to see if the drone could find duck nests in cover such as crop fields and hay lands that cannot really be searched using other methods. A second focus will be on pheasants. The initial testing in 2017 was positive, but a more intensive evaluation with a larger sample of nests is required in 2018.

## Geolocators to Monitor Canada Goose Movements

### Discovering migration dates of arctic and sub-arctic nesting geese versus resident geese in Manitoba.

FRANK BALDWIN, MANITOBA FISHERIES AND WILDLIFE BRANCH

JIM LEAFLOOR, CANADIAN WILDLIFE SERVICE

KEVIN FRASER, UNIVERSITY OF MANITOBA

► Large Canada geese that nest in southern Manitoba are rapidly increasing. The annual rate of increase is about 11 percent, which results in population doubling every six to

seven years. Crop damage is a major concern for farmers in southern Manitoba, with more than \$450,000 paid out in summer 2016 alone. It's increasing every year, but compensation covers only a portion of crop damage. Crop losses caused by local geese create a negative perception of wildlife among farmers, which is detrimental to wildlife conservation on private lands. Efforts to increase goose harvest in fall by increasing bag limits and lengthening seasons have been unsuccessful, so a spring conservation season is being considered. One impediment is that multiple stocks of Canada geese occur in Manitoba during the spring. In order to establish a spring season timed so it has practically no impact on Canada geese that breed at high latitudes, we need to understand migration dates for the major stocks passing through Manitoba. This research will use geolocators placed on many geese of each stock to document migration times without using high-priced telemetry units.

## Mallard Banding in Arkansas

### Do wintering mallards show site fidelity?

DR. DOUGLAS OSBORNE, UNIVERSITY OF ARKANSAS DIVISION OF AGRICULTURE

► We suspect that ducks often home (referred to as philopatry) to the site where they wintered in previous years. However,

there is little information on the frequency of such philopatry for mallards, and what factors may influence return rates to the same area. Geese, sea ducks and some diving duck species show high levels of winter philopatry, but they are often found in areas where it is relatively easy to observe small numbers of marked birds. We are banding up to 4,000 mallards annually in February to look at the distributions of recaptures and recoveries in subsequent years. Obtaining data on philopatry and the distribution of recoveries can also help clarify the downside or benefits of local refuges. Some hunters believe that federal wildlife refuges “hold all the birds so they can’t be shot by hunters.” Alternatively, without “refuge areas,” a region may hold fewer ducks and hence suffer reduced hunting success. An additional outcome of this project will be to compare the timing and location of Osborne’s band recoveries to more than 110,000 mallards banded in Arkansas since 1960. This might provide insight into the timing of fall migration to determine if it has changed over the years.

## Pintail Carrying Capacity in the Prairie Pothole Region

### Has carrying capacity changed because of wetland drainage and changes in upland cover?

DR. DAVID KOONS, COLORADO STATE UNIVERSITY

► Delta will work with Dr. Koons to assess long-term changes in pintail populations in the traditional survey area by reviewing trends at the transect scale of the May population and habitat survey. We will examine which regional groups of pintails have increased, decreased or remained stable. The pair data will then be overlain with wetland loss data and changes in perennial nesting cover in an attempt to tie population changes to large-scale habitat changes. The goal is to understand how pintail carrying capacity has changed, because this metric plays a central role in pintail harvest models. It is highly likely that prairie breeding areas can support far fewer pintails than current harvest models use as their target population size. Incorrect assessment of the carrying capacity can have a negative influence on harvest potential and regulations. Pintails are the initial focus, but all dabbling duck species will be examined in this research.

## Has Pintail Production Declined?

### Evaluating changes in pintail age and sex ratios over time.

DR. TODD ARNOLD, UNIVERSITY OF MINNESOTA

► Pintail population size and the birth and death rates that drive the duck’s numbers continue to be a source of much interest, especially in light of U.S. Fish and Wildlife Service regulations lowering the bag limit to one bird per day for the 2017-2018 season. Dr. Arnold will review pintail age and sex ratios using USFWS Parts Collection Survey data to document how age ratios (proportion of juveniles in the fall flight) and sex ratios (assessment of female fraction of the population) have changed since 1961. This work is an important step for informing pintail harvest models, which are under increasing scrutiny.

## Raccoon Satellite Telemetry

### Studying movements and habitat use of raccoons for more effective trapping.

DR. CHARLOTTE MILLING, DR. STANLEY GEHRT AND MR. SHANE MCKENZIE, MAX MCGRAW WILDLIFE FOUNDATION

► We marked 15 raccoons on Delta’s canvasback study block in Manitoba with advanced GPS transmitting collars this spring. These technologically advanced transmitters collect vast amounts of incredibly accurate location data on each collared raccoon every day. The collar transmits data to us in massive data pulses. This applied research will provide excellent data showing where and when raccoons travel so we can set traps in their preferred locations. Our goal is to learn how to more effectively and efficiently reduce these predators, which were introduced to the prairies only a few



decades ago. Raccoons are public enemy No. 1 for eggs of canvasbacks, ring-necked ducks and other diving ducks.

## Ring-necked Duck Tracking

**Using implant satellite transmitters to monitor movements and habitat use of ring-necked ducks.**

TORI MEZEBISH, M.S. STUDENT AND DR. MARK MCCONNELL, UNIVERSITY OF GEORGIA

► The goal with this project is to implant female ring-necked ducks during the winter with satellite telemetry units to monitor migration paths, discover breeding areas, and monitor habitat use and movements during the annual cycle. Remarkably little is known about ringnecks, which is surprising given that they are the most

important diver in the harvest — the only diver consistently in the Top 10. Ringnecks have increased in population size more steadily than any other duck since breeding population surveys began in 1955. Delta hopes that studying ringnecks will teach us important lessons from one of the most successful ducks we have monitored over the past 60 years. The settling locations for the marked ringnecks will be of immediate value for setting regulations in the Atlantic Flyway, and also inform future management on the breeding grounds.

## Ring-necked Duck Philopatry and Vital Rates

**Testing whether ring-necked ducks can be locally increased if production is high.**

DR. DAVID KOONS, COLORADO STATE UNIVERSITY



► Ring-necked ducks occur widely on the vast Canadian breeding grounds, but they are not abundant anywhere. Breeding densities do not reach five pairs per square mile anywhere. In contrast, mallards, blue-winged teal and gadwalls regularly reach densities of 30 to 50 breeding pairs per square mile, with well over 100 pairs for all dabblers in high-density areas. It is unknown if ringneck populations can be elevated so that intensive management makes sense. We will initiate work in the highest-density breeding site in Canada we can reasonably access to make research feasible. In addition to intensive work on nesting ducks, we will undertake a comprehensive review of all population data for the complete subset of diving ducks that nest overwater: ringnecks, canvasback, scaup and redheads. Data is sparse, but this information should be collated and analyzed to create the best possible annual cycle models of population dynamics for diving ducks, which have been neglected for decades.

## Survival and Harvest Rates of Diving Ducks

**Banding canvasbacks, redheads and ring-necked ducks at the Delta Marsh to measure survival and harvest rates, and to clarify derivation analyses.**

MR. FRANK BALDWIN, MANITOBA CONSERVATION STEWARDSHIP

DR. JIM LEAFLOOR, CANADIAN WILDLIFE SERVICE

DR. FRANK ROHWER, PRESIDENT AND CHIEF SCIENTIST, DELTA WATERFOWL

► The Delta Marsh is probably the most consistently used staging marsh for canvasbacks in prairie Canada. Our initial goal was to band up to 1,800 canvasbacks yearly to estimate survival and harvest rates. However, we have discovered why fewer than 200 canvasbacks per year have been banded on the breeding grounds: These birds are hard to capture. We have learned which traps won't work, and we are closing in on effective traps and lures for catching canvasbacks. Redheads and ringnecks have proven easier to capture, and there is scant banding data for all three species. Thus, we will deploy a variety of traps that target all three species of divers so we can gain valuable management information.



## Working Wetlands

### Understanding farmers' perceptions of the Working Wetlands program.

DR. CHERYL WACHENHEIM, NORTH DAKOTA STATE UNIVERSITY

► Delta Waterfowl, in partnership with U.S. Department of Agriculture Natural Resources Conservation Service, initiated the Working Wetlands pilot project to test a new approach to the conservation of small wetlands in cropland. In

partnership with North Dakota State University, we are undertaking survey work of the program's participants to elicit insight and learn how we can better serve farm operations and protect small wetlands. The goal of this research is to inform large, landscape-scale program development that we can incorporate in the U.S. Farm Bill to help conserve wetlands across the U.S. Prairie Pothole Region.

Delta Waterfowl has supervised and supported more than 300 graduate students and published 600 peer-reviewed scientific papers. This body of research has had a profound influence on how we and our conservation partners manage waterfowl, wetlands and annual harvest.

This research has also provided technicians, biologists and young scientists the opportunity to gain the hands-on experience and guidance to become leaders in waterfowl and wetland conservation.

We are extremely proud that our former students and technicians are working for various government and non-government agencies, as well as universities, to ensure that the tradition continues. Thank you to all of the donors, members and volunteers who have supported Delta Waterfowl research.



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