



*More blue-winged teal nest in the state than any other duck species, according to 60 years of breeding duck survey work in North Dakota.*

# Leading the Way

## Game and Fish Celebrates Six Decades of Duck Survey Work

By Patricia Stockdill  
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*"The need for state-wide waterfowl investigations in the state of North Dakota has long been recognized. This need is readily apparent when we stop to realize that such basic information as the extent of the waterfowl range in North Dakota and distribution of waterfowl within that range has never been accurately and completely determined."*

– North Dakota State Game and Fish Department Division of Federal Aid Project 19R,  
Migratory Waterfowl Survey, North Dakota – Spring, 1948

The year was 1948. Life was exciting as World War II had ended. Americans had time, shotguns and ammunition to hunt ducks again. Soldiers were eager for college educations and employment. Several universities were graduating students in a new field – wildlife management. Money was flowing into state wildlife agency coffers through the Pittman-Robertson Act, a hunting equipment excise tax created to provide financial resources desperately needed to develop wildlife management programs.

“Things were coming together so wildlife agencies could really begin to manage wildlife,” said Mike Johnson, North Dakota Game and Fish Department game management section leader. The Game and Fish Department, with assistance from the U.S. Fish and Wildlife Service, started in 1948 what is believed to be the longest-running breeding duck survey in the world.

Until then, the nation’s duck population data came from wintering ground counts started in the mid-1930s. “My sense is that during the war, things had to get set aside,” Johnson said. But North Dakota hasn’t looked back since its initial breeding duck survey.

*“An aerial sample, intended to be permanent, and consisting of 17 one-half mile wide strips of land extending across the entire state in an east-west direction and comprising approximately four-plus percent of the entire land and water area of the state, was set up.”*

Biologists flew aerial surveys until 1955.

*“The aerial survey, begun on May 20, 1948 and successfully completed on June 7, 1948, indicated a minimum duck population of 11.4 ducks of all species per square mile on the sample covered.”*

Game wardens and biologists also conducted ground surveys beginning in May 1948.

*“A total of 478.9 square miles surveyed from the ground indicated an averaging of 16.0 ducks and 4.7 water areas per square mile. . . . Total ducks seen, 7678: Blue Wing Teal, 31.2%; Pintail 22.6 %; Mallard 15.4%; Shoveler 12.5%; Gadwall, 8.0%; Red Head 3.1%; Lesser Scaup 2.8%; Canvasback 1.6%; Ruddy 1.4%; Baldpate 1.2%; Green Winged Teal, a trace; Bufflehead, a trace; Unidentified, 12 ducks.”*

*NOTE: All quotations in italics are from North Dakota State Game and Fish Department Division of Federal Aid Project 19R, Migratory Waterfowl Survey, North Dakota – Spring, 1948*

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*Department surveys have documented periodic wet and dry cycles that characterize prairie wetlands.*



## Touch of a Finger

High tech will meld with tried-and-true once Department waterfowl biologists Mike Johnson and Mike Szymanski finish fine-tuning the latest North Dakota Game and Fish Department computer technology.

Johnson and Szymanski are working with Brian Hosek, Game and Fish Department geographic information systems specialist, in developing a computer system that will take the Department's 60-year-old May breeding duck survey to a new level.

Instead of recording information on data sheets and then onto computers, Hosek is developing a touchpad computer system with Global Positioning System capabilities, which allows biologists to enter data with the touch of a finger. The computer records the same information as handwritten data sheets – species, bird numbers and sex, air temperature, wind speed and direction, date, cloud cover and wetland type – and is downloaded in less time than handwritten data.

Accessing decades of original, precomputer era May breeding duck survey data

is a problem. It's available in leather-bound books and original manual typewriter-typed reports, hand-drawn maps – fore-runners to modern computer-generated waterfowl and wetland density “thunderstorm” maps – and onionskin carbon copies.

But it's not on computer.

And it needs to be entered into computers to analyze trends and data. The new technology will provide a close-up look at duck species trends, even breaking down information within transects. It might help identify issues surrounding pintail and scaup population declines and provide better brood survey information or insight on wetland loss impacts. “We can ask all kinds of questions that we can't consider now because we can't get at the information,” Johnson said.

While still in the testing phase, Johnson and Szymanski hope it will be available for May breeding duck surveys within two years. It could be used on other surveys, such as big game or upland birds. “This will change the way we do business,” Johnson said.

Expansion and tweaking of ground survey routes has occurred since, mainly because of the creation of Lake Sakakawea and more recent rerouting of U.S. Highway 281 around Devils Lake. Today's survey now covers eight routes and 1,816 miles. The shortest, 192 miles, begins near Oakes and ends at Langdon. The longest, 260 miles, starts near Hettinger and treks north to Bowbells.

In between, biologists stop at any wetland or duck sighting, noting every wetland type, ducks, geese, and other interesting observations, including upland game, raptors, coots and crows, within one-eighth of a mile from the road. “Our crow data is probably the only information out there, at least for North Dakota,” Johnson said of the big black birds that are significant duck nest predators.

Biologists count the number of male and female ducks. They identify each species and social grouping, such as a lone male, flocks or pairs. Then they drive to the next wetland or location of flying, sitting or swimming ducks.

Biologists conduct the survey for several reasons: “Population surveys are the foundation of wildlife management. We feel it's our responsibility as the number one duck producing state in the United States outside of Alaska,” Johnson said. “We rely on annual population numbers and trends to manage waterfowl. We have the longest-running database on the continent.”



*Above: Mike Johnson, Department game management section leader, noting survey data on paper, said population surveys are the foundation of wildlife management.*

*Right: Biologists started carrying laptop computers in their vehicles four or five years ago to help chart their routes. Today, work is being done to develop a touchpad computer system, with Global Positioning System capabilities, to allow biologists to enter survey data with the touch of a finger.*



While the Fish and Wildlife Service conducts aerial breeding duck surveys, the most extensive of its type in the world, its survey work didn't initially evaluate U.S. wetlands. In addition, the North Dakota survey helps confirm Fish and Wildlife Service information.

Johnson finishes number crunching once the ground survey is complete, number of nesting females factored in, and numbers multiplied to equal the total miles in North Dakota. "It all comes down to this number – 3.209 million breeding ducks this year (2007)," Johnson said.

That's the breeding duck number. However, since blue-winged teal comprise nearly 40

percent of that number, and they typically leave North Dakota early, hunters shouldn't look for all these ducks this fall. Even so, that's a huge increase from 768,285 ducks estimated in the 1991 May breeding duck survey.

*"Since we think we have used the best known techniques in the regard we deem it reasonable to attempt calculating totals and believe that other interested parties should at least find these figures interesting as a basis for comparison and discussion."*

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## More Survey Work

There's more to learn about North Dakota's duck numbers than just from the May breeding duck survey.

A 59-mile test run begins in late March or early April once

Mother Nature breaks loose with waterfowl migration. "We drive down the road and we count all the ducks in one-eighth mile direction on either side of the road," said Mike Johnson, North Dakota Game and Fish Department game management section leader.

The route loops from Sterling north to Wing, east to Tuttle, and south to Steele. Mike Szymanski,

Department waterfowl biologist, drives it every

Wednesday morning until early June. He tracks species and duck numbers according to social grouping, such as flocks or lone males, which means a hen is likely sitting on a nest. Plus, he counts wetlands.

The test run helps track migration and nesting progress, Johnson said.

July brood runs are next. Biologists drive 18 routes north and east of the Missouri River, noting brood numbers, number and age of ducklings in each brood, species, and whether a hen is present. Plus, they tally wetlands.

Annual fall wetland surveys began in 2003. "It's a picture that we're trying to paint for people that wasn't painted before," said Szymanski about providing a look at changing wetland condi-

tions. Only wetland quality and number are noted. The survey takes place along several May breeding duck survey routes in North Dakota's prime waterfowl country a week before waterfowl hunting season opens.

Biologists compare September wetland conditions to those in May as well as to the previous year's September conditions. Although too new to track trends, Szymanski said the 2006 survey under-

scored south central North Dakota's dry conditions.

Survey work heats up the first week in January when North Dakota participates in a nationwide midwinter migratory bird survey. Biologists fly in airplanes, and often in bone-chilling conditions, from Garrison Dam to the North Dakota-South Dakota border, including Nelson Lake in Oliver County. They also fly Lake Sakakawea and the Missouri River-Yellowstone River confluence if there is open water.

Biologists count ducks and geese, noting them by species. The survey began in 1954.



*Canada geese are a common sight along survey routes today. There was a time that wasn't the case. In 1965, North Dakota was said to have only 100 wild breeding pairs of giant Canada geese.*