

Tracking *an* ENIGMA

written by Doug Howell and Jim Wilson

As pintail populations continue well below their long-term average, Atlantic Flyway biologists set out to learn more about the species in the East. The results give a clearer picture of how eastern pintails differ from those in the midcontinent.

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Hen pintails were captured with a rocket net and then fitted with a satellite-tracked transmitter.

The Northern pintail hen that would be known by the identifying number 55005 was captured and instrumented with a satellite-tracked transmitter on Feb. 24, 2005, at Lake Mattamuskeet National Wildlife Refuge, an important wintering area for many waterfowl species. One month later, the hen had made her way from North Carolina to western New York, just one stop on a spring migration that would, with any luck, result in a successful nesting attempt later in the summer.

After more than a month in New York and southern Quebec, she headed northeast, spending several weeks in eastern Quebec and later Newfoundland and Labrador. By June 10, the pintail had reached southern Ungava Bay, where she possibly nested in the nearly two and one-half months she remained there.

In mid-September, she was well into her fall migration, stopping in the St. Lawrence

River and Lake Ontario areas, just as she had in the spring. On Feb. 9, 2006, waterfowl biologists with the N.C. Wildlife Resources Commission recaptured No. 55005 at Lake Mattamuskeet. She had come full-circle, and through her approximately 3,500-mile migration, had given biologists another piece of information about pintails in the East.

Pintail No. 55005 was one of 68 females captured and marked with satellite-tracked transmitters in a collaborative effort among six state wildlife agencies from 2003–2005. By tracking the hens, which have an affinity for their natal territories, waterfowl biologists hoped to accomplish several goals: Assess the breeding ground affiliations of pintails wintering in the Atlantic Flyway, describe the timing and chronology of spring and fall migrations, identify critical habitats and staging areas, and learn what paths the birds take as they move to and from breeding and wintering areas.

Before discussing pintails that breed in eastern North America, however, it is important to understand the status of pintails from a continental perspective. The overarching issue with Northern pintails (*Anas acuta*) is the substantial and long-term decline of the species throughout its range, which is among the most expansive of any North American waterfowl species. Prior to 1980, pintails were one of the three most populous waterfowl species in North America, with a breeding population that reached 7 million in 1972. Today, the continental population estimate for pintails is 3.3 million birds, well below the 5.6 million set as the breeding population objective under the North American Waterfowl Management Plan.

Pintails winter in the southern latitudes of the United States and into Mexico, Cuba and Colombia, and in Pacific Northwest coastal areas. They breed in the northern Great Plains, across the breadth of Canada and west to Alaska and sometimes Siberia. The heart of pintail breeding territory, however, is the Prairie Pothole Region of the northern Great Plains and Canada. As a result, management strategies, including harvest, are based on the midcontinent component of the continental population of pintails.

Pintails experienced a sharp decline during the 1980s and through the early 1990s following extended periods of drought in the Prairie Pothole Region. In both 1991 and 2002, pintail numbers dropped to lows of 1.8 million birds. Although they breed in a variety of habitats, pintails prefer to nest on the prairies.

DROUGHT ON THE PRAIRIE

During drought conditions, however, pintails may over-fly the prairies and head to more northern latitudes, as far north as Alaska, where in some years more than half of pintail breeding may take place. For those birds that were bred on the prairies and have an affinity to return there to breed, over-flying their preferred habitat can mean a decline in nesting success. Hens build energy based on migration to their natal territory. When they must fly an additional 1,000 miles or more, the increased energetic demands affect nest success, brood survival and hen survival. Sometimes hens will abandon broods if they feel they don't have the energy to keep them alive, sacrificing this year's reproduction for next.

Typically, pintail populations—and those of other dabbling ducks—have reflected wet and dry cycles: During wet periods in the

IF HER NEST IS DESTROYED, A PINTAIL MAY NEST A SECOND TIME, BUT THE CLUTCH IS NORMALLY NOT AS LARGE AS THE FIRST AND DUCKLING SURVIVAL IS NOT AS HIGH.

prairies their populations increase; during dry periods they decline. Historically, when drought periods have ended and spring ponds have filled, dabbling duck populations have rebounded, with some species exhibiting remarkable turnarounds.

When wetlands began to increase again in the mid- to late 1990s, most dabbling ducks that nest in the prairies increased significantly, but pintails had only a modest resurgence. In the 2007 U.S. Fish and Wildlife Service's Waterfowl Breeding Population and Habitat Survey, some dabbling duck species, including blue-winged teal, gadwall and Northern shoveler, were well above their long-term averages. Pintails, however, remained about 19 percent below the 1955–2005 average.

In some areas, pintail breeding population estimates increased over 2006, particularly in central and northern Alberta and the eastern Dakotas, where habitat conditions were significantly improved in the prairies and parklands. In the eastern Dakotas, for example, population estimates rose 111 percent.

However, it was a different story in southern Alberta, southern Manitoba, Montana and the western Dakotas, which exhibited declines between 47 percent and 74 percent. Northern and southern Saskatchewan also had modest declines.

The long-term averages in these regions reflect the overall decline in pintails. Only the Alaska-Yukon Territory-Old Crow Flats region (up 24 percent over the long term) and the eastern Dakotas (up 19 percent) show positive trends. All other traditional survey areas have declines ranging from 37 percent to 87 percent.

Why have pintails failed to respond to increased water on the prairies? Waterfowl biologists conjecture that a large part of the problem lies in changing agricultural practices, particularly in Saskatchewan, Alberta and Manitoba,

where cropland has increased significantly in prairie areas. Primarily, pintail numbers have failed to increase not because of a loss of prairie to cropland, but by a move away from summerfallow, a traditional practice in which farmers rested croplands in alternate years. Those fields would be lightly tilled several times to control weed growth.

The Soil Service of Canada has encouraged farmers to decrease acreage left in summerfallow to reduce soil erosion. Too, continuous cropping is more profitable for farmers.

The push to eliminate summerfallow has worked well. In the mid-20th century, as much as 30–50 percent of cropland in the prairies was in summerfallow, but by 2002 that figure had fallen to less than 20 percent.

In the Prairie Pothole Region, pintails prefer to nest in areas with shallow, ephemeral to semipermanent wetlands with low emergent vegetation surrounded by low upland cover. They also frequently choose agricultural fields, and unlike other dabbling ducks will readily settle in the stubble of summerfallow fields. Typically, farmers would not till summerfallow for weed control until after pintails had nested. Because pintails are early nesters, that increased the chances that the eggs would have hatched before tillage. Under continuous cropping, fields are tilled earlier, leaving both hens and nests at risk from farm machinery.

If her nest is destroyed, a pintail may nest a second time, but the clutch is normally not as large as the first and duckling survival is not as high.

ATLANTIC FLYWAY PRIZE

Pintails have been and remain a paradox for Atlantic Flyway hunters. Historically, pintails wintering in the East, primarily in the coastal zone from New Jersey to Florida, have averaged less than 3 percent of the continental population. Despite the fact that other waterfowl have been more numerous, pintails, with their sleek bodies and dramatic yet understated plumage, long have been the duck of choice for Atlantic Flyway hunters, possessing a mystique rivaled perhaps only by black ducks and canvasbacks. Their historical popularity in North Carolina is revealed in hunting lore and in the decoys of such noted carvers as Ned Burgess, Mannie Haywood and Mitchell Fulcher.

Although the popularity of pintails with eastern hunters remains high, the birds' numbers have shrunk considerably, mirroring the decline seen throughout its range.

Midwinter Waterfowl Survey estimates of pintails in the Atlantic Flyway have tumbled from a five-year average of 280,000 birds from 1955–1960 to about 45,000 birds from 2000–2005. North Carolina's population of those wintering pintails has averaged about 55 percent of the flyway total.

Atlantic Flyway waterfowl biologists believed it would be instructive and beneficial to look at pintails from an eastern perspective, to understand more on how representative the midcontinent population is of the eastern population. Band-recovery data indicate less than 4 percent of the pintails banded in Canada and less than 8 percent of those banded in the continental United States are recovered by Atlantic Flyway hunters. However, problems with band-recovery data are that banding effort is not equal among species, is often not distributed equally geographically, and potentially is not totally representative of a species' breeding range. Although there's a good bit of effort to band pintails in the midcontinent, few pintails are banded in eastern Ontario and Quebec, particularly in the northern part of that province because it is so remote.

The pintail tracking project began in 2003 when South Carolina Dept. of Natural Resources biologists fitted 10 pintails with 30-gram transmitters—then the smallest available. After discussions among waterfowl biologists in the Atlantic Flyway, the project grew the following year into a six-state, multiagency effort, involving South Carolina, Virginia, Maryland, New Jersey, Florida and North Carolina. These states represent the primary wintering range of pintails in the Atlantic Flyway.

HEADING EAST, HEADING WEST

In 2004 biologists fitted 40 additional hens with lighter 20-gram transmitters. In 2005, another 18 were instrumented in North Carolina, New Jersey and Virginia. As the pintails flew north, biologists noticed a dichotomous migration along two primary corridors east and west of the Great Lakes. To the west, some component of birds crossed the Appalachians and flew northwest through Ohio, Indiana, Michigan and Wisconsin, which border the Great Lakes, into Minnesota, North Dakota and southern Manitoba. Once west of the Great Lakes, they dispersed northwest into Saskatchewan or traveled northeast to northern Ontario. To the east, another component of birds moved up the Atlantic coast to the Chesapeake Bay region and on to the



One of the findings from the project was that pintails in the Atlantic Flyway take two different migration corridors.

PINTAILS IN THE ATLANTIC FLYWAY Midwinter Waterfowl Survey

Years	N.C. Average	Flyway Average
1955–60	26,110	280,141
1961–65	30,340	175,327
1966–70	39,240	148,200
1971–75	32,100	92,489
1976–80	43,940	82,211
1981–85	23,160	53,032
1986–90	17,269	43,925
1991–95	25,628	55,030
1996–2000	24,313	45,268
2001–05	24,851	49,169



MARK BUCKLER



F. EUGENE HESTER

Changes in agricultural practices have hampered the rebound of Northern pintail populations.



TODD PUSSEY



TODD PUSSEY

After ducks were captured with a rocket net, waterfowl biologists recorded data from each bird. Pintails and other ducks that were not used for the project were leg-banded and released.

Hudson Bay regions is very different from the Prairie Pothole Region. The area is part of the Taiga Shield and Hudson Plains, which is the most extensive area of wetlands in the world. Its climate is subarctic and is characterized by peat-covered lowlands that are frequently wet due to permafrost.

With habitat conditions fairly stable in the East, the primary influencing factor probably would be weather. Although waterfowl biologists must be careful about using age ratio data to make too many inferences, they surmise that this stability in age ratios is unique to the East, where pintails appear to be more insulated from short-term habitat changes which favor higher rates of annual production. Stability over time suggests that the population levels of these birds might not be as driven by habitat conditions as those in the midcontinent or the West.

MANAGEMENT IMPLICATIONS

What effect this study might have on management of eastern pintails remains uncertain. When Adaptive Harvest Management (AHM) began to be used in determining waterfowl seasons and harvest in the mid-1990s, regulation frameworks in the east were based on the midcontinent mallard population. As biologists amassed more data on eastern mallards, those frameworks changed to reflect that eastern population. Pintails, however, are different. There is a separate harvest strategy for pintails that is outside the general regulatory cycle for other puddle ducks. The same is true for black ducks, another species that has suffered long-term declines. Neither bird is managed based on the eastern mallard harvest model. In North Carolina, for example, only one pintail and one black duck may be included in a hunter's daily bag.

Biologists have just broken the ice with eastern pintails. The difficulty in obtaining information on many waterfowl species, like pintails, will likely not lessen, but waterfowl managers need to constantly improve on the data needed to make informed management decisions. The data collected on the distribution, movements and habitat associations of eastern pintails, as well as questions raised by this study, are a step toward improving

grounds and the first to depart their summer habitat. Biologists found that while pintails exhibited the early spring migration, it was more extended in time. Females departed their wintering grounds in late February or early March with dispatch, making their ways to the Delaware Bay, which serves as an important staging area.

The fleshing out of critical habitat was just one of the important pieces of information the study revealed. Eastern pintails tended to funnel straight up the St. Lawrence River from Lake Ontario and make another stopover in that area, where they remained through April before dispersing to northern breeding areas in early May. In the three years of the study, biologists built on their knowledge of the timing and chronology of pintail migration. They also identified the locations of some of the key habitat and stopover sites that are important for these birds, both east and west of the Great Lakes.

Through age-ratio data that was extracted from the U.S. Fish and Wildlife Service's annual Parts Collection Survey, biologists also found that eastern pintail age ratios were more stable over time and about twice that of midcontinent birds. The Parts Collection Survey is exactly what the name implies: a survey of parts, in this case duck wings, sent in by hunters in each flyway identified through the Harvest Information Program.

Age ratios are an index to recruitment—how many birds enter the fall population. Because the age ratios of eastern pintails were fairly stable, biologists conjecture that fluctuations in water that influence midcontinent pintails might not be so much of a factor in the east. Habitat in the James and

Delaware Bay. Following paths along the Susquehanna and Delaware River systems, these pintails moved into the Finger Lakes and Lake Ontario Plain in New York. From there they moved northeast along the St. Lawrence River Valley, which extends through New York, southeastern Ontario and southwestern Quebec, before dispersing to locations in Newfoundland and Labrador, northern Quebec, and eastern Ontario.

Of the 21 birds marked in 2004 and 2005 in North Carolina that completed spring migration, only one migrated along the western corridor. South Carolina, however, had seven of its 12 pintails take the western route. A total of 55 hens marked in the six states completed spring migration, and only 11 took the western corridor.

Why South Carolina's pintails show an affinity for the western migration corridor is unknown, but birds of the two corridors also separate themselves in their summer locations. Some western corridor birds stayed in Saskatchewan and southern Manitoba, but beginning in June many birds moved north-east and settled along the Hudson and James Bay coasts, perhaps on molt migrations or to breed. Those birds, however, tended to remain in Ontario on the western side of James Bay. Pintails dispersing from the eastern migration corridor also settled in this area in summer, but exhibited a strong affiliation with the James and Hudson Bay coasts of Quebec, southern Ungava Bay, and the interior lakes region south of the Ungava Peninsula in northern Quebec, and the Happy Valley-Goose Bay area of central Labrador.

Some of the older literature suggested pintails are the first to leave their wintering

the knowledge base for this component of the continental population of pintails.

The study has helped define some critical areas in the East, such as Delaware Bay, the Finger Lakes Region in New York and the St. Lawrence River Basin, which are critical habitats for migrating pintails, and important nesting and molting locations, including the James and Hudson Bay coasts, the Ungava Peninsula and interior regions in northern Quebec. With those areas defined, the hope is that joint venture work in those areas can focus on pintails in habitat improvement work and strengthen the goals of the North American Waterfowl Management Plan.

Without increased survey and banding effort in eastern Canada, waterfowl biologists simply will not have the data needed to support a separate management strategy for eastern pintails as is done for mallards. Even with increased pintail banding, however, that might take years to accomplish, and there are other species—most notably black ducks—that will continue to be the focus of banding work done in the east.

At least in the short term, we will see management decisions continue to be driven by the midcontinent population of pintails, which is not a bad method. It is a conservative approach and one that is beneficial for a declining, enigmatic species of waterfowl. ❖

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THERE IS A SEPARATE HARVEST STRATEGY FOR PINTAILS THAT IS OUTSIDE THE GENERAL REGULATORY CYCLE FOR OTHER PUDDLE DUCKS.



TODD PUSSEY

HIGH-TECH ANSWERS TO PINTAIL MIGRATIONS

In North Carolina, Northern pintails are a coastal-oriented species, and an overwhelming majority of the pintail harvest occurs in six coastal counties: Currituck, Dare, Hyde, Beaufort, Pamlico and Carteret.

N.C. Wildlife Resources Commission waterfowl biologists focused their capture and marking efforts along the coast at several locations where suitable trapping sites could be found. Pintails were caught primarily with rocket nets and then fitted with transmitters. The heaviest hens (about 1.9 pounds) with adult plumage characteristics were chosen to be fitted with transmitters. All were kept overnight for observation and then released at the capture site.

Other pintails captured were leg-banded and released on-site. A total of 28 birds were marked at four different locations: Mattamuskeet National Wildlife Refuge (NWR), Pocosin Lakes NWR, Pea Island NWR and Pine Island Hunt Club. Most of the pintails were marked and released at Mattamuskeet.

The satellite transmitters, called PTTs or Platform Transmitter Terminals, weigh 20 grams. The weight of the transmitter was critical, as the overall weight of the transmitter/harness package should not exceed approximately

3 to 4 percent of the weight of the bird. The transmitter rests on the back of the bird and is attached with a Teflon ribbon harness. The battery life of a 20-gram transmitter was about 400 hours over 330 days.

Because biologists were primarily interested in large-scale movements over the course of one year, the transmitters were programmed for six hours of transmission every five days.

Signals were picked up by an Argos tracking system receiver attached to several National Oceanic and Atmospheric Administration (NOAA) polar-orbiting weather satellites. Argos is a cooperative venture under the joint management of France's Center of National Space Studies, the U.S. National Aeronautics and Space Administration and NOAA.

The locations were classified based on their estimated accuracy, with location classes 3, 2 and 1 having accuracy ratings within 1,000 meters. Class 0 was more than 1,000 meters, and classes A and B were unable to be evaluated.

Biologists received 10,897 Argos locations from the ducks, with the high-quality locations—0, 1, 2 or 3—averaging 66 percent of the total.