



MALLARD DECLINE

CAUSE & ACTION

BY JOSH STILLER | PHOTOS BY AUTHOR

History of Mallards in the Atlantic Flyway

Mallards are one of the most abundant and most sought-after ducks in New York State and much of the Atlantic Flyway. Whether it is for their excellent table fare, the stunning iridescent plumage of a male “greenhead,” or their eagerness to respond to a hunter’s call, there is just something about the mallard that keeps hunters and birders flocking to the marsh each fall in pursuit of this crown jewel.

However, mallards weren’t always king in New York. In the early 1900s, many historical accounts mention mallards merely as occasional visitors; some breeding bird accounts from that time don’t mention them at all!

The current population of mallards found in New York and throughout most of the Atlantic Flyway (“eastern mallards”) is thought to be the result of slow, natural eastward range expansion, coupled with the release of captive-reared mallards. Captive mallards were released for additional hunting opportunity, and many were liberated

live decoys. Live decoys were banned in 1935, and as a result, many people simply released whatever stock they had in their possession. This combination of range expansion eastward and captive release created a foothold for mallards.

As far as ducks are concerned, mallards are the ultimate adapters. They can survive and produce young seemingly wherever they end up, provided a few basic needs are met. Historically, mallards were primarily prairie ducks. They thrived in the open grassland and parkland habitats found throughout North Dakota, South Dakota, and portions of Alberta, Manitoba, Minnesota, Montana, Nebraska, and Saskatchewan. Many of these wetlands associated with the grassy upland nesting habitat are seasonal, and the amount of available water and nesting habitat varies considerably based on the amount of precipitation received each winter.

To thrive in the east, mallards had to adapt. As humans altered the landscape and moved ducks around, mallards quickly began thriving in the less productive beaver

flowages, marshes, tidal marshes, urban parks, and farm pond habitats found in the Northeast. While these habitats are not as productive as the prairie pothole region, they are consistent from year to year, and provide enough suitable habitat to support a healthy mallard population.

During the first half of the twentieth century, mallards were becoming more common. Their population really took off from the 1970s through 1990s; at the same time, the number of mallards breeding in the prairie pothole region tumbled due to sequential years of drought, habitat loss, and overall poor nesting conditions. Because national hunting seasons were based on the most abundant ducks that occurred in the prairies, the U. S. Fish and Wildlife Service (USFWS) restricted duck season lengths and bag limits throughout the U.S. At one point, duck seasons were as short as 30 days with a three-bird bag limit in the early 1990s. Banding data suggested that few mallards from the prairies were harvested in the Atlantic Flyway, and biologists in the east weren't seeing the declines observed in the prairies. To justify more liberal seasons, biologists had to demonstrate the birds being harvested in the Atlantic Flyway were different and were not declining like the birds found in the prairies.

In 1993, northeastern states began one of the largest and most comprehensive ground-based waterfowl surveys in North America to estimate breeding waterfowl

populations throughout the region. The Northeast Plot Survey provides annual estimates of commonly breeding ducks and geese (e.g. mallards, Canada geese, and wood ducks) found in these areas. To convince federal authorities that northeastern mallards could sustain additional hunting pressure, biologists used banding data to demonstrate that local birds were produced in eastern Canada and the northeastern United States. Through these efforts, the Atlantic Flyway Council and the USFWS could begin managing eastern mallard populations independently from "mid-continent mallards." In 1997, a liberal, 60-day duck season with a four-bird bag limit for mallards was implemented and has been in place ever since.

Soon after the new season lengths and bag limits were implemented, the eastern mallard population, which includes portions of the northeastern U.S. and eastern Canada, peaked at approximately 1.3 million breeding mallards. Since then, populations have steadily declined a little more than 1% per year. The decline is even more evident in the northeastern U.S., where mallard populations have declined from a high of nearly 900,000 in 1998 to approximately 450,000 in 2017.

Whenever significant declines in wildlife populations are observed, many people naturally question whether the population surveys accurately reflect the real population.

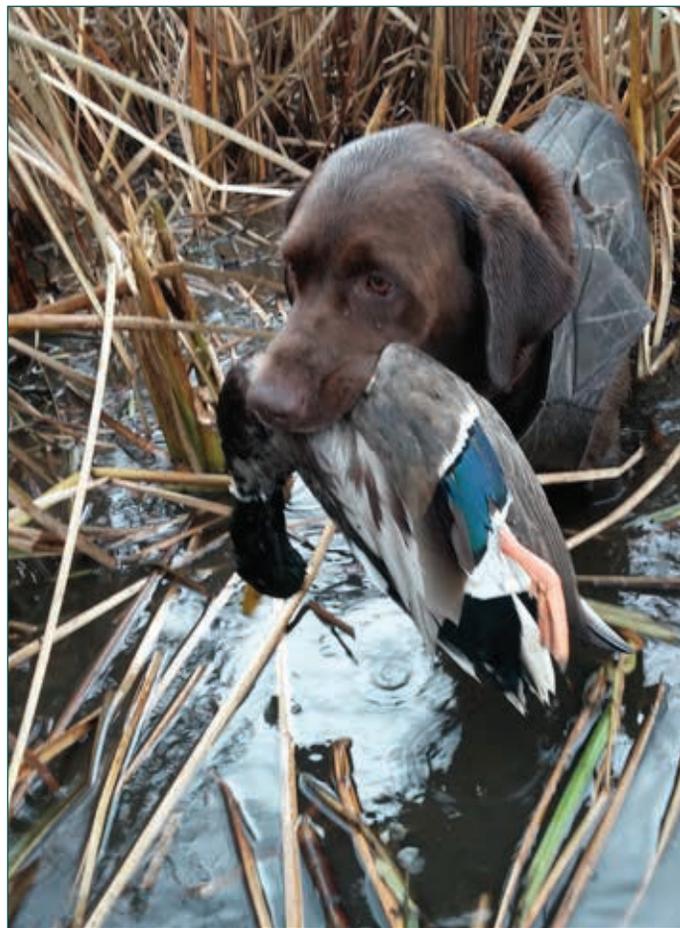


Drake (male) mallard

Are mallards being miscounted? How do biologists know their numbers are accurate? Are they missing urban birds?

Luckily, biologists have many ways to measure mallard population trends over time. In addition to count surveys, biologists band more than 15,000 eastern mallards every year. Hunters and others who find banded waterfowl report the band numbers to the United States Geological Survey (www.reportband.gov) when they find them. From these band recoveries, biologists learn a lot about mallard migration patterns and life histories. Armed with this information, the biologists model mallard populations.

Estimates from these data suggest the same declining trend. In addition to banding data, the USFWS and Atlantic Flyway biologists use hunter surveys to estimate harvest every year. Despite no changes to season length or bag limits for mallards, harvest in the U.S. portion of the Atlantic Flyway declined 40% from 1998-2016. In the end, all data points to the same thing: eastern mallards have been declining for nearly 20 years.



Mallards are one of the most sought after ducks by hunters in the Atlantic Flyway.

Why Are Mallards Declining?

There is little doubt that eastern mallards are experiencing a long-term decline, but the question is, what is driving the decline? Measuring changes in population size is much easier than explaining why they are happening. Wildlife populations are balancing acts. Breeding population size in any year depends on how many birds from the previous year's population survived the full year (survival rate), and how many young-of-the-year birds from the previous year's nesting season made it through the winter and early spring (production rate). A long-term decline means that either survival or production (or both) is 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 obtained from the USFWS Parts Collection Survey have not changed significantly from that time either. Yet the population decline is evident.

This indicates there may be an inaccuracy, or bias, in one of these critical data streams, in that survival or recruitment, or both, are consistently being overestimated. Assuming there is a bias in productivity or survival estimates, the question remains, why are eastern mallards declining? And what is causing lower productivity or survival? Biologists and researchers are hard at work trying to develop the right questions to find the answers. Right now, there are many potential causes being considered. For example, has habitat across the area gradually changed? Changes in habitat availability or quality can lead to lower productivity, even for a species like a mallard known to be extremely adaptable to habitat change. Another possible explanation, or theory, is that a decline in winter feeding sites or changes to agricultural practices results in lower survival or productivity the following breeding season.

A more recent hypothesis being discussed is the possibility captive-reared mallards being released into the wild may have been hybridizing with wild mallards at a high rate. The mixing may be frequent enough that the genetics of mallards are changing in a way that potentially makes them poorly adapted (i.e. they have lower productivity or survival) for the current landscape. Historically, large numbers of mallards were released annually by state agencies and private individuals to supplement wild populations. The state-funded mallard release programs have largely been discontinued, but permitted private shooting preserves and game bird breeders release these birds for recreational put-and-take



While mallard numbers have been declining, these birds are still one of the most numerous breeding duck species in the Atlantic Flyway.

hunting opportunity. Today, more than 200,000 captive-reared mallards are released in Atlantic Flyway states every year. While these released birds have a low survival (typically less than 30%), if even a small portion of the surviving birds are successfully reproducing, they could be having an impact on eastern mallard genetic diversity. Researchers from the University of Texas El Paso sampled wild mallards in the Atlantic Flyway and discovered evidence of significant hybridization, or genetic mixing, between wild and captive-reared mallards. However, when they examined birds from the prairie pothole region, they did not see evidence of mixing to the same degree. Much work must be done to see if there is any link between survival or productivity and the degree of hybrid genetics in wild mallards.

Beyond changes to habitat and hybridization, the decline could also be caused by hunter harvest or natural range contraction after mallards “invaded” the Northeast. Liberal season length and bag limits implemented in 1997 could have caused overharvest, especially over time. Mallard decline began shortly after the liberal seasons began; however, many people question whether this is merely coincidental, or a true cause-and-effect relationship. Also, it isn’t uncommon for a species that is new to an area to exceed the number of animals the land

can support over the long-term. In these situations, there is typically a population peak followed by a slow decline before stabilizing at a lower level.

While We Search for a Cause

In general, population changes are rarely driven by a single cause, and the recent decline in mallard numbers is likely no different. More than one of these factors may be contributing to the overall decline to various degrees.

Despite the decline, mallards are still one of the most numerous breeding duck species in the Atlantic Flyway. However, to ensure duck hunters and birdwatchers throughout the eastern mallard range continue to encounter large flocks of these beautiful birds, the Atlantic Flyway Council has recommended that USFWS reduce the daily bag limit for mallards from four birds per day to two. This reduction will allow time for biologists to better understand the likely causes of the decline, and the potential solutions. There is no defined endpoint for a two-bird limit, but biologists hope mallard populations will positively respond to the decreased harvest pressure, and eventually there will be additional opportunity for more liberal bag limits.

Josh Stiller is a biologist in DEC’s Bureau of Wildlife in Albany.