

# Wildlife Populations: Wood Duck

## Background

The wood duck (*Aix sponsa*) is one of many species of waterfowl that nest in North America.<sup>1</sup> It is an important game species, comprising 8% of the annual waterfowl harvest in 2017 in the United States.<sup>2</sup> In the Atlantic Flyway, the wood duck is the most harvested waterfowl, while in the Mississippi Flyway it is second only to the mallard in number of birds harvested.<sup>2</sup> It is a small to medium-sized duck with a crested head, broad wings and a large rectangular tail. The sexes are dimorphic; in alternate (breeding) plumage the male is quite distinctive with an iridescent green and purple head; a white throat with finger-like extensions onto the cheek; large red eyes; a long green, purple and white crest; and a burgundy breast.<sup>3</sup> The female is brownish to gray, with a white patch around the eyes, a white chest and a gray crest. Males in eclipse (basic) plumage and juveniles resemble females.<sup>3</sup>



Male wood duck. Photograph by William Krumpelman, Getty Images

The wood duck is a dabbling duck, which means it generally stays on the water surface and “tips up” for food items in shallow water; it is, however, a more efficient diver than other dabbling ducks and easily dives for corn or acorns in several feet of water.<sup>4</sup> Wood ducks nest in natural cavities or in nest houses. They are smaller than mallard ducks and it is believed that their size may have evolved to exploit cavities created by pileated woodpeckers (*Dryocopus pileatus*), with which they share their breeding range.<sup>4</sup>

Unlike other dabbling ducks, wood ducks are adept at perching in trees and flying between tree branches.<sup>4</sup> They are also skilled at walking on land and often seek food in uplands that are several miles from the nearest water.<sup>4</sup> Because of these behaviors, wood ducks are at home in a wide variety of wetland habitats, and they are uniquely adapted to breed in the deciduous forest biome, even to the point of nesting in cities and towns.

Some of the adaptations that allow the wood duck to exploit these habitats are broad wings, large eyes and a long tail.<sup>4</sup> Out of all species of game duck, the wood duck has the broadest wing in proportion to its length; this increased wing size supports flight between the branches of trees.<sup>4</sup> Wood ducks also have the largest eyes of any waterfowl; in addition to being advantageous at low light intensity, it allows greater acuity which further enables them to efficiently fly through branches.<sup>4</sup> The wood duck also has a longer tail than almost all of the other dabbling ducks; this contributes to greater maneuverability during flight, resulting in less risk of injury when navigating through the large number of densely-packed trees in its habitat.<sup>4</sup>

Early ornithologists in North America reported robust populations of wood ducks until late in the nineteenth century, after which numbers began to decline, especially near large cities.<sup>4</sup> This decline was likely the result of overharvest, deforestation, and loss of wetland habitats. By World War I, wood ducks were at extremely low levels over much of their range, as was the case with many other species of waterfowl.<sup>4</sup> Because of this, a number of bills were passed nationally to address dwindling populations; including the Weeks-McLean Bill (1913), which gave the federal government custody of migratory birds and prohibited the hunting of wood ducks; and the Migratory Bird Treaty Act (1918), which resulted in a limit of one wood duck per hunter that lasted until 1941.<sup>4</sup> The wood duck’s range, largely confined to areas populated by humans, made it vulnerable for longer periods of time than species that bred in more sparsely inhabited areas. Use of nest boxes,

expanding beaver (*Castor canadensis*) populations, which create favorable wetland habitat, regrowth of forested areas, and managed hunting seasons have all contributed to the recovery of the wood duck in North America.<sup>3</sup>

Today wood ducks are abundant throughout most of New Jersey. Highest densities are reached in forested and scrub-shrub wetlands adjacent to mature forests. Presence of abundant wood ducks in freshwater wetlands is indicative of healthy ecosystems.

### Status and Trends

Due to the migratory nature of waterfowl, the research and management activities of the Division of Fish and Wildlife Waterfowl Ecology and Management Program are generally conducted on a flyway or continental scale requiring the participation of numerous state, provincial, federal (US and Canadian) and non-government partners. New Jersey is a member of the Atlantic Flyway Council (AFC), which provides the means to participate in promulgating annual hunting regulations and long-term management plans in cooperation with partner states and the US Fish and Wildlife Service. The primary objective of the Division's Waterfowl Program is to work in a cooperative manner with the numerous government and non-government agencies responsible for the populations and habitats of migratory game birds.<sup>5</sup>

The Waterfowl Ecology and Management Program conducts the Atlantic Flyway Breeding Waterfowl Survey each spring along with other AFC partners. This survey is a ground survey, performed using observers in boats, vehicles and on foot. Two hundred and fifty randomly located, one-kilometer plots are traditionally sampled, and the results are extrapolated to estimate the statewide population (Figure 1).<sup>5</sup>

From 1989 to 2018, the long-term average of wood duck breeding pairs in New Jersey is 8,181 as estimated during the Atlantic Flyway Breeding Waterfowl Surveys.<sup>5</sup> The population estimates over time are shown in Figure 1.<sup>5</sup> These estimates indicate a fluctuating wood duck population with a period of apparent increase from 1989 to 1999, then a relatively stable population through 2012.<sup>5</sup> In 2013 and 2014, the Wood Duck population estimates decreased when the

number of sampling sites was reduced.<sup>5</sup> The reduction may in part be due to the reduction in sampling plots from 250 to 105 sites and the increase in variability in extrapolating the statewide population from the reduced number of plots. In 2015, the population estimate appears to once again be comparable with earlier estimates.<sup>5</sup> In 2016 the population increased to 11,525, followed by a decrease to 7,741 in 2017, and another increase to 13,635 in 2018.<sup>5</sup> While the population estimates from year to year have shown greater variability since 2013, in 2018 the number of breeding pairs of wood ducks was almost threefold higher than it was in 1989.<sup>5</sup>

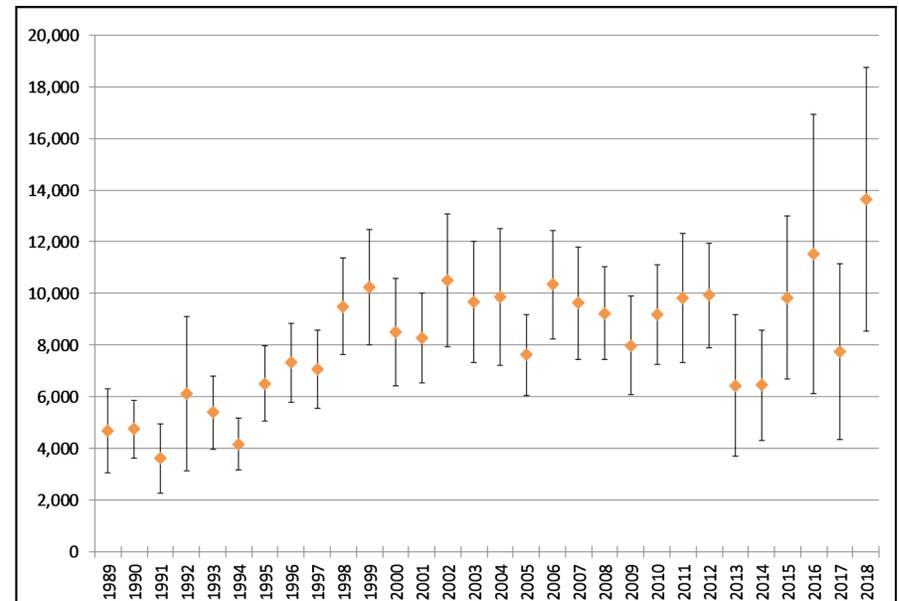


Figure 1: Estimate of breeding pairs of wood ducks in New Jersey during the spring Atlantic Flyway Breeding Waterfowl Survey, 1989-2018. The error bars on each point are calculated by multiplying the coefficient of variation by the respective data value.

## Outlook and Implications

Despite the apparent fluctuation in breeding pairs in New Jersey, population indices from the Breeding Bird Survey, which is performed across a larger spatial scale encompassing the entire breeding range of the wood duck, indicates an increasing population in North America.<sup>6</sup>



Female wood duck with her ducklings. Photograph by Lynn Bystrom, Getty Images.

## More Information

[https://www.nj.gov/dep/fgw/waterfowl\\_info.htm](https://www.nj.gov/dep/fgw/waterfowl_info.htm)

<https://www.fws.gov/migratorybirds/>

<https://birdsna.org/Species-Account/bna/species/169/articles/introduction>

## References

<sup>1</sup>Johnsguard, Paul A., "Waterfowl of North America: The Biology of Waterfowl" (2010), *Waterfowl of North America, Revised Edition (2010)*.4. <https://digitalcommons.unl.edu/biosciwaterfowlna/4> accessed 2/14/2019.

<sup>2</sup>Raftovich, R.V., S. C. Chandler, and K.K. Fleming. 2018. Migratory bird hunting activity and harvest during the 2016-17 and 2017-18 hunting seasons. U.S. Fish and Wildlife Service, Laurel, Maryland, USA.

<sup>3</sup>Hepp, G.R. and F.C. Bellrose (2013). Wood Duck (*Aix sponsa*), version 2.0. In *The Birds of North America* (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://birdsna.org/Species-Account/bna/species/wooduc/introduction> accessed 2/14/2019.

<sup>4</sup>Bellrose, F.C. and D.J. Holm. *Ecology and Management of the Wood Duck*. Mechanicsburg, PA: Stackpole Books, 1994.

<sup>5</sup>NJDEP, Division of Fish and Wildlife. "Waterfowl and Migratory Birds in New Jersey." [https://www.nj.gov/dep/fgw/waterfowl\\_info.htm](https://www.nj.gov/dep/fgw/waterfowl_info.htm) accessed 2/14/2019

<sup>6</sup>Zimmerman, G.S., J.R. Sauer, G.S. Boomer, P.K. Devers, and P.R. Garrettson. (2017). Integrating Breeding Bird Survey and demographic data to estimate Wood Duck population size in the Atlantic Flyway. *The Condor*, 119, 616-628. <https://doi.org/10.1650/CONDOR-17-7.1> accessed 2/14/2019.