

# Counting on Spring

The Atlantic Flyway Breeding Waterfowl Plot Survey | by Jessica Carloni

*Each spring, as I paddle my kayak across beautiful Highland Lake, I feel lucky to be outside with my binoculars in hand scanning the sky for ducks as part of the annual Breeding Waterfowl Plot Survey.*

The purpose of my fieldwork is to collect information about locally breeding waterfowl, including mallards, black ducks, wood ducks, and Canada geese. One of my plots to investigate is right in the middle of this long and narrow waterbody located in the western part of the Granite State. The only way to survey this plot is to launch my kayak and paddle to its boundary—a perfect way to spend a spring day.

Many wildlife biologists from the New Hampshire Fish and Game Department are out surveying plotted locations in different parts of this incredibly rugged and beautiful state. Reaching some of these spots requires an hour or longer trek through the woods, while others require a boat to access. Some surveys can even be conducted by looking through the windshield of a parked truck—of course, these are my least favorite.

Granite State duck hunters have enjoyed liberal duck seasons of 60 days in length with 6-bird bag limits for decades, but many enthusiasts may not know the story behind New Hampshire's current waterfowl regulations. Waterfowl

are managed in four regions that span North America: the Atlantic, Mississippi, Central, and Pacific Flyways. A flyway is a common flight path used by large numbers of migratory birds. Historically, the Atlantic Flyway's waterfowl seasons (and subsequently the Granite State's) were set based on data from waterfowl populations in the middle of the country, because no data were collected in our region. However, species important to us in the Atlantic Flyway, such as black ducks and wood ducks, rarely nest in the central United States. Waterfowl hunting seasons during the 1980s were therefore restrictive despite an increase in mallard populations along the Atlantic Coast.

State biologists on the East Coast pushed to establish Atlantic Flyway-specific regulations based on the status of populations within our flyway. Biologists

wanted to learn more about local breeding waterfowl populations and gather better data to inform hunting seasons, so they worked together to develop methods for a breeding survey that would be relevant to the Atlantic coastal region. The Atlantic Flyway Breeding Waterfowl Survey officially began in 1993, following a few pilot seasons.

Eleven states conduct independent plot surveys each spring, covering an expanse that stretches from New



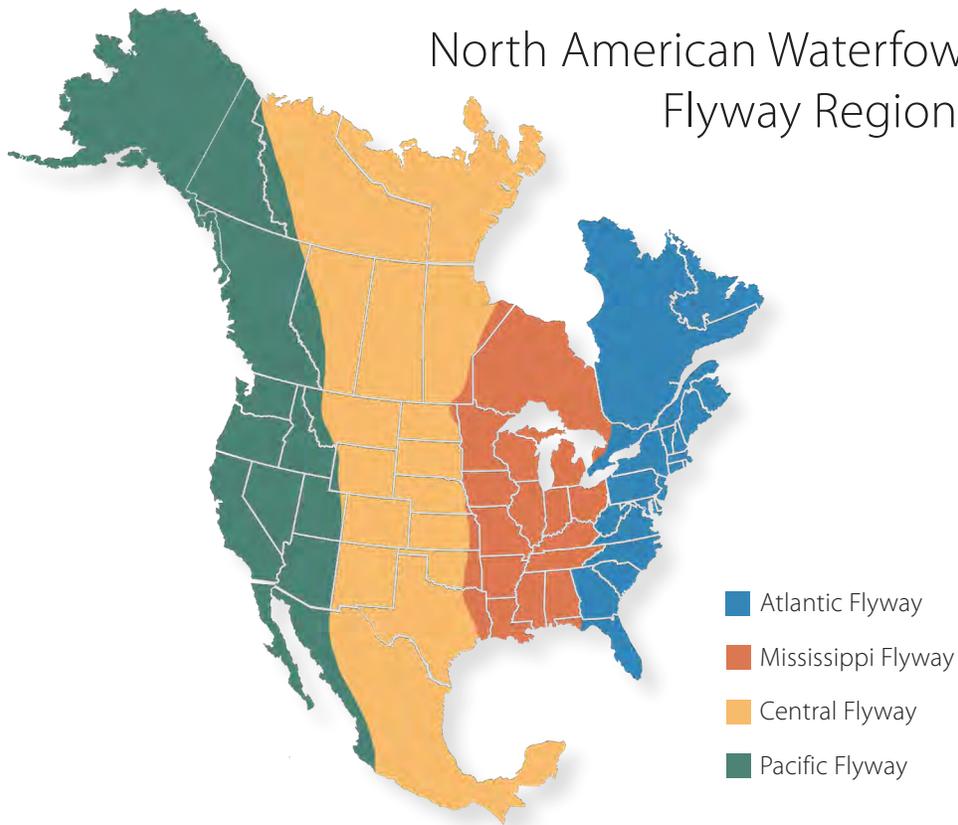
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Hampshire and Vermont south to Virginia. Because Maine is so vast, it participates in the Fixed Wing Aerial Survey, which relies on aircraft to collect population data. Plots were originally distributed among strata based on waterfowl densities from the North American Breeding Bird Survey and among states according to area in each stratum. Plots are 1 km<sup>2</sup> and are randomly assigned across each state. New Hampshire has

75 plots in total. The timing of the survey coincides with the peak waterfowl breeding periods in each state. Biologists in Virginia, for example, are the first to begin their surveys in early April, and surveys in other states are launched as spring progresses northward.

The peak breeding window in the Granite State is between April 18 and May 6. Plots are assigned to wildlife biologists

## North American Waterfowl Flyway Regions



based on Fish and Game's designated regions. Biologists are provided a time-frame in which to conduct their surveys and a map that displays the plot boundaries. Surveys are conducted in twilight or daylight. Twilight surveys include either a dawn check, beginning one half hour before sunrise, or a dusk check, ending one half hour after sunset. About 20% of the plots surveyed are visited at twilight. All other surveys are conducted during daylight hours. Biologists are required to survey all wet areas, such as marshes, swamps, ponds, and rivers, within each plot. Some plots do not contain wetland habitat, however, and therefore do not need to be surveyed.

The breeding plot survey originally tracked only eastern mallard populations, but all species of waterfowl encountered are now noted. The most common species found in New Hampshire are mallards, black ducks, wood ducks, and Canada geese.

Among *dimorphic species*, such as wood ducks (right), the plumage of drakes and hens are markedly different. Mating pairs of *monomorphic species*, like black ducks (far right), have nearly identical plumage, requiring a different process for calculating breeding pair estimates than for dimorphic species. Biologists record observations of several species in New Hampshire including ring-necked ducks (below).



To calculate breeding pair estimates, the total number of indicated pairs and the total number of birds within each plot are counted. An indicated pair is defined as a male and a female, a lone drake, or a flock of 2–4 males. Drakes indicate the assumed presence of a pair because nesting hens are so well camouflaged by the coloration of their feathers. Evolution has favored cryptically colored hens because their ability to blend into their surroundings has yielded more successful nests. If a female had brightly colored plumage like a male, she would be more vulnerable to predators while she was incubating her eggs on the ground. During the breeding season, when males display their colorful feathers, many duck species are sexually dimorphic, which means you can easily differentiate males from females. Most people are familiar with the green head of a male mallard and the brown, drab appearance of a mallard hen.

In the case of monomorphic species, such as Canada geese and black ducks, males and females have identical plumage, thus their sex cannot be readily identified in the field. It is easy to call two geese on a beaver pond a pair, but far more difficult to identify duos when twelve geese are flocked together in the middle of a lake. This group may consist of six pairs or four paired and four unpaired birds together. For that reason, geese count as a pair when one lone goose is observed or two are seen together. All other geese are included in the total count for the species. The same is true for black ducks; if the sex of a bird cannot be positively determined (males have a yellow bill and females have a dull olive bill), two are considered a pair and three are considered one pair with an extra drake.

Biologists in the Granite State also observe blue- and green-winged teal,

ring-necked ducks, common and hooded mergansers, common goldeneye, and buffleheads. Biologists record their observations and submit the data to the U.S. Fish and Wildlife Service for analysis. New Hampshire's findings are combined with data from other states and with the aerial transect survey findings from Canada and Maine. These data help set regulations each year and provide a better understanding of waterfowl population dynamics in New Hampshire and other Atlantic Flyway states.

New Hampshire's participation in the Atlantic Flyway Breeding Waterfowl Plot Survey has become an anticipated spring rite of passage for many wildlife biologists. The effort provides valuable information for making sound waterfowl management decisions both here in New Hampshire and across the Atlantic Flyway, based on relevant and present species—not those found in North Dakota any longer!

Over time, results from the survey have changed. Since the beginning of the Breeding Waterfowl Plot Survey, there has been an increase in the number of pairs of Canada geese and wood ducks in the Atlantic Flyway, but mallards have declined from levels observed in the 1990s. New Hampshire Fish and Game will be participating in a collaborative research project with other states in the Atlantic Flyway in an attempt to figure out why. Fieldwork begins this winter when mallard hens will be fitted with backpack telemetry units throughout the state to track their movements.



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