

Mallards and Multi-Stock Adaptive Harvest Management in the Atlantic Flyway

Since 2000 the general duck hunting season frameworks (e.g. season length and total duck bag limit) have been set in the Atlantic Flyway based upon the status of mallards breeding in the Atlantic Flyway Breeding Waterfowl Survey (AFBWS, Virginia north to New Hampshire) and portions of southern Canada (Figure 1). Eastern Mallard Adaptive Harvest Management (AHM) strives to provide maximum harvest opportunity into the future by weighing current mallard population levels, harvest levels, and projections of future mallard population growth. If the mallard population grows, there is more harvest opportunity, but as it declines, there is less opportunity.

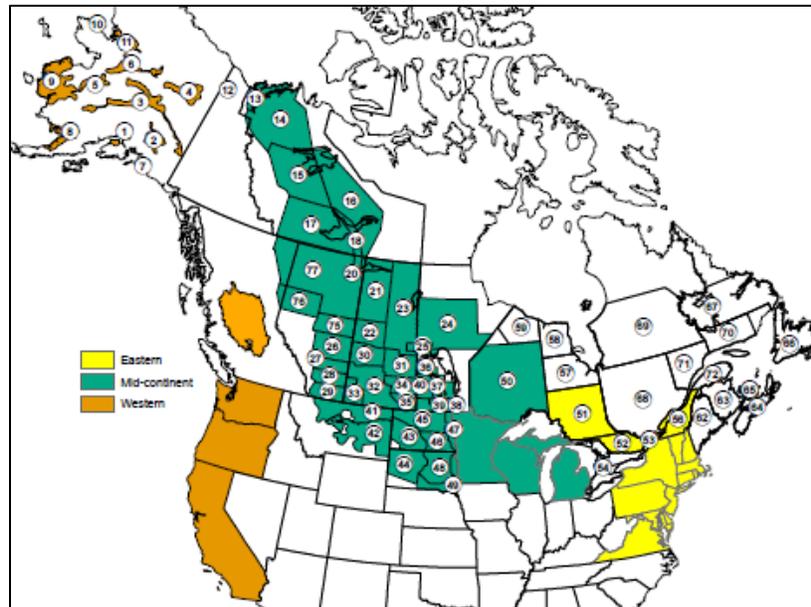


Figure 1. Survey extent for Eastern Mallard AHM shown in yellow.

Since 1996, the mallard population in the AFBWS has been steadily declining while breeding mallards in southern Canada have been slowly increasing. The overall trend in breeding mallards, however, has been a slow, but steady decline (Figures 2 and 3). As the mallard population has declined, so too has the mallard harvest (Figure 4). While mallard populations in the Flyway have been declining, most of the other duck species, except for the sea ducks, are experiencing positive population growth. As many hunters have already heard, for the 2019-2020 hunting season, the bag limit for mallards will be reduced from 4 per day to 2, no more than 1 of which may be a hen.

The declining mallard population has led to a much more conservative approach to duck harvest for all species in the Flyway. In two of the past six years, we have come very close to having to either close or severely restrict the duck hunting season in the Atlantic Flyway. In 2011 the hunting season closure threshold was a breeding mallard population of 675,000. The estimated breeding population was 746,000 mallards. Again in 2017, the hunting season closure threshold was 550,000 mallards. The estimated breeding population was only 650,000 mallards.

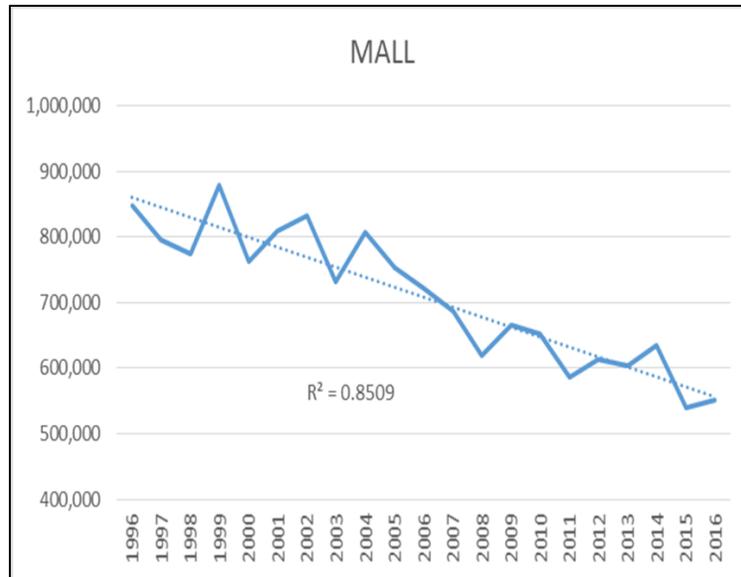


Figure 2. Mallard breeding populations in the Atlantic Flyway Breeding Waterfowl Survey.

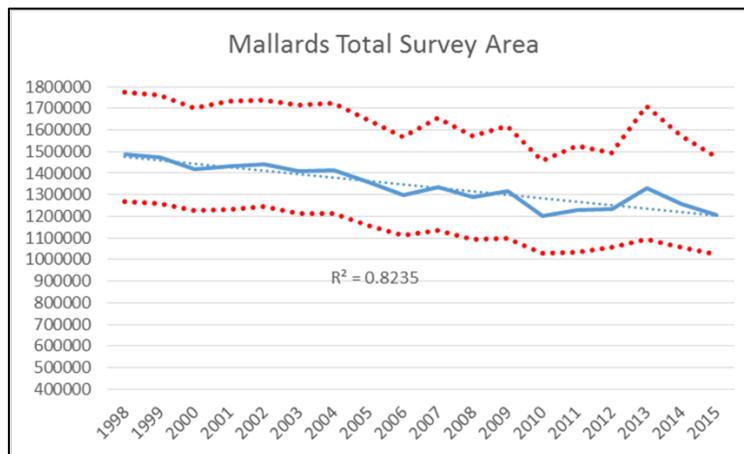


Figure 3. Mallard breeding populations in Eastern Canada (includes AFBWS Area)

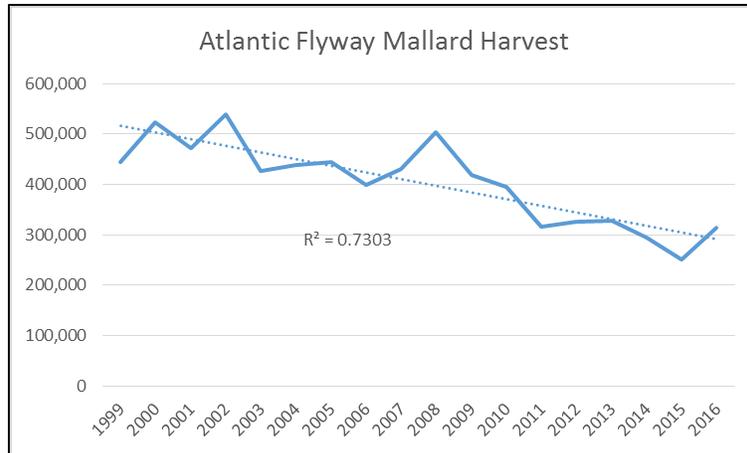


Figure 4. Harvest of mallards in the Atlantic Flyway

Since 2011 the Atlantic Flyway has been developing a new AHM protocol for setting the general duck season that does not rely upon the status of mallards. Mallards are not doing well, however most other species are. It is not reasonable to base the harvest opportunity of all species on just one species, particularly one that does not represent the interests of a large portion of the Atlantic Flyways duck hunters. This new protocol, Multi-stock AHM, will be implemented for the 2019-20 hunting season and will utilize the status of four species to set the general duck season frameworks. These four species, wood ducks, ring-necked ducks, American green-winged teal, and common goldeneye are important species for hunters and represent the entirety of habitat types used by ducks within the Atlantic Flyway. By setting our hunting seasons based on species that represent the diversity of breeding and wintering habitats in our Flyway, there is a direct link between the conservation efforts to protect and enhance habitat and hunting opportunity.

Similar to the other AHM protocols, the Multi-stock AHM consists of a number of key components; (1), population models that predict the effects of harvest and environmental factors on the abundance of each of the four species, (2), a measure of reliability of each population model, (3), an overall harvest objective, and (4), a limited set of hunting season packages, or regulatory alternatives.

The breeding range of the eastern populations of these four species is defined as follows: Wood Ducks-the breeding population occurring in the 17 states of the Atlantic Flyway (Figure 5). Ring-necked ducks, American green-winged teal, and common goldeneye-the breeding population in Canada from western Ontario to the Maritimes (Figure 6). Each year the breeding

population estimates of each of the four species are determined through our surveys. These estimates are used along with estimates of harvest rate from the previous season in population models for each species. These models allow us to estimate carrying capacity of the landscape and where the population of each species is in relation to carrying capacity. This relationship between carrying capacity of the landscape and the population is critical. Our management objective is to provide enough habitat on the ground such that the populations of each species are high and resilient enough to allow for a relatively high annual harvest rate. Understanding where each species population level is in relation to the amount of available habitat allows us to make the best decision each year as to what hunting regulation will best achieve the goals.

In the process of developing Multi-stock AHM and deciding upon the regulatory alternatives to consider (hunting season packages) we relied upon survey information we collected in 2015 via an online duck hunter survey. We received data from 12 of the 17 states in the Flyway and got responses from over 11,600 duck hunters in the Flyway. Duck hunters from across the Flyway provided us their opinions on season lengths, bag limits, and preferences for each. We used these data to develop hunting season packages that were biologically appropriate and that we thought best fulfilled the desires of duck hunters.



Figure 5. Atlantic Flyway States

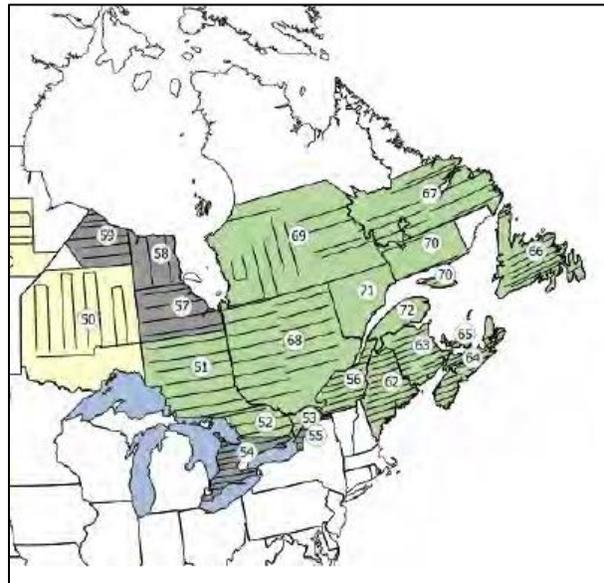


Figure 6. Eastern Survey Area shown in green.