NJDEP Division of Fish and Wildlife

Multi-stock Duck 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. As the mallard population grows, there is more harvest opportunity. Should the mallard population decline, there is less opportunity.
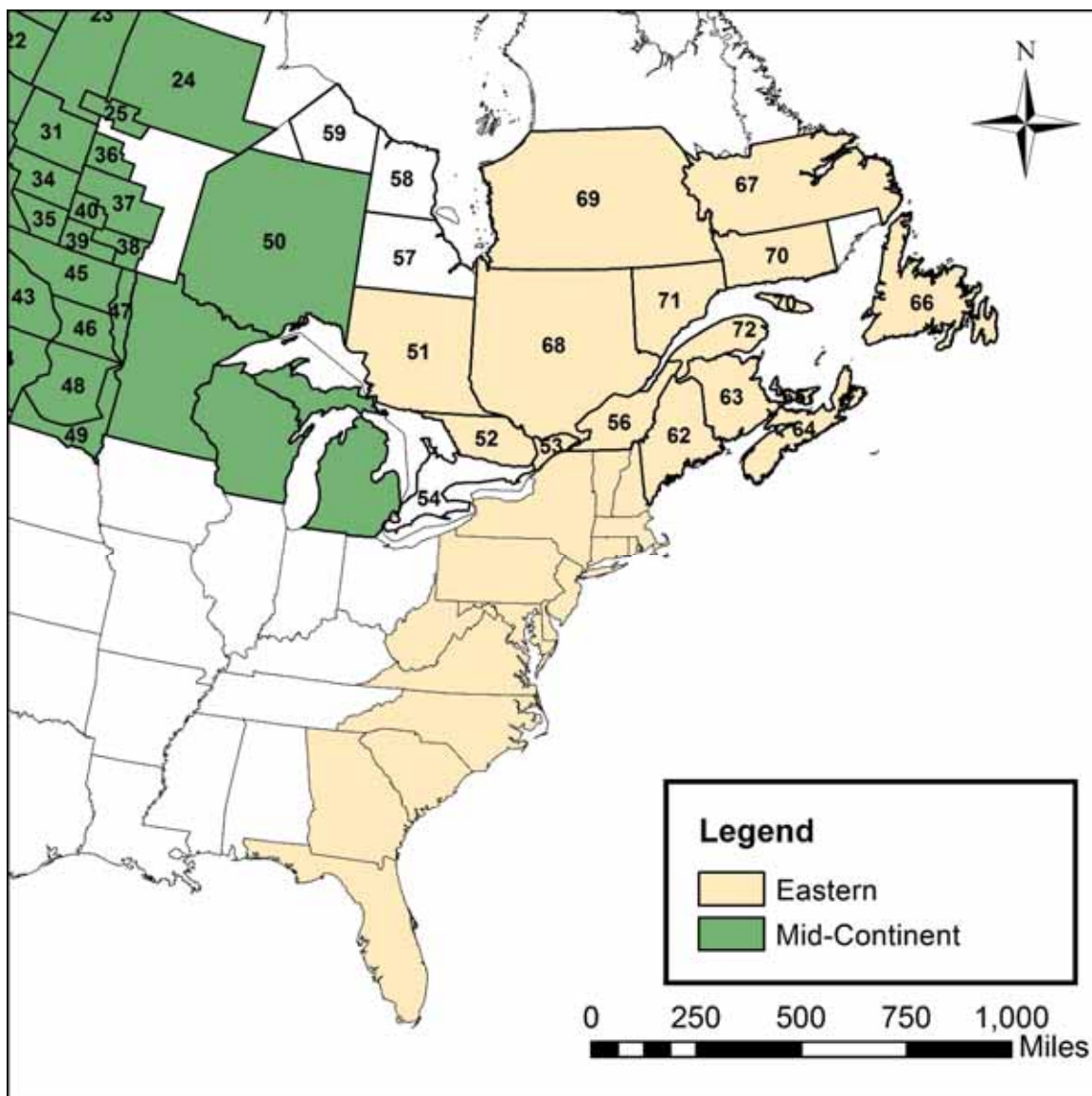

Figure 1. Geographic area for Eastern Mallard AHM.

Since 1996, the mallard population in the AFBWS area (Figure 2) has been steadily declining while the breeding mallards in southern Canada have been slowly increasing. The overall trend in breeding mallards, however, has been of a slow, but steady decline (Figure 3). The relative abundance of mallards in the AFBWS area is still greater than the abundance in southern Canada. As the mallard population has declined, so too has the mallard harvest (Figure 4). While eastern mallards have declined over the past 20 years, the majority of the other 20+ duck species that call the Atlantic Flyway home, have had stable populations. Consequently, eastern mallards are no longer reasonable surrogates for setting overall duck seasons in the Atlantic Flyway.
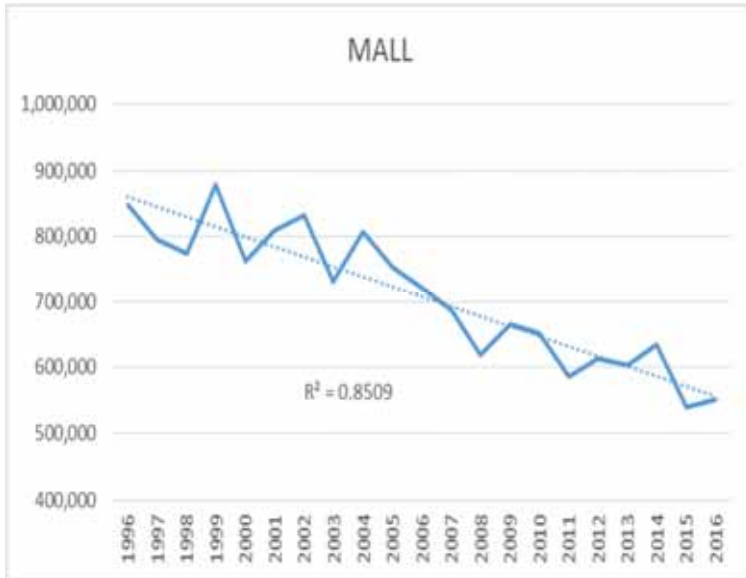

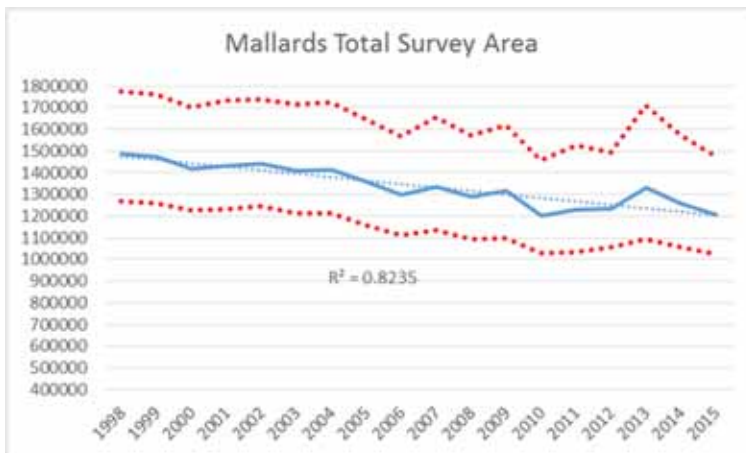Figure 2. Mallard breeding populations in the Atlantic Flyway Breeding Waterfowl Survey.

Figure 3. Mallard breeding populations in Eastern North America (includes AFBWS Area)
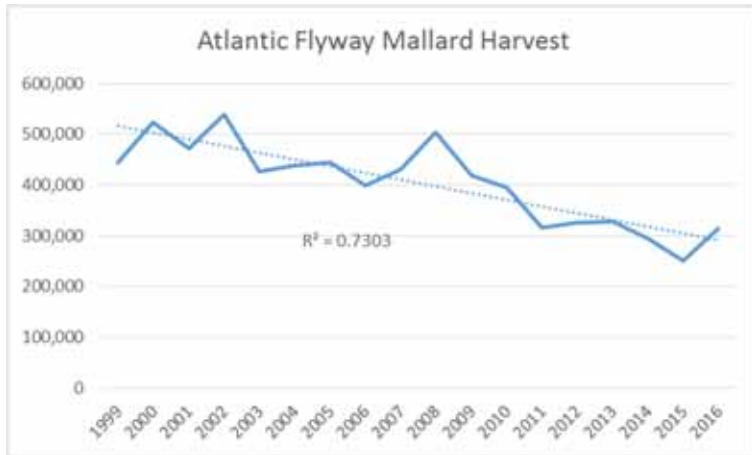
Figure 4. Harvest of mallards in the Atlantic Flyway

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. 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 across the Flyway, and, importantly 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 established 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.

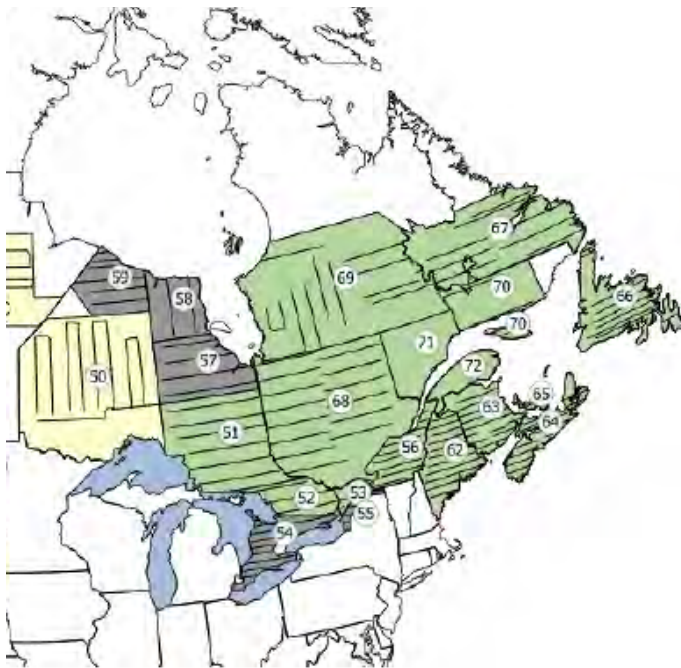Figure 5. Geographic area of wood ducks used in Atlantic Flyway Multi-Stock AHM models.

Figure 6. Figure 5. Geographic area for ring-necked ducks, green-winged teal and common goldeneyes used in Atlantic Flyway Multi-Stock AHM models shown in green.