

Trends for Three Waterfowl Species in Five U.S. States Using Christmas Bird Count

Data and Analysis

Christmas Bird Count (CBC) Data and analysis were obtained from the Audubon's Christmas Bird Count Database for three species of waterfowl (Gadwall, Northern Pintail, and Ring-necked Duck)

<http://netapp.audubon.org/CBCObservation/Historical/ResultsBySpecies.aspx?1>. These three duck species were chosen based on count estimates from the Louisiana Aerial Waterfowl Surveys that were conducted in December

2017. http://www.wlf.louisiana.gov/sites/default/files/pdf/waterfowl_survey/41734-December%202017%20Survey/waterdecember2017.pdf

The response variable, which one may assume is an index for abundance, was the number of bird per party hour, whereas the time period for this analysis was from 1985-2015 (coded as 86-115). For the first analysis, data were pooled for the following five U.S. states: Kansas, Michigan, Missouri, Illinois, and Wisconsin. For the second analysis, only the state of Louisiana was considered.

Results

The figure below, generated with data from the Audubon Christmas Bird Count Database, suggests that the annual index (birds per party-hour for Gadwall, Northern Pintail and Ring-necked Duck) has increased substantially over the analyzed time period for the states of Kansas, Michigan, Missouri, Illinois, and Wisconsin. For example, in 1986, the mean number of birds per party-hour was 0.195, whereas in 2015, the mean number of birds per party-hour was 1.98 (or approximately 10 times higher).

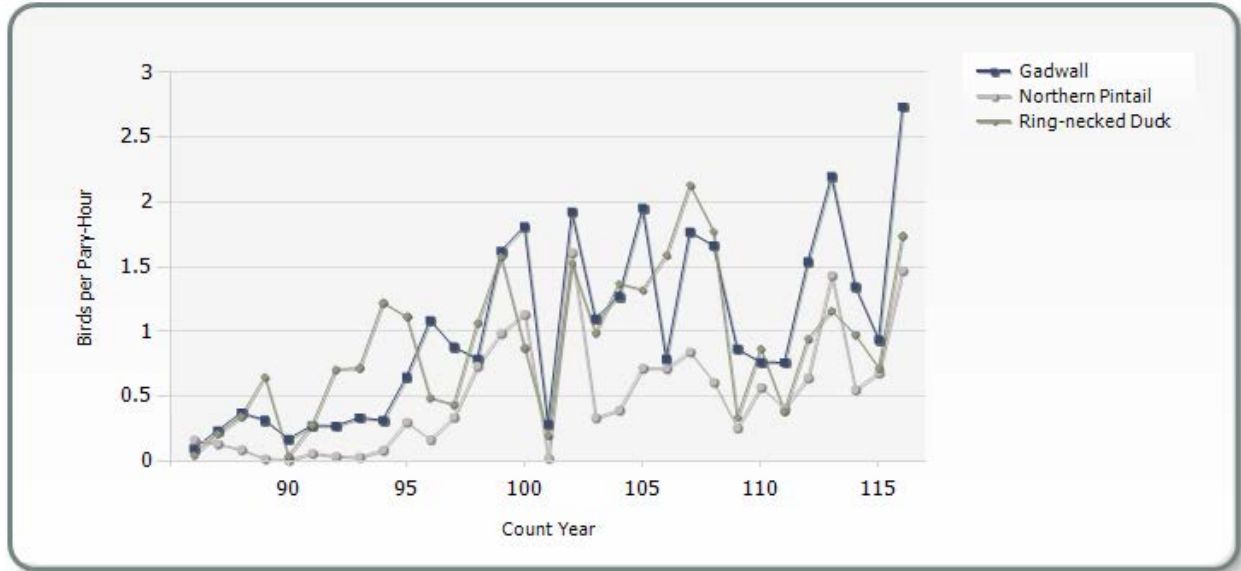


Figure 1. Number of birds per party-hour for three species of waterfowl between 1985 and 2015 in Kansas, Michigan, Missouri, Illinois, and Wisconsin (combined).

The figure below, generated with data from the Audubon Christmas Bird Count Database, suggests that the annual index (birds per party-hour for Gadwall, Northern Pintail and Ring-necked Duck) has decreased to varying degrees depending on the species in Louisiana over the analyzed time period, although there is considerable annual variation for Northern Pintail.

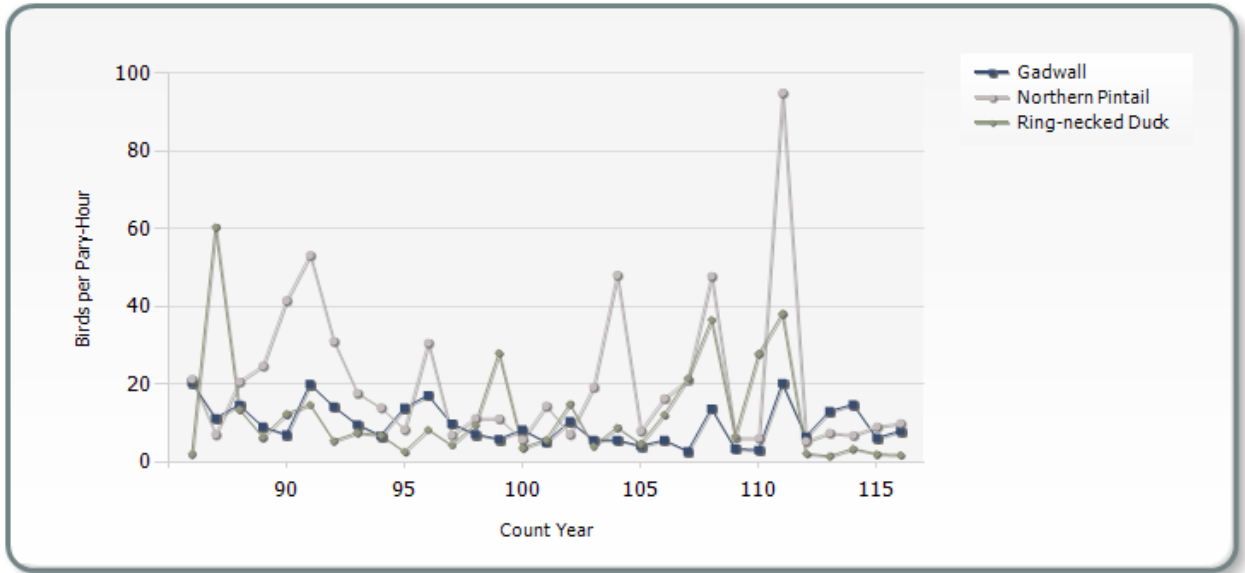


Figure 2. Number of birds per party-hour for three species of waterfowl between 1985 and 2015 in Louisiana.

In Figure 1. You will notice that the mallard survey results are elevated to levels that it will not allow the American Wigeon and Wood Duck to rise off of the bottom of the graph.

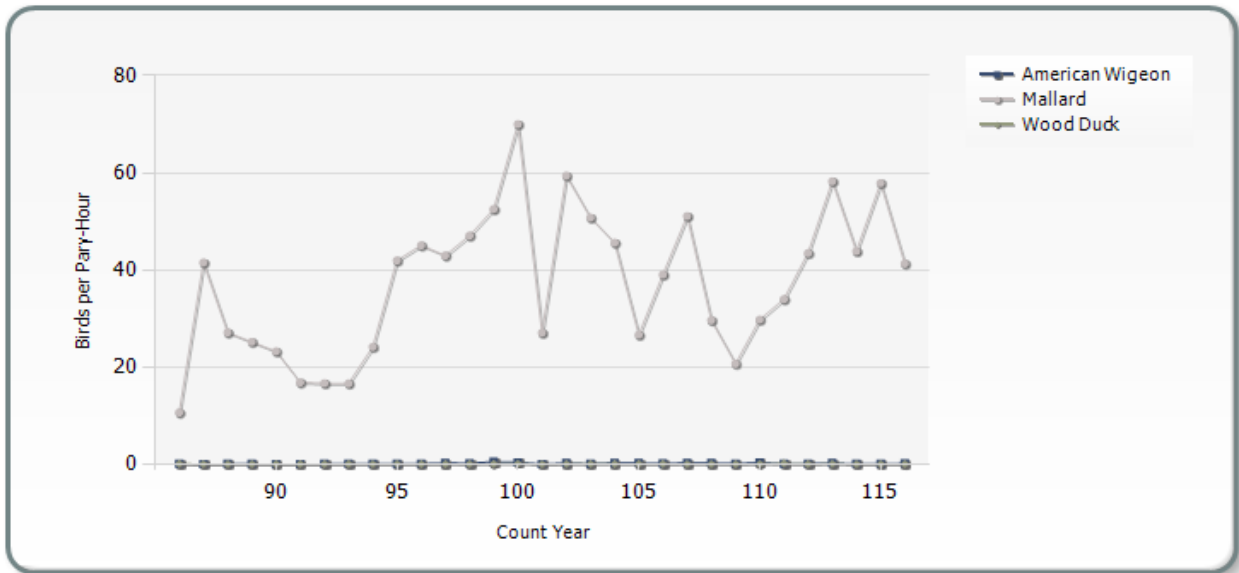


Figure 1. Number of birds per party-hour for three species of waterfowl between 1985 and 2015 in Kansas, Michigan, Missouri, Illinois, and Wisconsin (combined).

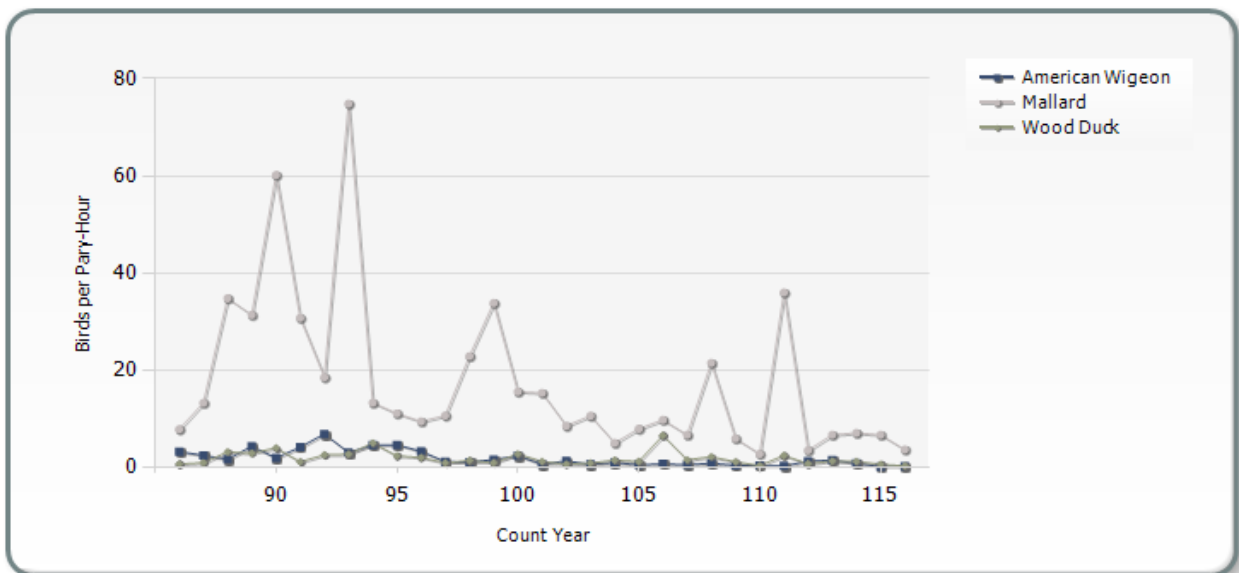


Figure 2. Number of birds per party-hour for three species of waterfowl between 1985 and 2015 in Louisiana.

The next two graphs will show the results when pulling the Mallard survey from the graph. It should show you that the mallard population is extremely high.

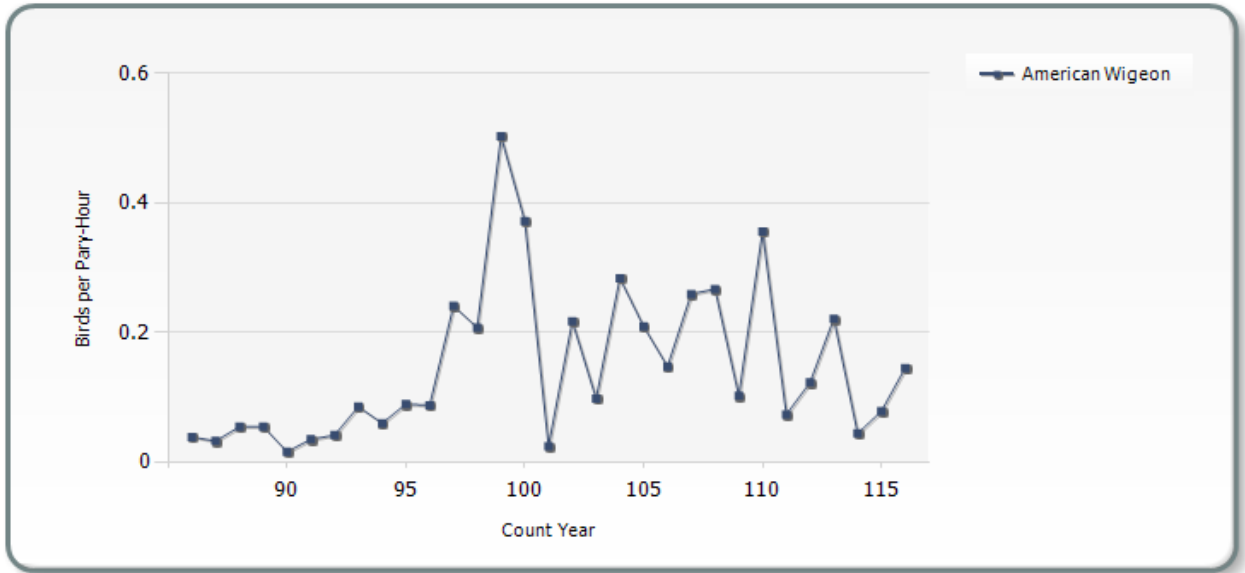


Figure 1. Number of birds per party-hour for American Wigeon between 1985 and 2015 in Kansas, Michigan, Missouri, Illinois, and Wisconsin (combined).

In this graph we pulled the mallard out, because the mallard count was so high that it would not allow for the wigeon and wood duck trend lines to show on the previous graph with all 3 species.

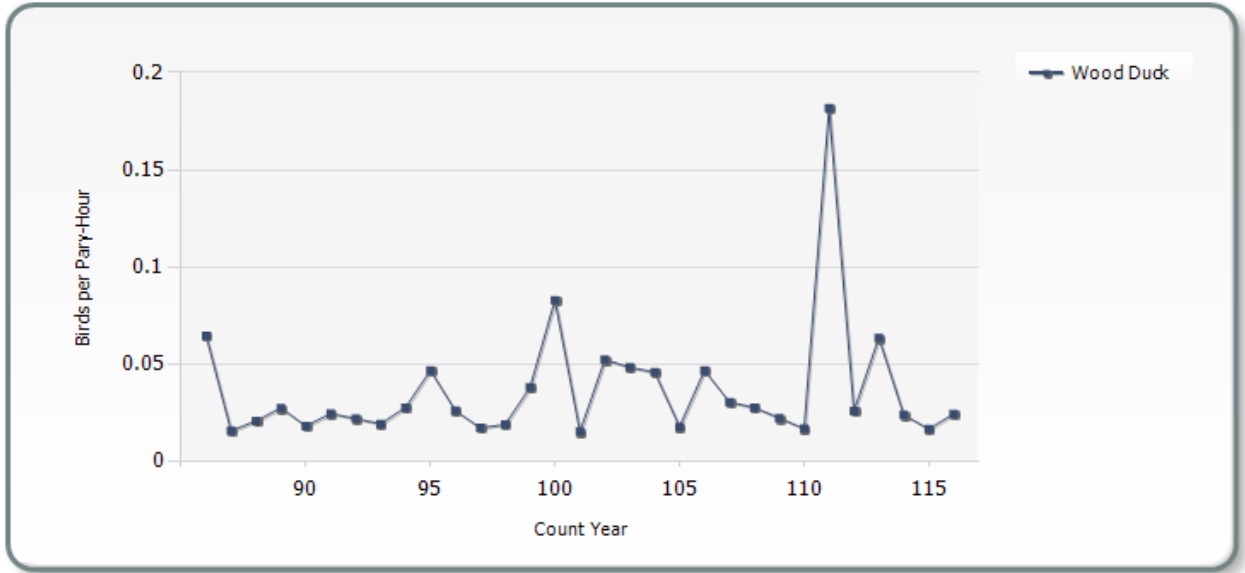


Figure 1. Number of birds per party-hour for Wood Duck between 1985 and 2015 in Kansas, Michigan, Missouri, Illinois, and Wisconsin (combined).

