Bird Populations

Bird populations are among the most visible biological components of ecological systems, supporting a number of important ecological functions including seed dispersal, plant pollination, and pest control. Some birds migrate over entire continents, while others have more restricted ranges and habitats. Trends in bird populations and in the abundance of different bird species are influenced by changes in landscape and habitat, the availability and quality of food, toxic chemicals, and climate. The North American Breeding Bird Survey (BBS) began in 1966 with approximately 600 surveys conducted by experienced birders in the U.S. and Canada east of the Mississippi River. There are now more than 5,000 defined BBS routes across the contiguous 48 states, Alaska, southern Canada, and northern Mexico (Sauer et al., 2017), of which approximately 3,000 were sampled in 2015.

The U.S. Geological Survey (USGS) has computed trends for observed population sizes of 348 bird species from 1966 through 2015. Exhibit 1 of this indicator reflects the number of species with statistically significant increases or decreases in the number of observations (not a change in the number of species) for which adequate trend data exist between 1966 and 2015. Species are grouped by primary breeding habitat—grassland, successional or scrub, wetland, woodland, and urban—and a trend is considered significant if the direction of change can be determined with at least 95 percent confidence.

Exhibit 2 shows the composite status of bird populations from 1968 to 2015 in seven habitat types: grassland; aridland; wetland; eastern, western, and boreal (northern) forests; and urban and suburban. With the exception of wetland and urban/suburban species, all of the graphs are restricted to obligate breeding groups, which refers to species that *require* a particular type of habitat for breeding.

What the Data Show

Exhibit 1 points to dynamic changes in observed bird populations in all habitat types. Of 348 species for which adequate data are available, 84 have experienced significant increases in population, and 126 have experienced significant decreases.

Grassland habitats: Of the 28 grassland species for which adequate data are available, only one has shown significant population increases, and 15 have shown significant decreases (Exhibit 1). Collectively, populations requiring grassland habitat for breeding declined through the 1980s and varied since then (Exhibit 2).

Aridland, other scrub, and successional habitats: Exhibit 1 shows trends for "successional or scrub" birds—a group that includes species in scrub deserts of the West as well as species in successional and scrub areas of the East. Of the 87 successional or scrub species for which adequate data are available, 13 have experienced significant population increases and 42 have experienced significant decreases. Exhibit 2 shows trends for birds that require arid breeding habitat—including (but not limited to) scrub desert. This group shows an overall population decline throughout the survey period, but a few recent years of increase.

Wetland habitats: Of the 86 wetland species for which adequate data are available, 23 have shown significant population increases and 19 have shown significant decreases (Exhibit 1). Collectively, populations of wetland birds declined somewhat through the 1980s but increased markedly during the most recent decade (Exhibit 2).

Woodland habitats: Of the 132 woodland species for which adequate data are available, 43 have experienced significant population increases and 41 have experienced significant decreases (Exhibit 1). Overall, obligate eastern and boreal (northern) forest breeding species declined during the first few decades of data collection and have varied in pattern since then, with an uptick in boreal species in recent years. Western forest populations have remained relatively stable over time (Exhibit 2).

Urban and suburban habitats: Of the 15 urban and suburban species for which adequate data are available, four have shown significant population increases and nine have shown significant decreases (Exhibit 1). Overall, urban and suburban bird populations have increased relative to their late 1960s levels, with notable increases during the 1990s and 2000s (Exhibit 2).

Limitations

- The BBS produces an index of relative abundance rather than a complete count of breeding bird populations. The data analyses assume that fluctuations in these indices of abundance are representative of the population as a whole.
- The BBS data do not provide an explanation for the causes of observed population trends. To evaluate population changes over time, BBS indices from individual routes are combined to obtain regional and continental estimates of trends. Although some species have consistent trends throughout the history of the BBS, most do not. For example, populations of permanent resident and short-distance migrant species (birds wintering primarily in the U.S. and Canada) are adversely affected by periodic episodes of unusually harsh winter weather.
- Few species have consistent observed population trends across their entire geographic ranges, so increases or decreases in Exhibit 1 may not reflect the situation across the entire range of the species.

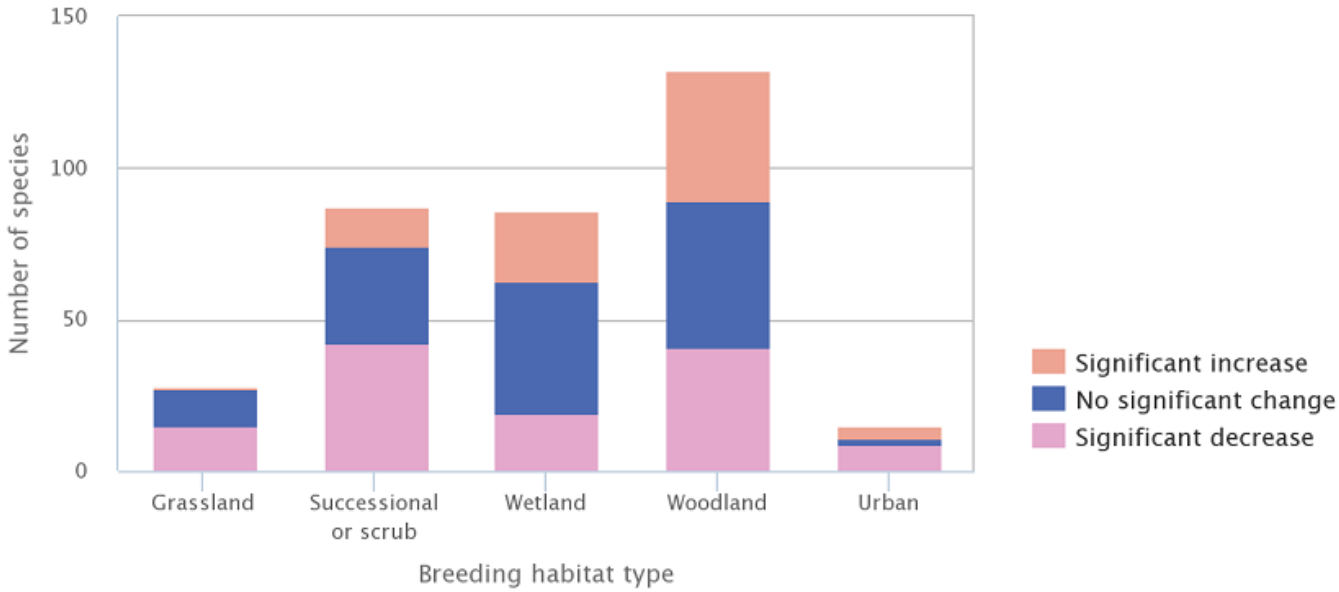
Data Sources

Trend data were obtained from the USGS, which compiles data from the BBS and maintains a website that allows the public to access survey results and compute trends (https://www.mbr-pwrc.usgs.gov/bbs/bbs.html).

References

Sauer, J.R., D.K. Niven, J.E. Hines, K.L. Pardieck, J.E. Fallon, W.A. Link, and D.J. Ziolkowski, Jr. 2017. The North American Breeding Bird Survey: Results and analysis 1966–2015. Version 12.23.2015; updated February 7, 2017. USGS Patuxent Wildlife Research Center. https://www.mbr-pwrc.usgs.gov/bbs/bbs.html.

Exhibit 1. Changes in bird populations in the U.S. by type of breeding habitat, 1966–2015

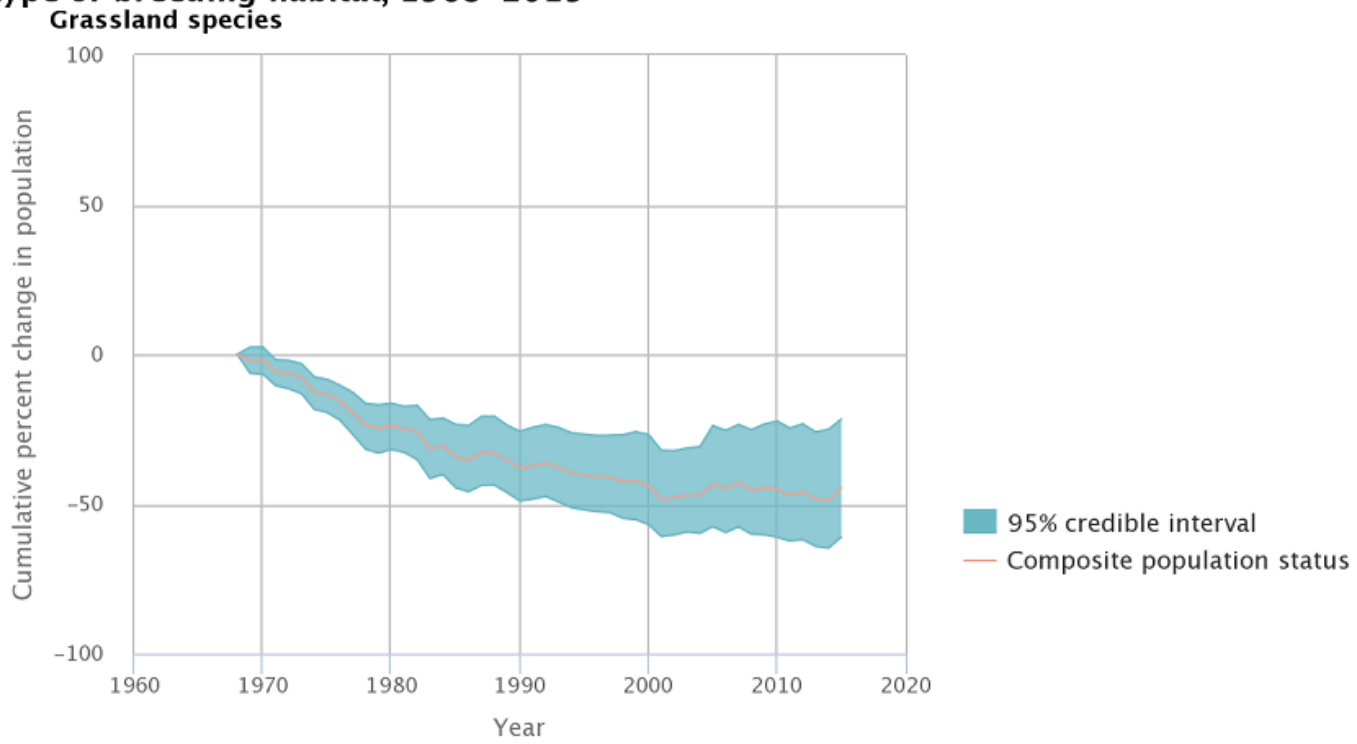


Coverage: 348 bird species observed as part of the annual North American Breeding Bird Survey in the contiguous U.S. and southeastern Alaska.

"Significant" indicates a population increase or decrease that is statistically significant with 95 percent confidence. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: Sauer et al., 2017

Exhibit 2. Composite bird population status in the U.S. and Southern Canada by type of breeding habitat, 1968–2015



Coverage: Contiguous 48 states, southern Canada, and part of southeastern Alaska.

Except for "Wetland" and "Urban and Suburban," all of the graphs are restricted to obligate breeding groups, which refer to species that require a particular type of habitat for breeding.

Analysis shows that some but not all individual species have statistically significant trends over time. The significance of the overall trend for this breeding group can be inferred by viewing the 95 percent credible interval. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: Sauer et al., 2017

Visit https://www.epa.gov/roe to see the full exhibit.

×
placeholder
placeholder
Close