

North Coast and Cascades Network Landbird Monitoring

2024 Field Season Report

Why We Monitor Birds

Many bird species in North America have declined substantially during the past half century. An estimated 3 billion birds, nearly 30% of North America's breeding birds, have been lost since the 1970s. Habitat loss and degradation (on the breeding grounds as well as non-breeding portions of the ranges of migratory species) have been the primary driver of these changes, but other factors including climate change, outdoor cats, avian flu, and invasive species are likely playing a role as well.

In the North Coast and Cascades Network (NCCN), landbirds were selected as an important "vital sign" for

monitoring because they are relatively easy to detect and are akin to canaries in a coalmine. Landbirds provide important ecological functions, such as seed dispersal and insect control, making them good indicators of ecosystem health. To that end, landbirds were selected as a vital sign at NCCN to better understand if bird populations in parks were stable or changing. Monitoring of landbird trends in the three large mountain parks (Mount Rainier National Park (MORA), North Cascades National Park Service Complex (NOCA), Olympic National Park (OLYM)) and two smaller lowland parks (Lewis and Clark National Historical Park (LEWI) and San Juan Island National Historical Park (SAJH)) began in 2005, in partnership with The Institute for Bird Populations (IBP) (Figure 1).

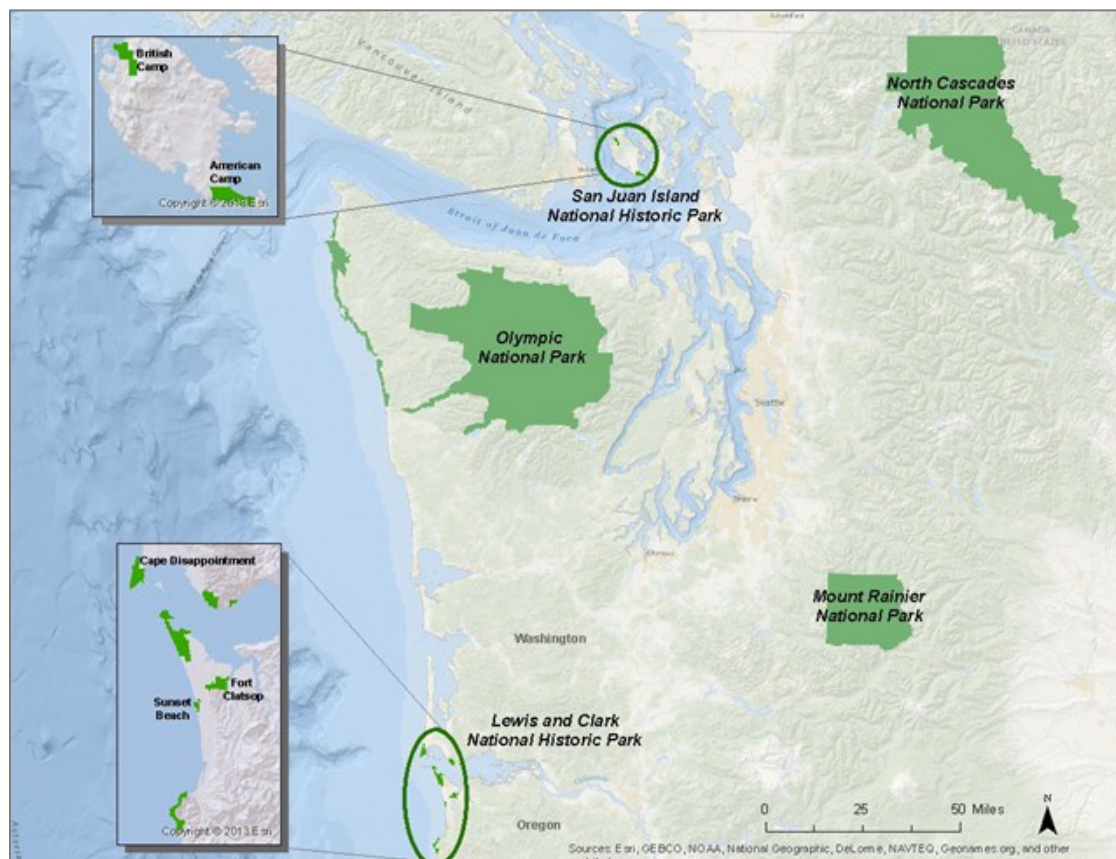
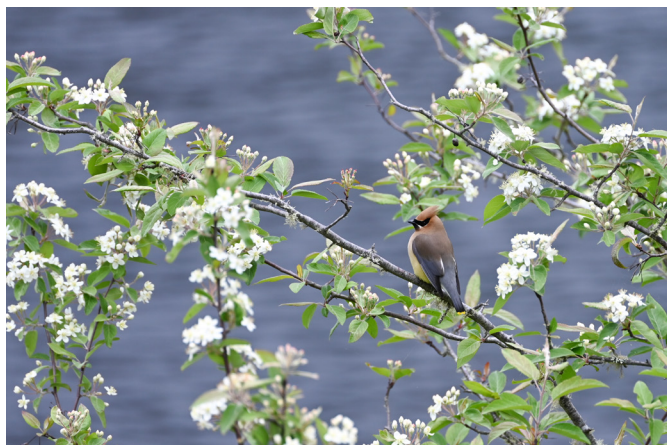


Figure 1. National Park Service units participating in the North Coast and Cascades Network Landbird Monitoring Project.

How We Count Birds

IBP staff conduct surveys annually at the mountain parks and alternate years between the lowland parks. The data collected have provided critical information for assessing changes in bird abundance and distribution in national parks over time. Monitoring data also provide important reference information for comparison with North American trends and an understanding of the effects of more intensive land management practices elsewhere in the region.



Cedar Waxwing (IBP / Melissa Marshall)

Birds are monitored along permanent transects comprised of point count stations (approximately 12 to 25 points depending on topography) spaced 200 meters apart along these transects. Surveys start within 10 minutes of official sunrise and continue for 3.5 hours. In addition to formal transect monitoring, incidental observations recorded during crew time in the park are used to supplement detections made during transect surveys. A detailed description of survey methods is present in the NCCN Landbird Monitoring Protocol¹.



Hammond's Flycatcher (IBP / Eric Guzman)

Transects at OLYM, MORA, and NOCA are based on an alternating panel design where one set, or panel, of transects is surveyed annually and five sets of transects

are surveyed on a 5-year return interval (Figures 2–4). Each year we sample all annual panel transects and one of the five alternating panels at each large park.

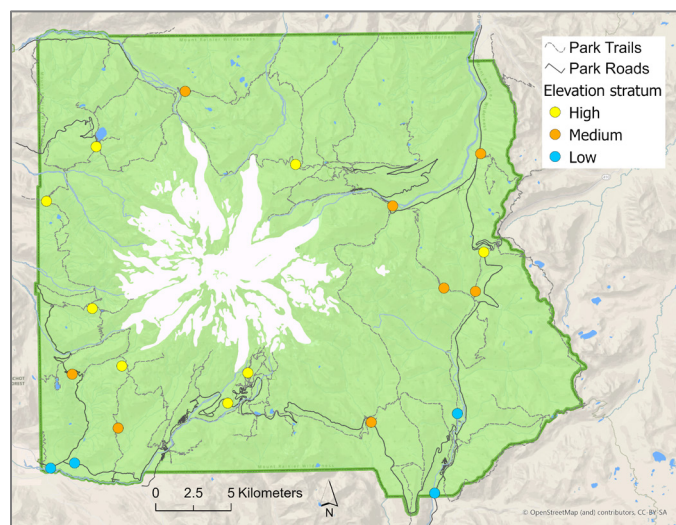


Figure 2. Locations of point count stations surveyed at Mount Rainier National Park in 2024.

Monitoring in the smaller parks, SAJH and LEWI, follows a grid (with a random starting point) covering the entire park area (Figure 5).

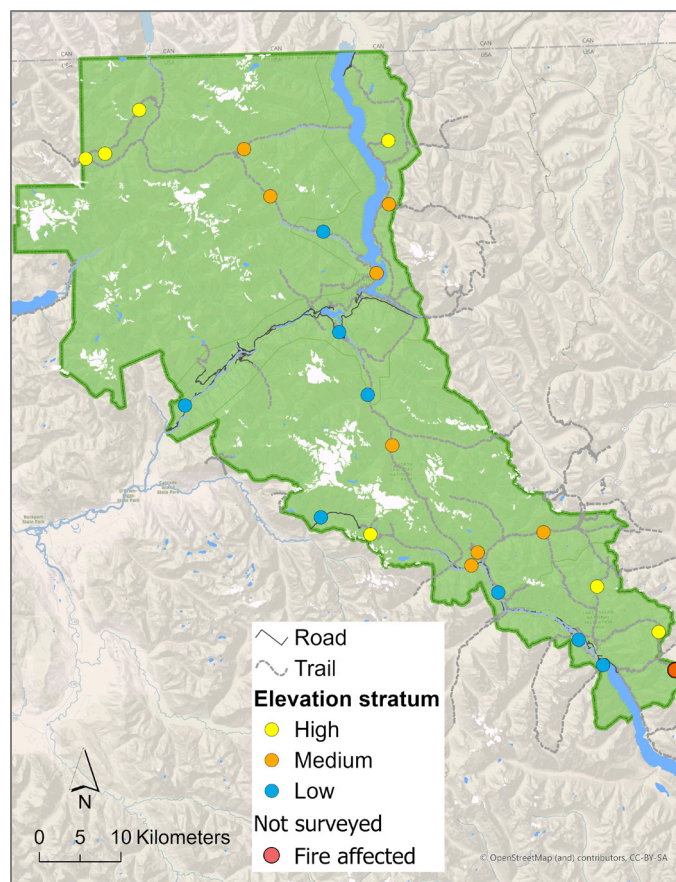


Figure 3. Locations of point count stations surveyed at North Cascades National Park Service Complex in 2024.

¹ Siegel, R. B., et al. 2007. Landbird monitoring protocol for national parks in the North Coast and Cascades Network. U.S. Geological

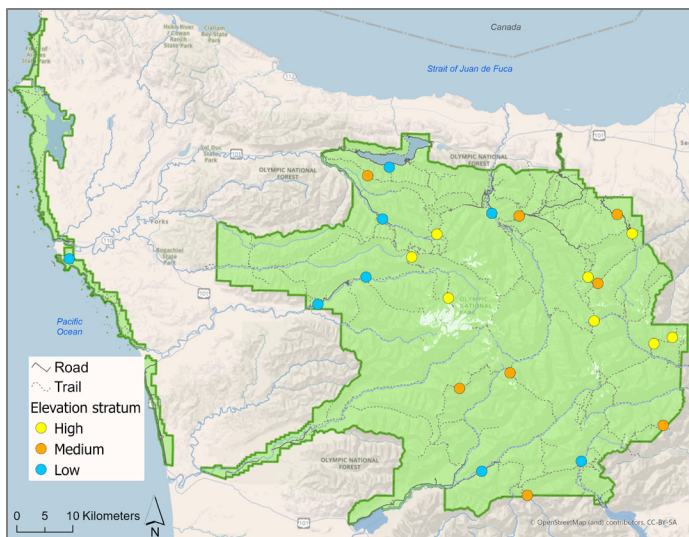


Figure 4. Locations of point count stations surveyed at Olympic National Park in 2024.

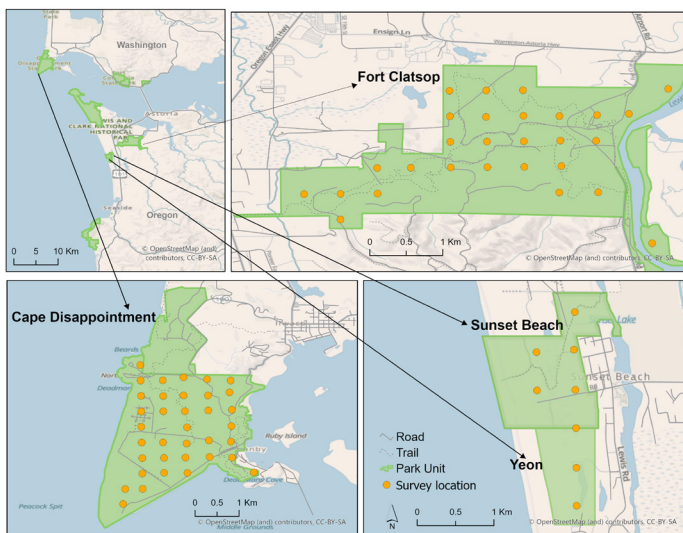


Figure 5. Locations of point count stations surveyed at Lewis and Clark National Historical Park in 2024; adjacent point count stations are 350 m apart.

What Have We Learned So Far?

The first analysis of NCCN landbirds trends was published in 2018² and summarized 2005–2016 data. We found that almost all species included in our modelling (68 species total) exhibited stable or increasing trends over the study period. As just one example, Yellow-rumped Warbler observations have increased since monitoring began in 2005 (Figure 6). Modelled declines, while few, were more nuanced and were species and park specific. For example, Olive-sided Flycatcher declined in two parks (NOCA and LEWI) and increased in SAJH and OLYM during this same time period. Single-park declines were documented for multiple species and were often paired with documented density increases in other parks (e.g., Wilson's Warbler density declined in

NOCA and increased in LEWI and OLYM). Lower amounts of snow and increasingly warm spring weather in the mountain parks may have contributed to rising landbird densities during the study period. Although population density varied with elevation in mountain parks, there was no clear evidence of elevational shifts within mountainous parks.

Overall, the trends in monitored populations across NCCN parks tended to be stable or increasing—these results contrast to North American patterns that include survey data from outside of national parks and highlight the benefits of protected areas to a broad number of bird species.



Pacific Wren (IBP / Eric Guzman)

2024 Highlights

The 2024 season represented the 20th consecutive season for the landbirds monitoring protocol. During the 2024 field season, which spanned from May 24 to July 31, crews visited four NCCN parks. Snowpack was unusually low throughout the field season. This was due to warmer than average winter months and an atmospheric river in late January that melted much of the accumulated snowpack, especially at lower elevations in mountain parks. We completed surveys at 67 of the 68 target transects. Wildfire prevented safe access to one of the transects targeted in 2024.

- 1) We conducted surveys at 1,194 point count stations along 67 transects in the large wilderness parks, MORA, NOCA, and OLYM, and at 73 point count stations at LEWI.
- 2) Across the three mountain parks (MORA, NOCA, and OLYM), we documented the presence of 167 species, 98 of which were detected during point counts; the other 69 were incidental observations detected outside of the point count periods. During the 1,194 point counts in the three mountain parks, we

² Ray, C., et al. 2018. Landbird population trends in mountain and historical parks of the North Coast and Cascades Network: 2005–2016 synthesis. Natural Resource Report NPS/NCCN/NRR—2018/1673.

counted 13,892 individual birds, with an average number of detections of 11.6 birds per point. The five most frequently detected species on point counts across all three mountain parks were (in order from highest to lowest numbers) Pine Siskin, Varied Thrush, Dark-eyed Junco, Pacific Wren, and Yellow-rumped Warbler.

- 3) The number of bird detections on annual-panel transects across all three large parks decreased by 7% between 2023 and 2024. This overall decrease in detections is in part due to an unusually high number of Red Crossbill detections in 2023, which dropped to levels in 2024 that were more consistent with the long-term average.
- 4) At LEWI, our 73 point counts yielded 2,659 detections of 83 species. The most frequently detected species (excluding Caspian Tern and California Gull) was Swainson's Thrush, followed by Red Crossbill, Wilson's Warbler, American Robin, and Western Flycatcher. Caspian Terns and gulls, which are non-landbird species that tend to occur in large flocks and can greatly inflate our total number of detections and average number of detections per point, accounted for 495 of these detections. When these species are excluded to provide a better comparison with data from previous years, 2,164

birds were detected with a detection rate of 29.6 birds per point.

We caution, however, that these detection totals have not been adjusted for differences in survey effort, observer effects, or potential differences in detectability of birds between years; such adjustments will be made in conjunction with trend analyses in a future multi-year report.



Western Tanager (IBP / Eric Guzman)

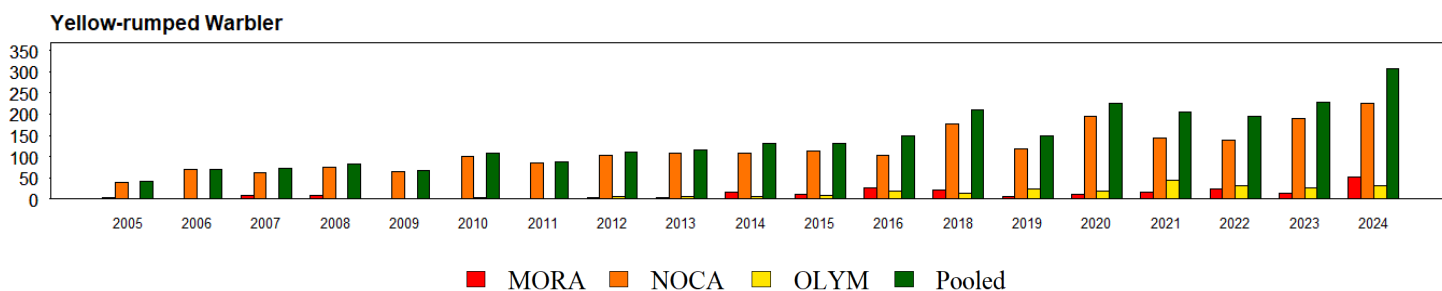


Figure 6. Detections of Yellow-rumped Warbler numbers have generally increased in Mount Rainier, North Cascades, and Olympic National Parks since the start of the monitoring program in 2005.

More Information

Miranda Terwilliger
Olympic Wildlife Branch Chief and Project Lead
Email: miranda_terwilliger@nps.gov

Rodney Siegel
Executive Director, The Institute for Bird Populations
Email: rsiegel@birdpop.org

Brief prepared by: Mandy Holmgren
Staff Biologist, The Institute for Bird Populations

Editor: Lise Grace
North Coast and Cascades Network

North Coast and Cascades Network website:
<https://www.nps.gov/im/nccn/landbirds.htm>



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