Audubon Climate Report

The Future for North American Birds

Audubon
Global Mean Surface Temperature

- annual mean
- 5-year running mean
- uncertainty

Credit: NASA Earth Observatory
Spending winter farther north

As the temperature across the U.S. has gotten warmer from 1966 to 2005, many bird species are spending their winters farther north.

Change in winter destination, 20 species with the most movement

Winter 1966-67 • Winter 2005-06

Sources: Audubon Society; NOAA

The Associated Press
Guide to Future Bird Ranges

https://www.youtube.com/watch?feature=player_embedded&v=a0EZnss2hMA
Range of Future Climates

![Graph showing global surface warming over time with future climate scenarios A2, A1B, B1, A1T, A2, and A1FI, and maps depicting climate changes in 2020-2029 and 2090-2099.]
Climate by Scenario

- Business as usual
- Constant 1990 emissions
- Half 1990 emissions

CO₂ concentration (parts per million) vs. Year

Year:
- 1990
- 2010
- 2030
- 2050
- 2070
- 2090

CO₂ concentration levels:
- 250
- 350
- 450
- 550
- 650
- 750
Bioclimatic Variables

Annual Mean Temperature (°C)
Mean Diurnal Range (Mean of monthly [maximum temperature – minimum temperature]) (°C)
Isothermality
Maximum Temperature of Warmest Month (°C)
Minimum Temperature of the Coldest Month (°C)
Temperature Annual Range (°C)
Mean Temperature of Wettest Quarter (°C)
Mean Temperature of Driest Quarter (°C)
Mean Temperature of Warmest Quarter (°C)
Mean Temperature of Coldest Quarter (°C)
Annual Precipitation (mm)
Precipitation of Wettest Month (mm)
Precipitation of Driest Month (mm)
Precipitation of Wettest Quarter (mm)
Precipitation of Driest Quarter (mm)
Precipitation of Warmest Quarter (mm)
Precipitation of Coldest Quarter (mm)

Credit: Raul Lieberwirth/Creative Commons
Summer and Winter Bird Count Data

BBS routes

CBC circles
Climate Threatened

Pinyon Jay
Current vs. Future Ranges

Anna’s and Black-chinned Hummingbirds

Climate Stable
Current vs. Future Ranges

Climate

Stable

EXPAND

Threatened

SHIFT

Endangered

CONTRACT
Current vs. Future Ranges

Climate Threatened

Common Loon
82% decrease in summer 2080 from 2000 range
Biological Response
“track and move”

Biological Response
“suffer in place”

Biological Response
“adapt in place”

potential distribution across futures
Bobolink

Climate Threatened

Bobolink

2080
Ranks the landscape based on 314 climate threatened and endangered species, for all possible futures and biological responses.

Highly ranked sites will be valuable to the highest number of the 314 species through time, incorporating uncertainty in biological response.
The map shows **only** the most valuable 5% of pixels in the entire continent. All of the pixels in Iowa and elsewhere have value rankings that we can look at in a more focused way.

**Highest Ranked Pixels - Top 5%**

**TOP 5%**

**of the landscape**
Arizona Strongholds
And
Important Bird Areas

Rivers
Mountains
Grasslands
Climate Threatened

Hairy Woodpecker

Audubon's climate model projects a 78 percent loss of current summer range by 2080, with a strong shift northward noticeable at both seasons.
Audubon's climate model shows an overall northward drift of the species’ range, with more disruption and range loss in summer than in winter.
92% summer range shift as predicted by Audubon's climate model. Winter range is predicted to remain stable.
Birds as bellweathers for environmental health

Credit: Brian Lasenby/Fotolia
Indigo Bunting (*Passerina cyanea*)
BY THE NUMBERS

- 30,000 members
- 56,000 + actions to protect riparian areas
- 26 members met with 13 members of Congress and delivered 2,000 constituent post cards
- Dozens of meetings with agency reps
- 12 fact sheets published
- Monthly WRAN newsletter
- Umpteen webinars!
A combination of drought, invasive species, over-allocation and unsustainable management are concerns for Western Rivers. The Western Rivers Action Network (WRAN) is collaborating to advance river protection and water conservation.

**Audubon Chapters**
Collaborating to advance river protection and water conservation

**Growing the Network**
Recruiting new activists and volunteers

**Volunteer Training**
Workshops to train volunteers in advocacy and outreach techniques

**Policy Action**
Over 2,000 CO WRAN members have weighed in on the state water plan. Over 2,400 NM WRAN members have sent letters opposing the Gila River diversion.

**Media Outreach**
Submitted and published LTEs and Op-eds in target media outlets

**Balanced Development**
Spring runoff that feeds the Colorado River was preserved. Funding for a pipeline that would drain the Gila River was denied.
WESTERN RIVERS ACTION NETWORK

http://conservation.audubon.org/westernrivers

azwran@audubon.org  602-468-6470
Audubon’s Birds and Climate Change Report

314 Species on the Brink

Shrinking and shifting ranges could imperil nearly half of U.S. birds within this century.

Baird's Sparrow

By 2080, this grassland bird is expected to lose 100 percent of its current breeding range.

See the climate forecast map »

Take Action

Climate change threatens the birds we see every day. I pledge to help build a brighter future for the 314 birds at risk.