

Lake Lifelines: The Role of New Hampshire's Lakes in Bird Migration





Agenda

- About Chad
- About *Birding University*
- State of the birds
- Why migratory birds?
- Role of NH lakes
- How you can help
- Q & A


A bird of prey, possibly an osprey, is shown from a low-angle perspective with its wings fully extended. The bird's plumage is a mix of brown, tan, and white. A dark, semi-transparent horizontal band runs across the center of the image, featuring the text "About Your Presenter" in a white, sans-serif font.

About Your Presenter

Chad Witko

- Lifelong birder
- From the Hudson Valley of NY
- Worked with birds in 7 different states
- Specialist, Avian Biology for Audubon's Migratory Bird Initiative
- eBird Reviewer: Windham, VT
- VT Bird Records Committee
- Founder of Antioch Bird Club
- Science Advisor for BirdNote
- Founder of Birding University



A Green Heron is shown in profile, facing right. It has a dark blue cap, a yellow eye, and a long, sharp beak. Its neck is a mix of reddish-brown and white. The bird's back and wings are a mottled blue and green. It is standing in shallow water with many green lily pads and some brown sticks around it. A dark horizontal band across the middle of the image contains the text "About *Birding University*".

About *Birding University*



Steven Lamonde



Will Stollsteimer



Chad Witko

Birding University: Advancing Your Curriculum

Curated content, courses, and cohorts: A preview of BU's paid tiers



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Birding University is an educational ecosystem helping birders of all backgrounds grow their skills in birding, conservation, and community—because birding is for everyone.

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Foundations of Field ID: Behavior

How the way a bird moves and acts can reveal its identity

AUG 2 • BIRDING UNIVERSITY

♡ 11



JULY 2025

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Between soft mist and harsh brush, a unique bird community thrives

JUL 26 • BIRDING UNIVERSITY



Community & Conservation: Find Your Cause

From local habitat loss to global climate change—finding what moves you is the first step toward action

JUL 19 • BIRDING UNIVERSITY



Birding Fundamentals: Binoculars 101

Whether you call them binos or bins—master your optics to catch every detail

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Foundations of Field ID: Color Patterns

From bright blocks to subtle streaks, color patterns offer quick and powerful clues for identifying birds

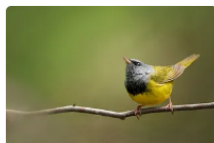
JUL 5 • BIRDING UNIVERSITY



Birds & Nature: Northern Hardwood Forest

When we understand place, we become better birders and better stewards

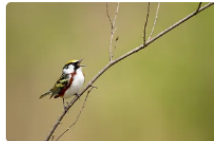
JUN 28 • BIRDING UNIVERSITY AND HAYLEY KOLDING



Community & Conservation: Find Your Flock

From reporting banded birds to finding others to share the joy of birding with, knowing where to go is the first step

JUN 21 • BIRDING UNIVERSITY



Celebrating Checklists: AviList and 2 Billion eBird Observations

How global community and collaboration are shaping checklists—cornerstones of birding and avian conservation

JUN 14 • BIRDING UNIVERSITY



Foundations of Field ID: Size & Shape

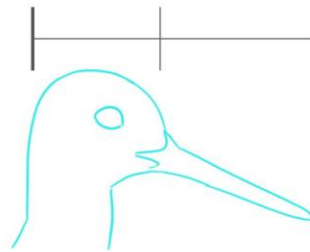
The fastest way to start identifying birds—learn to recognize them by their outline, posture, and proportions before anything...

JUN 7 • BIRDING UNIVERSITY

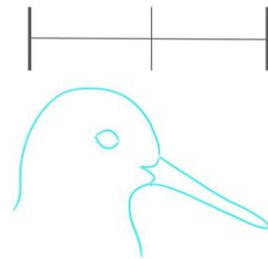




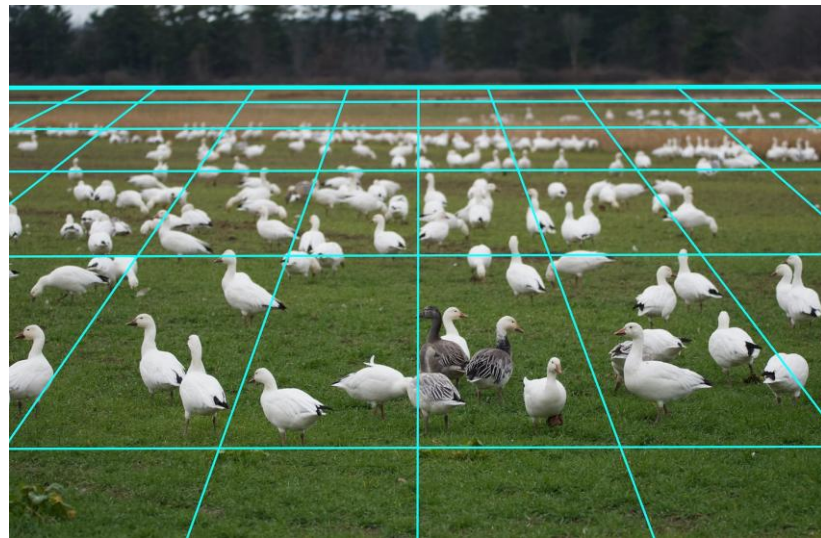
Greater Yellowlegs




Lesser Yellowlegs



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Free Tier	Paid Tier	Founding Member Tier
Free	\$5/mo OR \$50/yr	\$100/yr
<p><u>Weekly Newsletters</u> 1-2 per week</p> <p>Includes:</p> <ol style="list-style-type: none"> 1. <u>This Week in Birding History</u> 2. <u>Birding Tip</u> 3. <u>Deep Dive:</u> Rotating across four topic areas: <ul style="list-style-type: none"> • Bird ID • Birding Skills & Experiences • Community & Conservation • Birds & Nature 	<p>Free Tier + <u>Paid Newsletters</u> 2 per month</p> <p>Includes:</p> <ol style="list-style-type: none"> 1. <u>BU Study Series:</u> Monthly guided courses 2. <u>Bird's Eye View:</u> Curated content to fast-track learning 	<p>Free Tier + Paid Tier + <u>O&A with BU Educators</u> quarterly</p> <p>Includes:</p> <ol style="list-style-type: none"> 1. <u>Direct Access:</u> to BU educators; get your questions answered 2. <u>Help Influence:</u> the future of BU content 3. <u>Something Special:</u> A vinyl Birding University logo sticker



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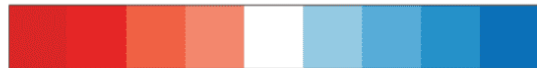




State of the Birds

CornellLab  eBird

Abundance trend



More loss

Uncertain

More gain

Abundance

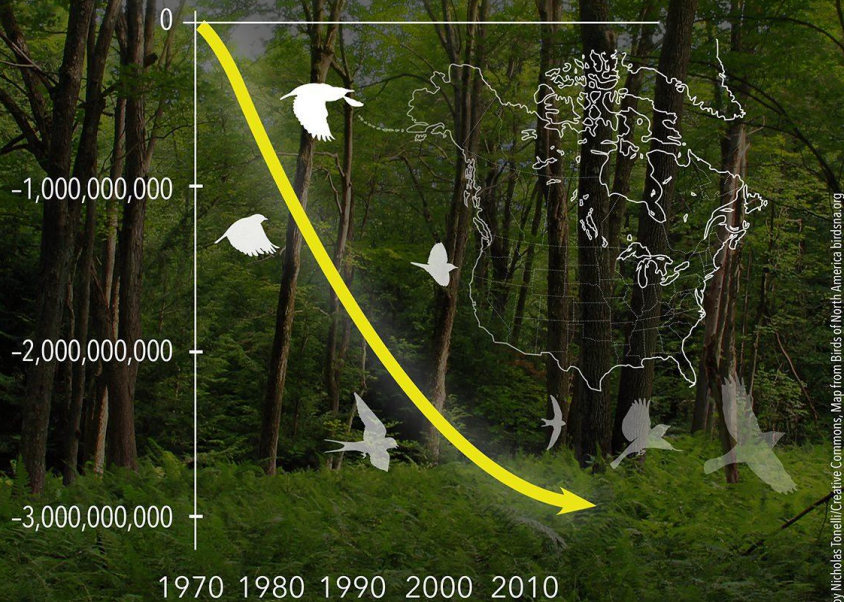


Lower

Higher

2.9 billion

birds gone since 1970

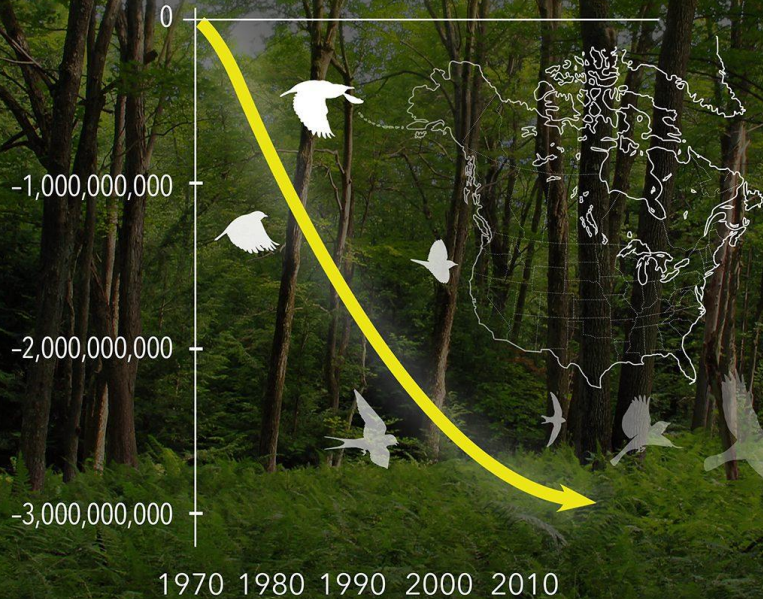


Courtesy of the Cornell Lab of Ornithology. Source: Science, 2019

WE LIVE IN A WORLD
WITH FEWER BIRDS

2.9 billion

birds gone since 1970



Courtesy of the Cornell Lab of Ornithology. Source: Science, 2019

Forest by Nicholas Turelli/Creative Commons. Map from Birds of North America birdsna.org

3 BILLION

lost in 50 years

**1 in 4
Birds Gone
Since 1970**



Courtesy of the Cornell Lab of Ornithology. Source: Science, 2019

Graphic by Jillian Ditner/Cornell Lab of Ornithology

3 BILLION
lost in 50 years

Migratory Birds

2.5
BILLION
MIGRATORY BIRDS
LOST SINCE 1970

-28%
POPULATION LOSS
IN MIGRATORY
BIRD SPECIES
SINCE 1970

2 IN 5
BALTIMORE ORIOLES
LOST SINCE 1970



Courtesy of the Cornell Lab of Ornithology. Source: Science, 2019

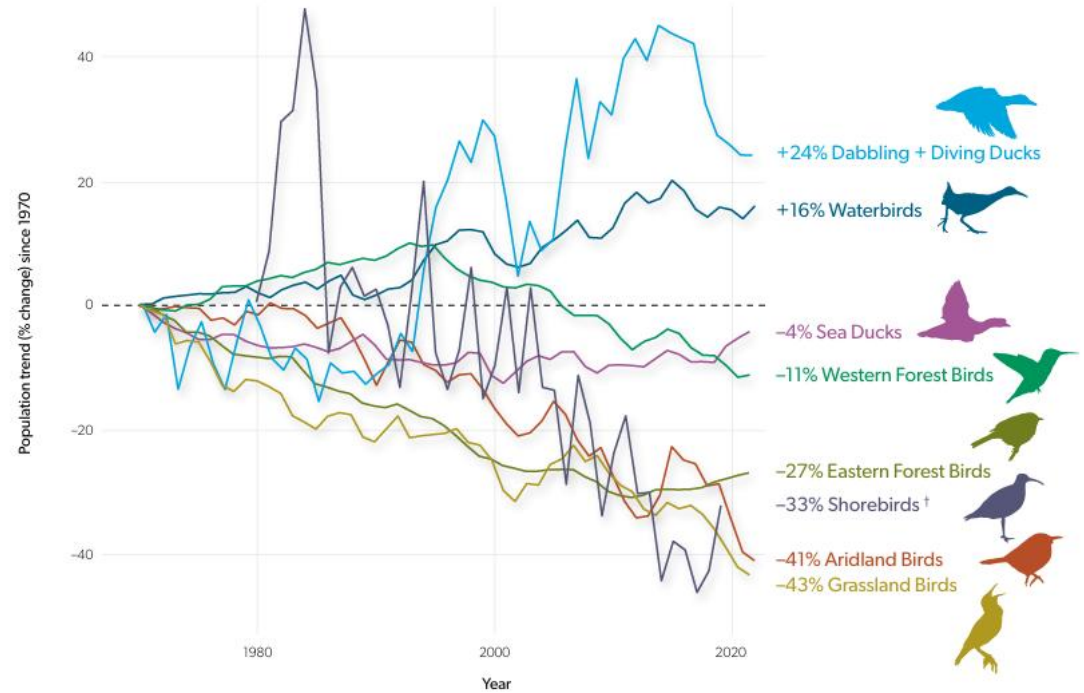
Baltimore Oriole by Gary Mendenhall, 2019. Oriole, Forest by Nicholas Trevis Creative Commons.

3 BILLION
lost in 50 years

STATE OF THE BIRDS REPORT UNITED STATES OF AMERICA



2025



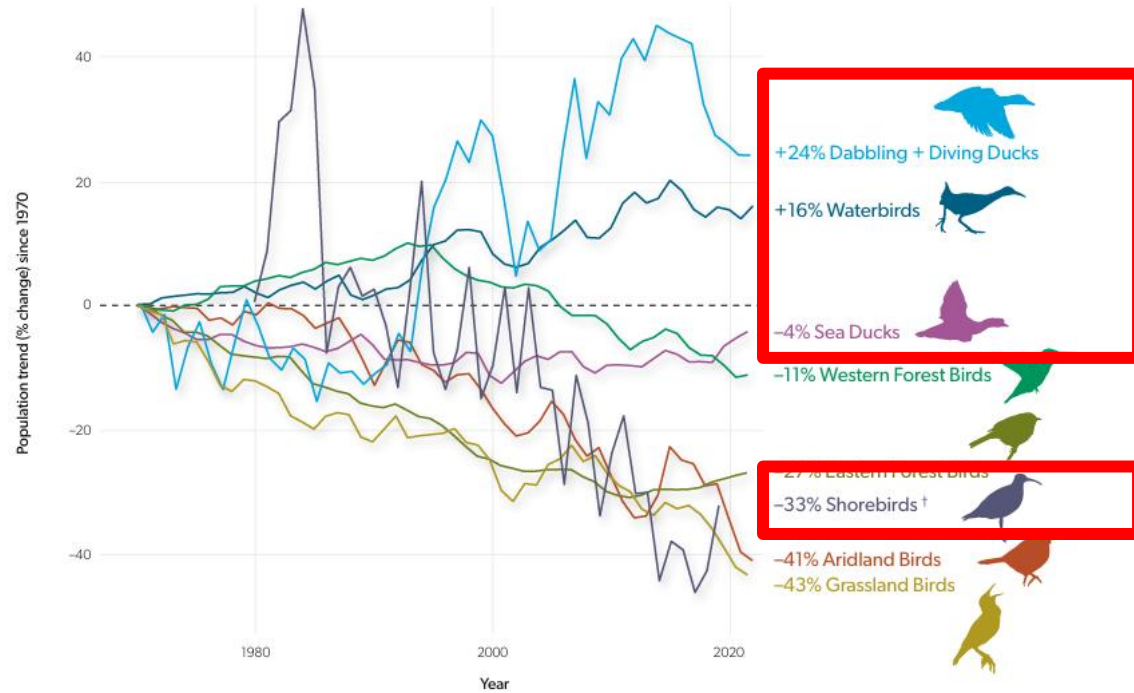
* Rosenberg, K.V., et al. 2019. Decline of the North American Avifauna. *Science*. 365 (6461). doi: 10.1126/science.1261313

† Shorebirds indicator trend data has not been updated since 2019.

STATE OF THE BIRDS REPORT UNITED STATES OF AMERICA



2025

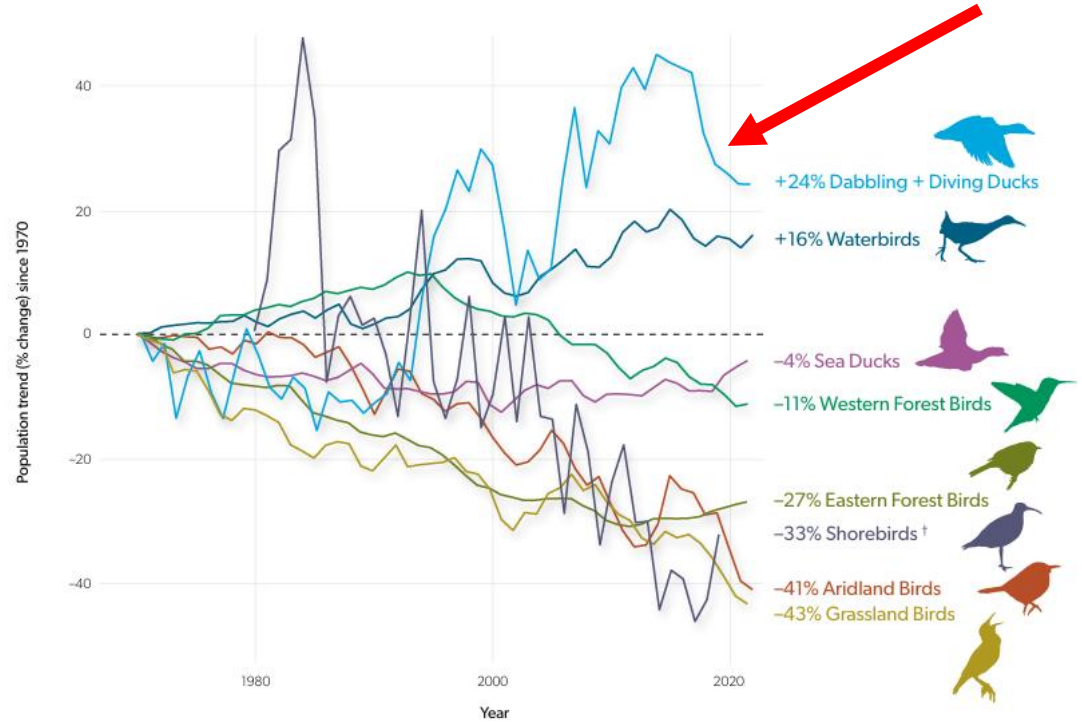


* Rosenberg, K.V., et al. 2019. Decline of the North American Avifauna. *Science*. 365 (6461). doi: 10.1126/science.1261313
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STATE OF THE BIRDS REPORT UNITED STATES OF AMERICA



2025

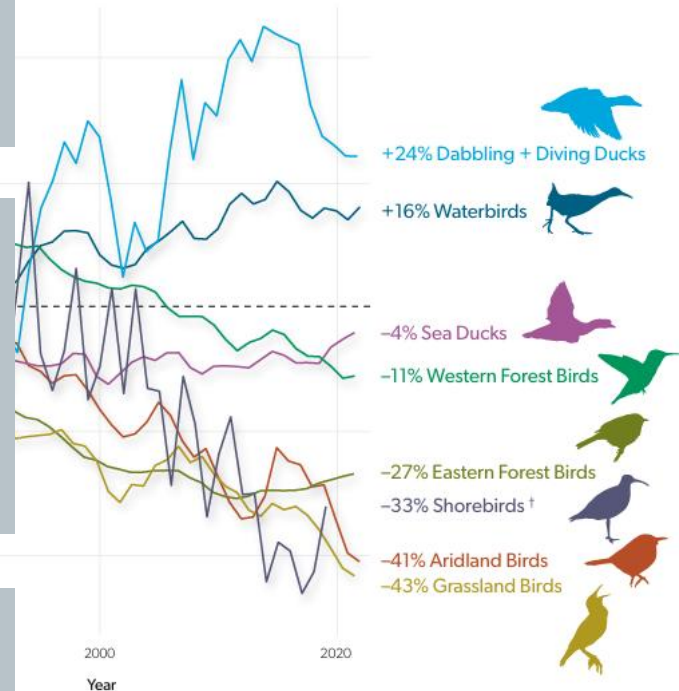
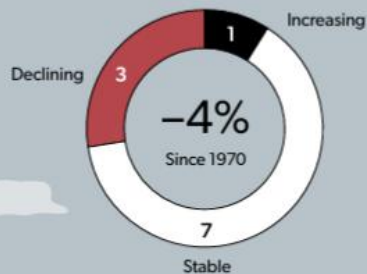
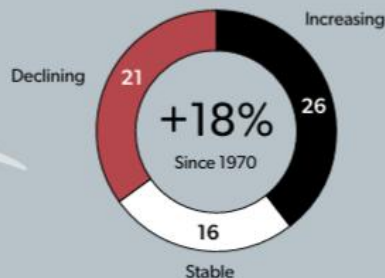
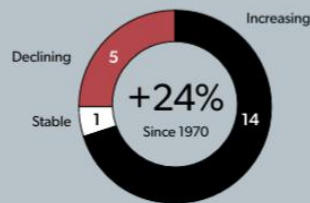


* Rosenberg, K.V., et al. 2019. Decline of the North American Avifauna. *Science*. 365 (6461). doi: 10.1126/science.1261313

[†] Shorebirds indicator trend data has not been updated since 2019.

WATERFOWL AND WATERBIRDS

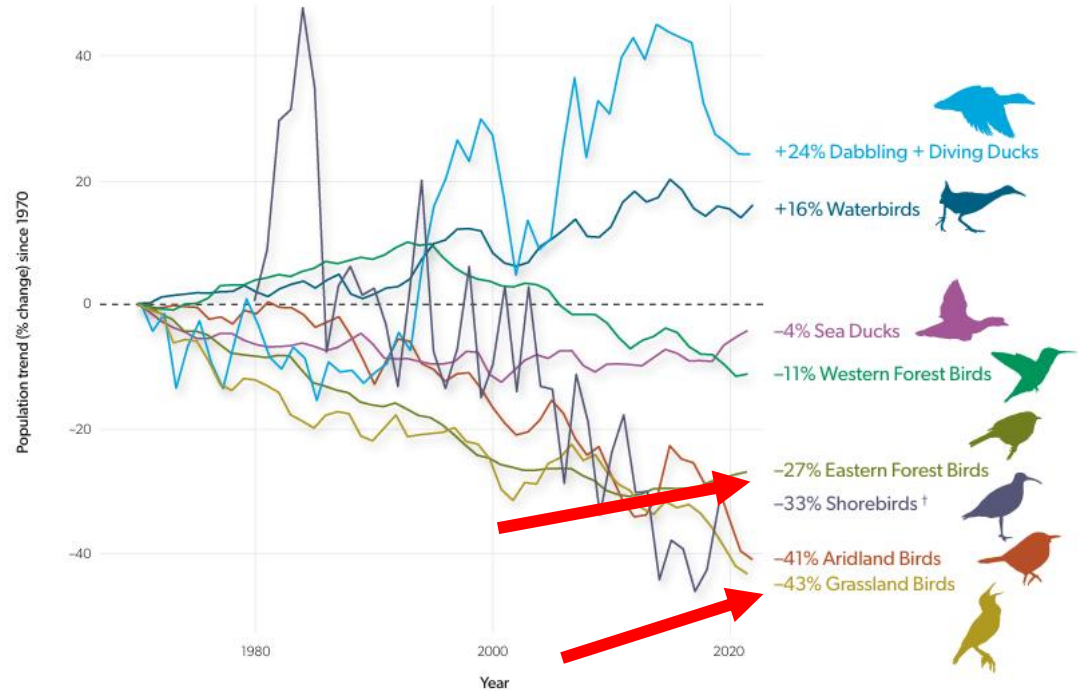
Long-term gains level off, renewing conservation concerns



STATE OF THE BIRDS REPORT UNITED STATES OF AMERICA

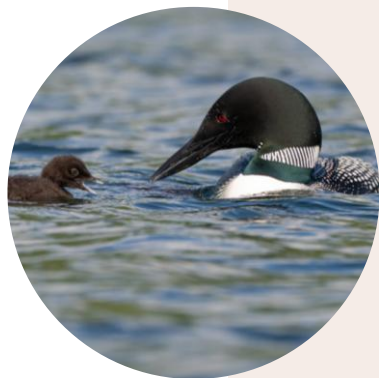


2025



* Rosenberg, K.V., et al. 2019. Decline of the North American Avifauna. *Science*. 365 (6461). doi: 10.1126/science.1261313

† Shorebirds indicator trend data has not been updated since 2019.



Warming scenario:

Current

+1.5 °C

+2.0 °C

+3.0 °C

Why these temperatures?

Vulnerability status:

Stable

100% range maintained

Map Legend

● Range gained

● Improving

● Slightly improving

● Stable

● Slightly worsening

● Worsening

● Range lost

What's a range?

Climate Map: Audubon's Survival By Degrees

What is a season?

Warming scenario:

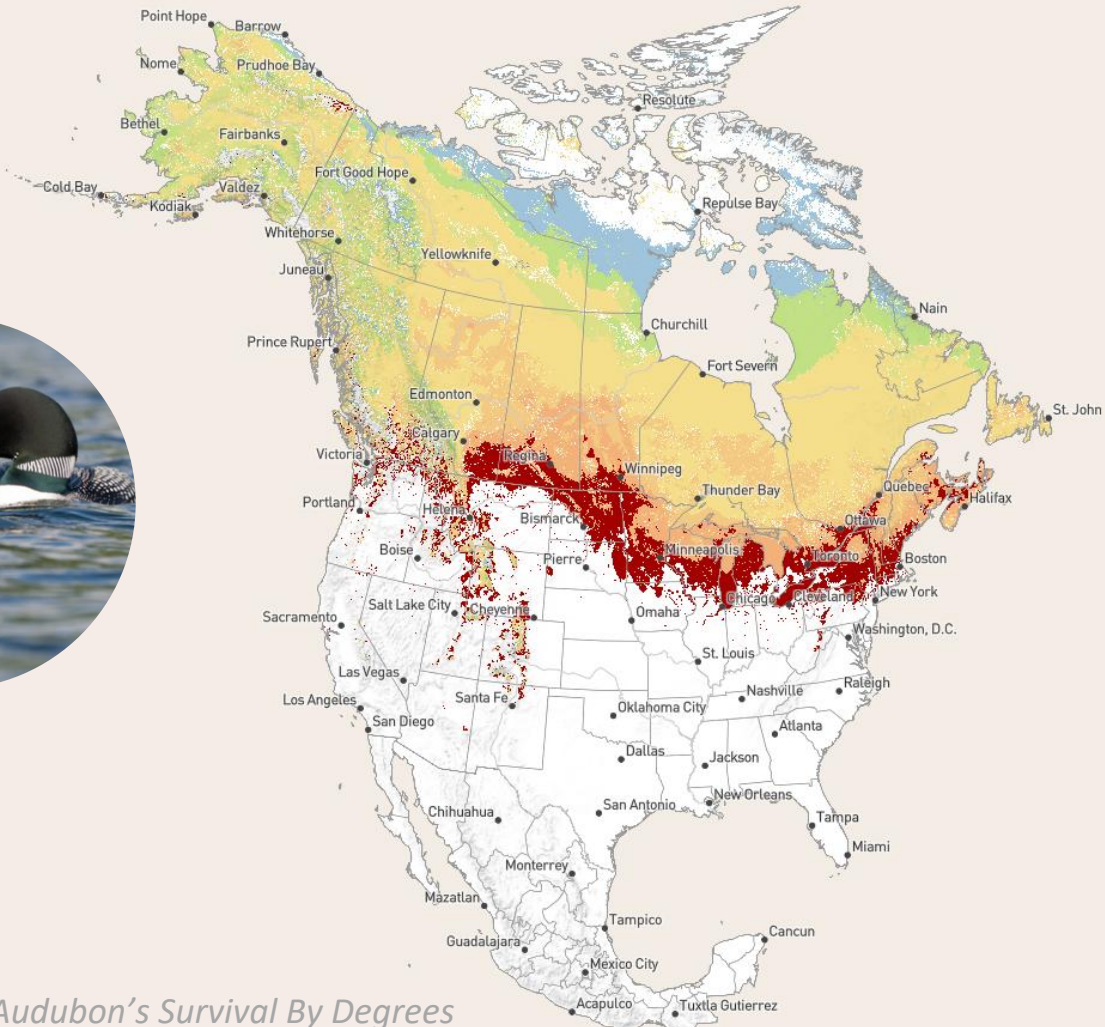
Current

+1.5 °C

+2.0 °C

+3.0 °C

Why these temperatures?



Vulnerability status:

Low

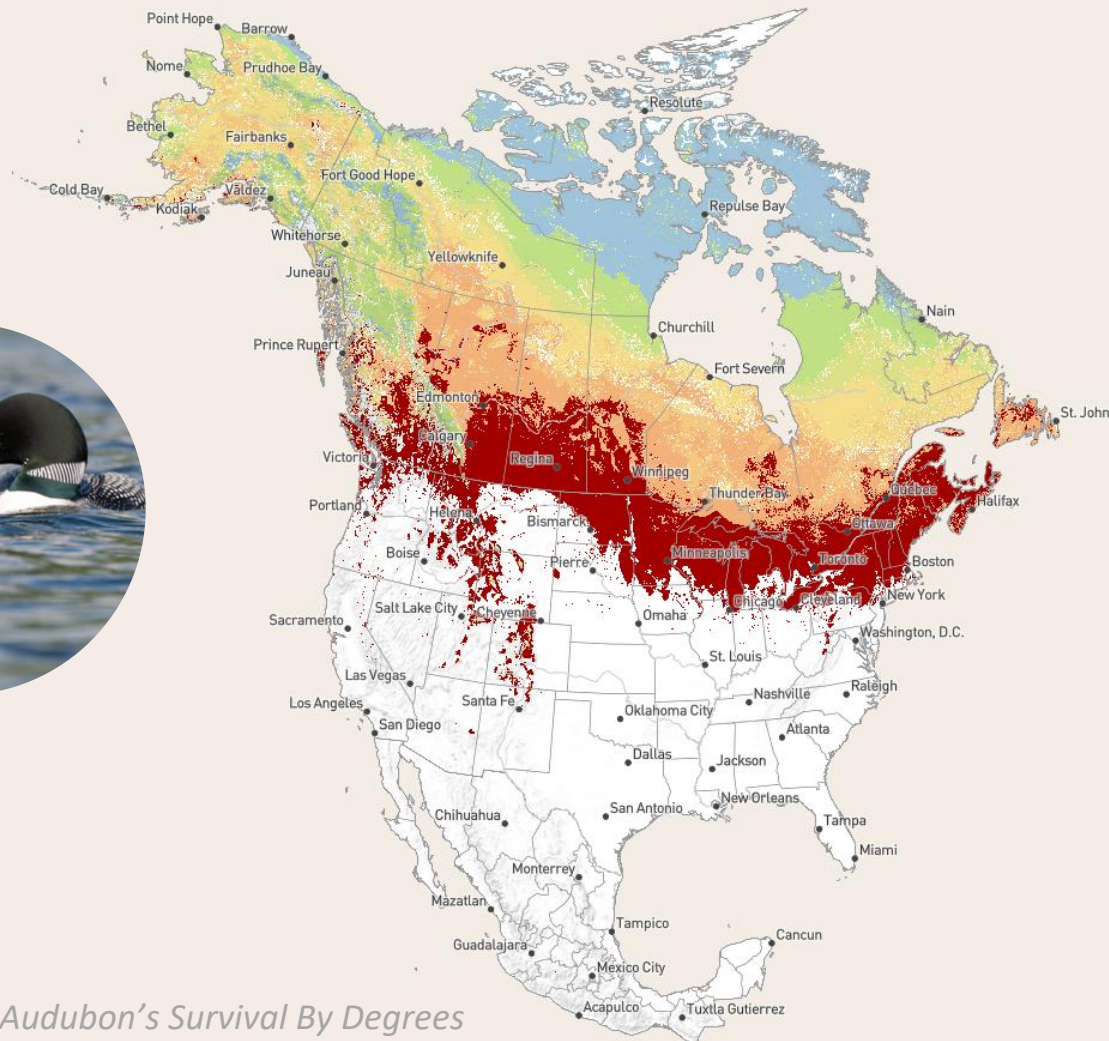


Map Legend

- Range gained
- Improving
- Slightly improving
- Stable
- Slightly worsening
- Worsening
- Range lost

What's a range?

Climate Map: Audubon's Survival By Degrees



Warming scenario:

Current

+1.5 °C

+2.0 °C

+3.0 °C

Why these temperatures?

Vulnerability status:

Moderate

18% range gained

73% range maintained

27% range lost

Map Legend

Range gained

Improving

Slightly improving

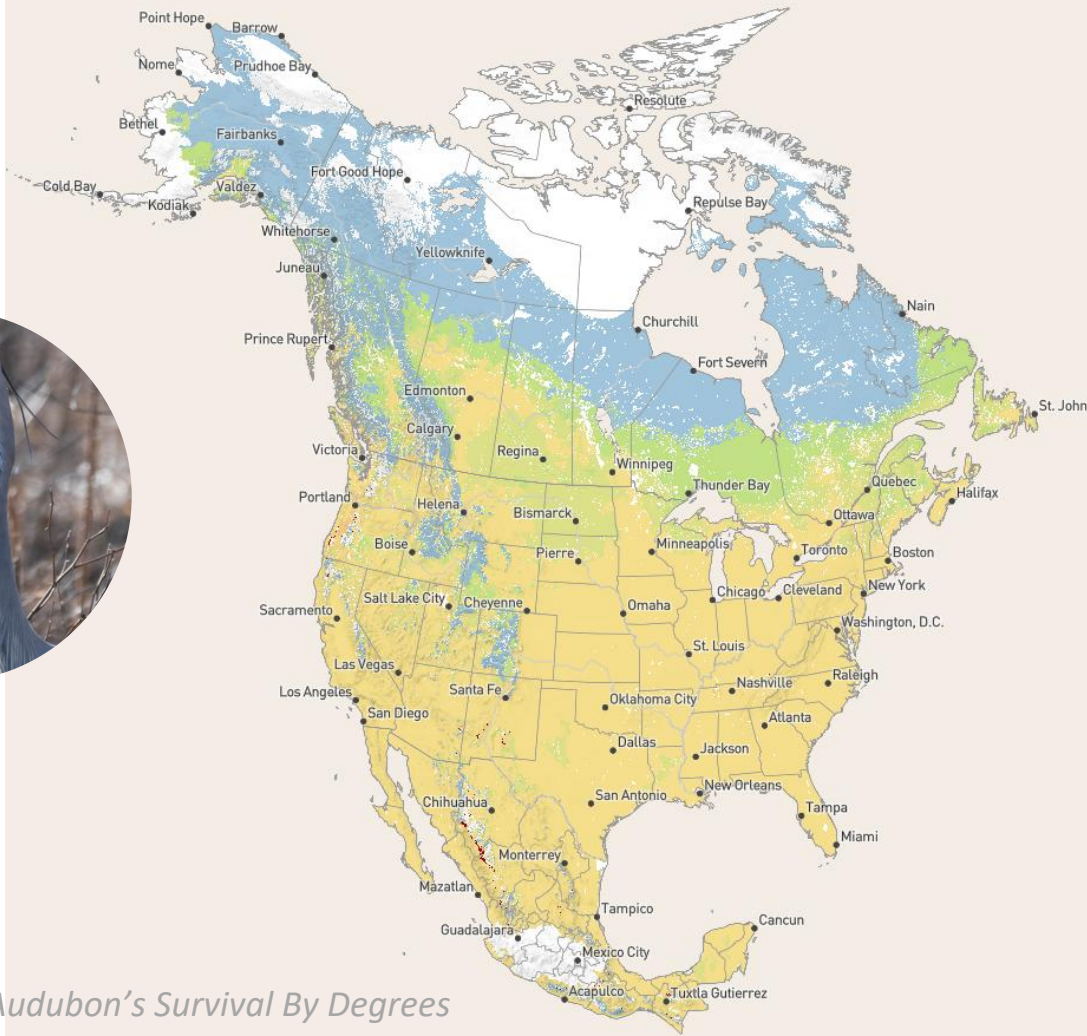
Stable

Slightly worsening

Worsening

Range lost

What's a range?



What is a season?

Warming scenario:

Current

+1.5 °C

+2.0 °C

+3.0 °C

Why these temperatures

Vulnerability status:

Stable

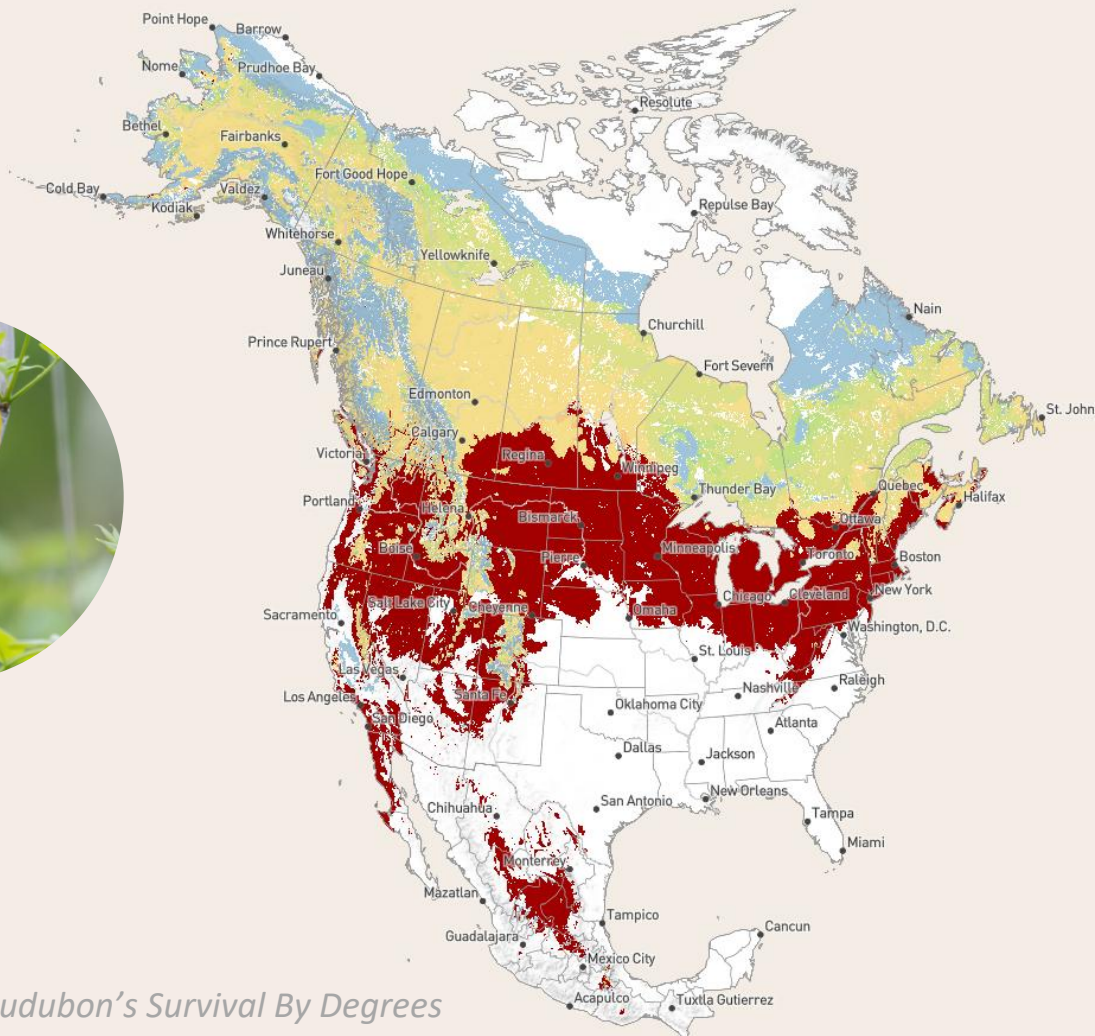
36% range gained
100% range maintained
0% range lost

Map Legend

Range gained
Improving
Slightly improving
Stable
Slightly worsening
Worsening
Range lost

What's a range?

Climate Map: Audubon's Survival By Degrees



What is a season?

Warming scenario:

Current

+1.5 °C

+2.0 °C

+3.0 °C

Why these temperatures?

Vulnerability status:

Moderate

22% range gained
59% range maintained
41% range lost

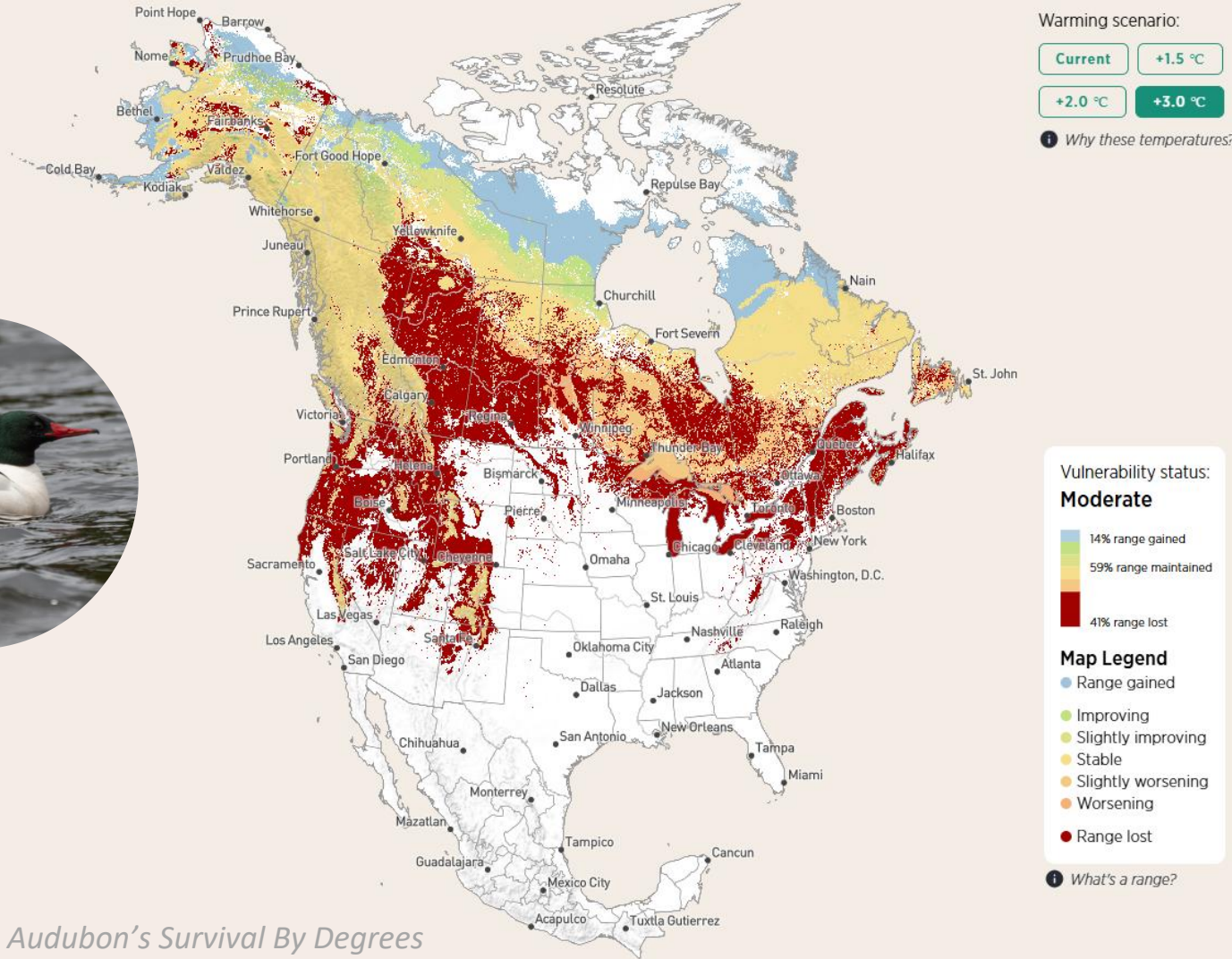
Map Legend

Range gained

Improving
Slightly improving
Stable
Slightly worsening
Worsening
Range lost

What's a range?

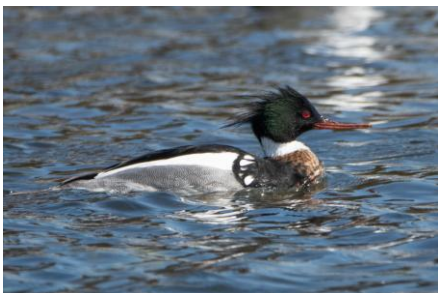
Climate Map: Audubon's Survival By Degrees



Climate Map: Audubon's Survival By Degrees



What are Migratory Birds?



Why do birds migrate?



- Areas of low/decreasing resources -> areas of high/increasing resources
- Food & nesting locations
- Migrate north for burgeoning insect populations, increased nesting locations, or open water
- South to escape cold, yes, but mostly for food resources

Illustration: David Allen Sibley

Types of migration



- Long-distance/Obligate (Arctic Tern)
- Short-distance/Facultative (Eastern Phoebe)
- Complete (Swainson's Hawk)
- Partial (American Robin)
- Altitudinal (Dusky Grouse)
- Diurnal (raptors)
- Nocturnal (songbirds)

Illustration: David Allen Sibley

The image shows two ducks in flight over a body of water. The duck on the left is in a higher position, with its wings fully extended upwards, showing a mix of brown and blue feathers. The duck on the right is lower and further along, also with wings spread, showing similar plumage. A dark, semi-transparent horizontal band runs across the middle of the image, containing the text "Why Migratory Birds?".

Why Migratory Birds?



CANARIES IN THE COAL MINE

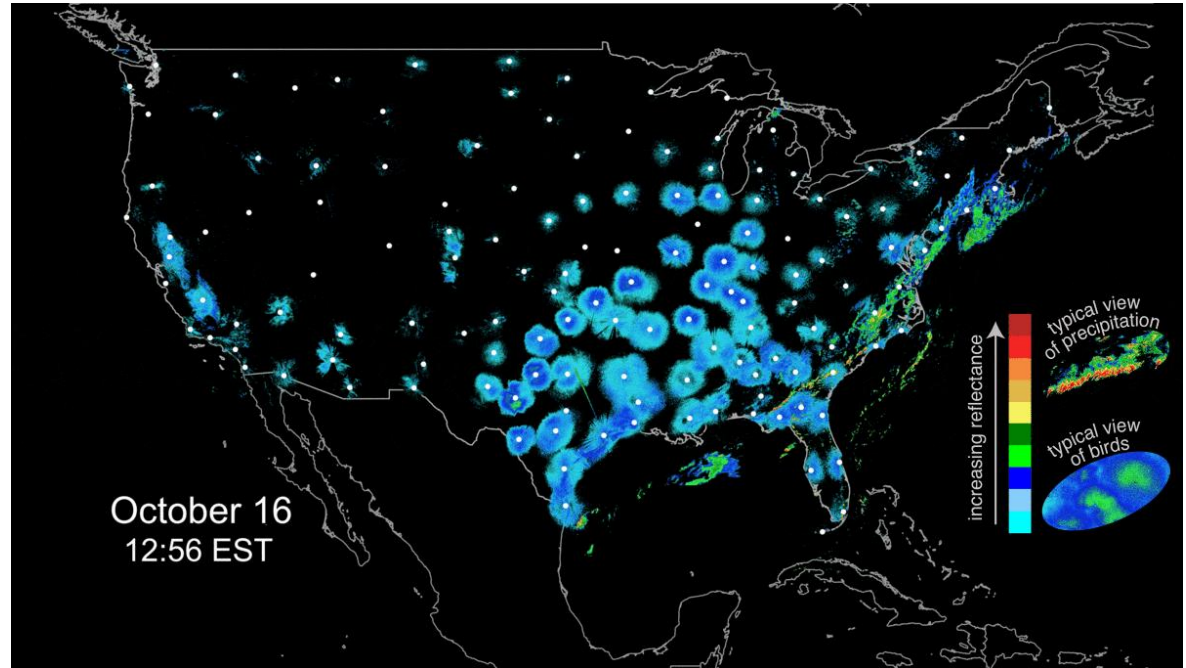
Birds tell us about
the health of our
environment

BY PROTECTING BIRDS AND THEIR HABITATS

We also protect the
places other wildlife
& people need



~ 70% OF
NORTH
AMERICAN
BREEDING
BIRDS
MIGRATE



BirdCast

A stylized map of the Americas, showing North and South America. The map is overlaid with numerous colorful lines representing bird migration routes. These routes are concentrated in the northern parts of the continents, particularly in North America, and extend southwards. The colors include shades of blue, green, yellow, orange, and purple. The map has a soft, painterly texture.

THEY SPEND MOST
OF THE YEAR, OVER
50%, OFF THE
BREEDING GROUNDS

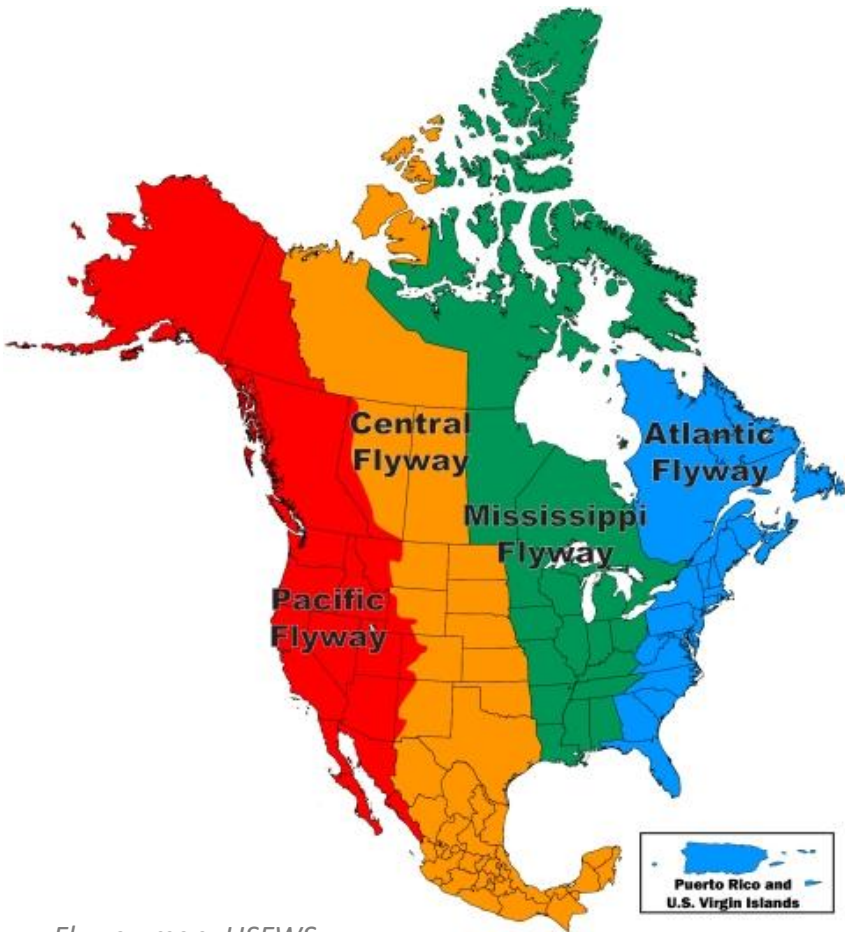
Smith et al. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. Accessed on August 19, 2025 at birdmigrationexplorer.org.



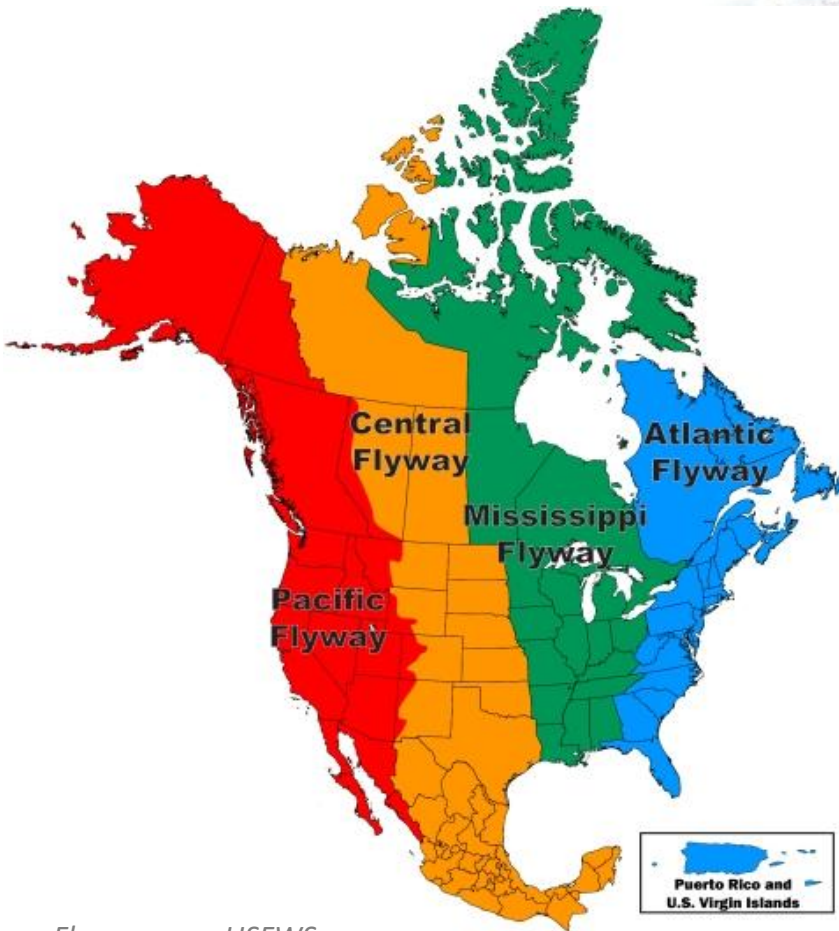
MIGRATORY BIRDS CONNECT US

Across a
hemisphere,
across the Earth

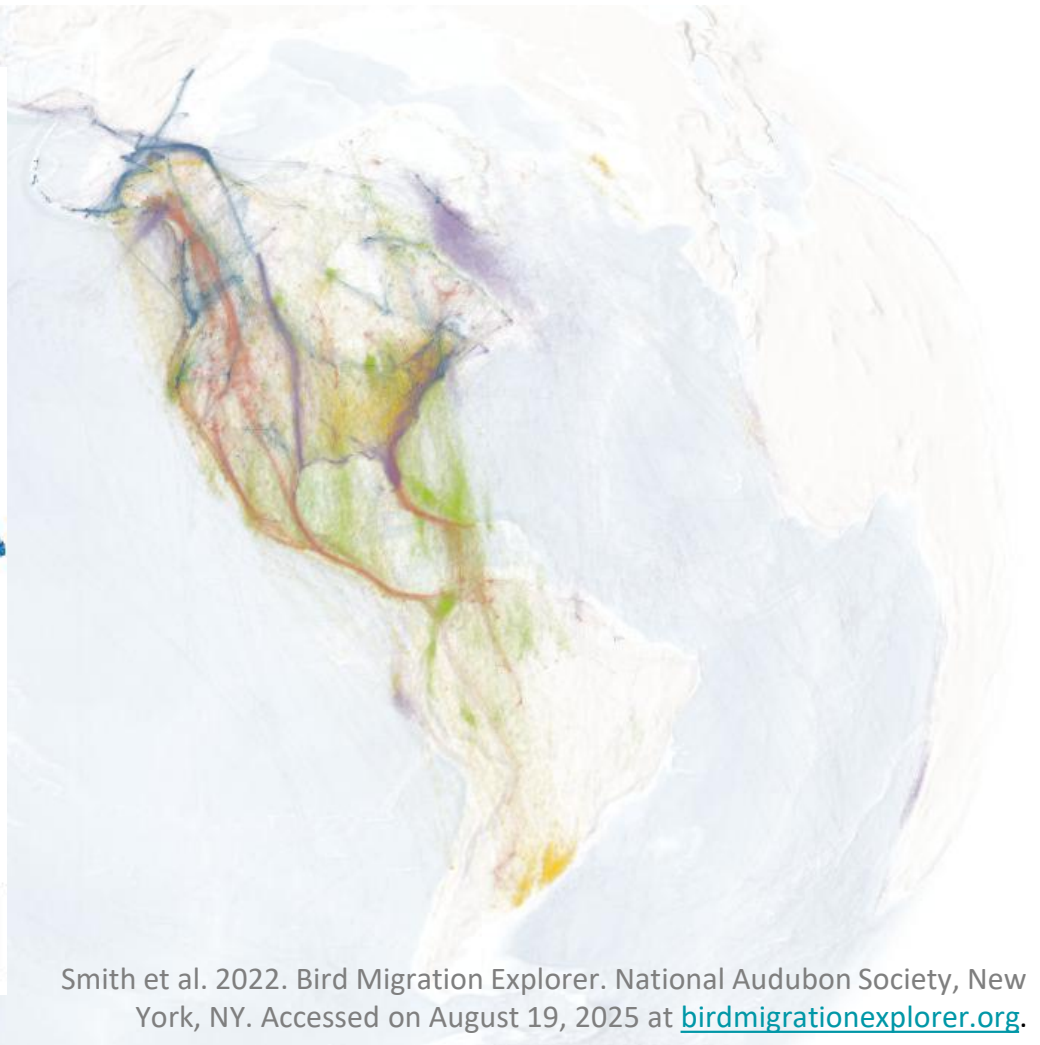
Smith et al. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. Accessed on August 19, 2025 at birdmigrationexplorer.org.



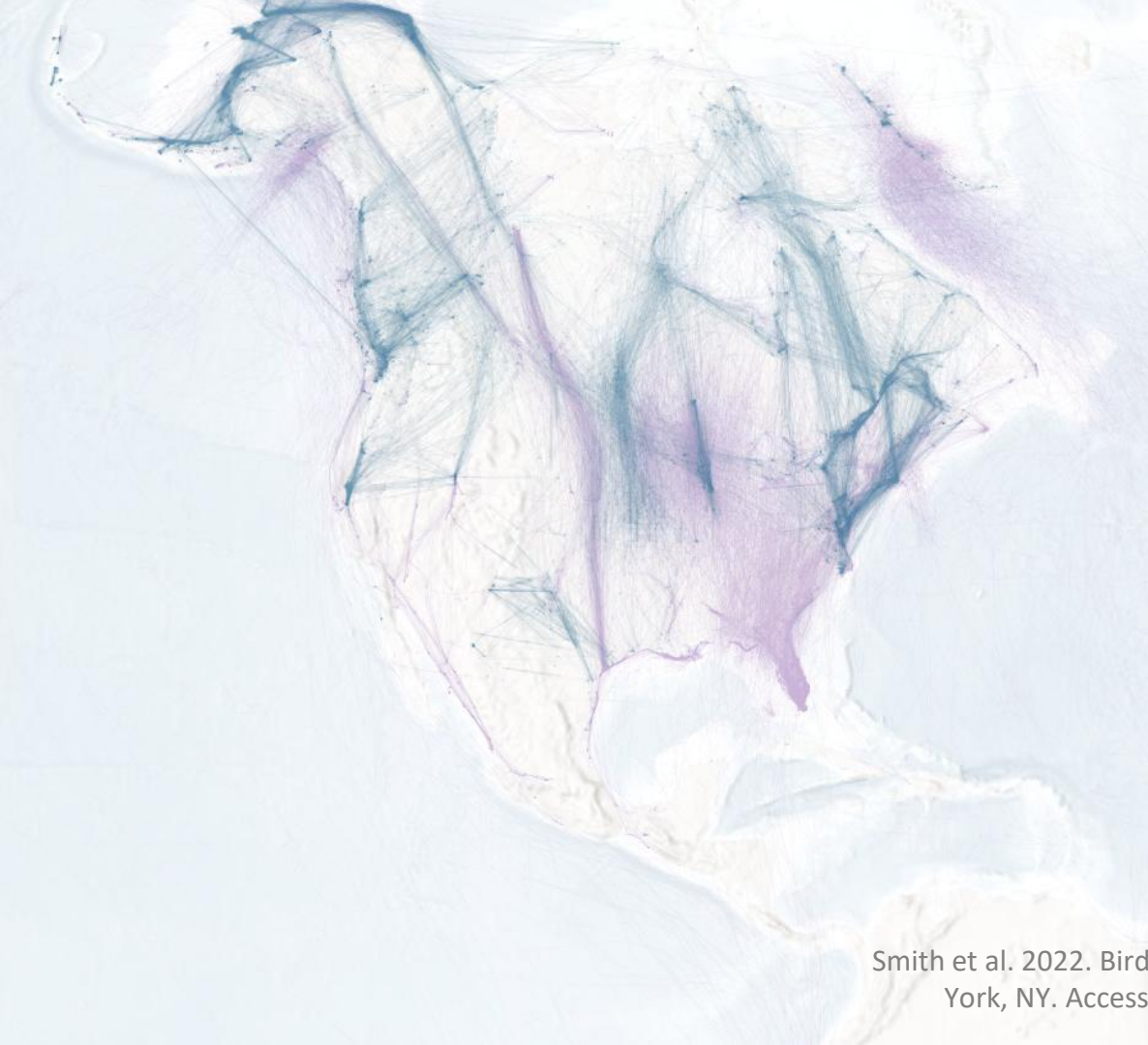
Flyway map: USFWS





Flyway map: USFWS



Smith et al. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. Accessed on August 19, 2025 at birdmigrationexplorer.org.













 **Map Layers** 

Migration Journeys

Explore the travels of thousands of individual migratory birds, aggregated here for the first time.

Migration Pathways

-  Landbirds 
-  Raptors 
-  Shorebirds 
-  Waterbirds 
-  Waterfowl 

[Show Descriptions](#)

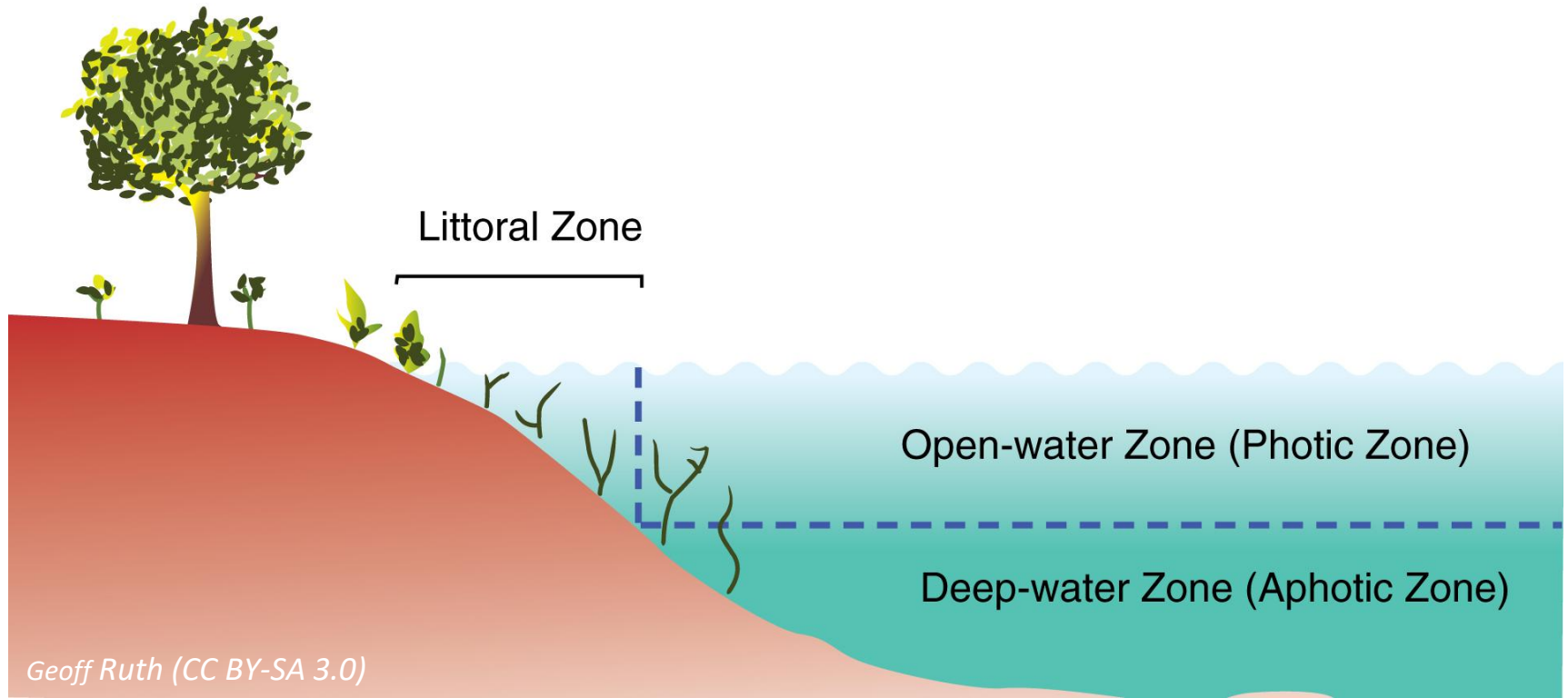
Smith et al. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. Accessed on August 19, 2025 at birdmigrationexplorer.org.



Role of New Hampshire's Lakes

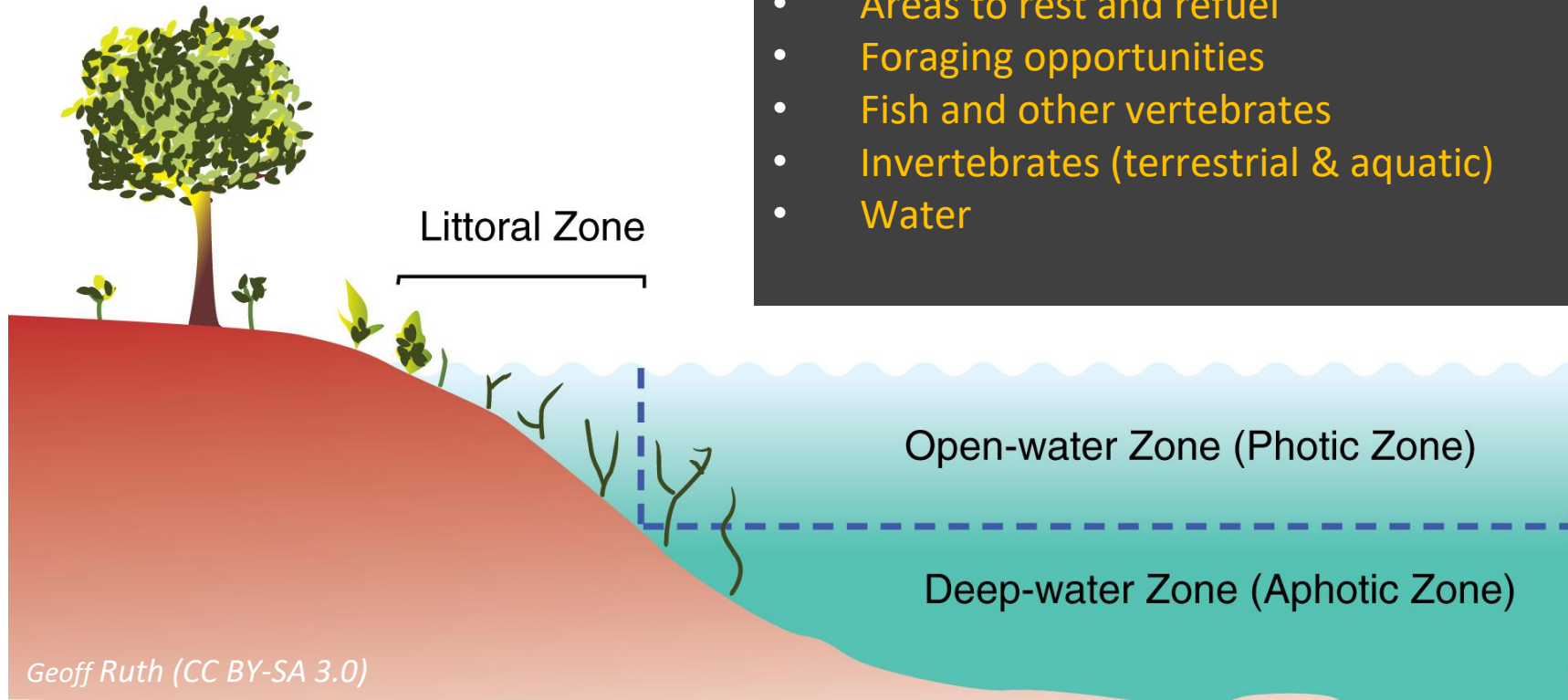
Echo Lake: Ken Gallagher (CC BY-SA 4.0)





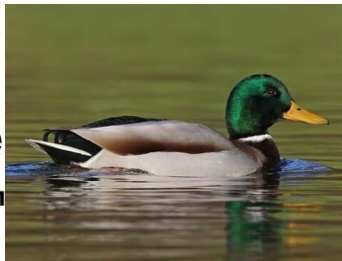
What do lakes offer migratory birds?

- Nesting habitat
- Shelter and protection from predators
- Areas to rest and refuel
- Foraging opportunities
- Fish and other vertebrates
- Invertebrates (terrestrial & aquatic)
- Water





Littoral Zone






e (Photic Zone)

ne (Aphotic Zone)







Species Leaders






















1. Rockingham	399
2. Strafford	316
3. Grafton	301
4. Merrimack	296
5. Hillsborough	291
6. Cheshire	285
7. Carroll	271
8. Coos	270
9. Belknap	256
10. Sullivan	252

Audubon  Bird Species  Locations  Conservation Challenges

Search for a species

Taxonomic Group  Data Technology  Conservation Statistics  Conservation 

Species Near My Location (172)

		 	 
Common Goldeneye	Common Grackle	Common Loon	Common Merganser
			 
Common Nighthawk	Common Redpoll	Common Yellowthroat	Connecticut Warbler
 			 
Cooper's Hawk	Dark-eyed Junco	Dickcissel	Double-crested Cormorant
			



Lake Winnisquam: Newton Court (CC BY-SA 4.0)



Belknap County


- White-winged Scoter: 200; Squam Lake; 21 May 2011
- Ring-necked Duck: 176; Lake Winnisquam; 12 Apr 2015
- Black Scoter: 120; Lake Winnisquam; 1 Nov 2023

Carroll County

- Red-necked Phalarope: 7; Squam Lake; 29 Aug 2024
- Bonaparte's Gull: 150; Lake Winnepesaukee; 12 May 2025

Cheshire County

- Tree Swallow: 2000; Spofford Lake; 22 Apr 2017
- Bufflehead: 222; Spofford Lake; 29 Apr 2018

A scenic photograph of a lake, likely Lake Winnisquam, with a sandy beach in the foreground and a dense forest of evergreen trees in the background. The sky is visible through the tree canopy at the top. A semi-transparent dark grey box is overlaid on the image, containing text about bird sightings in New Hampshire counties.

Grafton County

- Horned Grebe: 300; Moore Reservoir; 30 Apr 2018

Merrimack County

- Hooded Merganser: 280; Penacook Lake; 6 Nov 2010

Sullivan County

- Bonaparte's Gull: 300; Lake Sunapee; 30 Apr 2018
- Little Gull: 1; Lake Sunapee; 30 Apr 2018



Little Gull: Eric Masterson

<https://macaulaylibrary.org/asset/97434741>

A photograph of two birders on a beach. The person on the left is wearing a yellow and black jacket and is using binoculars. The person on the right is wearing a green jacket and an orange cap, and is using a spotting scope mounted on a tripod. The background shows a beach with shallow water and a cloudy sky.

How You Can Help Birds

Birders (USFWS/Public Domain)





1. Make windows safer
2. Keep cats indoors
3. Use native plants
4. Avoid pesticides
5. Drink shade-grown coffee
6. Reduce plastic use
7. Do community science



Threats to Common Loons on Lakes:

- Human disturbance
- Wildlife predation facilitated by human presence
- Fishing line and gear
- Climate change
- Water levels
- Shoreline development
- Additional threats along coasts

A Great Blue Heron is shown in profile, facing left. It has a long, sharp, yellowish-brown beak and a yellow eye. Its plumage is primarily grey and white, with a distinctive black cap and a long, thin black plume extending from the back of its head. The bird is standing in a marshy area with tall, green and yellow reeds in the background.

Threats to Great Blue Herons on Lakes:

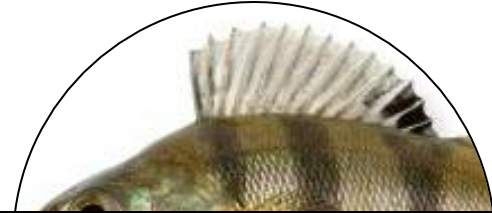
- Human disturbance
- Contaminants
- Habitat management



Clean Water



Invasive Plants



Healthy Fish Populations



Matrix of Habitats



Shoreline Habitat



Adjacent Wetlands



A close-up photograph of an American Bittern's head and neck. The bird's long, sharp beak is open, and its eye is visible. The background is a solid, muted green. A dark horizontal band across the middle of the image contains the text "Q & A".

Q & A

American Bittern. Matt Misewicz
<https://macaulaylibrary.org/asset/456814221>

Thank you!

