

# Survival by Degrees: 389 Species on the Brink

## Background

Birds form part of healthy ecosystems, bring joy to people, and benefit local economies throughout the United States. In 2011, birdwatching-related industries drove \$41 billion in expenditures and \$107 billion in total industry output nationally. There are more than 689,000 total birders in Maine alone [1]. Additionally, birds play critical roles in pollination, insect control, forest generation, seed dispersal, carrion scavenging, and many other ecosystem services we rely on.

However, the future of birds is at risk with alarming losses of biodiversity occurring worldwide. Global extinction rates are now 100 times higher than background rates [2]. Climate change exacerbates the global biodiversity crisis, with an anticipated rate of change 20 times faster in the next century than during the past two million years.

Audubon leads the way in conducting science to understand the vulnerability and threats to birds from climate change. Our science shows that stabilizing warming at a global average of 1.5°C (2.7°F), as recommended by the IPCC (Intergovernmental Panel on Climate Change) to reduce the global risk of climate change, would also reduce vulnerability and threats for many species of birds. To save birds we must address the underlying causes of climate change (*climate change mitigation*), and protect places that birds need now and will need in the future (*climate change adaptation*). Climate change mitigation means reducing or preventing the causes of climate change, such as greenhouse gas emissions. Climate change adaptation includes efforts to alter and adapt both our natural surroundings as well as our infrastructure to better withstand the threats of climate change.

Audubon's 2019 Report, *Survival by Degrees: 389 Bird Species on the Brink* [3], is a powerful look at how vulnerable birds are to climate change across North America based on a new, updated scientific analysis that leverages big data and incorporates the unique biology of each bird to determine its vulnerability. In this research, we related bird observations for 604 species with climate and habitat conditions at these locations and used modeling algorithms to capture the unique composition of each species's suitable range. We then mapped and compared the projected current and future ranges to estimate the projected range

loss and gain under multiple future climate change scenarios. These projections were then used to assess how vulnerable each species was to climate change [4,5].



Figure 1. Boreal Chickadee. Photo: Calgary Birder/Flickr (CC BY 2.0)

## Future Climate and Habitat in Maine

Across the state of Maine, without substantial climate change mitigation (i.e., a 3°C/5.4°F global warming scenario), average temperatures during the warmest month are expected to increase approximately 5.9°C (11°F), and average temperatures during the coldest month are expected to increase approximately 6.8°C (12°F) from 2010 to the end of the century. Average annual precipitation is expected to increase by approximately 100 mm (4 in). Despite the overall increase in precipitation, available moisture is expected to decrease by 60% across the state due to increases in evapotranspiration [6].

The distribution of vegetation biomes, critical for plants and animals, are also projected to change under climate change scenarios [7]. The largest biome in the state is Deciduous Forest, covering 98% of the state.

All of these changes in climate and vegetation will alter plant and insect communities; influence availability of food, water, and shelter for birds; and will likely cause ecological disruption as species assemblages reshuffle. Over time, a complex suite of changes in climate and vegetation will inevitably affect Maine's bird communities.

# Climate Change Vulnerability

Climate change will negatively affect many birds in the state. Here, we assess vulnerability based on the amount of a species's range that may be gained or lost with climate change. We designate species that may lose much more range across North America than they have the potential to gain as *climate vulnerable*. In Maine, 106 out of 187 species are climate vulnerable in summer under the 3°C scenario, meaning they stand to lose more of their North American summer range than they would gain under a warming climate. Reducing emissions to 1.5°C reduces the number of vulnerable species to 64. Impacts are somewhat lessened in winter, with 22 out of 119 species vulnerable under 3°C of

warming and 11 species vulnerable if we reduce warming to 1.5°C.

Each bird was grouped by its primary habitat (see Table 2 for groupings), and these groups are not equally affected. In Maine, the habitat groups with the most species vulnerable to the impacts of ongoing and future climate change are boreal forest (37 species) and eastern forest (26 species) in summer (Figure 2). In winter, boreal forest (14 species) and coastal (4 species) groups have the most vulnerable species.

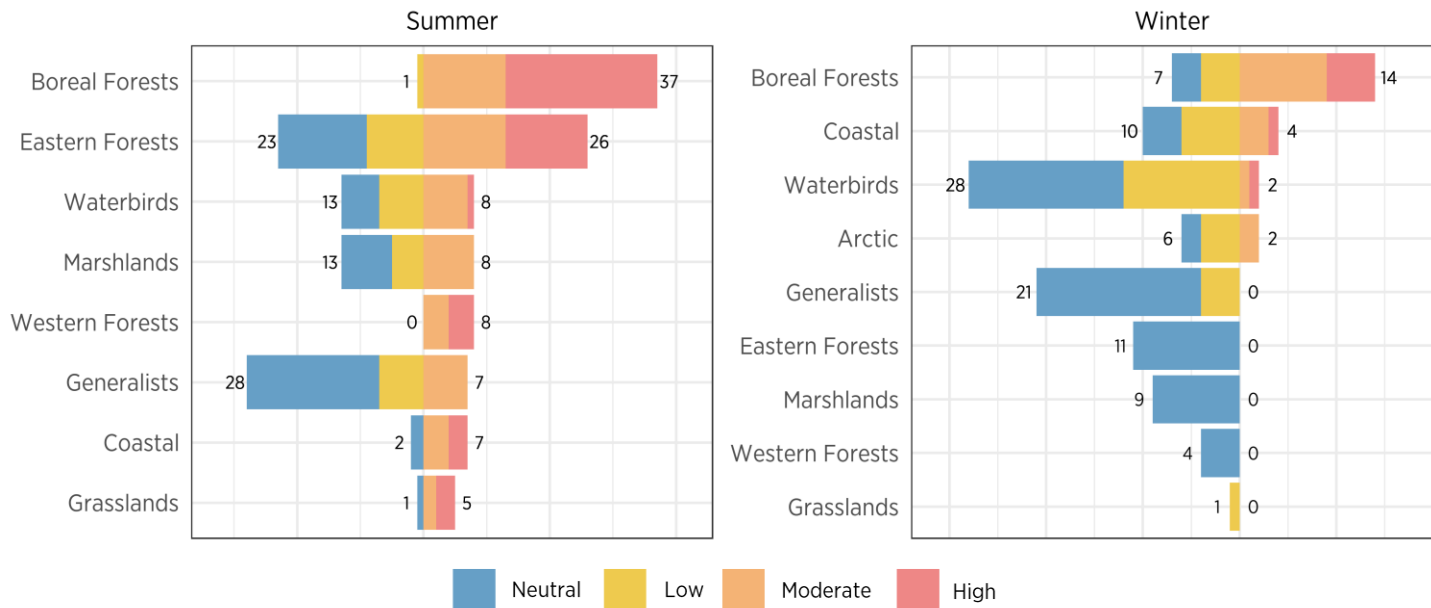


Figure 2. Number of species by their vulnerability to climate change in each habitat group under a global 3°C warming scenario. The species in each group are ones that currently live in the state, though vulnerability is assessed across the species's full North American range to better account for range-wide changes. Red and orange indicate number of vulnerable (high and moderate) species, and yellow and blue indicate non-vulnerable (low and neutral) species.

## Climate-Related Threats

In addition to changes in climate across North America, we assessed the potential impacts of other forecasted threats related to climate change, including sea level rise, land use change, and extreme weather events, such as extreme spring heat, spring drought, fire weather, heavy rain, and false springs within the lower 48 states [8]. These threats are relevant to both birds and the places they need, but were only available for the lower 48 states, and were analyzed separately from vulnerability. This analysis provides information on how each location and the birds that occur there may be exposed to these specific, climate-related threats (Figure 3) beyond their range-wide vulnerability described above. Here we summarize threats occurring within the state. Five climate-related threats will affect portions of Maine (Table 1). The threat affecting both

the greatest area and number of species in the state is extreme spring heat.

In Maine, species that are most threatened by a combination of climate change and additional climate-related threats under 3°C of warming include Chestnut-sided Warbler, Black-throated Blue Warbler, Eastern Whip-poor-will, Pine Warbler, Purple Finch, White-winged Crossbill, Tree Swallow, Hermit Thrush, Bobolink, Dark-eyed Junco, Yellow Warbler, Northern Parula, and Black-throated Green Warbler. Blackburnian Warbler, Canada Jay, Blue-headed Vireo, and Boreal Chickadee are also considered vulnerable to climate change, but were not assessed for climate-change related threats. Black-capped Chickadee faces multiple climate-change related threats despite having low range-shift based vulnerability. For information on threats for individual species in Maine, see Table 2.

Climate-Related Threats (Cont.)

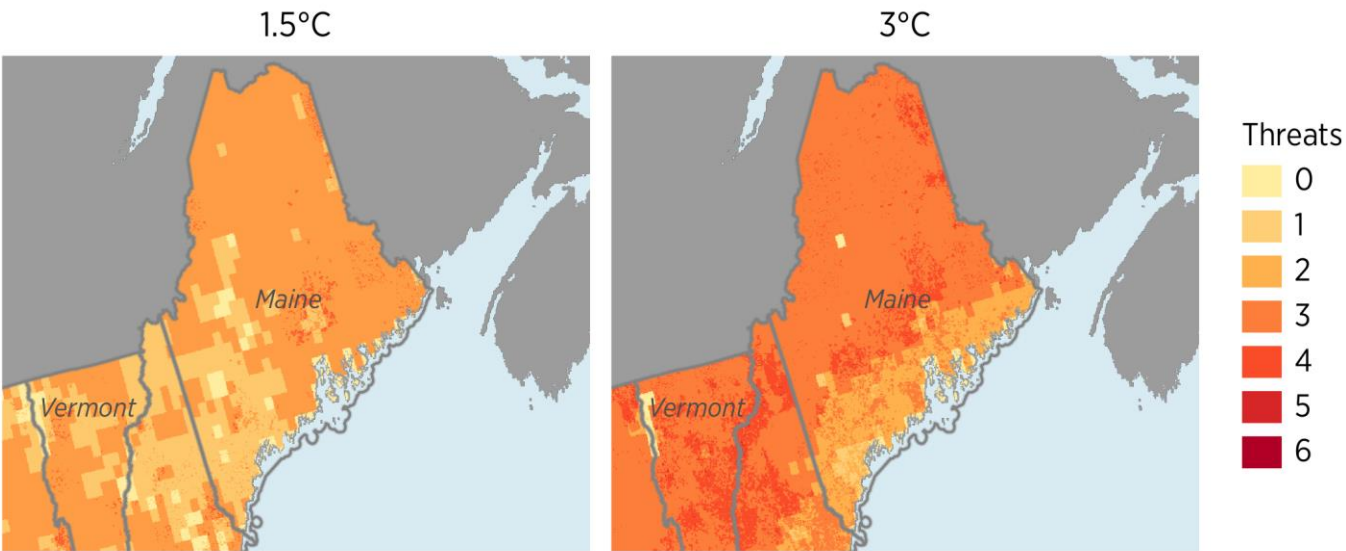







Figure 3. The number and distribution of overlapping climate-related threats under future global change scenarios of 1.5°C and 3°C. For detailed information on threats for each location in the state, refer to our online interactive tool at [climate.audubon.org](https://climate.audubon.org).

Table 1. Climate-related threats that Maine is expected to experience under the warming scenarios 1.5°C (2.7°F) and 3°C (5.4°F), and the projected area and number of species affected. We report the projected amount(s) of global sea level rise associated with each scenario [8]. Threats and scenarios were omitted if no species were affected in that scenario.

Threat	Scenario	Area Affected (acres)	Summer (Vulnerable) Species Affected	Winter (Vulnerable) Species Affected
 Sea Level Rise	3°C (2 m/6.6 ft)	143,743	6 (1)	3 (1)
 Urbanization	3°C	1,426,614	17 (5)	21 (2)
 Extreme Spring Heat	1.5°C	18,059,669	160 (37)	115 (3)
	3°C	20,677,252	142 (47)	139 (11)
 Fire Weather	3°C	15,506,580	112 (41)	96 (6)
 Heavy Rain	1.5°C	18,024,827	142 (33)	95 (3)
	3°C	20,091,860	140 (47)	139 (11)

We also mapped risk, areas of high conservation value for birds that are exposed to climate change-related threats. For any one location, risk is the product of the number of overlapping climate change-related threats, the total number of bird species that occur under future climate, and

the number of species with range-wide vulnerability under future climate. Risk is greater across Maine in summer relative to winter, and mitigating warming from 3°C to 1.5°C would more than halve the average risk of climate change-related threats to birds across the state.

## Conclusions and Caveats

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Birds are early responders to climate change and can be important indicators of large-scale ongoing and future ecological change. We found that 52% of Maine's 230 bird species are vulnerable to climate change across seasons. A rapidly changing climate could lead to population declines and local extinctions if species are not able to adapt. In addition, the reshuffling of bird communities at a continental scale will bring together species that previously lived in isolation, leading to novel, unpredictable interactions. Disruptions in food and nesting resources further compound vulnerabilities to climate change.

Although we project range gains offsetting loss for some species, especially in winter, it is unknown whether birds will establish populations in these new locations because of other factors not assessed here. On top of this, the added stressors of extreme weather events and other climate change-related threats will make establishment and persistence of populations difficult in the coming decades.

## Call to Action

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### **We know what to do.**

The scientific consensus is clear. We must reduce greenhouse gas emissions at an urgent speed and on a wide scale from every sector of the economy to achieve a more favorable future for birds and people. There is no single perfect solution, but we can make a series of changes that lead to large-scale, systemic adjustments to achieve the required reductions.

### **Addressing the underlying causes of climate change.**

Audubon is pursuing policies that together can drive down emissions at the scale and speed we need. For instance, we can invest in 100% clean energy, energy efficiency, and clean transportation policies that will dramatically reduce carbon emissions from the U.S. and world economies. We can adapt, improve, and innovate. We can power our cars, homes, cities, factories, farms, communities, and economy with clean energy—without contributing to climate change. We are working to implement policies and conservation practices that offset what we cannot eliminate, such as planting forests and testing new technologies to capture (i.e., sequester) carbon through industrial processes and permanently store it underground. We can do all of this in ways that spur innovation, create good jobs, promote homegrown industries, and build our economy for a smarter future.

### **Protecting the places birds need.**

We can also pursue policies and conservation practices that help us avoid some of the worst effects of climate change

While these studies did not assess the effects of climate change on people, we know that the fate of humans and birds are deeply connected. Climate change is currently and will continue to cause harm to people too, who face threats like extreme weather, loss of coastal areas and changing economic patterns, to name a few. Climate change will cause disproportionate harm to vulnerable communities, including children, the elderly, the sick, and the poor, who may have fewer resources available to move or otherwise protect themselves from these threats. If we drastically reduce carbon emissions, we help people and birds alike. This is the most comprehensive assessment of climate change vulnerability of birds in North America to date, but even this assessment may reasonably be considered conservative because the pace of change is exceeding the scenarios considered in this study. Our work concludes that climate change will have multiple, compounding effects on birds and will likely amplify biodiversity loss, unless actions are taken to lessen its effects.

by building more resilient infrastructure—meaning our cities, roads, and other structures—or even ranches, parks, floodplains, forests, and wetlands that can serve as good wildlife habitat and simultaneously protect our communities from extreme weather.

Audubon has identified the best opportunities to increase the resilience of coastal wetlands in key places that can serve as the first line of defense against the threat of sea level rise. We work to ensure key landscapes that are critical for birds have clean and reliable sources of water, now and in the future, and we advocate for conservation-minded management of working and urban landscapes that can help birds adapt to the changing climate.

### **We still have time.**

We can avert and limit dangerous warming and its worst effects if we act quickly. Science tells us that in order to limit warming to a rise of 1.5°C (2.7°F), we must reduce greenhouse gas emissions 45% below 2010 levels by 2030 and reach net-zero carbon emissions by 2050.

### **We must act now.**

We are on a dangerous path, but we have the power to chart a better one. Still, change will come only if we demand action from the public officials who represent us and the businesses we support.

### **We ask you to join us.**

Be part of the solution. We can do this, together.



# How You Can Help in Maine

Promote the use of clean energy in Maine at home by installing rooftop solar, purchasing an electric vehicle, or converting from heating oil to energy efficient pumps. Use your voice to advocate for aggressive clean energy laws, such as the recently passed law increasing Maine’s Renewable Portfolio Standard to achieve 80% renewable

energy by 2030. Support the preservation of Maine forest land as forest, rather than lose that sequestered carbon to urbanization. Help us protect wildlife habitat locally, including at Audubon sanctuaries, land trust properties, and private properties protected under conservation easements.

## More Information

This project was conducted by the National Audubon Society. For more information, including details on the methods, please see the project website ([climate.audubon.org](http://climate.audubon.org)) and the scientific publications [5,8].

### References

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7. Rehfeldt, G.E. et al. 2012. North American vegetation model for land-use planning in a changing climate: a solution to large classification problems.

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### Contact

Brooke Bateman, PhD  
Senior Climate Scientist, National Audubon Society  
[climatescience@audubon.org](mailto:climatescience@audubon.org)

## Species Projections































































Table 2. Climate suitability projections in summer and winter under the 3°C warming scenario for birds in Maine. Each bird is associated with the *Habitat Group* representing its primary habitat (see classification key below). *Range-wide Vulnerability* is the vulnerability of each species, across its full North American range under 3°C of global warming, based on long-term climate and vegetation change. High and moderately vulnerable species are considered vulnerable to climate change, whereas low and neutral species are considered not vulnerable. In *State Trends*, we show the top two trends in climate and habitat suitability for select birds in Maine, with colors reflecting the trend according to the legend below and percentages reflecting the percent of the state’s area in which each trend will occur. The total percentage reflects the area of the state that the species currently occupies and is projected to occupy in the future. Potential colonization indicates that climate and habitat are projected to become suitable for the species, whereas potential extirpation indicates that climate and habitat are suitable today but projected to become unsuitable. *State Threats* shows the additional climate-related threats each species might face, indicated by icons as in Table 1. Threats shown here were assessed within each state for species under either 1.5°C or 3°C warming (i.e., species that will be completely extirpated from the state do not have threats shown). Omitted species are either not present in the state during that season or not modeled due to data deficiency. These lists may have been further reduced by local experts. For a full list of species modeled in Maine, see the project website ([climate.audubon.org](http://climate.audubon.org)).




































































**Habitat classifications:**

F-B = Boreal Forests  
 F-E = Eastern Forests  
 F-W = Western Forests  
 F-S = Subtropical Forests  
 A = Arctic  
 D = Aridlands  
 G = Grasslands  
 M = Marshlands  
 C = Coastal  
 W = Waterbirds  
 Gen = Generalists

**Trend classifications:**

































































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Brant	W	Winter	Moderate	<1% 6%	
Cackling Goose	M	Winter	Moderate	9%	
Canada Goose	W	Summer	Moderate	45% 40%	
	W	Winter	Neutral	3% 95%	
Wood Duck	W	Summer	Low	48% 39%	
	W	Winter	Neutral	65%	
Blue-winged Teal	M	Summer	Low	3% 1%	
Northern Shoveler	M	Summer	Low	<1%	
	M	Winter	Neutral	6%	
Gadwall	M	Summer	Moderate	3% 3%	
	M	Winter	Neutral	2% 24%	
Eurasian Wigeon	M	Winter	Moderate	4%	
American Wigeon	M	Summer	Moderate	4%	
	M	Winter	Neutral	<1% 13%	
Mallard	W	Summer	Low	85% 9%	
	W	Winter	Neutral	79% 11%	
American Black Duck	W	Summer	Moderate	66% 30%	
	W	Winter	Low	27% 43%	














































































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Northern Pintail	M	Winter	Neutral	<div><div></div><div>2%18%</div></div>	  
Green-winged Teal	M	Summer	Moderate	<div><div></div><div>10%</div></div>	 
	M	Winter	Neutral	<div><div></div><div>6%</div></div>	 
Canvasback	M	Winter	Neutral	<div><div></div><div>1%20%</div></div>	  
Redhead	M	Winter	Low	<div><div></div><div>21%</div></div>	  
Ring-necked Duck	W	Summer	Moderate	<div><div></div><div>51%2%</div></div>	  
	W	Winter	Neutral	<div><div></div><div>&lt;1%26%</div></div>	  
Greater Scaup	W	Winter	Neutral	<div><div></div><div>6%42%</div></div>	  
Lesser Scaup	W	Winter	Neutral	<div><div></div><div>28%</div></div>	  
King Eider	W	Winter	Low	<div><div></div><div>2%2%</div></div>	
Common Eider	C	Summer	Moderate	<div><div></div><div>1%2%</div></div>	
	C	Winter	Low	<div><div></div><div>8%1%</div></div>	 
Harlequin Duck	W	Winter	Low	<div><div></div><div>&lt;1%</div></div>	
Surf Scoter	C	Winter	Neutral	<div><div></div><div>5%</div></div>	 
White-winged Scoter	W	Winter	Neutral	<div><div></div><div>3%14%</div></div>	  
Black Scoter	C	Winter	Neutral	<div><div></div><div>1%5%</div></div>	 
Long-tailed Duck	W	Winter	Low	<div><div></div><div>7%10%</div></div>	  
Bufflehead	W	Winter	Low	<div><div></div><div>4%20%</div></div>	  
Common Goldeneye	W	Summer	High	<div><div></div><div>45%</div></div>	
	W	Winter	Neutral	<div><div></div><div>26%34%</div></div>	  
Barrow's Goldeneye	W	Winter	High	<div><div></div><div>3%</div></div>	 
Hooded Merganser	W	Summer	Low	<div><div></div><div>65%22%</div></div>	  
	W	Winter	Neutral	<div><div></div><div>4%47%</div></div>	  
Common Merganser	W	Summer	Moderate	<div><div></div><div>70%18%</div></div>	  
	W	Winter	Low	<div><div></div><div>23%61%</div></div>	  
Red-breasted Merganser	W	Summer	Moderate	<div><div></div><div>19%</div></div>	
	W	Winter	Low	<div><div></div><div>10%24%</div></div>	  
Ruddy Duck	M	Winter	Neutral	<div><div></div><div>13%</div></div>	 

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Ruffed Grouse	F-B	Summer	Moderate	98% 1%	 
	F-B	Winter	Moderate	44% 54%	 
Spruce Grouse	F-B	Summer	High	35%	
	F-B	Winter	High	60%	
Wild Turkey	Gen	Summer	Neutral	36% 48%	  
	Gen	Winter	Neutral	37% 45%	  
Pied-billed Grebe	M	Summer	Neutral	5% 3%	  
	M	Winter	Neutral	11%	 
Horned Grebe	M	Winter	Neutral	3% 18%	  
Red-necked Grebe	M	Winter	Neutral	3% 11%	  
Mourning Dove	Gen	Summer	Neutral	31% 61%	  
	Gen	Winter	Neutral	48% 46%	  
Yellow-billed Cuckoo	F-E	Summer	Neutral	20% 71%	  
Black-billed Cuckoo	F-E	Summer	Low	26% 59%	  
Common Nighthawk	Gen	Summer	Neutral	30% 53%	  
Eastern Whip-poor-will	F-E	Summer	High	49% 39%	  
Chimney Swift	F-E	Summer	Neutral	9% 86%	  
Ruby-throated Hummingbird	F-E	Summer	Neutral	45% 53%	  
King Rail	M	Summer	Low	3%	  
Clapper Rail	C	Summer	Low	5%	 
	C	Winter	Low	9%	 
Virginia Rail	M	Summer	Moderate	20% 10%	  
	M	Winter	Low	4%	  
Sora	M	Summer	Moderate	1%	 
Common Gallinule	M	Summer	Neutral	6% 12%	  
American Coot	M	Winter	Neutral	16%	 
Sandhill Crane	M	Summer	Moderate	3%	 



























































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats		
	M	Winter	Low	<div><div></div>2%</div>			
American Oystercatcher	C	Summer	Neutral	<div><div></div>2%<div></div>2%</div>			
Piping Plover	C	Summer	High	<div><div></div>2%</div>			
Killdeer	W	Summer	Neutral	<div><div></div>30%<div></div>32%</div>			
	W	Winter	Neutral	<div><div></div>54%</div>			 
Upland Sandpiper	G	Summer	Neutral	<div><div></div>1%</div>			
Ruddy Turnstone	W	Winter	Neutral	<div><div></div>2%</div>			
Sanderling	W	Winter	Neutral	<div><div></div>1%<div></div>2%</div>			
Dunlin	W	Winter	Low	<div><div></div>1%<div></div>2%</div>			
Purple Sandpiper	W	Winter	Low	<div><div></div>5%<div></div>3%</div>			
American Woodcock	F-E	Summer	Moderate	<div><div></div>56%<div></div>43%</div>			
	F-E	Winter	Neutral	<div><div></div>20%</div>			
Wilson's Snipe	M	Summer	Moderate	<div><div></div>9%</div>			
	M	Winter	Neutral	<div><div></div>4%</div>			
Spotted Sandpiper	W	Summer	Moderate	<div><div></div>9%<div></div>22%</div>			
Willet	W	Summer	Neutral	<div><div></div>3%</div>			
Bonaparte's Gull	W	Winter	Neutral	<div><div></div>2%<div></div>21%</div>			
Black-headed Gull	C	Winter	High	<div><div></div>6%</div>			
Little Gull	C	Winter	Low	<div><div></div>4%</div>			
Laughing Gull	C	Summer	Neutral	<div><div></div>2%<div></div>4%</div>			
Ring-billed Gull	W	Summer	Low	<div><div></div>10%<div></div>9%</div>			
	W	Winter	Neutral	<div><div></div>10%<div></div>81%</div>			
Herring Gull	W	Summer	Low	<div><div></div>10%<div></div>33%</div>			
	W	Winter	Neutral	<div><div></div>24%<div></div>73%</div>			
Iceland Gull	C	Winter	Low	<div><div></div>27%<div></div>21%</div>			
Lesser Black-backed Gull	C	Winter	Low	<div><div></div>8%<div></div>62%</div>			
Glaucous Gull	W	Winter	Low	<div><div></div>20%<div></div>34%</div>			
Great Black-backed Gull	C	Summer	Moderate	<div><div></div>5%<div></div>6%</div>			











































































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends		State Threats		
	C	Winter	Low	25%	41%			
Least Tern	W	Summer	Low	<1%	4%			
Gull-billed Tern	C	Summer	Neutral		2%			
Caspian Tern	W	Summer	Low		8%			
Black Tern	M	Summer	Low		2%			
Common Tern	W	Summer	Low	4%	8%			
Forster's Tern	M	Summer	Neutral		8%			
Royal Tern	C	Summer	Neutral		2%			
Sandwich Tern	C	Summer	Low		3%			
Black Skimmer	C	Summer	Neutral		4%			
Red-throated Loon	W	Winter	Low	2%	17%			
Common Loon	W	Summer	Moderate	100%				
	W	Winter	Low	5%	12%			
Great Cormorant	C	Summer	Moderate	4%	3%			
	C	Winter	Low	8%	7%			
Double-crested Cormorant	W	Summer	Neutral	27%	11%			
	W	Winter	Neutral		6%			
American Bittern	M	Summer	Low	88%	3%			
Least Bittern	M	Summer	Neutral		13%			
Great Blue Heron	W	Summer	Neutral	32%	67%			
	W	Winter	Neutral	15%	77%			
Great Egret	W	Summer	Neutral	3%	21%			
Snowy Egret	M	Summer	Neutral	1%	3%			
Little Blue Heron	M	Summer	Neutral		10%			
Green Heron	M	Summer	Neutral	9%	68%			
Black-crowned Night-Heron	M	Summer	Neutral	8%	9%			
	M	Winter	Neutral		9%			







































































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Yellow-crowned Night-Heron	M	Summer	Neutral	<1% 9%	 
Glossy Ibis	M	Summer	Neutral	2% 5%	 
Turkey Vulture	Gen	Summer	Neutral	15% 15%	  
	Gen	Winter	Neutral	50%	   
Osprey	W	Summer	Neutral	36% 31%	  
Northern Harrier	M	Summer	Low	4% <1%	  
	M	Winter	Neutral	24%	 
Sharp-shinned Hawk	F-W	Summer	Moderate	96%	  
	F-W	Winter	Neutral	23% 75%	  
Cooper's Hawk	Gen	Summer	Neutral	8% 85%	  
	Gen	Winter	Low	3% 91%	  
Northern Goshawk	F-B	Summer	High	90%	 
	F-B	Winter	Low	40% 45%	  
Bald Eagle	Gen	Summer	Low	1% 98%	  
	Gen	Winter	Neutral	57% 42%	  
Red-shouldered Hawk	F-E	Summer	Neutral	6% 93%	  
	F-E	Winter	Neutral	30%	  
Broad-winged Hawk	F-E	Summer	Low	29% 44%	  
Red-tailed Hawk	Gen	Summer	Neutral	12% 85%	  
	Gen	Winter	Neutral	44% 51%	  
Rough-legged Hawk	A	Winter	Moderate	2% 8%	  
Barn Owl	Gen	Summer	Neutral	52%	   
	Gen	Winter	Neutral	54%	   
Eastern Screech-Owl	F-E	Summer	Neutral	68%	  
	F-E	Winter	Neutral	75%	  
Great Horned Owl	Gen	Summer	Neutral	3% 85%	  
	Gen	Winter	Neutral	5% 84%	  





































































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Snowy Owl	A	Winter	Low	<div><div>26%</div><div>70%</div></div>	  
Northern Hawk Owl	F-B	Winter	Moderate	<div><div>1%</div></div>	
Barred Owl	F-E	Summer	Neutral	<div><div>72%</div><div>26%</div></div>	  
	F-E	Winter	Neutral	<div><div>97%</div><div>1%</div></div>	  
Great Gray Owl	F-B	Winter	Moderate	<div><div>42%</div></div>	
Long-eared Owl	F-W	Winter	Low	<div><div>80%</div></div>	  
Short-eared Owl	G	Winter	Neutral	<div><div>19%</div></div>	  
Northern Saw-whet Owl	F-B	Summer	Moderate	<div><div>97%</div></div>	  
	F-B	Winter	Low	<div><div>88%</div><div>10%</div></div>	  
Belted Kingfisher	Gen	Summer	Neutral	<div><div>95%</div><div>3%</div></div>	  
	Gen	Winter	Neutral	<div><div>1%</div><div>55%</div></div>	   
Yellow-bellied Sapsucker	F-E	Summer	High	<div><div>92%</div></div>	 
	F-E	Winter	Neutral	<div><div>90%</div></div>	  
Red-headed Woodpecker	F-E	Summer	High	<div><div>12%</div></div>	  
	F-E	Winter	Neutral	<div><div>33%</div></div>	   
Red-bellied Woodpecker	F-E	Summer	Neutral	<div><div>1%</div><div>45%</div></div>	  
	F-E	Winter	Neutral	<div><div>1%</div><div>46%</div></div>	  
American Three-toed Woodpecker	F-B	Summer	High	<div><div>2%</div></div>	
	F-B	Winter	High	<div><div>2%</div></div>	
Black-backed Woodpecker	F-B	Summer	High	<div><div>59%</div></div>	
	F-B	Winter	Moderate	<div><div>61%</div></div>	
Downy Woodpecker	Gen	Summer	Neutral	<div><div>33%</div><div>65%</div></div>	  
	Gen	Winter	Neutral	<div><div>32%</div><div>67%</div></div>	  
Hairy Woodpecker	Gen	Summer	Low	<div><div>5%</div><div>90%</div></div>	  
	Gen	Winter	Low	<div><div>94%</div><div>2%</div></div>	  
Pileated Woodpecker	F-E	Summer	Neutral	<div><div>92%</div><div>4%</div></div>	  
	F-E	Winter	Neutral	<div><div>90%</div><div>4%</div></div>	  
Northern Flicker	Gen	Summer	Moderate	<div><div>98%</div></div>	  




































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends		State Threats		
American Kestrel	Gen	Winter	Neutral	38%	60%			
	Gen	Summer	Neutral	85%	9%			
	Gen	Winter	Neutral	2%				
Merlin	F-E	Summer	Moderate	97%				
	F-E	Winter	Neutral	77%	21%			
Gyr Falcon	A	Winter	Low	94%				
Peregrine Falcon	Gen	Summer	Neutral	24%	53%			
	Gen	Winter	Neutral	12%	77%			
Olive-sided Flycatcher	F-B	Summer	High	49%				
Eastern Wood-Pewee	F-E	Summer	Low	81%	14%			
Yellow-bellied Flycatcher	F-B	Summer	High	45%				
Acadian Flycatcher	F-E	Summer	Moderate	75%				
Alder Flycatcher	F-B	Summer	Moderate	97%				
Willow Flycatcher	F-W	Summer	Moderate	29%	64%			
Least Flycatcher	F-B	Summer	Moderate	98%				
Eastern Phoebe	F-E	Summer	Low	44%	44%			
Great Crested Flycatcher	F-E	Summer	Moderate	31%	57%			
Eastern Kingbird	G	Summer	Moderate	31%	62%			
Northern Shrike	F-B	Winter	Moderate	98%	1%			
White-eyed Vireo	F-E	Summer	Neutral	27%				
Yellow-throated Vireo	F-E	Summer	Moderate	15%	82%			
Blue-headed Vireo	F-E	Summer	High	98%				
Philadelphia Vireo	F-B	Summer	High	38%				
Warbling Vireo	Gen	Summer	Neutral	15%	84%			
Red-eyed Vireo	F-E	Summer	Low	16%	83%			
Canada Jay	F-B	Summer	High	42%				
	F-B	Winter	High	42%				
Blue Jay	F-E	Summer	Neutral	79%	18%			























Species	Habitat Group	Season	Range-wide Vulnerability	State Trends		State Threats		
American Crow	F-E	Winter	Neutral	96%	2%			
	Gen	Summer	Low	92%	6%			
	Gen	Winter	Neutral	70%	28%			
Fish Crow	Gen	Summer	High	23%				
	Gen	Winter	Low	12%				
Common Raven	Gen	Summer	Low	8%	91%			
	Gen	Winter	Low	40%	58%			
Horned Lark	G	Winter	Low	2%	52%			
Northern Rough-winged Swallow	Gen	Summer	Neutral	8%	75%			
Purple Martin	Gen	Summer	Neutral	58%				
Tree Swallow	Gen	Summer	Moderate	21%	73%			
Bank Swallow	Gen	Summer	Neutral	55%	17%			
Barn Swallow	Gen	Summer	Neutral	24%	62%			
Cliff Swallow	Gen	Summer	Neutral	23%	54%			
Carolina Chickadee	F-E	Summer	Neutral	4%				
Black-capped Chickadee	F-B	Summer	Low	10%	88%			
	F-B	Winter	Low	65%	32%			
Boreal Chickadee	F-B	Summer	High	42%				
	F-B	Winter	High	42%				
Tufted Titmouse	F-E	Summer	Neutral	6%	78%			
	F-E	Winter	Neutral	7%	70%			
Red-breasted Nuthatch	F-B	Summer	Moderate	98%				
	F-B	Winter	Neutral	96%	2%			
White-breasted Nuthatch	F-E	Summer	Low	28%	67%			
	F-E	Winter	Neutral	41%	56%			
Brown Creeper	F-W	Summer	Moderate	93%				
	F-W	Winter	Neutral	62%	37%			


























Species	Habitat Group	Season	Range-wide Vulnerability	State Trends		State Threats		
House Wren	Gen	Summer	Moderate	17%	69%			
Winter Wren	F-E	Summer	High	95%				
	F-E	Winter	Low	28%				
Marsh Wren	M	Summer	Low	5%	12%			
	M	Winter	Low	6%				
Carolina Wren	F-E	Summer	Neutral	6%	73%			
	F-E	Winter	Neutral	9%	74%			
Blue-gray Gnatcatcher	Gen	Summer	Neutral	<1%	36%			
Golden-crowned Kinglet	F-B	Summer	Moderate	73%				
	F-B	Winter	Neutral	5%	46%			
Ruby-crowned Kinglet	F-W	Summer	High	50%				
Eastern Bluebird	F-E	Summer	Neutral	7%	75%			
	F-E	Winter	Neutral	3%	94%			
Veery	F-E	Summer	Moderate	69% 28%				
Swainson's Thrush	F-B	Summer	High	38%				
Hermit Thrush	F-W	Summer	High	77%				
	F-W	Winter	Low	16%				
Wood Thrush	F-E	Summer	High	23%	71%			
American Robin	Gen	Summer	Moderate	1%	98%			
	Gen	Winter	Neutral	53%	45%			
Gray Catbird	F-E	Summer	Neutral	71%	28%			
	F-E	Winter	Moderate	7%				
Brown Thrasher	F-E	Summer	High	2%	80%			
	F-E	Winter	Neutral	3%				
Northern Mockingbird	Gen	Summer	Neutral	<1%	29%			
	Gen	Winter	Neutral	86%				
Bohemian Waxwing	F-B	Winter	High	90%				
Cedar Waxwing	Gen	Summer	Low	14%	82%			

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Evening Grosbeak	Gen	Winter	Neutral	<div><div>24%</div><div>62%</div></div>	  
	F-B	Summer	High	<div><div>75%</div></div>	 
	F-B	Winter	Moderate	<div><div>93%</div><div>5%</div></div>	  
Pine Grosbeak	F-B	Winter	Moderate	<div><div>86%</div></div>	
House Finch	Gen	Summer	Low	<div><div>8%</div><div>75%</div></div>	  
	Gen	Winter	Low	<div><div>9%</div><div>79%</div></div>	  
Purple Finch	F-B	Summer	Moderate	<div><div>98%</div></div>	 
	F-B	Winter	Low	<div><div>10%</div><div>87%</div></div>	  
Common Redpoll	A	Winter	Low	<div><div>57%</div><div>41%</div></div>	  
Hoary Redpoll	A	Winter	Moderate	<div><div>84%</div></div>	
Red Crossbill	F-B	Summer	High	<div><div>2%</div></div>	 
	F-B	Winter	Moderate	<div><div>74%</div></div>	  
White-winged Crossbill	F-B	Summer	High	<div><div>45%</div></div>	
	F-B	Winter	Moderate	<div><div>4%</div><div>95%</div></div>	  
Pine Siskin	F-W	Summer	Moderate	<div><div>12%</div></div>	 
	F-W	Winter	Neutral	<div><div>85%</div><div>14%</div></div>	  
American Goldfinch	Gen	Summer	Moderate	<div><div>10%</div><div>80%</div></div>	  
	Gen	Winter	Neutral	<div><div>73%</div><div>24%</div></div>	  
Lapland Longspur	A	Winter	Neutral	<div><div>13%</div><div>51%</div></div>	  
Snow Bunting	A	Winter	Low	<div><div>5%</div><div>93%</div></div>	  
Chipping Sparrow	Gen	Summer	Moderate	<div><div>54%</div><div>38%</div></div>	  
Field Sparrow	F-E	Summer	High	<div><div>12%</div><div>72%</div></div>	  
	F-E	Winter	Neutral	<div><div>62%</div></div>	   
American Tree Sparrow	A	Winter	Neutral	<div><div>46%</div><div>40%</div></div>	  
Fox Sparrow	F-B	Summer	High	<div><div>2%</div></div>	
	F-B	Winter	Moderate	<div><div>24%</div></div>	  
Dark-eyed Junco	F-W	Summer	High	<div><div>76%</div></div>	 
	F-W	Winter	Neutral	<div><div>41%</div><div>58%</div></div>	  

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
White-crowned Sparrow	Gen	Winter	Neutral	25%	  
White-throated Sparrow	F-B	Summer	High	72%	
	F-B	Winter	Neutral	79% 19%	  
Seaside Sparrow	C	Summer	Neutral	1%	 
Nelson's Sparrow	G	Summer	High	3%	
Saltmarsh Sparrow	M	Summer	Neutral	4% 8%	 
Savannah Sparrow	G	Summer	High	53%	
Song Sparrow	Gen	Summer	Moderate	24% 66%	  
	Gen	Winter	Neutral	91% 5%	  
Lincoln's Sparrow	F-B	Summer	High	42%	
Swamp Sparrow	M	Summer	Moderate	53% 2%	 
	M	Winter	Neutral	64%	  
Eastern Towhee	F-E	Summer	High	24% 67%	  
	F-E	Winter	Neutral	49%	  
Yellow-breasted Chat	F-E	Summer	Neutral	16%	  
Bobolink	G	Summer	High	63% 14%	 
Eastern Meadowlark	G	Summer	Moderate	10% 50%	  
	G	Winter	Neutral	28%	  
Orchard Oriole	F-E	Summer	Low	29%	  
Baltimore Oriole	F-E	Summer	Low	50% 31%	  
Red-winged Blackbird	Gen	Summer	Neutral	31% 50%	  
	Gen	Winter	Neutral	1% 61%	  
Brown-headed Cowbird	Gen	Summer	Neutral	11% 79%	  
	Gen	Winter	Neutral	3% 91%	  
Rusty Blackbird	F-B	Summer	High	38%	
	F-B	Winter	Neutral	66%	  
Common Grackle	F-E	Summer	Low	49% 43%	  
	F-E	Winter	Neutral	65%	  

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Boat-tailed Grackle	C	Winter	Moderate	<div><div></div>3%</div>	  
Ovenbird	F-E	Summer	Moderate	<div><div></div>85%<div></div>7%</div>	 
Worm-eating Warbler	F-E	Summer	High	<div><div></div>20%</div>	  
Louisiana Waterthrush	F-E	Summer	Neutral	<div><div></div>3%<div></div>81%</div>	  
Northern Waterthrush	F-B	Summer	Moderate	<div><div></div>98%<div></div>1%</div>	
Blue-winged Warbler	F-E	Summer	Moderate	<div><div></div>4%<div></div>78%</div>	  
Black-and-white Warbler	F-E	Summer	Moderate	<div><div></div>85%<div></div>9%</div>	  
Prothonotary Warbler	F-E	Summer	Neutral	<div><div></div>17%</div>	  
Tennessee Warbler	F-B	Summer	Moderate	<div><div></div>44%</div>	
Nashville Warbler	F-E	Summer	Moderate	<div><div></div>76%</div>	 
Mourning Warbler	F-B	Summer	High	<div><div></div>62%</div>	
Kentucky Warbler	F-E	Summer	Low	<div><div></div>9%</div>	  
Common Yellowthroat	Gen	Summer	Low	<div><div></div>96%<div></div>2%</div>	  
Hooded Warbler	F-E	Summer	Moderate	<div><div></div>72%</div>	  
American Redstart	F-B	Summer	Moderate	<div><div></div>90%<div></div>9%</div>	  
Cape May Warbler	F-B	Summer	High	<div><div></div>26%</div>	
Cerulean Warbler	F-E	Summer	High	<div><div></div>60%</div>	  
Northern Parula	F-E	Summer	Moderate	<div><div></div>59%<div></div>16%</div>	   
Magnolia Warbler	F-B	Summer	High	<div><div></div>74%</div>	
Bay-breasted Warbler	F-B	Summer	High	<div><div></div>22%</div>	
Blackburnian Warbler	F-B	Summer	High	<div><div></div>95%</div>	
Yellow Warbler	F-B	Summer	Moderate	<div><div></div>52%<div></div>35%</div>	  
Chestnut-sided Warbler	F-E	Summer	High	<div><div></div>97%</div>	 
Blackpoll Warbler	F-B	Summer	Moderate	<div><div></div>27%<div></div>&lt;1%</div>	
Black-throated Blue Warbler	F-E	Summer	High	<div><div></div>97%</div>	 
Palm Warbler	F-B	Summer	High	<div><div></div>67%</div>	
Pine Warbler	F-E	Summer	High	<div><div></div>40%<div></div>29%</div>	  



Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Yellow-rumped Warbler	F-B	Summer	Moderate	94%	 
	F-B	Winter	Neutral	26%	  
Yellow-throated Warbler	F-E	Summer	High	10%	  
Prairie Warbler	F-E	Summer	Moderate	16% 73%	  
Black-throated Green Warbler	F-E	Summer	High	98%	 
Canada Warbler	F-B	Summer	High	66%	
Wilson's Warbler	F-W	Summer	High	<1%	
Scarlet Tanager	F-E	Summer	High	17% 71%	  
Northern Cardinal	F-E	Summer	Neutral	4% 92%	  
	F-E	Winter	Neutral	28% 57%	  
Rose-breasted Grosbeak	F-E	Summer	Moderate	34% 28%	  
Indigo Bunting	F-E	Summer	Moderate	15% 80%	