

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 1,903,000 total birders in Georgia 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. Brown Thrasher. Photo: Una Davenport/Great Backyard Bird Count

Future Climate and Habitat in Georgia

Across the state of Georgia, 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 4.6°C (8.3°F), and average temperatures during the coldest month are expected to increase approximately 2.9°C (5.3°F) from 2010 to the end of the century. Average annual precipitation is expected to increase by approximately 140 mm (5.6 in). Despite the overall increase in precipitation, available moisture is expected to decrease by 18% 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]. By the end of the century under a 3°C (5.4°F) global warming scenario, approximately 39% of the state of Georgia will transition to a different biome. At present, the largest biome in the state is Deciduous and Evergreen Forest, covering 64% of the state. By the end of the century, Deciduous and Evergreen Forest will cover approximately 75% 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 Georgia'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 Georgia, 48 out of 164 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 26. Impacts are somewhat lessened in winter, with 11 out of 202 species vulnerable under 3°C of

warming and 7 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 Georgia, the habitat groups with the most species vulnerable to the impacts of ongoing and future climate change are eastern forest (27 species) and generalist (7 species) in summer (Figure 2). In winter, eastern forest (3 species) and coastal (3 species) groups have the most vulnerable species.

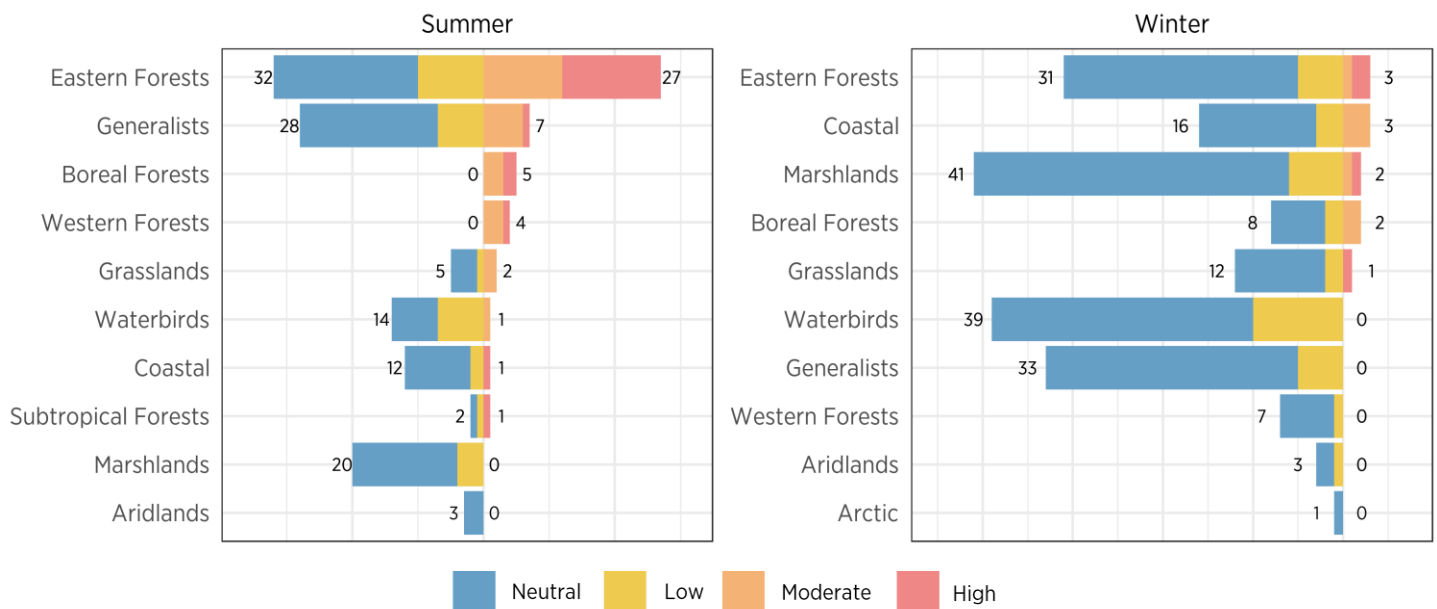


Figure 2. Number of species by their vulnerability to climate change in each habitat group under a global 3°C warming scenario. The species in each group are ones that currently live in the state, though vulnerability is assessed across the species's full North American range to better account for range-wide 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 Georgia (Table 1). The threat affecting both the greatest area and number of species in the state is extreme spring heat.

In Georgia, species that are most threatened by a combination of climate change and additional climate-related threats under 3°C of warming include Red-headed Woodpecker, Fish Crow, Eastern Whip-poor-will, Brown-headed Nuthatch, Brown Thrasher, Nelson's Sparrow, Eastern Towhee, and Yellow-throated Warbler. For information on threats for individual species in Georgia, see Table 2.

Climate-Related Threats (Cont.)

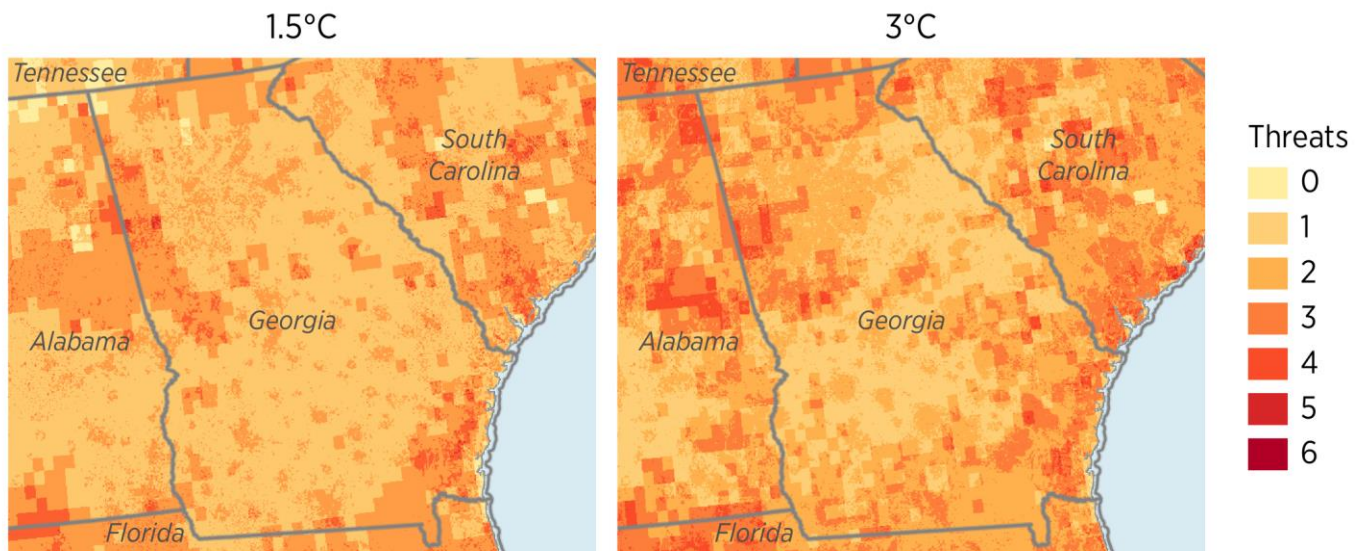







Figure 3. The number and distribution of overlapping climate-related threats under future global change scenarios of 1.5°C and 3°C. For detailed information on threats for each location in the state, refer to our online interactive tool at climate.audubon.org.

Table 1. Climate-related threats that Georgia 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	1.5°C (0.5 m/1.6 ft)	316,482	19 (0)	36 (4)
	3°C (1 m/3.3 ft)	617,167	21 (3)	38 (7)
	3°C (2 m/6.6 ft)	946,350	24 (3)	52 (9)
 Urbanization	1.5°C	3,604,323	38 (11)	45 (5)
	3°C	8,576,426	135 (18)	221 (11)
 Extreme Spring Heat	1.5°C	36,631,834	152 (17)	224 (9)
	3°C	37,594,060	159 (33)	236 (15)
 Heavy Rain	1.5°C	4,706,609	16 (4)	12 (1)
	3°C	13,409,647	47 (20)	68 (11)
 False Springs	1.5°C	4,065,866	2 (1)	1 (0)
	3°C	2,833,059	2 (2)	2 (1)

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 Georgia 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

Birds are early responders to climate change and can be important indicators of large-scale ongoing and future ecological change. We found that 23% of Georgia's 254 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

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.

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) and the scientific publications [5,8].

References

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Species Projections

Table 2. Climate suitability projections in summer and winter under the 3°C warming scenario for birds in Georgia. 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 Georgia, 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 Georgia, see the project website (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
Black-bellied Whistling-Duck	M	Summer	Neutral	12% Potential extirpation, 55% Improving	Buildings, Sun
	M	Winter	Neutral	1% Potential extirpation, 85% Improving	Buildings, Sun
Fulvous Whistling-Duck	M	Summer	Neutral	43% Improving	Buildings, Sun
	M	Winter	Neutral	4% Improving	Clouds, Buildings, Sun, Rain
Snow Goose	W	Winter	Low	24% Worsening, 11% Stable	Clouds, Buildings, Sun, Rain
Ross's Goose	W	Winter	Low	19% Worsening, 10% Improving	Buildings, Sun, Rain
Cackling Goose	M	Winter	Moderate	2% Potential extirpation	Sun, Rain, Plant
Canada Goose	W	Summer	Moderate	49% Potential extirpation, 15% Worsening	Buildings, Sun
	W	Winter	Neutral	60% Potential extirpation, 40% Worsening	Buildings, Sun
Wood Duck	W	Summer	Low	34% Potential extirpation, 63% Worsening	Buildings, Sun
	W	Winter	Neutral	87% Worsening, 13% Stable	Buildings, Sun
Blue-winged Teal	M	Summer	Low	<1% Potential extirpation, 1% Improving	Clouds, Buildings, Sun, Rain
	M	Winter	Neutral	35% Stable, 29% Improving	Buildings, Sun
Cinnamon Teal	M	Winter	Neutral	12% Improving	Clouds, Buildings, Sun, Rain
Northern Shoveler	M	Winter	Neutral	41% Stable, 7% Improving	Buildings, Sun
Gadwall	M	Winter	Neutral	51% Stable, 23% Improving	Buildings, Sun
American Wigeon	M	Winter	Neutral	29% Stable, 12% Improving	Buildings, Sun
Mallard	W	Summer	Low	34% Potential extirpation, 47% Worsening	Buildings, Sun









































































Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
	W	Winter	Neutral		
American Black Duck	W	Winter	Low		
Mottled Duck	M	Summer	Low		
	M	Winter	Low		
Northern Pintail	M	Winter	Neutral		
Green-winged Teal	M	Winter	Neutral		
Canvasback	M	Winter	Neutral		
Redhead	M	Winter	Low		
Ring-necked Duck	W	Winter	Neutral		
Greater Scaup	W	Winter	Neutral		
Lesser Scaup	W	Winter	Neutral		
Surf Scoter	C	Winter	Neutral		
White-winged Scoter	W	Winter	Neutral		
Black Scoter	C	Winter	Neutral		
Bufflehead	W	Winter	Low		
Common Goldeneye	W	Winter	Neutral		
Hooded Merganser	W	Summer	Low		
	W	Winter	Neutral		
Common Merganser	W	Winter	Low		
Red-breasted Merganser	W	Winter	Low		
Ruddy Duck	M	Winter	Neutral		
Northern Bobwhite	G	Summer	Neutral		
	G	Winter	Neutral		
Ruffed Grouse	F-B	Summer	Moderate		
	F-B	Winter	Moderate		
Wild Turkey	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Least Grebe	M	Summer	Neutral		

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Pied-billed Grebe	M	Winter	Neutral	9%	
	M	Summer	Neutral	7% 11%	
	M	Winter	Neutral	75% 17%	
Horned Grebe	M	Winter	Neutral	8% 11%	
Red-necked Grebe	M	Winter	Neutral	2% <1%	
Eared Grebe	M	Winter	Neutral	<1% 3%	
Western Grebe	M	Winter	Low	1%	
Inca Dove	D	Summer	Neutral	83%	
	D	Winter	Neutral	46%	
Common Ground-Dove	D	Summer	Neutral	40% 32%	
	D	Winter	Neutral	31% 31%	
Mourning Dove	Gen	Summer	Neutral	100%	
	Gen	Winter	Neutral	1% 97%	
Yellow-billed Cuckoo	F-E	Summer	Neutral	43% 57%	
Common Nighthawk	Gen	Summer	Neutral	29% 67%	
Chuck-will's-widow	F-E	Summer	Neutral	82% 15%	
Eastern Whip-poor-will	F-E	Summer	High	51% <1%	
	F-E	Winter	Low	9% 64%	
Chimney Swift	F-E	Summer	Neutral	100%	
Ruby-throated Hummingbird	F-E	Summer	Neutral	91% 8%	
	F-E	Winter	Low	36%	
Black-chinned Hummingbird	D	Summer	Neutral	2%	
	D	Winter	Low	3% 10%	
Rufous Hummingbird	F-W	Winter	Moderate	14%	
Calliope Hummingbird	F-W	Winter	High	9%	
King Rail	M	Summer	Low	2% 4%	
	M	Winter	Neutral	22% 12%	
Clapper Rail	C	Summer	Low	1% 2%	

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
	C	Winter	Low	<1% 5%	   
Virginia Rail	M	Winter	Low	6% 7%	  
Sora	M	Winter	Neutral	10% 13%	 
Common Gallinule	M	Summer	Neutral	33% 23%	 
	M	Winter	Neutral	22% 39%	 
American Coot	M	Summer	Neutral	4% 10%	 
	M	Winter	Neutral	58% 22%	 
Black Rail	M	Summer	Moderate	2%	   
	M	Winter	Low	4%	   
Limpkin	M	Summer	Neutral	6%	  
	M	Winter	Neutral	2% 18%	  
Sandhill Crane	M	Summer	Moderate	1%	
	M	Winter	Low	15% 66%	 
Black-necked Stilt	M	Summer	Neutral	7% 25%	 
	M	Winter	Neutral	27%	   
American Avocet	M	Summer	Neutral	2%	  
	M	Winter	Neutral	1% 10%	   
American Oystercatcher	C	Summer	Neutral	1%	 
	C	Winter	Neutral	3% <1%	   
Black-bellied Plover	W	Winter	Neutral	11% 16%	  
Wilson's Plover	C	Summer	Neutral	2%	   
	C	Winter	Neutral	1% 7%	   
Semipalmated Plover	C	Winter	Neutral	2% 5%	   
Piping Plover	C	Winter	Moderate	1% 7%	   
Killdeer	W	Summer	Neutral	30% 57%	 
	W	Winter	Neutral	43% 39%	 
Long-billed Curlew	G	Winter	Neutral	13%	   
Marbled Godwit	M	Winter	Neutral	3%	  

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Ruddy Turnstone	W	Winter	Neutral		
Red Knot	W	Winter	Low		
Stilt Sandpiper	W	Winter	Neutral		
Sanderling	W	Winter	Neutral		
Dunlin	W	Winter	Low		
Least Sandpiper	W	Winter	Neutral		
Western Sandpiper	W	Winter	Neutral		
Short-billed Dowitcher	W	Winter	Neutral		
Long-billed Dowitcher	W	Winter	Neutral		
American Woodcock	F-E	Summer	Moderate		
	F-E	Winter	Neutral		
Wilson's Snipe	M	Winter	Neutral		
Spotted Sandpiper	W	Winter	Neutral		
Greater Yellowlegs	W	Winter	Neutral		
Willet	W	Summer	Neutral		
	C	Winter	Neutral		
Lesser Yellowlegs	W	Winter	Neutral		
Bonaparte's Gull	W	Winter	Neutral		
Laughing Gull	C	Summer	Neutral		
	C	Winter	Neutral		
Ring-billed Gull	W	Summer	Low		
	W	Winter	Neutral		
Herring Gull	W	Winter	Neutral		
Lesser Black-backed Gull	C	Winter	Low		
Great Black-backed Gull	C	Winter	Low		
Least Tern	W	Summer	Low		
Gull-billed Tern	C	Summer	Neutral		
	C	Winter	Neutral		

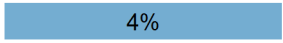



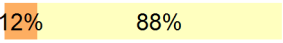



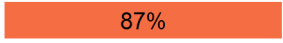

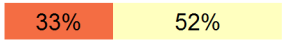

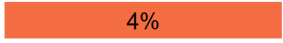



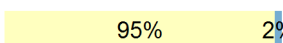



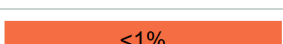



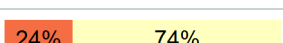



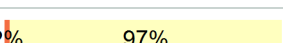



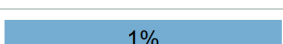

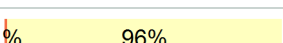

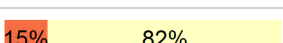

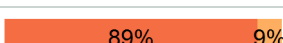

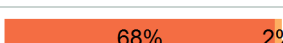

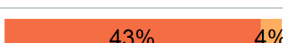

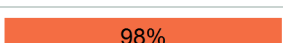



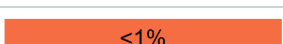
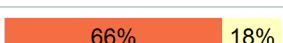

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Caspian Tern	W	Summer	Low		
	W	Winter	Neutral		
Common Tern	W	Summer	Low		
Forster's Tern	M	Winter	Neutral		
Royal Tern	C	Summer	Neutral		
	C	Winter	Neutral		
Sandwich Tern	C	Summer	Low		
	C	Winter	Neutral		
Black Skimmer	C	Summer	Neutral		
	C	Winter	Neutral		
Red-throated Loon	W	Winter	Low		
Common Loon	W	Winter	Low		
Wood Stork	M	Summer	Neutral		
	M	Winter	Neutral		
Magnificent Frigatebird	C	Summer	Neutral		
Northern Gannet	C	Winter	Neutral		
Anhinga	M	Summer	Neutral		
	M	Winter	Neutral		
Neotropic Cormorant	C	Summer	Neutral		
Double-crested Cormorant	W	Summer	Neutral		
	W	Winter	Neutral		
American White Pelican	M	Winter	Neutral		
Brown Pelican	C	Summer	Neutral		
	C	Winter	Neutral		
American Bittern	M	Winter	Neutral		
Least Bittern	M	Summer	Neutral		
	M	Winter	Neutral		
Great Blue Heron	W	Summer	Neutral		

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Great Egret	W	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 62%; background-color: #ffff00;"></div><div style="width: 38%; background-color: #add8e6;"></div></div>	 
	W	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 59%; background-color: #ff8c00;"></div><div style="width: 24%; background-color: #ffff00;"></div></div>	 
	W	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 57%; background-color: #ff8c00;"></div><div style="width: 34%; background-color: #add8e6;"></div></div>	 
Snowy Egret	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 15%; background-color: #ffff00;"></div><div style="width: 40%; background-color: #add8e6;"></div></div>	 
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 35%; background-color: #add8e6;"></div><div style="width: 35%; background-color: #add8e6;"></div></div>	 
Little Blue Heron	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 42%; background-color: #ffff00;"></div><div style="width: 32%; background-color: #add8e6;"></div></div>	 
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 25%; background-color: #add8e6;"></div><div style="width: 50%; background-color: #add8e6;"></div></div>	 
Tricolored Heron	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 12%; background-color: #ffff00;"></div><div style="width: 29%; background-color: #add8e6;"></div></div>	  
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 9%; background-color: #add8e6;"></div><div style="width: 18%; background-color: #add8e6;"></div></div>	  
Reddish Egret	C	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 2%; background-color: #ffff00;"></div></div>	  
	C	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 1%; background-color: #ffff00;"></div><div style="width: 3%; background-color: #add8e6;"></div></div>	   
Cattle Egret	W	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 61%; background-color: #ff8c00;"></div><div style="width: 35%; background-color: #ffff00;"></div></div>	 
	W	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 14%; background-color: #ffff00;"></div><div style="width: 52%; background-color: #add8e6;"></div></div>	 
Green Heron	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 35%; background-color: #ffff00;"></div><div style="width: 55%; background-color: #add8e6;"></div></div>	 
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 16%; background-color: #add8e6;"></div><div style="width: 57%; background-color: #add8e6;"></div></div>	 
Black-crowned Night-Heron	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 23%; background-color: #ffff00;"></div><div style="width: 15%; background-color: #add8e6;"></div></div>	 
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 13%; background-color: #ffff00;"></div><div style="width: 17%; background-color: #add8e6;"></div></div>	 
Yellow-crowned Night-Heron	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 56%; background-color: #add8e6;"></div><div style="width: 35%; background-color: #add8e6;"></div></div>	 
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 2%; background-color: #add8e6;"></div><div style="width: 43%; background-color: #add8e6;"></div></div>	  
White Ibis	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 55%; background-color: #ffff00;"></div><div style="width: 26%; background-color: #add8e6;"></div></div>	 
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 17%; background-color: #add8e6;"></div><div style="width: 36%; background-color: #add8e6;"></div></div>	 
Glossy Ibis	M	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 6%; background-color: #ffff00;"></div><div style="width: 10%; background-color: #add8e6;"></div></div>	   
	M	Winter	Low	<div style="display: flex; width: 100%;"><div style="width: 13%; background-color: #add8e6;"></div><div style="width: 14%; background-color: #add8e6;"></div></div>	  
White-faced Ibis	M	Summer	Low	<div style="display: flex; width: 100%;"><div style="width: 24%; background-color: #add8e6;"></div></div>	  
	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 13%; background-color: #add8e6;"></div></div>	   
Roseate Spoonbill	C	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 3%; background-color: #add8e6;"></div><div style="width: 30%; background-color: #add8e6;"></div></div>	   
	C	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: <1%; background-color: #add8e6;"></div><div style="width: 20%; background-color: #add8e6;"></div></div>	   
Black Vulture	Gen	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 28%; background-color: #ffff00;"></div><div style="width: 71%; background-color: #add8e6;"></div></div>	 

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Turkey Vulture	Gen	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 76%; background-color: #ffff00;"></div><div style="width: 23%; background-color: #4682b4;"></div></div>	
	Gen	Summer	Neutral	<div style="width: 100%; background-color: #ffff00;"></div>	
	Gen	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 97%; background-color: #ffff00;"></div><div style="width: 2%; background-color: #4682b4;"></div></div>	
Osprey	W	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 20%; background-color: #ffa500;"></div><div style="width: 27%; background-color: #4682b4;"></div></div>	
	W	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 20%; background-color: #ffff00;"></div><div style="width: 59%; background-color: #4682b4;"></div></div>	
White-tailed Kite	D	Summer	Moderate	<div style="width: 100%; background-color: #4682b4;"></div>	
	D	Winter	Neutral	<div style="width: 100%; background-color: #4682b4;"></div>	
Swallow-tailed Kite	F-S	Summer	Low	<div style="display: flex; width: 100%;"><div style="width: 18%; background-color: #ffa500;"></div><div style="width: 24%; background-color: #ffff00;"></div></div>	
Mississippi Kite	F-E	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 25%; background-color: #ffa500;"></div><div style="width: 64%; background-color: #ffff00;"></div></div>	
Northern Harrier	M	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 6%; background-color: #ffa500;"></div><div style="width: 58%; background-color: #ffff00;"></div></div>	
Sharp-shinned Hawk	F-W	Summer	Moderate	<div style="width: 100%; background-color: #ffa500;"></div>	
	F-W	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 42%; background-color: #ffa500;"></div><div style="width: 11%; background-color: #ffff00;"></div></div>	
Cooper's Hawk	Gen	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 66%; background-color: #ffff00;"></div><div style="width: 25%; background-color: #4682b4;"></div></div>	
	Gen	Winter	Low	<div style="display: flex; width: 100%;"><div style="width: 48%; background-color: #ffa500;"></div><div style="width: 15%; background-color: #4682b4;"></div></div>	
Bald Eagle	Gen	Summer	Low	<div style="display: flex; width: 100%;"><div style="width: 35%; background-color: #ffa500;"></div><div style="width: 26%; background-color: #4682b4;"></div></div>	
	Gen	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 23%; background-color: #ffff00;"></div><div style="width: 74%; background-color: #4682b4;"></div></div>	
White-tailed Hawk	G	Winter	Low	<div style="width: 100%; background-color: #4682b4;"></div>	
Red-shouldered Hawk	F-E	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 46%; background-color: #ffff00;"></div><div style="width: 45%; background-color: #4682b4;"></div></div>	
	F-E	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 79%; background-color: #ffff00;"></div><div style="width: 19%; background-color: #4682b4;"></div></div>	
Broad-winged Hawk	F-E	Summer	Low	<div style="display: flex; width: 100%;"><div style="width: 39%; background-color: #4682b4;"></div><div style="width: 58%; background-color: #4682b4;"></div></div>	
	F-E	Winter	Low	<div style="width: 100%; background-color: #4682b4;"></div>	
Short-tailed Hawk	F-S	Winter	Neutral	<div style="width: 100%; background-color: #4682b4;"></div>	
Red-tailed Hawk	Gen	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 6%; background-color: #ffa500;"></div><div style="width: 94%; background-color: #ffff00;"></div></div>	
	Gen	Winter	Neutral	<div style="width: 100%; background-color: #ffff00;"></div>	
Barn Owl	Gen	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 87%; background-color: #ffff00;"></div><div style="width: 13%; background-color: #4682b4;"></div></div>	
	Gen	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 86%; background-color: #ffff00;"></div><div style="width: 14%; background-color: #4682b4;"></div></div>	
Eastern Screech-Owl	F-E	Summer	Neutral	<div style="display: flex; width: 100%;"><div style="width: 38%; background-color: #ffff00;"></div><div style="width: 58%; background-color: #4682b4;"></div></div>	
	F-E	Winter	Neutral	<div style="display: flex; width: 100%;"><div style="width: 46%; background-color: #ffff00;"></div><div style="width: 50%; background-color: #4682b4;"></div></div>	

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Great Horned Owl	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Burrowing Owl	G	Winter	Neutral		
Barred Owl	F-E	Summer	Neutral		
	F-E	Winter	Neutral		
Short-eared Owl	G	Winter	Neutral		
Belted Kingfisher	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Yellow-bellied Sapsucker	F-E	Winter	Neutral		
Red-headed Woodpecker	F-E	Summer	High		
	F-E	Winter	Neutral		
Red-bellied Woodpecker	F-E	Summer	Neutral		
	F-E	Winter	Neutral		
Downy Woodpecker	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Red-cockaded Woodpecker	F-E	Summer	Low		
	F-E	Winter	Neutral		
Hairy Woodpecker	Gen	Summer	Low		
	Gen	Winter	Low		
Pileated Woodpecker	F-E	Summer	Neutral		
	F-E	Winter	Neutral		
Northern Flicker	Gen	Summer	Moderate		
	Gen	Winter	Neutral		
Crested Caracara	D	Summer	Neutral		
	D	Winter	Neutral		
American Kestrel	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Merlin	F-E	Winter	Neutral		

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Aplomado Falcon	G	Winter	Moderate		
Peregrine Falcon	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Eastern Wood-Pewee	F-E	Summer	Low		
Acadian Flycatcher	F-E	Summer	Moderate		
Willow Flycatcher	F-W	Summer	Moderate		
Least Flycatcher	F-B	Winter	Neutral		
Eastern Phoebe	F-E	Summer	Low		
	F-E	Winter	Neutral		
Vermilion Flycatcher	D	Winter	Neutral		
Great Crested Flycatcher	F-E	Summer	Moderate		
	F-E	Winter	Neutral		
Western Kingbird	G	Winter	Neutral		
Eastern Kingbird	G	Summer	Moderate		
Gray Kingbird	F-S	Summer	High		
Scissor-tailed Flycatcher	G	Summer	Neutral		
	G	Winter	Neutral		
Loggerhead Shrike	G	Summer	Neutral		
	G	Winter	Neutral		
White-eyed Vireo	F-E	Summer	Neutral		
	F-E	Winter	Low		
Yellow-throated Vireo	F-E	Summer	Moderate		
Blue-headed Vireo	F-E	Summer	High		
	F-E	Winter	Low		
Warbling Vireo	Gen	Summer	Neutral		
Red-eyed Vireo	F-E	Summer	Low		
Blue Jay	F-E	Summer	Neutral		
	F-E	Winter	Neutral		

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Florida Scrub-Jay	F-S	Summer	Low	 4%	
	F-S	Winter	High	 2%	
American Crow	Gen	Summer	Low	 12% 88%	
	Gen	Winter	Neutral	 83% 17%	
Fish Crow	Gen	Summer	High	 87%	
	Gen	Winter	Low	 33% 52%	
Common Raven	Gen	Summer	Low	 4%	
	Gen	Winter	Low	 2%	
Horned Lark	G	Winter	Low	 2%	
Northern Rough-winged Swallow	Gen	Summer	Neutral	 95% 2%	
Purple Martin	Gen	Summer	Neutral	 48% 51%	
Tree Swallow	Gen	Summer	Moderate	 <1%	
	Gen	Winter	Neutral	 41% 25%	
Barn Swallow	Gen	Summer	Neutral	 24% 74%	
Cliff Swallow	Gen	Summer	Neutral	 20% 54%	
Carolina Chickadee	F-E	Summer	Neutral	 2% 97%	
	F-E	Winter	Low	 50% 48%	
Black-capped Chickadee	F-B	Winter	Low	 1%	
Tufted Titmouse	F-E	Summer	Neutral	 1% 96%	
	F-E	Winter	Neutral	 15% 82%	
Red-breasted Nuthatch	F-B	Winter	Neutral	 89% 9%	
White-breasted Nuthatch	F-E	Summer	Low	 68% 2%	
	F-E	Winter	Neutral	 43% 4%	
Brown-headed Nuthatch	F-E	Summer	High	 98%	
	F-E	Winter	High	 69% 27%	
Brown Creeper	F-W	Summer	Moderate	 <1%	
	F-W	Winter	Neutral	 66% 18%	

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
House Wren	Gen	Winter	Neutral	95% 3%	
Winter Wren	F-E	Winter	Low	28% 24%	
Sedge Wren	G	Winter	Neutral	51% 35%	
Marsh Wren	M	Summer	Low	1% <1%	
	M	Winter	Low	16% 3%	
Carolina Wren	F-E	Summer	Neutral	100%	
	F-E	Winter	Neutral	100%	
Bewick's Wren	D	Winter	Low	2%	
Blue-gray Gnatcatcher	Gen	Summer	Neutral	8% 86%	
	Gen	Winter	Neutral	38% 43%	
Golden-crowned Kinglet	F-B	Winter	Neutral	43% 56%	
Ruby-crowned Kinglet	F-W	Winter	Neutral	93% 5%	
Eastern Bluebird	F-E	Summer	Neutral	14% 81%	
	F-E	Winter	Neutral	1% 99%	
Veery	F-E	Summer	Moderate	<1%	
Hermit Thrush	F-W	Winter	Low	3% 94%	
Wood Thrush	F-E	Summer	High	66% 31%	
American Robin	Gen	Summer	Moderate	30% <1%	
	Gen	Winter	Neutral	100%	
Gray Catbird	F-E	Summer	Neutral	13% 85%	
	F-E	Winter	Moderate	21% 16%	
Brown Thrasher	F-E	Summer	High	98% 2%	
	F-E	Winter	Neutral	85% 15%	
Northern Mockingbird	Gen	Summer	Neutral	98%	
	Gen	Winter	Neutral	1% 97%	
American Pipit	A	Winter	Neutral	91% 3%	
Sprague's Pipit	G	Winter	Neutral	40%	
Cedar Waxwing	Gen	Summer	Low	10% <1%	

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
House Finch	Gen	Winter	Neutral	98%	
	Gen	Summer	Low	83%	
	Gen	Winter	Low	77%	
Purple Finch	F-B	Winter	Low	58% 1%	
Pine Siskin	F-W	Winter	Neutral	32% 45%	
Lesser Goldfinch	F-W	Summer	Neutral	28%	
American Goldfinch	Gen	Summer	Moderate	27%	
	Gen	Winter	Neutral	27% 73%	
Bachman's Sparrow	F-E	Summer	Moderate	42% 39%	
	F-E	Winter	Neutral	26% 24%	
Grasshopper Sparrow	G	Summer	Low	1%	
	G	Winter	Neutral	66% 15%	
Chipping Sparrow	Gen	Summer	Moderate	27%	
	Gen	Winter	Neutral	62% 37%	
Field Sparrow	F-E	Summer	High	80%	
	F-E	Winter	Neutral	1% 97%	
Fox Sparrow	F-B	Winter	Moderate	44% 4%	
Dark-eyed Junco	F-W	Summer	High	<1%	
	F-W	Winter	Neutral	77% 16%	
White-crowned Sparrow	Gen	Winter	Neutral	44% 10%	
White-throated Sparrow	F-B	Winter	Neutral	15% 85%	
Vesper Sparrow	G	Winter	Neutral	62% 19%	
LeConte's Sparrow	G	Winter	Neutral	78% 13%	
Seaside Sparrow	C	Summer	Neutral	2%	
	C	Winter	Moderate	2% 2%	
Nelson's Sparrow	G	Winter	High	4% <1%	
Saltmarsh Sparrow	M	Winter	High	2% 1%	
Savannah Sparrow	G	Winter	Low	4% 89%	

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Henslow's Sparrow	G	Winter	Neutral		
Song Sparrow	Gen	Summer	Moderate		
	Gen	Winter	Neutral		
Lincoln's Sparrow	F-B	Winter	Neutral		
Swamp Sparrow	M	Winter	Neutral		
Eastern Towhee	F-E	Summer	High		
	F-E	Winter	Neutral		
Yellow-breasted Chat	F-E	Summer	Neutral		
Eastern Meadowlark	G	Summer	Moderate		
	G	Winter	Neutral		
Orchard Oriole	F-E	Summer	Low		
Baltimore Oriole	F-E	Summer	Low		
	F-E	Winter	High		
Red-winged Blackbird	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Bronzed Cowbird	D	Winter	Neutral		
Brown-headed Cowbird	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Rusty Blackbird	F-B	Winter	Neutral		
Brewer's Blackbird	Gen	Winter	Neutral		
Common Grackle	F-E	Summer	Low		
	F-E	Winter	Neutral		
Boat-tailed Grackle	C	Summer	High		
	C	Winter	Moderate		
Great-tailed Grackle	Gen	Summer	Neutral		
	Gen	Winter	Neutral		
Ovenbird	F-E	Summer	Moderate		
	F-E	Winter	Neutral		

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
Worm-eating Warbler	F-E	Summer	High		
Louisiana Waterthrush	F-E	Summer	Neutral		
Northern Waterthrush	F-B	Winter	Neutral		
Black-and-white Warbler	F-E	Summer	Moderate		
	F-E	Winter	Neutral		
Prothonotary Warbler	F-E	Summer	Neutral		
Swainson's Warbler	F-E	Summer	Low		
Orange-crowned Warbler	F-W	Winter	Neutral		
Nashville Warbler	F-E	Winter	Neutral		
Kentucky Warbler	F-E	Summer	Low		
Common Yellowthroat	Gen	Summer	Low		
	Gen	Winter	Neutral		
Hooded Warbler	F-E	Summer	Moderate		
American Redstart	F-B	Summer	Moderate		
Northern Parula	F-E	Summer	Moderate		
	F-E	Winter	Moderate		
Blackburnian Warbler	F-B	Summer	High		
Yellow Warbler	F-B	Summer	Moderate		
Chestnut-sided Warbler	F-E	Summer	High		
Black-throated Blue Warbler	F-E	Summer	High		
Palm Warbler	F-B	Winter	Low		
Pine Warbler	F-E	Summer	High		
	F-E	Winter	Neutral		
Yellow-rumped Warbler	F-B	Winter	Neutral		
Yellow-throated Warbler	F-E	Summer	High		
	F-E	Winter	Neutral		
Prairie Warbler	F-E	Summer	Moderate		

Species	Habitat Group	Season	Range-wide Vulnerability	State Trends	State Threats
	F-E	Winter	Low	37%	
Black-throated Green Warbler	F-E	Summer	High	5%	
Canada Warbler	F-B	Summer	High	<1%	
Wilson's Warbler	F-W	Winter	Low	3%	
Summer Tanager	F-E	Summer	Neutral	2% 93%	
Scarlet Tanager	F-E	Summer	High	26% 3%	
Northern Cardinal	F-E	Summer	Neutral	100%	
	F-E	Winter	Neutral	1% 99%	
Blue Grosbeak	F-S	Summer	Neutral	13% 85%	
Indigo Bunting	F-E	Summer	Moderate	59% 29%	
Painted Bunting	D	Summer	Neutral	43% 37%	
	D	Winter	Neutral	7%	
Dickcissel	G	Summer	Neutral	77%	