



Eagle Lake, Acadia National Park, Maine © Tim Fitzharris/Minden Pictures



# Red Knot

## and other migratory birds of the Northeast

Each spring, certain areas in **Acadia National Park** in Maine are closed to visitors as peregrine falcons return to their ancestral nesting sites on seaside cliffs. With great anticipation, park visitors gather below the cliffs with binoculars, spotting scopes, and zoom lenses to watch the peregrines — a species that in the mid-1960s was on the brink of extinction. Similarly, flocks of bird-watchers gather at Massachusetts's **Cape Cod National Seashore** and New York's **Fire Island National Seashore** in autumn to scan the skies for migrating hawks, shorebirds, and a great diversity of songbirds. Some migratory shorebirds, like the red knot, have already suffered precipitous declines, putting them at great risk as shorelines recede in response to climate change.

Plovers, pelicans, peregrines, red knots, and warblers are just a few of the more than 300 species of birds that spend time in the forests, marshes, dune systems, tidal flats, grasslands, and open waters of the national parks that dot the East Coast. They rely on these and other protected landscapes that lie within the Atlantic Flyway — a primary migration corridor — for food, nest sites, and places to rest.

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Stretching from the coast of Greenland all the way south to the Caribbean, the core of the flyway coincides with the barrier islands stretching from Cape Cod to **Cape Hatteras** National Seashore. The national parks and refuges along the way offer key landing zones that are interwoven into the life expectancy of both individual birds and species as a whole. Critical to survival is habitat that is ready with food when exhausted birds arrive, either for a quick feeding stop or to settle in and breed. Also important are vegetation in which to elude predators and suitable habitat for nesting. Pull one brick out of this foundation and it could lead to ecological collapse.

Unfortunately, climate change threatens to pull at least a few bricks out of

the massive flyway's structure, all to the detriment of various bird species. Predicted sea-level rise, coupled with more potent storm surges, could radically alter coastal wetlands if those habitats are not able to shift inland as the seas rise. Wetland-dependent species such as sora rail, common loon, and American bittern, are projected to see a 50 percent drop in abundance under most climate change scenarios. Higher temperatures in ocean surface waters could jeopardize food sources for gulls, terns, and other seabirds that spend much of their lives at sea. Some important food plants will bear fruit at dates that do not coincide with bird nesting or migration. A recent study predicted that the Northeast will be greatly affected by higher ocean levels associated

with human-caused global warming, which could spell trouble for long-legged waders and seabirds that rely on the Northeast's coastal areas for nesting. The common loon is another signature species likely to suffer from climate change as the Atlantic Coast estuaries where they spend winters are affected by rising waters.

The effects of climate change aren't restricted to only those bird species that rely on coastal areas. Black-throated blue warblers and Bicknell's thrush will be affected as vegetation changes driven by global warming alter the spruce-fir forests they inhabit. Some researchers predict that warming by as little as one degree Centigrade could cut in half suitable habitat for high-elevation

species, such as Bicknell's thrush, by forcing the spruce-fir forests they inhabit to move higher in elevation. Other studies indicate that montane environments inhabited by other high-elevation bird species, including boreal chickadees, kinglets, and cross-bills, will shrink by 90 percent before the end of the 21st century.

Many of our bird species are already struggling due to the combined effects of forest fragmentation, acid rain's impacts on forests and aquatic ecosystems, human disturbance at nesting sites, and over-fishing that has humans out-competing our wild friends for food. Climate change impacts will exacerbate these problems. Some birds might not have the energy needed to complete their annual migrations. Up to 85 percent of adult bird mortality that typically occurs may occur during migration, and that rate is expected to increase under climate change as conditions change at a time when migrating birds, already stressed by arduous flights, can least afford it.

Already, East Coast populations of red knots, colorful shorebirds that migrate along the Atlantic Flyway between the Arctic and Tierra del Fuego at the bottom of South America, have plummeted 82 percent. These declines are primarily due to competition for horseshoe crabs (from humans) and human disturbance (i.e., beach use) at their resting sites. Atlantic coastal marshlands have disappeared largely due to development, and climate change threatens to further diminish these important habitats. Coastal marshlands are the only known habitat of saltmarsh sharp-tailed sparrows, a species that is of conservation concern for the U.S. Fish and Wildlife Service within the states of Georgia, Maryland, New York, South Carolina, and Virginia. How will red knots and saltmarsh sharp-tailed sparrows fare under growing climate-change threats?

## SOLUTIONS

To help these species, cooperation is critical. The National Park Service must work with other land managers — private, federal, city, and state — to protect existing habitat up and down the Atlantic Flyway, create and maintain corridors between protected areas, and build new habitat when possible. Remaining salt marshes need to be protected, and degraded or destroyed marshes should be restored. Colonial seabird nesting sites could be re-established with dredge spoils. Land use needs to be regulated as much as possible to allow coastal refuges to retreat inland in the face of rising seawaters. Where shoreline retreat isn't possible due to existing development, the only options are slowing seawater rise or increasing beach buildup by natural or supplemental means.

Land managers are not the only ones who can help protect birds facing threats from climate change and other human-caused problems. Academic institutions, nonprofit, and citizen-based organizations, could play a valuable role by carefully monitoring populations of at-risk species. This information would enable scientists to spot emerging trends that could be tied to subtle changes in habitat along the flyway. With this information in hand, we would all be better equipped to take appropriate actions to preserve species and habitat before it's too late.

## We Can Safeguard Migrating Birds from Climate Change

### Stop contributing to climate change

Migrating birds like red knots could decline even further if we fail to reduce greenhouse gas emissions and climate change that is causing sea levels to rise, threatening coastal sanctuaries that are vital flyover stops on their migration routes.

### Reduce and eliminate existing harms that make migrating birds more vulnerable to climate change

By preventing further loss of critical habitat to development, and by balancing the harvest of food sources like horseshoe crabs and fish to meet the needs of human communities and migrating birds, we can help birds cope with additional loss of habitat that could result from climate change.

### Give migrating birds freedom to roam

The National Park Service, working with other land managers — private, federal, city, and state — can protect existing habitat up and down the Atlantic Flyway, and can identify and protect replacement habitat for migrating birds that will be necessary as existing flyover stops are lost to sea level rise.

