



People enjoying the beach with their dogs off leash can be a threat to shorebird habitat.

Lesson Four: Shorebirds at Risk: Threats and Action

Threats to Migrating Shorebirds

Shorebirds face almost insurmountable odds. Research shows a steep decline in the populations of several shorebird species, and it is suspected that many others have declining populations. What are the threats that affect migratory shorebirds each year? There are a variety of natural threats such as predators, weather, and disease. However, human-influenced changes are by far the most serious threats to shorebird survival today.

Vanishing habitat

Today, the primary threat to the survival of migratory birds is the disappearance and degradation of habitat. Many migrant shorebird populations are dependent on vital food and rest found at the same wetlands, estuaries, and grasslands year after year. In some circumstances, if one of these stopover locations is lost, shorebirds may not stop nearby even if an alternate site exists. Instead, they fly on to the next stop, perhaps hundreds of miles away, without resting or feeding. Many birds may not survive.

In many situations the habitat is still there, but it has been degraded to the point that it is no longer healthy and cannot support the wildlife as it did in its unspoiled state. Even if the habitat is not completely removed from the landscape, things such as disturbances from people, effects of nearby industry, and the increase of predators can make a habitat unhealthy for wildlife that depends on it. Urban sprawl and industry are reducing the availability of habitat. This type of development also reduces the quality

of neighboring conservation lands because nonnative species, chemical pollutants, and an increase in predators associated with humans (dogs, cats, raccoons, rats) can be introduced.

Agriculture and wetlands were historically drained or the water diverted for irrigation. Rivers have been dredged and diked for navigation and flood control. Prairies and wetlands were quickly replaced by agriculture. Our modern system of agriculture, called monoculture, uses a piece of land for a single type of crop which effectively eliminates habitat and species diversity. The use of pesticides to control weeds and insects on crop fields also is thought to have both direct and indirect effects on shorebirds. Food resources may be removed, causing the birds to starve. Chemicals may also accumulate within the birds' tissues, leading to deformities and poisoning. In places where agriculture and shorebirds attempt to coexist, eggs and young birds are often crushed by machinery.

Pollution hurts shorebirds and their invertebrate foods

Many types of pollution, including runoff and pesticides may all be affecting shorebirds and the insects and fish they feed on. An oil spill near coastal stopover areas, especially one timed with the peak of migration, would be a disaster to shorebirds. For example, Delaware Bay, a critical stopover site for over 600,000 migrating shorebirds, is also the second largest petrochemical port in the eastern United States. A major oil spill would coat the feathers of shorebirds, making it impossible for them to fly or stay warm and dry. Birds that try to clean themselves and accidentally ingest oil would be poisoned. An oil spill would also kill horseshoe crabs and their eggs, a critical food source for the shorebirds that pass through the area.

Human recreation can disturb wintering and feeding shorebirds

Migrating shorebird populations are also threatened by disturbances at their stopover sites. If the disturbance is intense enough, migrating shorebirds will continue migrating without stopping at all. Without adequate refueling, individuals may not have enough energy to reach their breeding grounds and/or breed successfully.

Popular recreation activities like riding off-road vehicles on barrier beaches sometimes leave deep tire tracks in the sand or mud, trapping newly hatched chicks. They also force birds into the air at a time that is critical for the birds to rest and feed. Operating jet skis and boats near shorebird wintering areas scares birds away.

Other types of recreation can also be a problem for shorebirds. Off-leash dog walking, kite flying, sunbathing, and surfing also chase birds from their choice feeding sites and cause them to use valuable energy in the process.

Shorebirds and hunting

Historically, flocks of migrating shorebirds were highly vulnerable to shooting. Market shooting was a common occurrence in the Nineteenth century. Market shooters took advantage of the need for fresh meat in the urbanizing eastern United States. Shorebirds could be easily and economically harvested because they concentrated in huge flocks at predictable migratory staging areas, could be decoyed into shooting range, and would return back for wounded flock mates. Most species of shorebirds were hunted throughout the 1800s, some to the point of extinction.

The Arctic-breeding Red Knot, which migrates in massive flocks northward across the United States, was severely affected by market hunters in the 1800s. The endangered Eskimo Curlew, called the "doughbird," was hunted for food and sport until it was likely driven to extinction. Even though regulations were passed to stop the killing of shorebirds, their low reproductive rate and highly social lifestyle has prevented their comeback.

Today in the United States, there are only two shorebird species (American Woodcock and Wilson's (common) Snipe) that have large enough populations to support a regulated harvest season. Subsistence egg gathering by native indigenous people in the Arctic is still a traditional practice that is allowed. Migrating shorebirds are still being hunted in many other countries today. Working with international, national, and regional communities is important to ensure that shorebirds are not overharvested.

Spread of exotic species

Nonnative or exotic species are being introduced into wetlands. Sometimes these introduced species seriously alter the structure of the wetland by competing with native plants and animals. As healthy wetland habitat shrinks, shorebirds lose the feeding and resting sites they rely on.



Resource management can conflict with shorebirds

Many of our resource management strategies like mosquito-control programs, oyster-culture practices, and salt pond management can conflict with shorebird conservation. In places where agriculture and shorebirds attempt to coexist, eggs and young birds are often crushed by harvest machinery. As many as 400-600 birds were killed in a 10-day mowing season in the hay fields of the Silvies Floodplain in Oregon. Without grasses to hide in, the chicks that escaped the machinery were caught quickly by predators.

All along the Atlantic and Pacific coasts, entire beaches are raked daily or weekly to remove trash and tidal debris. This makes it impossible for Snowy Plovers or Piping Plovers to nest. Noisy and large, these machines can crush plover nests and chicks and scare the adults away. Beach raking also removes the kelp and driftwood that invertebrate foods live on.

Shorebirds and deadly diseases

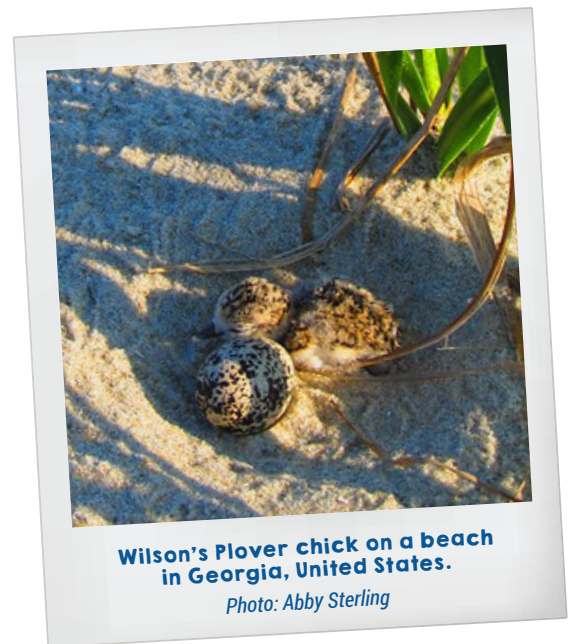
Shorebirds are also susceptible to diseases. Most diseases are natural occurrences, but their effects on the bird population are dependent upon how many individuals are concentrated in the area at the time of the outbreak. Some of the diseases that may have a devastating effect on shorebirds include avian botulism.

Avian botulism outbreaks are common within the interior of North America during the summer and early fall when temperatures are warm and water conditions are low. A toxin is produced by a bacterium and is ingested by birds as they feed on invertebrates in infected waters. During late summer and fall, water resources are rare and migrating birds concentrate in the few areas where water does occur. Control of botulism outbreaks is difficult because there is still a lot to be learned about this disease. Land managers spend a lot of time and energy trying to avoid massive die-offs. Many critical shorebird staging areas are known to have botulism outbreaks. Several thousand shorebirds can be lost during severe outbreaks.

Predators out of balance

Shorebirds have only a few natural mammalian predators at their remote nesting grounds. Their cryptic coloration helps them hide from avian predators like falcons and jaegers. As Arctic nesting areas are developed, introduced predators may become an increased concern.

Shorebirds that nest, stop to rest and refuel, and winter on coastal beaches and mudflats near large population centers are vulnerable to predators. Many shorebird predators such as foxes, skunks, crows, gulls, rats, and raccoons are extremely successful at coexisting with people. Their population numbers have increased to the point that the delicate predator/prey relationship is out of balance. Normally, predators would not impact the shorebird population. However, shorebirds that are already at a disadvantage due to other human-related threats become vulnerable to these predators, including peoples' pets—dogs and cats! Even if not actively hunted by these predators, the energy used by shorebirds to move out of their way can jeopardize their health.





Sanderling running along the water's edge. Photo: Abby Sterling

Shorebird Conservation

Provides a hopeful future

- Over 38.7 million acres of shorebird habitat are part of the Western Hemisphere Shorebird Reserve Network (WHSRN). This voluntary network of over 430 organizations and agencies across the Americas is working together to protect and manage wetlands.
- The National Wildlife Refuge system, managed by the U.S. Fish and Wildlife Service, provides quality habitat for shorebird breeding, nesting, and wintering.
- Working with land managers and landowners, there are opportunities for management that benefits people and shorebirds.
- By managing habitat for shorebirds, numerous other species that depend on these ecosystems will benefit too.

Shorebird conservation is very challenging!

Land managers and biologists are faced with many tough questions that often have many possible answers, depending on an individual's perspective. Consider a private landowner who is trying to keep a family-owned ranching business alive. He or she will probably have different ideas and feelings about protecting shorebird habitat on land where his or her cattle grazes than a research biologist will. A community development committee elected to create jobs and attract tourist dollars into the community will probably have different coastal development priorities than a member of a bird-watching group.

Below are some of the difficult questions scientists must answer when promoting or defending shorebird conservation. Which of these questions do you think are easily answered?

How can we work to protect birds beyond our borders?

Perhaps one of the most significant conservation challenges is protecting species with long-distance migrations. The shorebirds that breed in North America migrate through or spend the nonbreeding season in at least 36 countries! Protecting shorebirds involves cooperation and agreement among many different countries. Cultural differences, gaps in scientific understanding, and varying conservation ethics can create challenges to cooperation among countries.

How can we increase our knowledge of shorebirds?

There is a need for more research and monitoring of many shorebird species. Biologists need more information on baseline population numbers, an inventory of habitats used by shorebirds, and the development of long-term monitoring programs. Existing data suggest that populations of many shorebird species are already declining.

How can we reverse past population declines?

Another significant conservation challenge is the low reproductive potential of shorebirds. The fact that most species lay a clutch of four or fewer eggs each season, with only very few species re-nesting, makes it difficult for biologists to reverse past population declines and increase shorebird numbers quickly.

How can we protect shorebirds from disasters?

The fact that shorebirds concentrate in such high numbers at migration stopover sites poses another challenge to biologists. Huge populations of shorebirds are vulnerable to any number of catastrophic environmental changes like weather events, oil spills, toxic chemical residues, habitat development, or human disturbances at many of these key sites.

How might climate change affect shorebirds?

Climate change is possibly the least studied threat to shorebirds across all the flyways. Scientists suspect that global warming could change water levels along the coast and eliminate important shorebird habitat. Warmer winters might change the migration patterns of shorebirds, causing some to winter further north, bypassing the more southern conservation lands specifically set aside for them.

How can we help private landowners save important habitat?

Much of the land used by shorebirds is privately owned. Several federal and most state natural resource agencies have programs to assist private landowners in managing wildlife and wildlife habitat on their property. These programs are limited in staff and funding.

How do we increase public understanding?

Many people do not see wetlands and grasslands as important. They are not aware of the benefits that wetlands and grasslands provide them. Therefore, they do not see a need to preserve or manage these unique and critical areas. Educators, students, biologists, and bird enthusiasts can work together through education and conservation projects to increase public understanding.

National and International Partnership Programs

Thankfully, an increasing number of individuals and countries are recognizing these conservation challenges and the threat of habitat destruction all over the world. Many federal, state, indigenous, and private groups have purchased and protected millions of acres for local and migratory wildlife. There is a worldwide effort to identify critical staging areas and then to protect them. More studies are conducted each year to answer questions about shorebird migration patterns, current population numbers, and habitat needs. Education programs are teaching people about the value of wetlands and grasslands for shorebirds and all the other species that depend on these vital ecosystems. The following is a description of several of these national and international partnership programs established to help protect shorebirds and their habitats.

The Western Hemisphere Shorebird Reserve Network: The Western Hemisphere Shorebird Reserve Network (WHSRN) brings together over 430 private and public organizations in seven countries working toward the conservation, restoration, and management of critical shorebird habitats throughout the Americas. Sites are recognized as significant to shorebirds when they fit one of three requirements: Regional Sites host at least 20,000 shorebirds; International Sites are used by at least 100,000 shorebirds; and Hemispheric Sites provide habitat to 500,000 or more shorebirds throughout the year. To date, WHSRN has over

114 wetland sites in 18 countries that are critical links in a shorebird migration chain. For more information contact www.whsrn.org.

WHSRN works to:

- Build a strong international system of sites used by shorebirds throughout their migratory ranges.
- Develop science and management tools that expand the scope and pace of habitat conservation at each site within the Network.
- Establish local, regional and international recognition for sites, raising new public awareness and generating conservation funding opportunities.
- Serve as an international resource, convener and strategist for issues related to shorebird and habitat conservation.

The Ramsar Convention on Wetlands: This intergovernmental treaty signed in Ramsar, Iran, in 1971, was established to provide a framework for international cooperation for the conservation and wise use of wetlands and their resources. More than 170 countries from all regions of the world are now part of the convention. They meet every three years to discuss progress and wetland conservation. As part of membership, these countries agree to consider wetland conservation in their natural resource planning, promote wise use of wetlands in their countries, and establish nature reserves. They are also required to designate at least one site for inclusion on the “List of Wetlands of International Importance” based on criteria adopted under the convention. For more information go to <http://www.ramsar.org>.

The International Shorebird Survey (ISS): ISS is a volunteer program organized by Manomet. The purpose of the ISS is to collect information on shorebirds and the wetlands they use during migration. To date, more than 800 shorebird watchers have collected information from 1650 locations throughout the Western Hemisphere. Volunteers have added to our knowledge of migration routes, timing of peak migrations, trends in species declines, and locations of key stopover areas for shorebirds. The work of ISS volunteers has made it evident that many species of shorebirds are dependent on these critical sites, leading to the creation of WHSRN. To learn more about this important volunteer group, contact Manomet at www.manomet.org.



Whimbrels flying over the salt marsh at Monomoy National Wildlife Refuge WHSRN Site.
Photo: Alan Kneidel



Student with the beach sign that was created from her artwork.
Photo: Tami Kerr

You Can Help Shorebirds Too!

Learn about shorebirds.

The more you know about shorebirds, the more you will understand how you can help.

Never chase flocks of shorebirds.

Chasing shorebirds forces them to use up valuable energy and reduces the time they spend feeding and roosting.

Never let dogs chase shorebirds.

Choose to take your pets to an exercise area away from where shorebirds nest, rest, and feed. Always keep your pets on a leash.

Explain to others why it is so important not to disturb shorebirds.

Many people do not know that their actions hurt shorebirds. Share what you know with them so they can make better choices.

Become a shorebird observer.

Keep track of migrants coming through your local area. Help scientists identify critical staging areas for preservation. Submit your information to ebird.

Additional Resources:

Shorebird Threats and Status:

<https://whsrn.org/about-shorebirds/shorebird-status/>

Conservation Action and WHSRN:

<https://whsrn.org/about-shorebirds/conservation-action/>

Shorebird Monitoring:

<https://whsrn.org/about-shorebirds/shorebird-monitoring/>

Shorebird Resources:

<https://whsrn.org/about-shorebirds/shorebird-resources/>

Environment and Climate Change Canada:

<https://www.youtube.com/watch?v=aB-AMDrQLzY>

