

### Flyways—Sky Paths

The migratory routes of birds, referred to as *flyways*, are not specific, narrow “highways.” Instead, they are general routes that most migrants tend to follow. Scientists have proposed that birds use the stars, the sun, and even the Earth’s magnetic field for guidance.

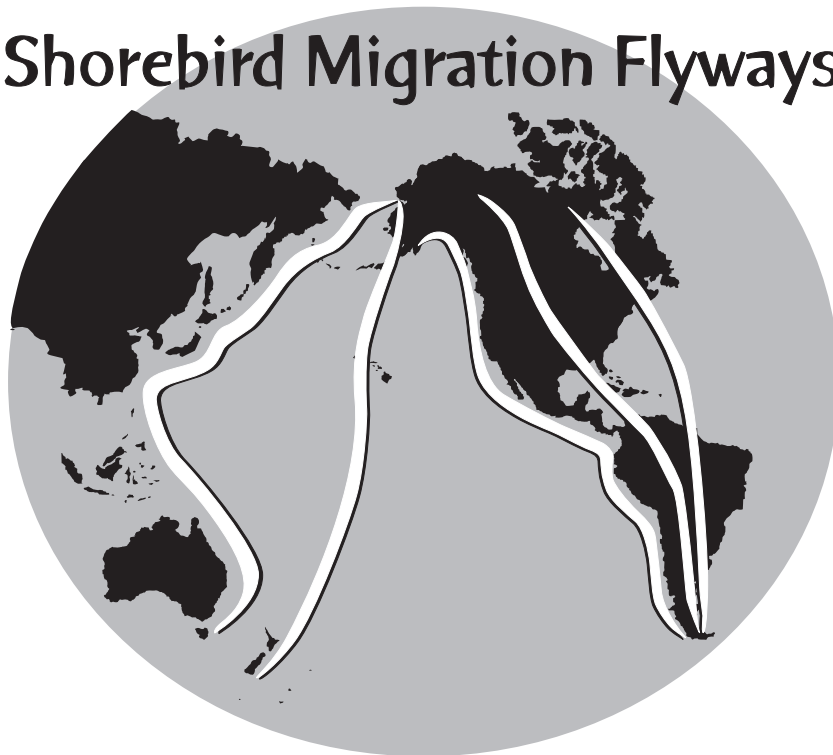
Many shorebirds follow coastlines. Two flyways, the *American Pacific* and the *American Atlantic*, follow the coasts of the North American continent. They extend from the Alaskan and Canadian Arctic, along the Pacific and Atlantic coasts to the southern tip of South America. In North America, shorebirds also migrate inland along the *American Central Flyway*.

Other shorebird migration routes that use the North American Arctic include the Central Pacific and the East Asian-Australasian Flyways. The *Central Pacific Flyway* extends across the ocean from New Zealand to Pacific islands like Hawaii and up through the Alaskan Arctic. The *East Asian-Australasian Flyway* runs from Australia, along the east of the Asian continent, through countries such as Japan, China, and Korea, to the Russian and Alaskan Arctic.

### Migrating Shorebirds Stop to Rest and Feed

Most migrating birds require the presence of *wetlands* in their breeding habitat and on their wintering grounds. These two regions are often thousands of miles apart. Shorebirds depend on wetlands in between for food and rest to reach their final destinations. Large numbers of

## Shorebird Migration Flyways



migrating shorebirds will return to the same *stopover site* year after year. Termed *staging*, these large flocks of shorebirds will feed for several days or weeks in order to build up their energy reserves to continue their flight. Wetland *estuaries*, rich habitats where a source of freshwater meets the ocean, provide some of the most important shorebird *staging areas* in the world.

Arctic-nesting shorebirds are also famous for the huge numbers of birds that concentrate at stopover sites along the flyway. Since most Arctic-nesting shorebirds tend to use the same relatively

few stopover sites, a *bottleneck* results at these few vital wetlands. These critically important staging areas can host tens of thousands, even hundreds of thousands, of shorebirds at one time. In fact, five sites in North America support more than a million shorebirds each spring.

## Shorebirds Congregate at Important Staging Areas!

- The Copper River Delta is thought to be the most heavily used stopover site for all Western Sandpipers along the *Pacific Flyway*. Shorebirds stop at this site because of the superabundance of crustaceans, mollusks, worms, and other energy-rich foods.
- Shepody Bay, in the Bay of Fundy, is another important shorebird site for at least 34 species of shorebirds that use the marshes and mudflats. About one million Semipalmated Sandpipers visit this stopover site along the *Atlantic Flyway* from mid-July to early September.
- Cheyenne Bottoms, considered the largest interior marsh in the United States, hosts as many as 45 to 90 percent of all our shorebird, duck, and geese species that stop to rest and feed during their migration along the *Central Flyway*.

## Critical Staging Areas of North America

### Pacific Flyway

Copper River Delta, Alaska  
Kachemak Bay, Alaska  
Mono Lake, California  
Salton Sea, California  
San Francisco Bay, California  
Gray's Harbor, Washington  
Great Salt Lake, Utah  
Lahontan Valley, Nevada

### Central Flyway

Cheyenne Bottoms, Kansas  
Sand Lake, South Dakota  
Quill Lake, Saskatchewan  
Bolivar Flats, Texas  
Quivira NWR, Kansas  
Rainwater Basin, Nebraska  
Horicon Marsh, Wisconsin

### Atlantic Flyway

Delaware Bay, New Jersey,  
Delaware, Maryland  
Bay of Fundy, Canada  
Maryland/Virginia Barrier  
Islands  
Cape Romain NWR, South  
Carolina  
Monomina Island, Massachusetts

## Migrating Shorebirds Are Extremely Vulnerable!

If a traditional stopover is lost to development or contaminated with pollution, the birds do not have the energy or the time to look for another suitable place to stop. Sometimes an entire population will move through a stopover site within a week or two. This makes shorebirds extremely vulnerable to habitat changes or loss. *One environmental disaster at a critical staging site could impact the survival of an entire species of shorebird!*

## Explore the World with Shorebirds!

Discover the mysteries and challenges of migration through math, simulation games, and creative writing using these activities:

- [Migration Headache](#)
- [Migration Math Madness](#)
- [The Incredible Journey](#)
- [Precarious Paths](#)
- [Bird's-Eye View](#)

# The Shorebird Flyways in Your Backyard

## What is a Migration Flyway?

A migration flyway is an invisible “highway in the sky,” a general route birds follow as they fly from their breeding grounds in the north to more southern areas where they spend their winters.

## How Did Scientists Determine Where the Flyways Are?

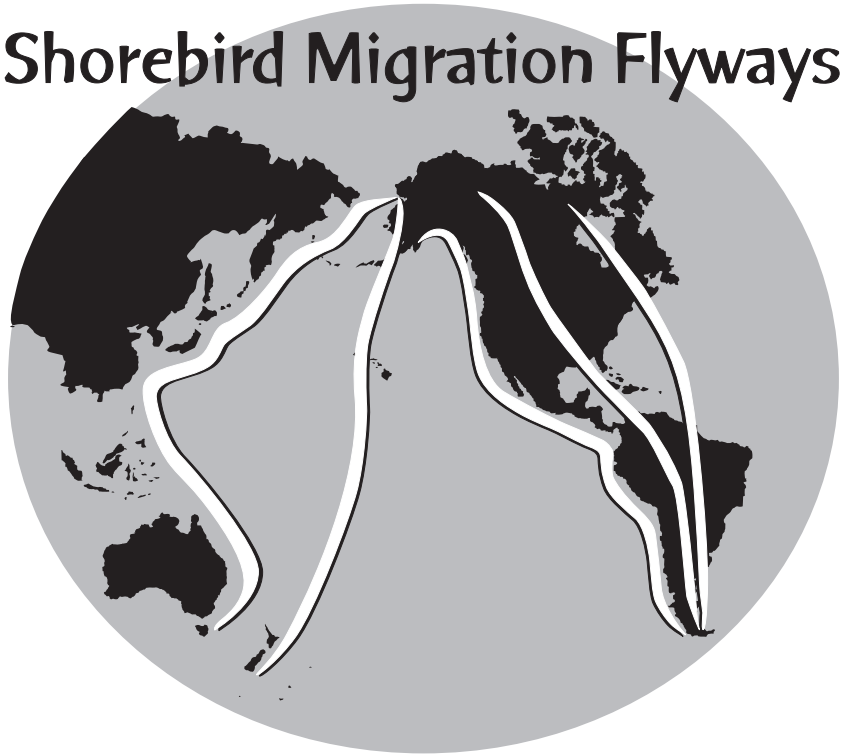
Biologists have determined migration routes through the use of radio telemetry and observation of banded and flagged birds. For some species, they can even tell where birds are from by bill length and coloration. Many shorebirds that have been banded have also been flagged. This is a band that sticks out from the side of the bird’s leg. Each country has an assigned color so biologists can determine where the birds have come from. For more information on the flagging program go to <http://www.mb.ec.gc.ca/nature/migratorybirds/pasp/dc29s01.en.html>.

## Where Are These Flyways Located?

Scientists have grouped these flight paths into generalized flyways. When talking about migration flyways, biologists have most often referred to the routes of *waterfowl* that follow four fairly narrow migration paths through North America: the Pacific Flyway, the Central Flyway, the Mississippi Flyway, and the Atlantic Flyway.

Shorebird flyways are more general and tend to overlap. For this reason, *shorebird biologists* have identified three broader shorebird flyways within North America: the *American Pacific Flyway*, the *American Central Flyway* (which combines the Central and Mississippi flyways of songbirds and waterfowl), and the *American Atlantic Flyway*. Other shorebird migration routes that use the North American Arctic include the *Central Pacific* and the *East*

## Shorebird Migration Flyways



*Asian-Australasian Flyways*. The *Central Pacific Flyway* extends across the ocean from New Zealand to Pacific islands like Hawaii, and up through the Alaskan Arctic. The *East Asian-Australasian Flyway* runs from Australia, along the east of the Asian continent through countries such as Japan, China, and Korea, to the Russian and Alaskan Arctic.

## Flyway Names

You will notice that the flyways are named with “American” at the beginning. This is to clarify that these flyways are located in the Western Hemisphere. Without that clarification, people from other countries may look at this information and confuse these flyways with other regions of the globe. For example, if you take into account the entire globe, the

American Atlantic Flyway is really on the western side of the Atlantic Ocean and should be called the Western Atlantic Flyway. However, we felt that would confuse our primary audience which is in the United States. By adding “American” to Atlantic Flyway, people will understand that we are speaking of the Atlantic flyway in the Americas.

Interested in more information about the flyway in your backyard? The following pages describe the geographic zones and highlight exciting shorebird facts about the area where you live.

## How Do Birds Find Their Way?

Birds probably use a variety of methods to navigate. Though scientists are not exactly sure how birds navigate along these routes,

there are several theories. Some think birds find their way using the stars as a guide. There is evidence that some large flocks of migrating birds have seemed to “lose their way” over large metropolitan areas where city lights brighten the sky and make the stars harder to see. Other scientists believe that birds migrate using an internal magnetic compass. This system guides the birds along the earth’s magnetic routes.

### **How Are Shorebirds Able to Migrate Such Long Distances?**

Shorebirds have specific physical adaptations for long distance flight, including long, pointed wings and the ability to gain and store highly concentrated fat to fuel their journey. Some shorebirds can fly nonstop for thousands of miles to reach their migratory destinations. However, most shorebird species stop along the way to rest and feed. Stopover sites with abundant food sources have become traditional areas where hundreds of thousands of birds congregate during the migration season. Here they gorge themselves on nutrient-rich invertebrates to replenish the body fat that fuels the rest of their journey. These sites are vitally important to shorebird survival and breeding success.

### **Where Are Important Shorebird Stopover Sites Located?**

Important stopover areas are located along each flyway. Some are famous, like the Copper River Delta in Alaska, for the hundreds of thousands of birds that stop each year; other sites are smaller but just as important. Today pollution, development, and agriculture expansion threaten to wipe out many shorebird stopover sites. The Western Reserve Network (WHSRN) is a multinational coalition of scientists and conservationists working together to identify important sites for protection. Sites nominated into the WHSRN network fall into one of three categories: Hemispheric Sites that host a minimum of 500,000 shorebirds annually, International Sites with a minimum of 100,000 shorebirds each year, and Regional Sites where at least 20,000 shorebirds migrate through annually. The network provides recognition and information for managing these sites. New sites are nominated each year. Of course there are many sites that have fewer than 20,000 birds. These sites are also very important for shorebirds and can be recognized through the National Audubon Society’s Important Bird Area (IBA) network (<http://www.audubon.org/bird/iba/>). Schools and communities can also nominate their towns as Shorebird Sister Cities through the Shorebird Sister Schools Program (<http://sssp.fws.gov>).

For answers to more questions commonly asked about shorebird migration and adaptations, please refer to the sections *The Magnificent Shorebird Migration* and *Shorebirds Have Special Adaptations* in the *Shorebird Primer*.

### **Explore the World with Shorebirds!**

Have students identify the shorebird flyway(s) they live in. Use the WHSRN site listings found later in this section or log on to the WHSRN Web site ([www.manomet.org/WHSRN/](http://www.manomet.org/WHSRN/)) to identify important shorebird stopover sites in their flyway. Then have your students mark them on a wall map of North America. Students can learn specific information about the site’s resources from the WHSRN Web site. Interested in knowing which shorebirds are found in your area? Refer to any of the field guides listed in the Appendix, or check out the *Shorebird Profiles* to learn more about birds specific to your flyway.

# American Pacific Flyway

## Route Description

The American Pacific Flyway generally follows the eastern Pacific coastline from the western Arctic, including Alaska and the Aleutian Islands, down the Rocky Mountain and Pacific coastal regions of Canada, the United States, and Mexico, to where it blends with other flyways in Central and South America. The extensive American Pacific flyway system is separated into four **geographic regions**: Alaska, the Northern Pacific, the Intermountain West, and the Southern Pacific Region.

A map of the **geographic regions** is in the U.S. Shorebird Conservation Plan located at <http://shorebirdplan.fws.gov>.

## Facts About the Flyway

### Alaskan Region

- Alaska's size and northerly position provide breeding habitat for more types of shorebirds than anywhere else in the United States.
- Of the 71 species which have occurred in this region, 37 breed here.
- Most Alaskan shorebirds migrate to southern areas of the United States and Mexico. About one third head to South America or Oceania (Australia and New Zealand).
- More than one million birds congregate at Alaskan staging sites. In the spring, as many as five to eight million shorebirds use the food resources of the famous Copper River Delta.

### Northern Pacific Region

- Estuaries like Gray's Harbor, Willapa Bay, and Bandon Marsh support over 100,000 shorebirds during peak migration.
- Other important shorebird habitats, such as the Willamette Valley are a mix of wetlands and agriculture and are used extensively in winter by Dunlin and Wilson's Snipe.
- Of the 50 shorebird species that breed in the United States, 40 are found regularly in this region.
- Important habitats include coastal estuaries, sandy beaches, rocky shorelines, freshwater marshes, pastures, and agricultural lands.

### Intermountain West Region (IMW)

- Eleven species of shorebirds breed and another 23 migrate regularly through this huge region that includes a variety of wetlands, from saline sinks to alpine streams.
- Up to 90 percent of the world's adult Wilson's Phalaropes molt and stage in the IMW hypersaline lakes prior to their trip to South America.
- Important habitats include large saline lakes, marshes, upland, agricultural fields, ephemeral wetlands, man-made impoundments, and riparian areas.

### Southern Pacific Region

- Internationally and nationally significant numbers of Western Sandpipers, Snowy Plovers and Mountain Plovers are found here.
- Important habitats include tidal wetlands and marshes, salt ponds, seasonal wetlands, flooded agricultural lands, managed wetlands, and range and agricultural land.
- Twenty eight species of shorebirds spend the nonbreeding season here.

### Shorebirds Most Characteristic of the American Pacific Flyway

With the exception of the Snowy Plover, the shorebirds on this list are common and can be observed by students. The list is also a "snapshot" of species diversity in the flyway, providing a variety of natural history stories to learn about. Shorebirds that are rare on this flyway are noted with an asterisk. Consider having your students research these shorebirds using this guide, the library, and the World Wide Web.

*Western Sandpiper*  
*Black-bellied Plover*  
*Short-billed Dowitcher*  
*Dunlin*  
*Marbled Godwit*  
*Black Oystercatcher*  
*Black Turnstone*  
*Long-billed Curlew*  
*Snowy Plover\**  
*Black-necked Stilt*

## Shorebird Migration Flyways



# Western Hemisphere Shorebird Reserve Network Sites on the American Pacific Flyway\*

Refer to the Shorebirds Across the Americas poster included in your educator's binder or request a copy by sending an e-mail to [sssp@fws.gov](mailto:sssp@fws.gov).

## Hemispheric Sites

A minimum of 500,000 shorebirds use these sites each year.

### *United States*

Copper River Delta, Alaska  
Grays Harbor, Washington  
Great Salt Lake, Utah  
Lahontan Valley, Nevada  
San Francisco Bay, California  
Yukon Delta, Alaska

### *Argentina*

Tierra del Fuego

## International Sites

A minimum of 100,000 shorebirds use these sites each year.

### *United States*

Kachemak Bay, Alaska  
Grasslands, California  
Humboldt Bay, California  
Mono Lake, California

### *Mexico*

Estero Rio Colorado  
Guerrero Negro  
Marismas Nacionales

### *Brazil*

### *Argentina*

## Regional Sites

A minimum of 20,000 shorebirds use these sites each year.

### United States

Elkhorn Slough, California  
Kvichak Bay, Alaska  
Nushagak Bay, Alaska  
Sacramento Valley, California  
San Diego Bay, California  
South Salton Sea, California  
Springfield Bottoms, Idaho  
Yukon Delta, Alaska

\* For a detailed description of these sites, please go to the WHSRN Web site at <http://www.manomet.org/WHSRN/> and click on the Shorebird Reserve Network button.



# American Atlantic Flyway

## Route Description

The American Atlantic Flyway extends from the offshore waters of the Atlantic Coast west to the Appalachian Mountains. Many birds using the American Atlantic Flyway start at the southern tip of South America or the coast of Chile and then move through the interior of South America (Argentina, Paraguay, Bolivia, Brazil, and Suriname) and across the Caribbean. They reach the United States touching Maryland, Virginia, and Delaware. From there they head to James Bay and Hudson Bay in Canada.

The Atlantic Flyway is divided into two geographic areas: the Northern Atlantic and the South East Coastal Plain/Caribbean.

A map of the geographic areas is in the U.S. Shorebird Conservation Plan located at <http://shorebirdplan.fws.gov>.

## Facts About the Flyway

### Northern Atlantic Region

- This is the most heavily populated area in the United States.
- Wetlands are affected by development. Still, beaches in this region are essential, high-quality habitat for shorebirds.
- This region is considered critical to the survival of Red Knots, Piping Plovers, and Whimbrels.
- The Delaware Bay was the first WHSRN site. It supports huge concentrations of spring migrants that feast on horseshoe crab eggs.

- There is good access to shorebird viewing opportunities. Large portions of publicly owned coastal habitat and strong state land use regulations have strengthened local support for shorebird conservation.

### South East Coastal Plain/Caribbean Region

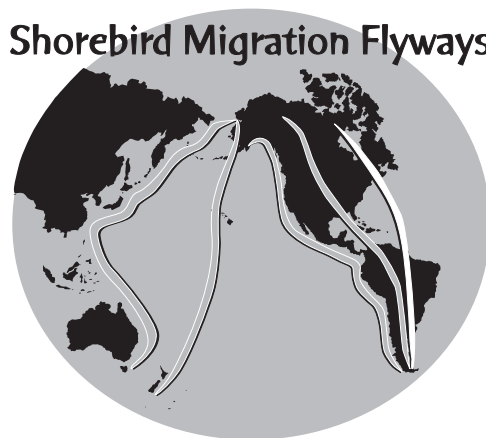
- This is an important area for breeding American Oystercatchers, Snowy Plovers, Wilson's Plovers, and Piping Plovers.
- Over five million shorebirds use the 50,000 acres of publicly managed wetlands in this region.

### Shorebirds Most Characteristic of the American Atlantic Flyway

With the exception of the Piping Plover, shorebirds on this list are common and can be observed by students. The list is also a “snapshot” of species diversity in the flyway, providing a variety of natural history stories to learn about. Shorebirds that are rare on this flyway are noted with an asterisk. Consider having your students research these shorebirds using this guide, the library, and the World Wide Web.

*Semipalmated Sandpiper*  
*Purple Sandpiper*  
*Red Knot*  
*Willet*  
*Ruddy Turnstone*  
*Sanderling*  
*Greater and Lesser Yellowlegs*  
*American Oystercatcher*  
*Piping Plover\**  
*Least Sandpiper*

## Shorebird Migration Flyways



# Western Hemisphere Shorebird Reserve Network Sites on the American Atlantic Flyway\*

Refer to the Shorebirds Across the Americas poster included in your educator's binder or request a copy by sending an e-mail to [sssp@fws.gov](mailto:sssp@fws.gov).

## Hemispheric Sites

A minimum of 500,000 shorebirds use these sites each year.

United States  
Delaware Bay, Delaware, New Jersey,  
Maryland

Canada  
Bay of Fundy, Nova Scotia

Suriname  
Bigi Pan  
Coppename  
Wia Wia

Brazil  
Reentrancias/Maranhenses/  
Maranhao

Argentina  
Laguna Mar Chiquita  
Tierra del Fuego

## International Sites

A minimum of 100,000 shorebirds use these sites each year.

United States  
Barrier Islands, Maryland and Virginia  
Cape Romain, South Carolina

Brazil  
Logoa de Peixe, Brazil  
Argentina  
Bahía de San Antonia Oeste

## Regional Sites

A minimum of 20,000 shorebirds use these sites each year.

United States  
Altamaha River Delta, Georgia  
Edwin B. Forsythe, New Jersey  
Monomoy Islands, Massachusetts

Peru  
Paracas

\* For a detailed description of these sites, please go to the WHSRN Web site at <http://www.manomet.org/WHSRN/> and click on the Shorebird Reserve Network button.



# American Central Flyway

## Route Description

The American Central Flyway covers a wide band of land that extends from the eastern edge of the Rocky Mountains, including the Midwest, the Mississippi River, and the Gulf of Mexico, to the western edge of the Appalachian Mountains.

There are four geographic regions within the Central Flyway: the Northern Plains and Prairie Potholes, the Central Plains and Playa Lakes, the Upper Mississippi Valley and Great Lakes, and the Lower Mississippi and Western Gulf Coast.

A map of the geographic areas is in the U.S. Shorebird Conservation Plan located at <http://shorebirdplan.fws.gov>.

## Facts About the Flyway

### Northern Plains/ Prairie Pothole Region

- This is one of the major migration routes of Western Hemisphere shorebirds. Thirteen species also breed here.
- It encompasses prairies, potholes, and badlands in all or part of seven states.
- There are constantly changing habitat conditions. Shorebirds here are opportunistic.
- Habitat in this area includes rolling hills of prairie grasses, temporary and semi-permanent wetlands, and agricultural fields.

### Central Plains and Playa Lakes

- Three stopover sites in this region are part of WHRSN.
- This region supports a large percentage of the hemisphere's long-distance migrants, including the Stilt and White-rumped Sandpipers.

- Mosaics of temporary wetlands, like playa lakes, are extremely important to shorebirds but are unpredictable in their locations due to weather conditions and hydrological changes from human activities.
- Important habitats in this region include temporary wetlands, agricultural fields, short-grass prairies, freshwater marshes, and rivers.

### Upper Mississippi Valley and the Great Lakes

- The region experiences dynamic climate changes and unpredictable habitat conditions.
- Thirty-two species of shorebirds occur in this region.
- Habitats in this region include managed and natural wetlands, river floodplains, lake shoreline, sand and gravel bars, reservoirs, and flooded agricultural fields.

### Lower Mississippi and Western Gulf Coast

- A rich variety of shorebird habitats provides important areas for shorebirds in the United States.
- Five highly imperiled shorebirds—the Snowy Plover, Piping Plover, Mountain Plover, Eskimo Curlew, and Long-billed Curlew, have historically been or are presently found along the Gulf Coast.

### Shorebirds Most Characteristic of the American Central Flyway

With the exception of the Buff-breasted Sandpiper, shorebirds on this list are common and are readily observed by students. The list is also a “snapshot” of species diversity in the flyway, providing a variety of natural history stories to learn about. Shorebirds that are rare on this flyway are noted with an asterisk. Consider having your students research these shorebirds using this guide, the library, and the World Wide Web.

*White-rumped Sandpiper*  
*American Golden-Plover*  
*Long-billed Dowitcher*  
*American Avocet*  
*Upland Sandpiper*  
*Hudsonian Godwit*  
*Lesser Yellowlegs*  
*Buff-breasted Sandpiper\**  
*Pectoral Sandpiper*  
*Spotted Sandpiper*

## Shorebird Migration Flyways



# The Western Hemisphere Shorebird Reserve Network Sites on the American Central Flyway\*

Refer to the Shorebirds Across the Americas poster included in your educator's binder or request a copy by sending an e-mail to [sssp@fws.gov](mailto:sssp@fws.gov).

## Hemispheric Sites

A minimum of 500,000 shorebirds use these sites each year.

### *United States*

Great Salt Lake, Utah  
Cheyenne Bottoms, Kansas

### *Canada*

Chaplin/Old Wives/Reed Lakes,  
Saskatchewan

### *Brazil*

Reentrancias/  
Maranhenses/Maranhao

### *Argentina*

Laguna Mar Chiquita  
Tierra del Fuego

## International Sites

A minimum of 100,000 shorebirds use these sites each year.

### *United States*

Bolivar Flats, Texas  
Brazoria NWR, Texas  
Laguna Madre (bi-national), Texas and  
Mexico

### *Mexico*

Laguna Madre (bi-national),  
Texas and Mexico

### *Canada*

Quill Lakes, Saskatchewan

## Regional Sites

A minimum of 20,000 shorebirds use these sites each year.

### *United States*

Benton Lake NWR, Montana  
Chautauqua NWR, Illinois  
J. Clark Slayer NWR, North Dakota  
Long Lake NWR, North Dakota  
Quivira NWR, Kansas  
Salt Plains NWR, Oklahoma  
Swan Lake NWR, Illinois

### *Canada*

Beaverhill Lake,  
Saskatchewan  
Last Mountain Lake,  
Saskatchewan

### *Mexico*

Playa Ceuta

### *Peru*

Paracas

\*For a detailed description of these sites, please go to the WHSRN Web site at <http://www.manomet.org/WHSRN/> and click on the Shorebird Reserve Network button.



# East Asian-Australasian Flyway

## Route Description

The East Asian-Australasian Flyway (EAA) stretches nearly pole to pole. Birds breed on the tundra inside the Arctic Circle in Alaska and Russia. Countries with important wintering and stopover sites include: Australia, New Zealand, Japan, China, Taiwan, the Koreas, Singapore, Malaysia, Indonesia, Philippines, Mongolia, Bangladesh, Vietnam, India, Papua New Guinea, Myanmar, and Thailand.

## Facts About the Flyway

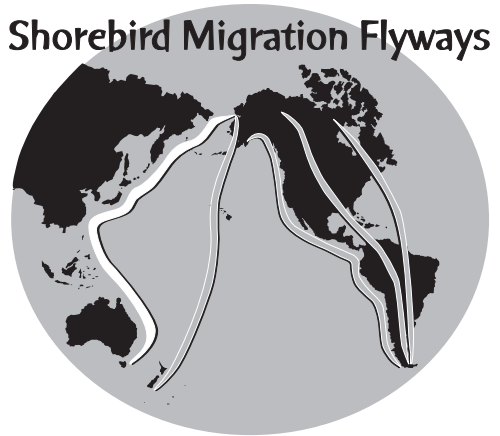
- The EAA Shorebird Site Network identifies some of the flyway's most important sites for shorebirds. As of July 2002, this network contained 31 sites in ten countries. Wildlife scientists estimate that about 400 sites in the EAA are critical to shorebirds.
- Wildlife scientists estimate at least four million migratory shorebirds use this flyway. Australia alone hosts at least two million shorebirds at some time during the year. More than 60 species of migratory shorebirds use the flyway.
- Wildlife scientists are concerned about the survival of 11 species of migratory shorebirds in this flyway. Some of the flyway's most threatened shorebirds include the Spoon-billed Sandpiper, Asian Painted Snipe, and Spotted Greenshank.
- Dunlins, Great Knots, and Bar-tailed Godwits are the most common birds in the flyway. The least common species are the Spoon-billed Sandpiper, Asian-painted Snipe, and Spotted Greenshank. Other shorebirds which occur in this flyway include the Red-necked Stint, Little and Long-toed Stints; Curlew, Marsh, Terek, and Broad-billed Sandpipers; Black-bellied, Kentish (snowy), Little-ringed and Mongolian Plovers; Eurasian and Far Eastern Curlews; Asian Dowitchers; Red Knots; Pied Avocets; Spotted Redshanks; Black-winged and Banded Stilts; Whimbrels; Pied and Sooty Oystercatchers; and Pheasant-tailed Jacanas.
- The greatest threats to shorebirds in the flyway come from loss and degradation of wetlands from agriculture, pollution, overfishing, logging, and soil erosion.
- Some of the most important shorebird sites along the flyway include China's Yellow Sea; the Yalu Jiang National Nature Reserve; Manko, on the island of Okinawa in Japan; and the Moroshechnaya River estuary in Russia.

## Shorebirds Most Characteristic of the East Asian-Australasian Flyway

Most of the shorebirds on this list are common and can be observed by students. The list is also a "snapshot" of species diversity in the flyway, providing a variety of natural history stories to learn about. Shorebirds that are rare on this flyway are noted with an asterisk. Consider having your students research these shorebirds using this guide, the library, and the World Wide Web.

*Little Curlew*  
*Bar-tailed Godwit*  
*Great Knot*  
*Gray-tailed Tattler*  
*Red-necked Stint*  
*Sharp-tailed Sandpiper*  
*Spoon-billed Sandpiper*  
*Spotted Greenshank*

## Shorebird Migration Flyways



# Central Pacific Flyway

## Route Description

The Central Pacific Flyway includes New Zealand and hundreds of islands spread over thousands of miles in the Pacific Ocean. Some of the island groups include Hawaii, Guam and the Northern Mariana Islands, Phoenix Islands, Line Islands, and American Samoa. Most of the birds that use this flyway for migration or nonbreeding habitat fly to the Arctic or sub Arctic regions of North America and Asia to breed.

## Facts About the Flyway

- The Hawaiian and Pacific/Remote Islands National Wildlife Refuges (NWR) play an important role in shorebird migration in the Central Pacific Flyway. Some of the refuges in this complex include Midway Atoll NWR, Kealia Pond NWR on Maui, James Campbell NWR, and Hanalei NWR on Kaua'i Island. Palmyra Atoll is another part of the Pacific/Remote Islands NWR Complex. This is a group of about 50 islands near the equator in the Line Islands.
- Guam and islands off the coasts of Micronesia and Tahiti are also important for shorebirds.
- This flyway is crucial for the Bristle-thighed Curlew, Pacific Golden-Plover, and Wandering Tattler which spend the nonbreeding season on the islands within this flyway.
- Shorebird species in this flyway perform incredible migratory journeys. Bar-tailed Godwits appear to make a nonstop 6500-mile flight Alaska to New Zealand in the fall. Bristle-thighed Curlews and Pacific Golden Plovers may fly over 3000 miles non-stop during both their fall and spring migrations.
- Hawaii is home to an endangered non-migratory shorebird, the Hawaiian Stilt. Native Hawaiians call this bird the 'Ae'o.
- Threats in this flyway include nonnative plants and animals, land development, wetland drainage, water pollution, and disturbance.
- Some species of migratory shorebirds in this flyway are also threatened by how little we know about them. For example, we could lose important habitats before we even know they are important.

## Shorebirds Most Characteristic of the Central Pacific Flyway

With the exception of the Bristle-thighed Curlew, the shorebirds on this list are common and can be observed by students. The list is also a "snapshot" of species diversity in the flyway, providing a variety of natural history stories to learn about. Shorebirds that are rare on this flyway are noted with an asterisk. Consider having your students research these shorebirds using this guide, the library, and the World Wide Web.

*Pacific Golden-Plover*  
*Wandering Tattler*  
*Bristle-thighed Curlew*  
*Ruddy Turnstone*

## Shorebird Migration Flyways

