

Grays Harbor National Wildlife Refuge
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Olympia, WA 98516
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http://www.fws.gov/refuge/grays_harbor

U.S. Fish and Wildlife Service
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This brochure is available in
alternative formats upon request.



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*All photos USFWS
unless otherwise noted.*

*Cover Photo:
Western sandpiper
in breeding plumage.*
©Bill Schmoker

U.S. Fish & Wildlife Service

Grays Harbor

National Wildlife Refuge



*The restlessness of
shorebirds, their kinship
with the distance and
swift seasons, the wistful
signal of their voices*

*down the long coastlines
of the world make them,
for me, the most affecting
of wild creatures.*

Peter Matthiessen, 1973



Mixed shorebird flock during migration.

About Grays Harbor NWR

Grays Harbor estuary on Washington's coast is one of six major estuary systems on the entire Pacific Coast. Here the freshwater of the Chehalis, Humptulips, Hoquiam, Elk, and Johns Rivers combine with the salt water of the Pacific Ocean. The estuary's 94 square miles of mudflats, saltmarshes, and open water provide critical habitat for a variety of wildlife and fish including up to a million shorebirds during spring migration. The estuary is located in the Chehalis River Watershed, which is the second largest watershed in Washington.



Mudflats at Grays Harbor NWR

Grays Harbor National Wildlife Refuge (NWR), located along the northern edge of Grays Harbor estuary, occupies only two percent of the intertidal habitat, but hosts up to 50 percent of the migrating shorebirds in spring.



This "blue goose" is the symbol of the Refuge System.



Native sweetgrass bordering the mudflats around the Refuge

Below: Dunlin in breeding plumage
©Jan Wieser

To protect this crucial shorebird habitat, Congress authorized the establishment of Grays Harbor National Wildlife Refuge in 1988. Managed by the U.S. Fish and Wildlife Service as part of the National Wildlife Refuge System, Grays Harbor NWR encompasses about 1500 acres of intertidal mudflats, salt marsh, and uplands including what is known as Bowerman Basin.

The unique conditions at the Refuge make it a focal area for shorebirds during migration. The mudflats on the Refuge are the last in Grays Harbor to be flooded at high

tide and the first areas to be exposed as the tide recedes. Shorebirds take advantage of the available mudflats as long as possible in order to obtain a constant supply of food needed for migration. They peck and probe in the mud almost continuously. During high tide, shorebirds rest on high salt marsh or islands above high water. As the tide recedes, the birds follow the water, spreading out over vast areas of mudflats as they continue to feed.



The Shorebird Migration Story

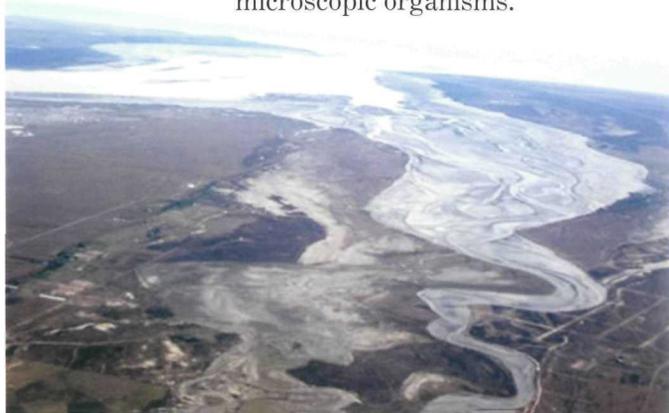


- Breeding Grounds
- Shorebird Migration Routes
- Non-breeding Areas

Shorebirds are among the world's greatest migrants. Some birds travel over 15,000 miles round trip from their southerly non-breeding areas to their breeding grounds in the Arctic. While travelling north in the spring, shorebirds need to stop, rest, and fuel up at stopover areas, in order to continue their long distance journey. They are looking for mudflats that are teeming with abundant food like worms, tiny shrimp (arthropods) and other microscopic organisms.

Above: Copper River Delta, southeast Alaska

Below: Estuario del Río Gallegos, Santa Cruz, Argentina



From late April to early May, hundreds of thousands of shorebirds stop to rest and feed on the vast mudflats in Grays Harbor. After a brief stay, the birds move north along the coast of British Columbia and reach the Copper River Delta in southeast Alaska. Then it's on to their breeding grounds where long days and abundant food resources provide an ideal place to nest and raise their young.

Fall migration begins in July, when shorebirds begin to arrive in Grays Harbor. Shorebirds leave their breeding grounds at different times so fall migration is less concentrated than spring migration and lasts through September. While most shorebirds continue moving south, thousands of shorebirds, primarily dunlin, will winter along the Washington coast.

About two dozen species of shorebirds use the Refuge during spring and fall. The five most abundant species are western sandpipers, dunlin, short-billed and long-billed dowitchers, and semipalmated plover. Other shorebirds include black-bellied plover, red knot, and least sandpiper. Western sandpipers and dunlin compose 80 percent of the shorebirds present in the spring.



Habitats of the Refuge

Refuge habitats are important for a variety of wildlife. All of these habitats can be viewed from the Sandpiper Trail.

Estuary

Estuaries, places where salt and freshwater mix, are some of the most biologically productive ecosystems on the planet. These tidally driven areas of transition between land and sea are home to a tremendous variety of plants and animals, are rich in nutrients, and provide the basis for the food chain. The whole of Grays Harbor is an estuary.

Open Salt Water

Open water provides an area with abundant food resources for western grebes, double-crested cormorants, common loons, and Caspian terns. Black brant feed on the eel grass beds and ducks feed at the waterline. Harbor seals hunt for fall Chinook and chum salmon.



Gammarid amphipod
male
(*Corophium salmonis*)

Saltmarsh

Salt tolerant plants such as tufted hairgrass, Lyngby's sedge, Baltic rush, and pickleweed surround the mudflat and provide cover and a resting place for birds during high tide. Saltmarsh plants also contribute small plant particles that fish and invertebrates consume. Plants also provide habitat for invertebrates and crustaceans. Ducks and geese nest and feed among grasses and sedges on the saltmarsh. Red-tailed hawks, merlin, peregrine falcons, and northern harriers hunt prey over saltmarshes.

Mudflats

Twice a day, as the tide recedes, vast expanses of mud are exposed. Although it may not look like it, mudflats are a banquet table for birds. Within a square meter of mud, there may be up to 50,000 individual invertebrates! More than 90 percent of these tiny animals occur within the top five centimeters of mud. This abundant food resource enables shorebirds to gain up to 30 percent of their body weight in fat prior to resuming their travels. The tide refreshes mudflats with nutrients.



Estuarine amphipod
(*Eohaustorius
estuarinus*)



Gammarid amphipod
female
(*Corophium salmonis*)

Deciduous Woodlands and Willow Thickets



Mudflats and marshes are bordered by willows, marsh grasses, and deciduous woodlands of alder and cottonwood. These are ideal habitats for feeding and nesting migratory songbirds. Resident birds such as common yellowthroat, marsh wrens, and black-capped chickadees can be heard in the willow thickets. Finches, sparrows, and swallows can be observed during different seasons. Low flowering shrubs provide food and nesting areas for hummingbirds and warblers. Red-tailed hawks nest in the alders. Woodland shrubs such as salal, thimbleberry, salmonberry, blackcap, and blackberry produce fruit that is eaten by robins, cedar waxwings, deer, coyote, and small mammals.

Above left: Yellow-rumped warbler

Left: Cedar waxwing. ©Jan Wieser

Plants of the Refuge

Tufted Hairgrass *Deschampsia cespitosa*



This native grass grows in dense tufts or clumps in many different environments as long as sufficient moisture is available, from tidal marshes and beaches to alpine meadows. The foliage is greenish through the summer and turns golden in the fall. Its tall, lacy seed heads can remain into winter. The photograph to the left shows a typical mudflat clump of pickleweed (on the bottom), seaside arrowgrass (middle), and tufted hairgrass.

Lyngby's Sedge *Carex lyngbyei*



Lyngby's is one of the most common sedges on the Pacific coast and can be found growing densely in estuaries and on mudflats from California to Alaska. In summer, seeds form in plump, tightly packed spikes. The entire plant is an ideal food for migrating geese and other fowl as it is very high in protein.

Pickleweed *Salicornia virginica*



Pickleweed is a small succulent adapted to high salt conditions in mudflats and salt marshes. The plant filters the salt it absorbs from the environment and stores it in the cells of outer leaves, which turn reddish and die as the salinity builds over time. Pickleweed provides cover and nest material for small animals and food for some migrating waterfowl. Humans also enjoy its crunchy texture and salty flavor.

Salmonberry *Rubus spectabilis*



The golden to ruby colored salmonberries are usually the first to ripen in summertime and have been a favorite of Pacific Northwest peoples for centuries. The plant itself resembles other thorny berries in the area with deeply serrated green leaflets arranged in groups of three. The two lateral leaflets are said to resemble the two wings of a butterfly.

Red Elderberry *Sambucus racemosa*



This native shrub is adapted to the moist soils around the waterways of the Pacific Northwest. It can grow to the size of a small tree and sports clusters of white flowers in spring and bright red berries in summer. In the past the berries were an important food for coastal peoples. The plants also provide shelter and forage for songbirds and other animals.

Top photos display birds in breeding plumage. Bottom photos show birds in non-breeding plumage.

Most shorebirds can be identified by where they forage on the mudflat and the feeding methods they use. Coloration and physical shape also help you identify the species.

Western Sandpiper

(6.5 inches)

Western sandpipers are the most abundant shorebird seen during spring migration. Its black legs, longish, slightly drooping bill and its rufous back and head markings distinguish the Western from other sandpipers. They feed on the mudflats and along the water's edge constantly walking and probing for tiny clams, worms, and sand fleas. They winter along the coast from California to Peru.

Least Sandpiper (6 inches)

This is the world's smallest shorebird weighing only 0.7 ounces. The least sandpiper has an overall darker appearance and a brown breast. It's yellow legs can sometimes help in identifying this bird. Least sandpipers forage at the upper edges of mudflats and in the low marsh vegetation. They feed by picking and probing in dry and wet mud for small invertebrates. Least sandpipers migrate in small numbers and breed from Northern British Columbia to Alaska.



All shorebird photos on pages 12-14 ©Stuart MacKay unless otherwise noted.



Short-billed dowitcher



Long-billed dowitcher



Short-billed Dowitcher

(11 inches)

Long-billed Dowitcher

(11.5 inches)

These two dowitchers are difficult to tell apart even by the experts! They feed in slightly deeper water using an up and down head motion like a sewing machine. Dowitchers on the west coast winter from California to Peru. In early March, they begin migrating northward in small groups. During the flight north, they fly 2,500 miles at a time without stopping to rest and feed.

Semipalmated Plover

(7.25 inches)

These small plovers have a very short black bill and a conspicuous black breast band. They stand upright and use their large eyes to see prey move, they then run to pluck the prey up, stop, and begin looking for prey again. In this way they hunt for mollusks, crustaceans, and marine worms. They typically winter in South America and the southern U.S.

Dunlin (8.5 inches)

In spring, a conspicuous black belly patch distinguishes this bird. Using swift probing movements, they feed near the water's edge for tiny clams, worms, and shrimp-like animals. Dunlins winter in the warm climates of the Northern Hemisphere and are one of the few shorebirds that winter in Grays Harbor.



Black-bellied Plover

(11.5 inches)

In breeding season this large, plump plover has distinct black and white plumage. They use their large eyes to search for food close to the water's edge, where they feed on earthworms, grubs, beetles, and large marine worms. Black-bellied plovers spend the winter in grasslands and beaches along the coast from British Columbia to Chile. Large numbers winter in Grays Harbor.



Red Knot (10.5 inches)

Red knots are medium sized chunky shorebirds with short straight bills. They feed in tight groups on the open mudflats by probing the mud for mollusks. Red knots breed in the high arctic tundra near the North Pole. Although much remains a mystery about their migration, some birds winter in southern South America and travel 8,000 miles to their breeding grounds.



Marsh Wren

This small, stocky brown wren is a challenge to spot in the reeds and marshy plants it favors for nesting and feeding. Listen for their staccato chirps and the distinctive trilling, gurgling song. Some populations of marsh wren migrate south, but those in Western Washington will generally stay near their nesting grounds throughout the winter.

©Dennis Ellison



Peregrine Falcon

Thought to be the fastest bird in the world, Peregrine falcons dive after prey at speeds of up to 240 miles per hour. They hunt over dense concentrations of shorebirds, ducks, and seabirds and will follow shorebirds as they migrate north. Watch for them as they swiftly enter the mudflat area and cause shorebirds to raise up in large, tight flocks to try and out maneuver the peregrine.

David Ledig/USFWS



Common Yellowthroat

The male common yellowthroat is identified by a striking black mask and white stripe above its eye. The female lacks this distinctive feature but displays the same bright yellow throat for which these small warblers are named. Yellowthroats are common in dense, brushy vegetation and grasses found near freshwater marshes where insects are abundant. Listen for their musical song, "whichity-whichity-whichity" in summer.

©Jan Wieser



Caspian Tern

The gull-like Caspian tern is one of the largest terns in North America with a black cap extending below its eyes and a bright red beak. Feeding on small fish, the birds will fly 20-50 feet above the water and hover momentarily before diving beneath the waves to make a catch.

©Dennis Ellison

Refuge Management

Active management is required to maintain quality habitats for the benefit of wildlife. The Refuge works with many partners on projects such as shorebird monitoring and control of invasive species.

Wildlife Surveys and Studies

Wildlife surveys and studies support sound Refuge management. Shorebird surveys in Grays Harbor and other Flyway locations indicate

some populations may be declining. Studies are needed to help understand the causes and identify solutions. Estuaries are also important places to monitor climate change because of their sensitivity to sea level rise.

Left: An AmeriCorps volunteer listens for frequencies on radio-tagged shorebirds.

Below: Using a Global Positioning System(GPS), a volunteer measures the growth of a large stand of Phragmites off the Sandpiper Trail.



Three western sandpipers prior to banding

Scientists studying shorebird migration have found it can take birds from two to ten days to migrate from wintering grounds to breeding grounds. Most of the world's population of western sandpipers move through Grays Harbor estuary, some spending two to five days.

Invasive Plants

Invasive plants are a serious threat to wildlife and plant communities on many National Wildlife Refuges.

At Grays Harbor NWR, the mild climate allows a number of non-native plants to thrive. These plants become invasive when they disrupt native plant communities. The Refuge uses several techniques to control invasive plants.



A patch of Spartina densiflora growing in the saltmarsh

Non-native Spartina cordgrass has spread throughout the Grays Harbor estuary. This plant grows quickly in salt marshes and mudflats threatening native plant and invertebrate communities and shorebird feeding habitat. The Refuge works with State agencies and others to survey and control Spartina on the estuary and coastline.

Phragmites or common reed is a bamboo-like, invasive plant that has invaded parts of Grays Harbor estuary and over-taken large portions of the low growing salt marsh community. Because Phragmites grows so tall and dense it prevents shorebirds, waterbirds, and waterfowl from utilizing these habitats.



Wildlife Viewing

Wildlife Viewing Areas

Wildlife may be seen from parking areas near the airport, from openings along the blacktop road and along the Sandpiper Trail. The shrubs and woodlands along the road and trail also provide opportunities to see wildlife.

The Port of Grays Harbor makes wildlife viewing possible by providing access to the Sandpiper Trail. Refuge volunteers and Grays Harbor Audubon Society assist with a variety of wildlife viewing activities.



Visitors on the Sandpiper Trail during shorebird migration

Trails



Visitors on the Sandpiper Trail

The Sandpiper Trail boardwalk leads visitors to the tip of Bowerman Peninsula. To access the Sandpiper Trail, park at the Refuge Kiosk parking area, walk through the gate to the west, and continue along the blacktop road.

The Sandpiper Trail begins at the end of the blacktop road. From the parking area to the tip of the peninsula is a two mile round trip. Visitors must stay on

the road and trail. Do not walk onto the airport runway or hangar area, as this is Port of Grays Harbor property. To protect habitat, stay on the trail.

Best Shorebird Viewing Times

Peak shorebird numbers occur during spring migration from late April through early May. The best viewing times are two hours either side of high tide. Highest tides cover mudflats and push shorebirds toward mudflat edges which offers the best viewing opportunities.

Fall migration begins in mid-July and shorebirds may be seen in smaller numbers through September. Dunlin and black-bellied plovers winter along the coast.



Canada and White-fronted geese on the saltmarsh

Environmental Education

Local students look for birds during a field trip.



The Refuge provides assistance to teachers through classroom presentations and teacher training. "An Educator's Guide to Grays Harbor NWR," with field trip planning, lessons, and background information is also available.

Teachers may receive assistance with Refuge field trips and the Grays Harbor Shorebird Festival Poster Contest. For education program information, contact the Education Coordinator at 360/753 9467.



Refuge volunteers remove invasive plants from the saltmarsh.

Volunteers



Volunteers assist with a variety of projects and are critical to helping the Refuge fulfill its mission. Volunteer opportunities include assisting with special events, trail roving, outreach and maintenance. For more information, contact the Volunteer Coordinator at 360/753 9467.

Grays Harbor Shorebird Festival

Celebrating the Spring Migration of Shorebirds in Grays Harbor County



Wooden shorebirds painted by kids at the Shorebird Festival's Nature Fun Fair.

Below: Field trip participants head out for a day of bird watching.

For many years, people have flocked to Grays Harbor, in late April to witness the shorebird migration spectacle. Grays Harbor Audubon Society, Grays Harbor NWR, the City of Hoquiam and a host of local sponsors work together to produce the annual Shorebird Festival. This event provides a chance for people from near and far to learn more about shorebirds and this unique area.



Festival events include field trips, lectures, workshops, a bird's market place, a nature fun fair, a banquet, an auction, guided walks, and a community day. Proceeds from the Festival support Festival events and programs at the Refuge.

For more information see www.shorebirdfestival.com



Globally Important Bird Area



The American Bird Conservancy has recognized Grays Harbor as a Globally Important Bird Area because of the significantly large concentration of migrating shorebirds that depend on the estuary. Audubon of Washington recognized Bowerman Basin which makes up a large portion of Grays Harbor NWR as a state Important Bird Area, noting its importance to the long-term conservation of birds.

Flock of western sandpipers and dunlin.

©Jan Wieser



Western Hemisphere Shorebird Reserve Network Site



-  Sites of Hemispheric Importance
-  Sites of International Importance
-  Sites of Regional Importance

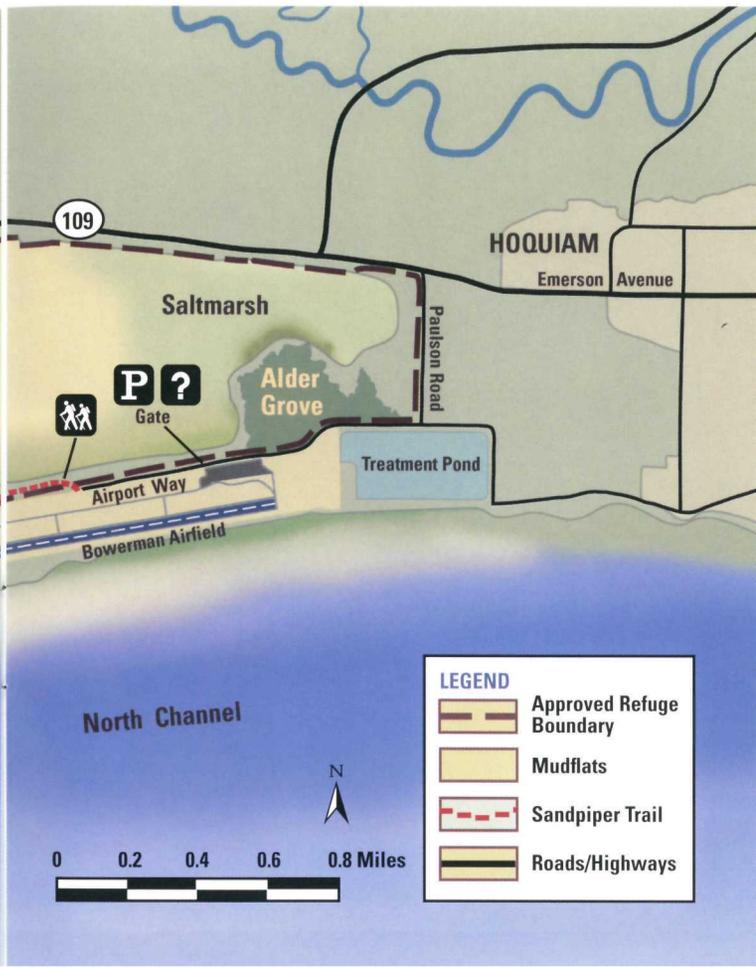
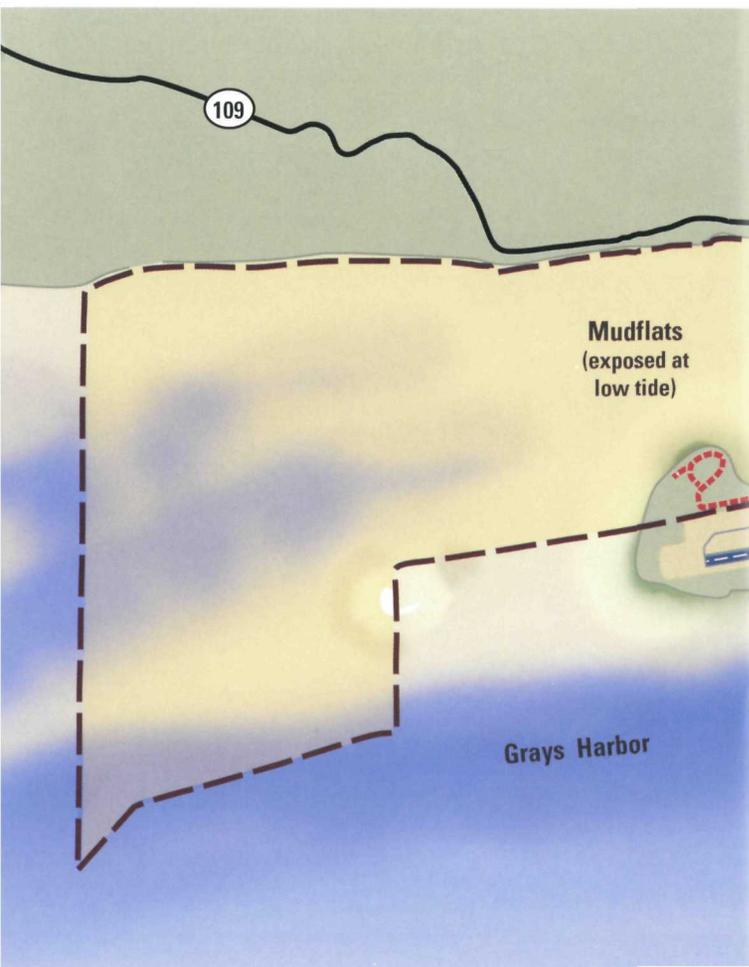
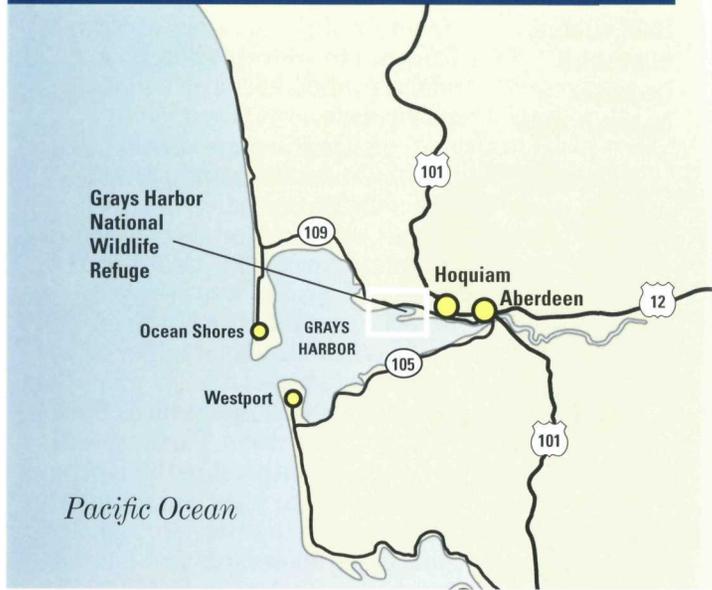
The Western Hemisphere Shorebird Reserve Network was created to address shorebird conservation needs on a global scale. It is a voluntary, non-

regulatory coalition that identifies and promotes conservation of sites crucial for shorebirds. In April 1996, Grays Harbor estuary was recognized as a WHSRN site of hemispheric importance because it hosts more than 500,000 shorebirds during migration. Partners with an interest in the Grays

Harbor estuary are committed to maintaining the Reserve as habitat critical to shorebirds and have agreed to work together to promote the Reserve as a wetland vital to the maintenance of the hemisphere's biological diversity.

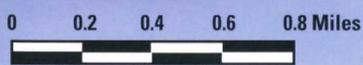


Enjoying the Refuge



LEGEND

-  Approved Refuge Boundary
-  Mudflats
-  Sandpiper Trail
-  Roads/Highways



General Information

Location

From Hoquiam, head west on Hwy 109. Turn left on Paulson Road and right on Airport Way. The Refuge information kiosk and parking area are located across from the Airport Buildings, at the gate.

Hours

The Refuge is open daily, sunrise to sunset.

Parking

Limited parking is available on the right side as you approach the Refuge kiosk. Please park diagonally to minimize space. Do not park in Cafe only parking area.

Prohibited Activities

Walking pets, riding bikes, jogging, collecting, fishing, hunting and boating (including kayaking) are not allowed on the Refuge. The restrictions reduce wildlife disturbance and improve your wildlife viewing experience.

Hoquiam Area Services

Greater Grays Harbor, Inc.
360/532 1924

Grays Harbor Shorebird Festival

For information visit
www.shorebirdfestival.com

Sandpiper Trail through alder trees
©Kathryn Stevens

