

Refuge Explorer

-Adaptations Edition-



Mallards Dabbling

©Dr. Madeline Kalbach

Willapa National Wildlife Refuge

Adaptations - Strategies for Survival

Adaptation Fast Facts

- ◆ Adaptations include behaviors and structures.
- ◆ Each organism has adaptations that help it live with the L.A.W.S. of their preferred habitat.
- ◆ Adaptations help an organism find and get food, water, shelter and space.

-An organism is a living thing; a plant, animal, bacteria or fungi.-

Behaviors include how an organism gets food, water, and shelter. What time of a day an organism is most active and seasonal movements (migration) are behavioral adaptations.

Feeding and traveling at night (nocturnal) or dawn & dusk (crepuscular) helps animals hide. Much of Willapa's wildlife is either nocturnal or crepuscular, including: bats, beaver, porcupine, flying squirrels, owls, cougar, deer and elk.

Migration (yearly or twice yearly animal movements) maximizes food and minimizes competition with other organisms. Shorebirds, such as the Red knot, travel through Willapa Bay each spring on their way to the arctic from Mexico and Central America. Some Red knots travel from the southernmost tip of South America to the arctic and back each year - a distance of 9,300miles (15,000km).

Structures are how the organism is shaped or how parts of an organism function.

Kinnickinnick grows long and flat against the ground and has leathery leaves to cope with dry, windy conditions in dunes.

Many adaptations can be seen. They can help us identify the organism. For example, birds have different shaped bills, legs and feet that help us know a Great blue heron (long legs and toes, and slender, long bill) from a Green-winged teal (short legs, webbed feet, and a wide flat bill).

It is not only fine feathers that make fine birds. -Aesop



©Suzy Whittey

Willapa National Wildlife Refuge is for the Birds!

Willapa National Wildlife Refuge was created in 1937 for birds. Today, the diverse habitats protected by the Refuge are places for over 200 bird species to rest, nest and winter. This includes over 30 species of waterfowl (ducks and geese) and over 30 species of shorebirds.

Build a Bird

Birds have adaptations from their heads to their toes! Think of a habitat from the last lesson (bay, wetlands & streams, saltmarsh, mudflats, forest, dunes and grasslands). What adaptations would a bird need to live in this habitat? Draw or create your unique bird below. Don't forget to give it a name!



Long-necked Gullwitcher

This large-mouthed bird uses its webbed feet to swim along pond edges. Its gray, brown and striped feathers help it to blend in with plants. The long-necked gullwitcher uses its long neck and flat bill to collect and eat wetland plants.

Bird Basics

To recognize your bird neighbors you must first learn what to look for. Label the parts of this bird. These words will help you start:

Nape	Chin	Crown
Breast	Shoulder	Belly
Legs	Back	Throat
Wings	Rump	Bill (Mandibles)



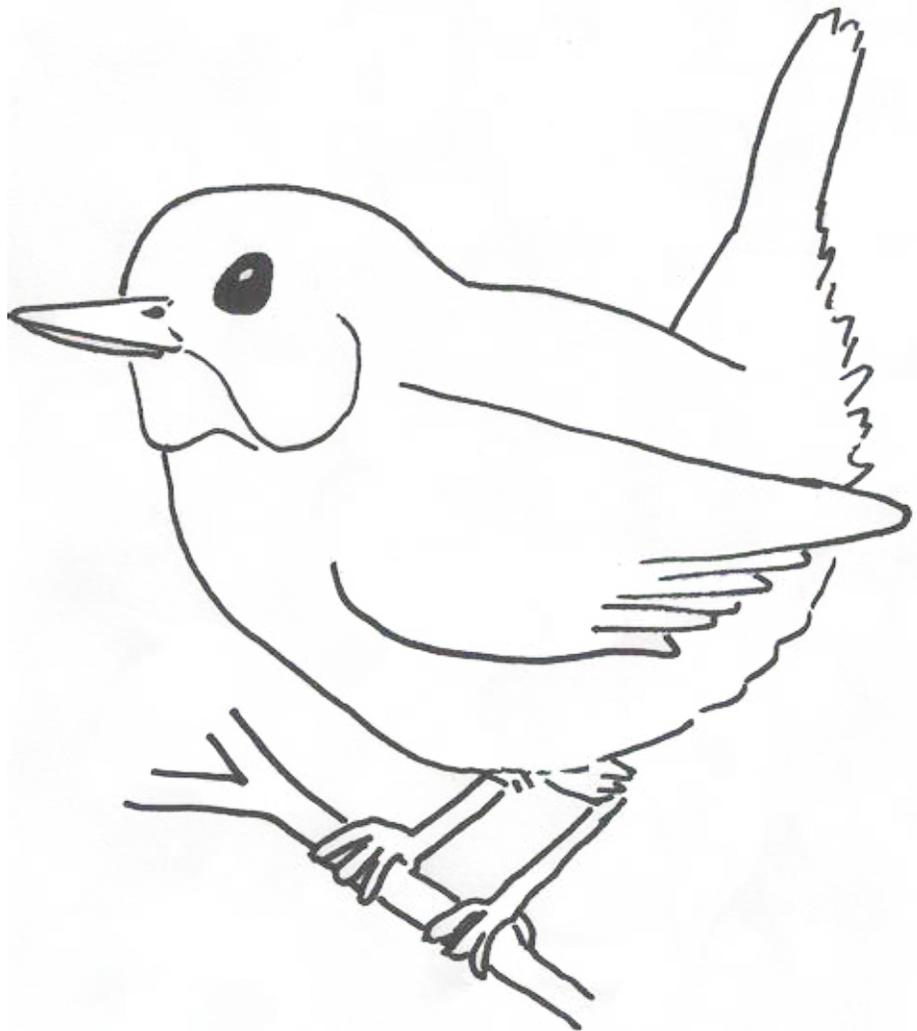
Naturalist of Note

*Roger Tory
Peterson*

1908-1996

Artist, naturalist and educator Roger Tory Peterson created the first published field guide. This field guide introduced an easy way to identify birds based on their shapes and behaviors. This guide became the first of over 30 different plant and animal guides to help people learn about the natural world.

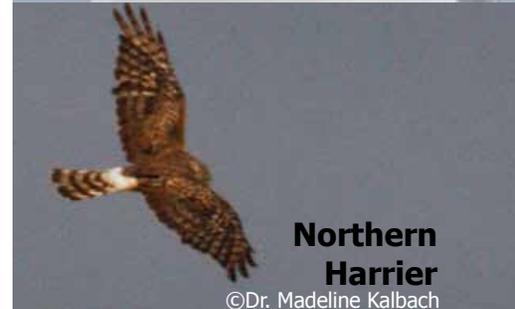
Learn more, visit the Roger Tory Peterson Institute for Natural History website at: www.rtpi.org



Field Marks

The following are clues that can help you identify a bird. Match a bird with each field mark.

- Spots or streaks on breast
- Wing bars
- Eyestripes and rings
- Rump patches
- Breast patch
- Bill spots, rings or patterns
- Tail or wing patterns
- Caps



How is the Bird Shaped?

Look at its silhouette. Is it tall and thin, or compact and plump? Long legs or short? Is its body longer than it is tall? What shape is the bill? What do the feet look like? What shape and length is the tail?

Look for Behaviors, too!

Does it climb trees, wade, swim, fly, perch? How? Does it twitch or bob? How does it feed? How does it hold its wings and tail?





Naturalist Notes

Record an observation of a bird that you saw:

Bird Name: _____

Date & Time: _____

Location: _____

Habitat (name what this bird uses): _____

Food - _____

Water - _____

Shelter - _____

Space - _____

Adaptations (describe 2):

1. _____

2. _____

Creature Feature

Western Snowy Plover

The Western snowy plover is a small shorebird with adaptations to help them live on the beach and dunes at Leadbetter Point. They lay their speckled eggs in a depression in the sand and sometimes hide their nest area with broken bits of oyster shells. The chicks are the size of cotton balls when hatched and their speckled down helps them blend into the sand.

Western snowy plovers are a threatened species. Willapa National Wildlife Refuge works to protect their beach home.

Learn more, visit:
www.fws.gov/willapa

Your
Observations
Could Make History!

You never know how your observations will be used in the future. You could be the first to observe a bird species in your area or record an unusual behavior. The first step is to start watching!

Your Observations Count!

Have fun and participate in citizen science.

Put your bird ID skills to the test and record your sightings online. Make your bird observations count!

The Great Backyard Bird Count

This worldwide count takes place during the third weekend in February. Observations from this count help scientists know more about winter birds.

Learn more at www.birdcount.org

Project FeederWatch

A winter-long survey of birds that visit feeders in North America. People, like you, count birds that they see at their feeders from November through early April. Observations are entered online. There is a fee to submit your observations.

Get your Research Kit and find out more about this project at www.birds.cornell.edu/pfw.

Christmas Bird Count

An annual tradition, the Christmas Bird Count started over 100 years ago. It is the longest-running wildlife census in the world. It helps to assess bird health. The Audubon Society and other organizations use the observations from this count to guide bird conservation efforts.

Learn more about the count, view bird photos, and discover how to participate at: birds.audubon.org/christmas-bird-count

Uncover additional ways to make your observations count: www.audubon.org/citizenscience

Protecting Birds with Art!



Junior Duck Stamp

The first Junior Duck Stamp was made in 1993. A student art contest is held each year by the U.S. Fish and Wildlife Service. Prizes are awarded at the state and national level. The winning picture in the national contest is made into the stamp. Junior Duck Stamps are sold by the U.S. Postal Service. Profits made from the sales help fund educational programs to teach young people about birds, conservation and habitats.

Be one of the 27,000 students to enter the contest this year.

Learn More: find out how to enter the contest and view previous stamp designs at: www.fws.gov/juniorduck



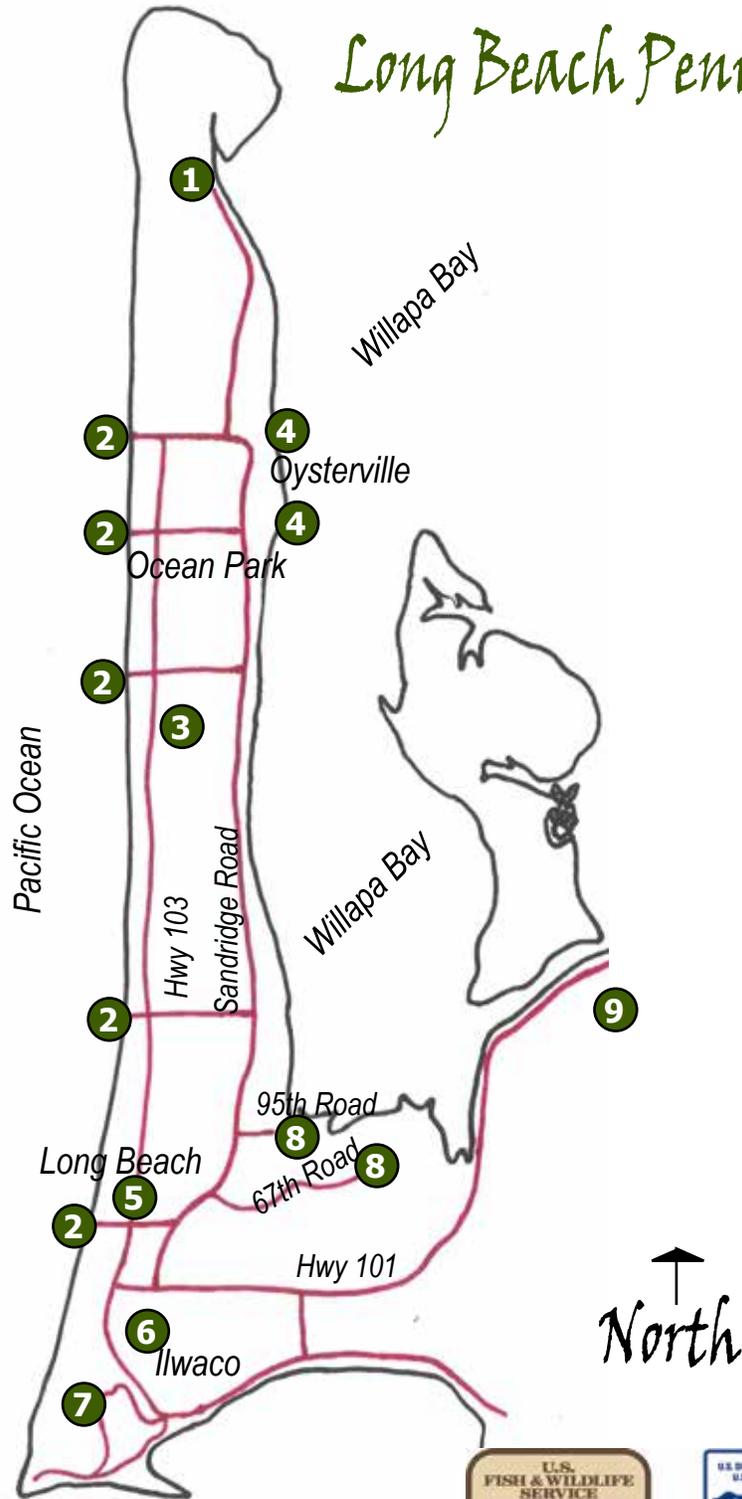
**Cedar
Waxwing**

©Rollin Bannow

- 1 Leadbetter Point***
Walk to views of Willapa Bay, mudflats, salt marsh, dunes, forest and ocean beach.
- 2 Ocean Beach Access**
Dunes and grasslands.
- 3 Loomis Lake State Park***
Trails to the dunes and beach, freshwater wetlands and lake.
- 4 Bay Access**
Views of Willapa Bay, mudflats and salt marsh.
- 5 Discovery Trail**
Walk or bike this path for views of grasslands, dunes, wetlands and forest.
- 6 Black Lake**
Trails to freshwater lake, wetlands and forest.
- 7 Beard's Hollow***
Trails to forest, freshwater wetlands and dunes.
- 8 Willapa National Wildlife Refuge - Tarlatt & Riekkola Units**
Access to grasslands, salt marsh, freshwater wetlands, Willapa Bay and wildlife viewing blind.
- 9 Willapa National Wildlife Refuge - Headquarters**
Views of the bay, salt marsh, mudflats and a trail through freshwater wetlands and forest. Located near milemarker 24 on Hwy 101.

*Discover Pass Required

Long Beach Peninsula



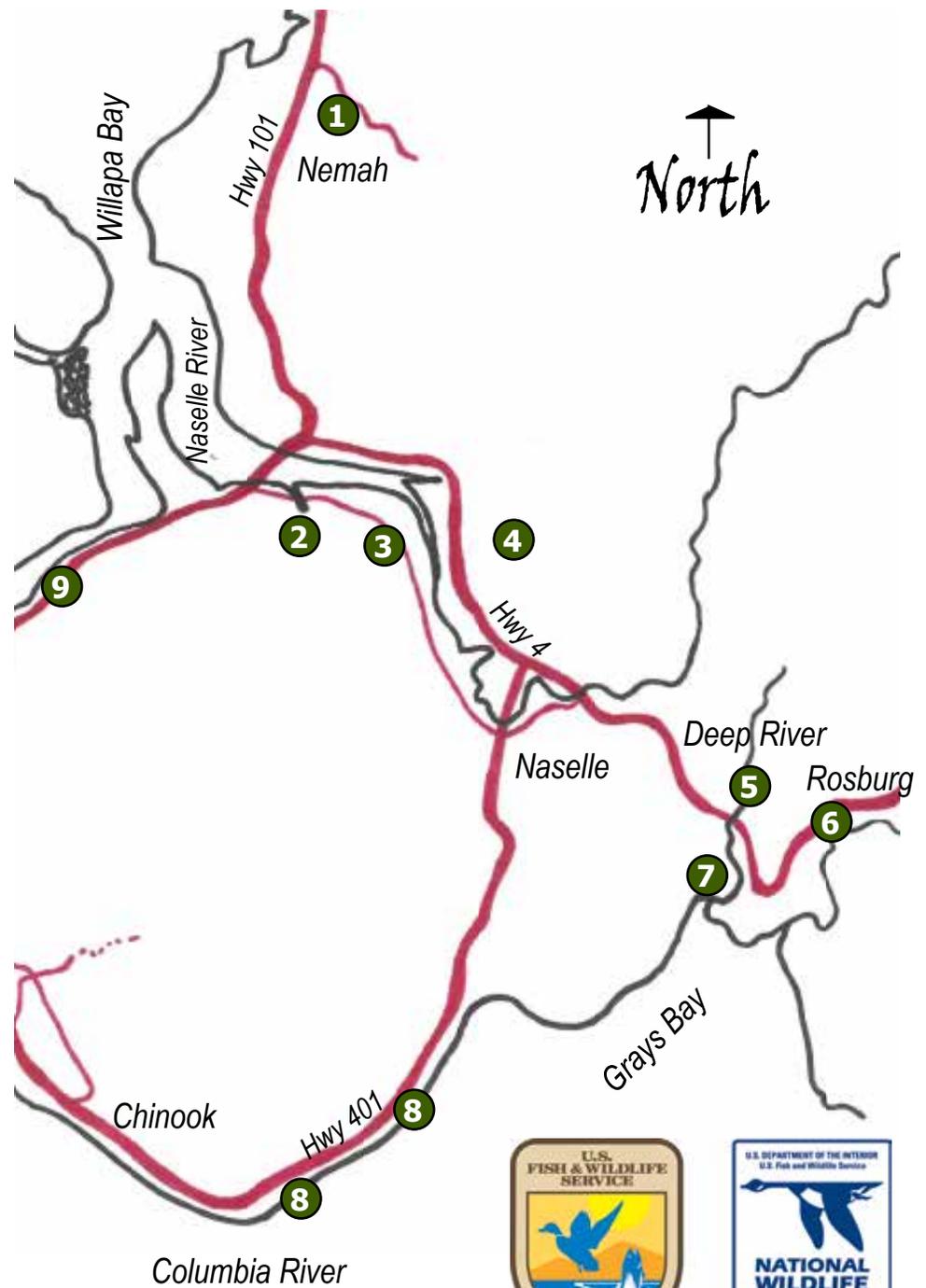
For more information visit:
www.fws.gov/willapa

Get Outside!

- Look for herons and other waterbirds in wetlands and on mudflats.
- Search for sparrows in brush piles, shrubby hedgerows and grasslands.
- Find hawks, eagles and falcons hunting fields, beaches and mudflats.

- 1 Nemah Fish Hatchery**
Access to river and forest.
- 2 Ellsworth Creek Preserve - The Nature Conservancy**
Views of estuary, salt marsh, streams, wetlands and forests.
- 3 Parpala Road**
Views of saltmarsh, river, grasslands and wetlands.
- 4 Radar Lakes - DNR**
Trails and camping with access to forest and lakes.
- 5 Deep River Road Loop**
Views of river, wetlands and forest.
- 6 Devils Elbow - Columbia Land Trust**
Wetlands and forest can be viewed near the end of Raistakka Rd.
- 7 Oneida Road**
Boat launch and views of bay, mudflats and wetlands.
- 8 Rest Area & Pullouts**
Look all directions for views of the Columbia River, forest, wetlands and ponds.
- 9 Willapa National Wildlife Refuge - Headquarters**
Views of the bay, salt marsh, mudflats and a trail through freshwater wetlands and forest. Located near milemarker 24 on Hwy 101.

Naselle - Deep River - Rosburg



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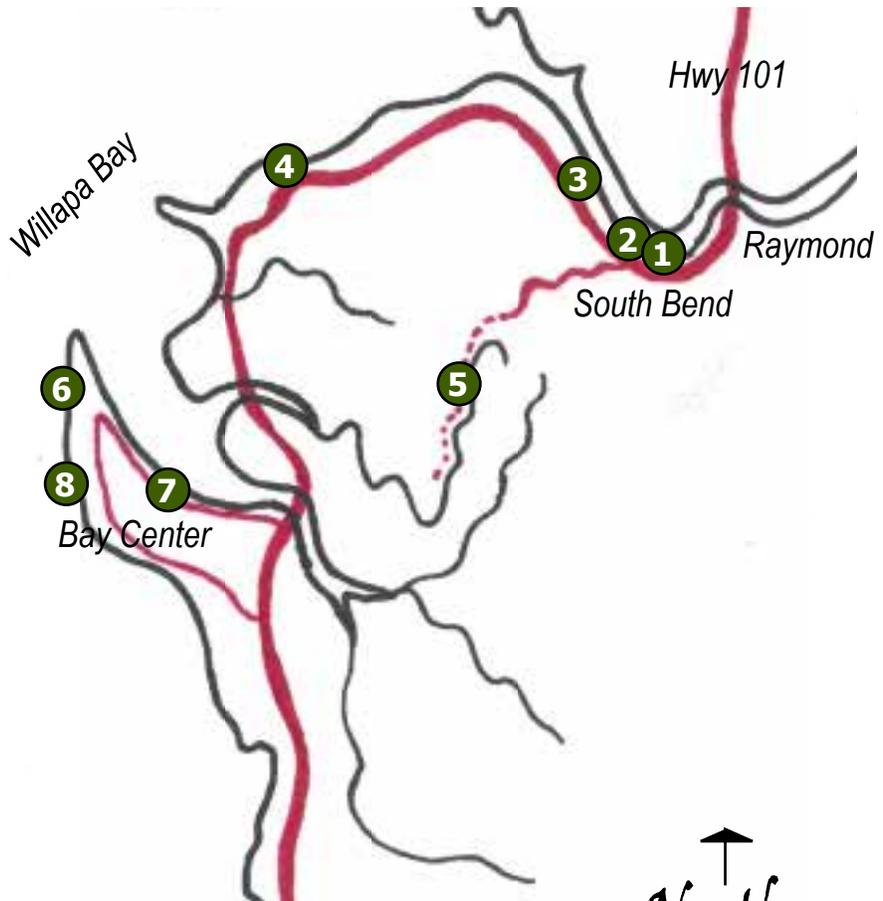
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South Bend & Bay Center

- 1 Walk the South Bend Riverfront Trail**
Views of Willapa River and grasslands.
- 2 Helen Davis Memorial Park**
Views of forest and estuary.
- 3 Pullout on Hwy 101**
Views of mudflats and forest.
- 4 Bruceport County Park**
A forested trail will take you to the beach.
- 5 South Bend Palix Road**
Access to freshwater wetlands and streams along the Niawakum River.
- 6 Bush Pioneer County Park**
Forest trails, bay overlook, marsh. Walk to Johnson Beach from here.
- 7 Bay Center Dike Road**
Views of grasslands, streams and salt marsh.
- 8 Rhodesia Beach**
Visit the bay and dunes.

Willapa National Wildlife Refuge Headquarters

Views of the bay, salt marsh, mudflats and a trail through freshwater wetlands and forest. Located near milemarker 24 on Hwy 101.



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Raymond & Willapa Valley

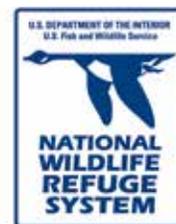
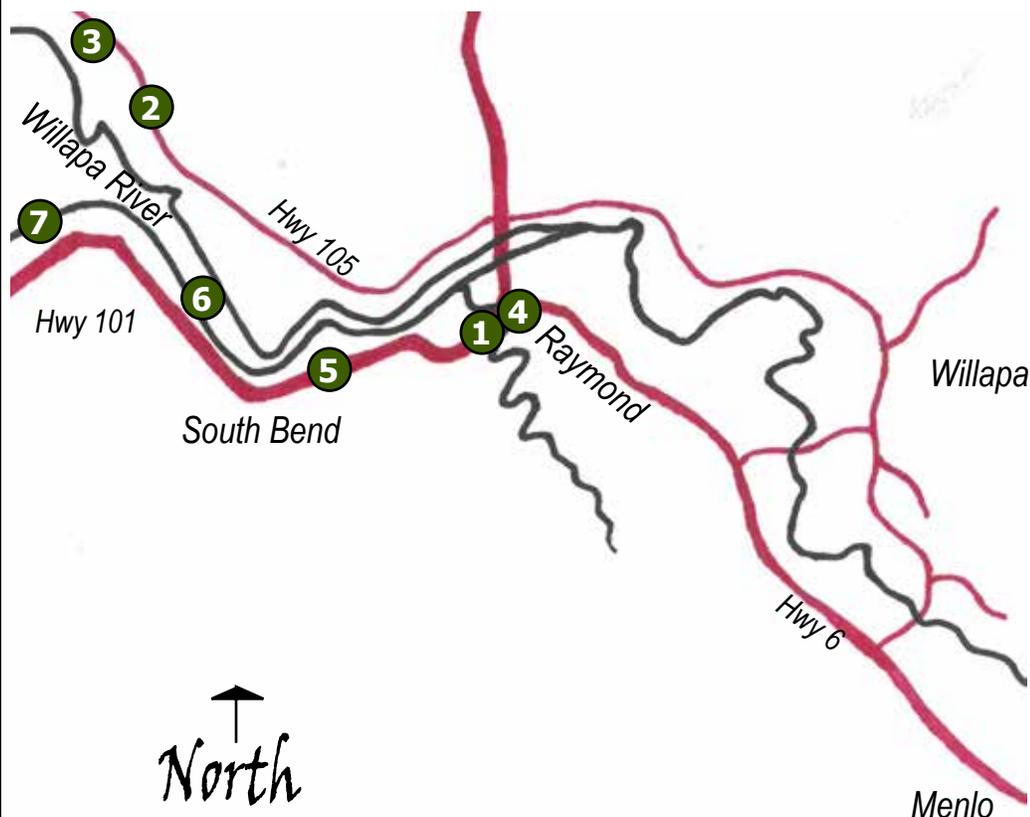
- 1 Willapa River Trail**
Walk this paved trail for views of Willapa River.
- 2 Raymond Airport**
View grasslands.
- 3 Smith Creek**
Park at the boat launch for views of salt marsh, mudflats and estuary. Walk a short trail into the forest.
- 4 Willapa Landing**
This boat launch offers a fishing pier and short nature trail with views of the river, salt marsh and mudflats.
- 5 Helen Davis Memorial Park**
Views of forest and estuary.
- 6 Pullout on Hwy 101**
This parking area has views of mudflats and forest.
- 7 Bruceport County Park**
A forested trail will take you to the beach.

Fields, Wetlands & More!

Take a walk, bike or drive anywhere and you will see a diversity of habitats.

Willapa National Wildlife Refuge - Headquarters

Views of the bay, salt marsh, mudflats and a trail through freshwater wetlands and forest. Located near milemarker 24 on Hwy 101.



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