

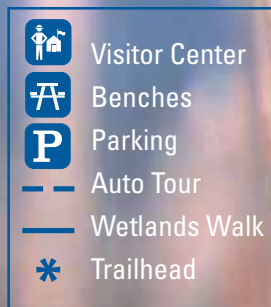
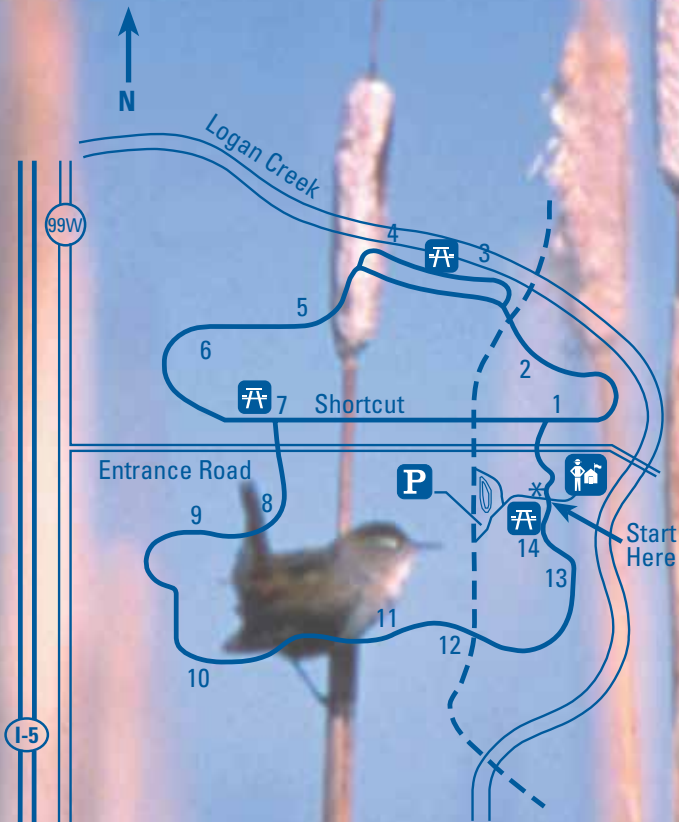
U.S. Fish & Wildlife Service

Sacramento

*National Wildlife
Refuge*

*Wetlands Walk Trail
Guide*





Come explore the wonders of our wetlands along the trail that meanders through shallow marshes, along a creek, and past deep ponds!

Seasonal Cycle

During the **fall** and **winter**, the Refuge wetlands are flooded. Thousands of ducks and geese are on the Refuge at this time. In the **spring**, waterfowl migrate north as the water recedes, while shorebirds and songbirds are more common. During the **summer**, most wetlands are dry, therefore, resident animals are often found near permanent ponds.

Viewing Tips

The best times to see wildlife are in the early **morning** and late **afternoon** from **November through February**. To increase your chances of seeing animals, take binoculars, walk slowly, talk softly, and stay on the marked trail.

Trail Tidbits

It takes at least an **hour** to leisurely walk this two-mile trail. However, a shortcut allows you to return to the trailhead from the halfway point. Numbered posts correspond to the stops in this guide.

Quiz Yourself!

Pictures of the plants and animals are numbered. See how many you can identify correctly! Their names are listed on the last page of this brochure.

 **To begin the walk, follow the trail across the entrance road.**

1. What Are Wetlands?

There are many different kinds of **wetlands**. Wetlands may be as small as puddles or as big as lakes, and they may contain fresh or salty water. Some wetlands contain water all year long, while others dry out in summer. The wetland you see here is a fresh-water marsh. On the Wetlands Walk, you will be exploring wetlands that include **seasonal marshes**, **permanent ponds**, **vernal pools**, and **riparian** (waterside) **woodlands**. Each one supports unique plants and animals that have adapted to this soggy environment.



Notice the variety of plants in the seasonal marsh along the creek...

2. A Seasonal Marsh

Historically, the Sacramento River flooded in the winter and spring. The floods created vast seasonal marshes. Beginning in the late 1800s, most of the Sacramento Valley was converted to farmland. Marshes like these have been created to provide homes for animals that need wetlands.



Water is **drained** from the marsh in **late spring** so a new generation of marsh plants can sprout in the warm, moist

pond bottoms. In the **fall**, when the seed heads ripen, the marshes are **reflooded** to bring an abundance of food within easy reach of many birds.



Follow the trail across the auto tour and to the right to explore the secluded riparian (rye-pair-ee-an) woodlands...

3. How Important Is This Creek?

Logan Creek provides water for some of the Refuge's marshes, through a system of canals and pipes. Along the creek grows a special forest of cottonwoods and willows — trees that like to keep their roots wet. This riparian woodland provides food and shelter for a variety of animals. Raccoons, egrets, and herons hunt for fish and crayfish at the edge of the creek. Deer, rabbits, and owls seek relief from both the hot summer sun and cold winter rains under the trees. Nesting songbirds find insects here to feed their young.

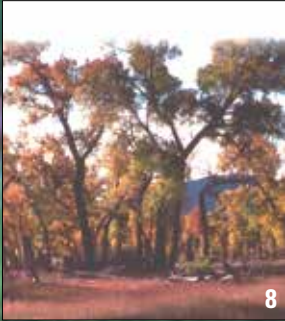


Look in the willow trees for nests, and along the creek banks for beaver-chewed trees.


4. The Duck That Nests In Trees

Unlike most other ducks, wood ducks, or “woodies,” nest in holes in trees. Because so many riparian woodlands have been cut down throughout the United States, nest boxes like this one have been placed to make up for lost nesting trees.


Notice the entrance of the nest box is small enough to let adult wood ducks in but keep raccoons and other predators out. However, many other animals will use the boxes, including owls, honey bees, and woodpeckers.



5. Wetlands Are Working For You

 **Look for tracks of wildlife along the creek and trail.**

Wetlands act as a **living filter**. Agricultural and urban runoff may enter these wetlands via Logan Creek. Marshes can absorb excess chemicals thereby helping to purify the water before it returns to the Sacramento River.

 **Listen for lizards, pheasants, and rabbits as they scurry away to hide from you — a possible predator!**

6. Smell The Marsh!

During the walk, you may have noticed a faint rotten egg odor. In wetlands that are flooded for a long time, dead plants and animals collect on the bottom and rot slowly, creating a thick black muck. Special **bacteria** that live naturally in this waterlogged muck release a **sulfur-containing gas** as they break down dead plants and animals. This gas gives the marsh its characteristic, rotten egg odor.



Look for floating cut cattails which are evidence of muskrats digging for roots to eat.

10



7. You're Halfway!

While you take a break near the **eucalyptus trees**, listen and look for **songbirds** and **turkey vultures**. You may hear the deep bellowing of **bullfrogs** or witness the **heron's** slow stalk and quick spearing of a **crayfish**.

At this point the trail splits. Continue straight ahead to go back to the visitor center.

Follow the trail crossing to the entrance road to continue on the Wetlands Walk.



As you walk between the permanent ponds, notice how the tall, dense bulrush and cattails provide excellent hiding places for wildlife and you!

11

8

8. Permanent Or Year-Round Ponds

Many plants and animals depend on permanent ponds. Dense cattails and bulrush in and around the edges of the pond offer **nesting places** for yellow-headed blackbirds and snowy egrets. The open water, with floating plants, provides a place for animals to feed on aquatic life year-round. Given time, the cattails and bulrush will replace the floating plants, until very little open water is left. This cycle of plants replacing each other is called **succession**.

Every so often, permanent ponds are drained to recycle nutrients, and cattails and bulrush may be burned to set succession back so that floating plants may grow once again.



Look and listen for marsh wrens calling within the bulrush.

12



13



14



15



16



17



9. Survival In The Marsh Muck!

Wetland plants have evolved unique ways of coping with oxygen-poor soils. **Air-filled tubes** run from their leaves to their roots, forming a snorkel through which the plant can breathe; they also help the plant float. Cattails and bulrush have additional **air-filled cells** around these breathing tubes, which provide extra support for their tall stems.



Bulrush have no leaves!
Gently feel their spongy stems.

10. Grasslands And Alkali Meadows: Who Needs Them?

At first glance this flat, treeless expanse looks dry and deserted, particularly during the summer and fall. But **jackrabbits, ground squirrels, pheasants, red-tailed hawks, and coyotes** feed in these grasslands year-round. In the fall, some grasslands and alkali meadows are burned to control invasive weeds, return nutrients to the soil, and stimulate the growth of rare, native plants. Winter rains cause grasses and wildflowers to sprout. **Wigeon** and **geese** join the resident wildlife to graze on the tender young grasses and wildflowers.




The grasslands are part of the original Colusa Plains. Much of the Refuge looked like this prior to the early 1900's.



11. Wetland Nursery

Wetlands are “nurseries” for many animals. Dense plants protect young animals from predators, and there’s plenty of good things to eat. The **western pond turtle, bluegill, common garter snake, green darner dragonfly, cinnamon teal, black-tailed deer, and muskrat** are just a few of the animals that raise their young in the wetlands.




 **Smartweed, also called knotweed, is characterized by its slender leaves, knobby stem joints, and nodding, pale-pink white flower spikes.**

12. Vernal (Springtime) Pools

Vernal pools host a unique community of plants and animals adapted to the dry-and-wet cycle. In the summer, the pool appears lifeless, but seeds of plants and eggs of shrimp lie in the cracked soil.

In late fall, rain stimulates growth. Soon after, thousands of shrimp, insects, and microscopic animals hatch, providing a protein-rich “soup” for ducks and shorebirds. Drying springtime pools display vivid rings of goldfields, white meadowfoams, and purple downingias. North winds trigger summertime plant growth, and the cycle continues.

 **Notice how the high concentration of calcium and salts have lightened the soil color. It’s not surprising that early attempts at farming these poor soils failed.**



13. What Is The Future Of These Special Lands?

This is a great opportunity to see many different habitats at a glance. The Coast Range Mountains, in front of you, silhouette the cattails of the **seasonal marsh**. Turning to your right, the tall trees of the **riparian woodlands** are a dramatic contrast to the vast **grasslands** which give way to the jagged Sutter Buttes in the distance.

Today, in California, over **90%** of the original habitats like these have been **lost to urban development and agriculture**. But the picture is not entirely bleak. Thousands of acres of special habitats like these are being restored and created throughout the State. Although much has been achieved, there is much more to be accomplished.



Listen for the sounds of nature . . . leaves rustling in the wind, wren's musical rattle and buzz, crickets chirping, creek bubbling . . .

14. How Can You Help?

If you've enjoyed the beauty and wonder of these wetlands today, you can help preserve them for tomorrow's generation. **By conserving water, volunteering, joining a wetland conservation group, or buying a Migratory Bird Hunting and Conservation Stamp (Duck Stamp), you will be doing your part to protect our valuable wetlands.**



We hope you enjoyed the Wetlands Walk. Visit again, during a different time of year to explore the dramatic seasonal changes that occur here!

- | | |
|----------------------------|---------------------------------|
| 1 Mallard Pair | 19 Western Meadowlark |
| 2 American Coot | 20 Coyote |
| 3 Seasonal Marsh | 21 Immature Red-tailed Hawk |
| 4 Raccoon | 22 Black-tailed Jack Rabbit |
| 5 Northern Flicker | 23 California Ground Squirrel |
| 6 Black Willow | 24 Smartweed |
| 7 Cattail | 25 Killdeer with Young |
| 8 Cottonwoods | 26 Grindelia and Blister Beetle |
| 9 Wood Duck Pair | 27 Black-tailed deer |
| 10 Turkey Vulture | 28 Common Garter Snake |
| 11 American Bittern | 29 Western Pond Turtle |
| 12 Yellow-headed Blackbird | 30 Damselfly on Pickleweed |
| 13 Marsh Wren | 31 Western Sandpiper |
| 14 Pacific Tree frogs | 32 Fairy Shrimp |
| 15 Muskrat | 33 Goldfields and Downingia |
| 16 Bulrush | |
| 17 Redhead Pair | |
| 18 Ring-necked Pheasant | |

Photo Credits:

Cover, Great Blue Heron and Page 5, Northern Flicker ©Vaughn Ruppert
Pages 9-10, 11-12 and photos 1, 2, 4, 10, 11, 12, 13, 17, 18, 21, 22, 23, 25, 31 ©Steven R. Emmons.

Photo 9, Wood duck ©Mike Peters

Photo 14, Tree frog ©1996 Glenn McCrea.

Photo 32, Fairy shrimp ©George Turner.

Photos 26, 28, 33 Joe Silveira, U.S. Fish and Wildlife Service.

All other photos U.S. Fish and Wildlife Service.



If you are finished using this brochure, please return it to the rack for others to use.

Sacramento National Wildlife Refuge
752 County Road 99 W
Willows, California 95988
530/934 2801
<http://www.fws.gov/refuge/sacramento>
TTY 530/934 7135

U.S. Fish and Wildlife Service
1 800/344 WILD
Pacific Southwest Region Information
<http://www.fws.gov/cno>

**This brochure will be made
available in other formats
upon request.**



May 2013

*Printed on 100% recycled paper with a minimum
50% post-consumer fiber content.*