

U.S. Fish & Wildlife Service

# Bitter Lake

*National Wildlife  
Refuge*



*The 24,536-acre Bitter Lake National Wildlife Refuge is one of more than 500 refuges throughout the United States managed by the Fish and Wildlife Service. The National Wildlife Refuge System is the only national system of lands dedicated to conserving our wildlife heritage for people today and for generations yet to come.*

**Welcome:  
Rare Wildlife  
Oasis**

UFO sightings may have put Roswell, New Mexico, on the map, but at nearby Bitter Lake National Wildlife Refuge, strange creatures are more than visitors. They inhabit odd sinkholes, playa lakes, seeps, and gypsum springs fed by an underground river.

At first glance, you might see only the 10,000 wintering sandhill cranes and 20,000 snow geese. Take a deeper look. Where the Chihuahuan Desert meets the Southern Plains, bizarre geology is responsible for habitats supporting wildlife you'll find nowhere else in the world.

*A frog  
that barks?*

Barking frogs nestle in limestone crevices or burrow in gypsum soils. You'll hear their yapping chorus in June and July. These odd frogs, found in New Mexico only in Chaves, Eddy, and Otero Counties, join other wildlife, some of which are relics from millions of years ago when the refuge was once a Permian shallow sea.

*Sinkhole on the Refuge*





*Pecos Pufffish.*

*Fish that change colors?*

Within the sinkholes and springs, tiny native fish thrive, like the Pecos pupfish, greenthroat darter, and the federally endangered Pecos gambusia. You are not likely to see any of these fish outside the Pecos River drainage. In fact, most of the refuge's 24 fish species are native to these waters. Pecos pupfish males change from dull brown to iridescent blue in breeding season. Courting greenthroat darter males rival them in brilliance, transforming from olive to emerald green with reddish fins.

*Pecos Puzzle Sunflower in Hunters Marsh.*



*A salt-loving flower?*

The Pecos puzzle sunflower is equally rare and adapted to living in the salty environment of alkaline wetlands. You'll see these brilliant flowers blooming in late August and September.

### **Wildlife Chronicle**

Bitter Lake NWR joins a Central Flyway complex of several thousand playa lakes found in New Mexico, Colorado, Texas, and Chihuahua, Mexico. These lakes are a winter destination for thousands of waterfowl and a refueling spot for others continuing to Mexico.

*Magnet for Birds*

November through February marks the peak time for great flocks of snow geese and sandhill cranes. A large portion of the world's population of lesser sandhill cranes winter here. By late February, most waterfowl depart for their long flight to breeding grounds in the north.

In summer, the interior least tern nests on refuge salt flats, the only place this endangered species breeds in New Mexico. Snowy plovers, killdeer, avocets, and black-necked stilts raise their chicks as well. Year round, look for roadrunners, coveys of scaled quail, and a variety of sparrows.

*Snow Geese. Photograph by Norbert Wu*





*Sago Springs Sinkholes.*

**Aquatic Rarities** The flowing streams, rivers, sinkholes, playa lakes, and brackish waters each shelter their own communities of fish, snails, and plants. Koster's spring snails and Roswell spring snails find footholds just in certain refuge springs. Noel's amphipod, a shrimplike crustacean, survives only on this refuge and is acutely sensitive to water pollution.

Bitter Lake NWR protects these fragile creatures from the threats of water and land development, and from exotic fish introductions that have devastated many other native fisheries.

**Scientific Treasures: Research Natural Areas**

Conservation is the number one priority at Lake St. Francis, Bitter Lake, and Inkpot Research Natural Areas, where scientists study life within water-filled depressions called sinkholes. Today, the sinkholes suffer from lowering of the water table across the Pecos River valley. Lake St. Francis, northwest of headquarters, is the largest water-filled sinkhole remaining—200 feet wide and 60 feet deep.



*Inkpot Sinkhole.*

**History: Overlooked Riches**

Sinkhole waters are home to rare fishes and plants, including a marine algae that normally inhabits the lagoons of the Gulf of Mexico. To protect these fragile communities of life, the refuge limits public access to scientific and educational groups (contact the staff in advance of a visit for permission).

Antonio de Espejo's fruitless quest for wealth in the Pecos River Valley in 1582 would have been a success if he had measured richness in terms of species diversity. Today, we know that Bitter Lake NWR harbors at least 352 bird species, 57 mammal species, 52 reptile and amphibian species, and 24 fish species.

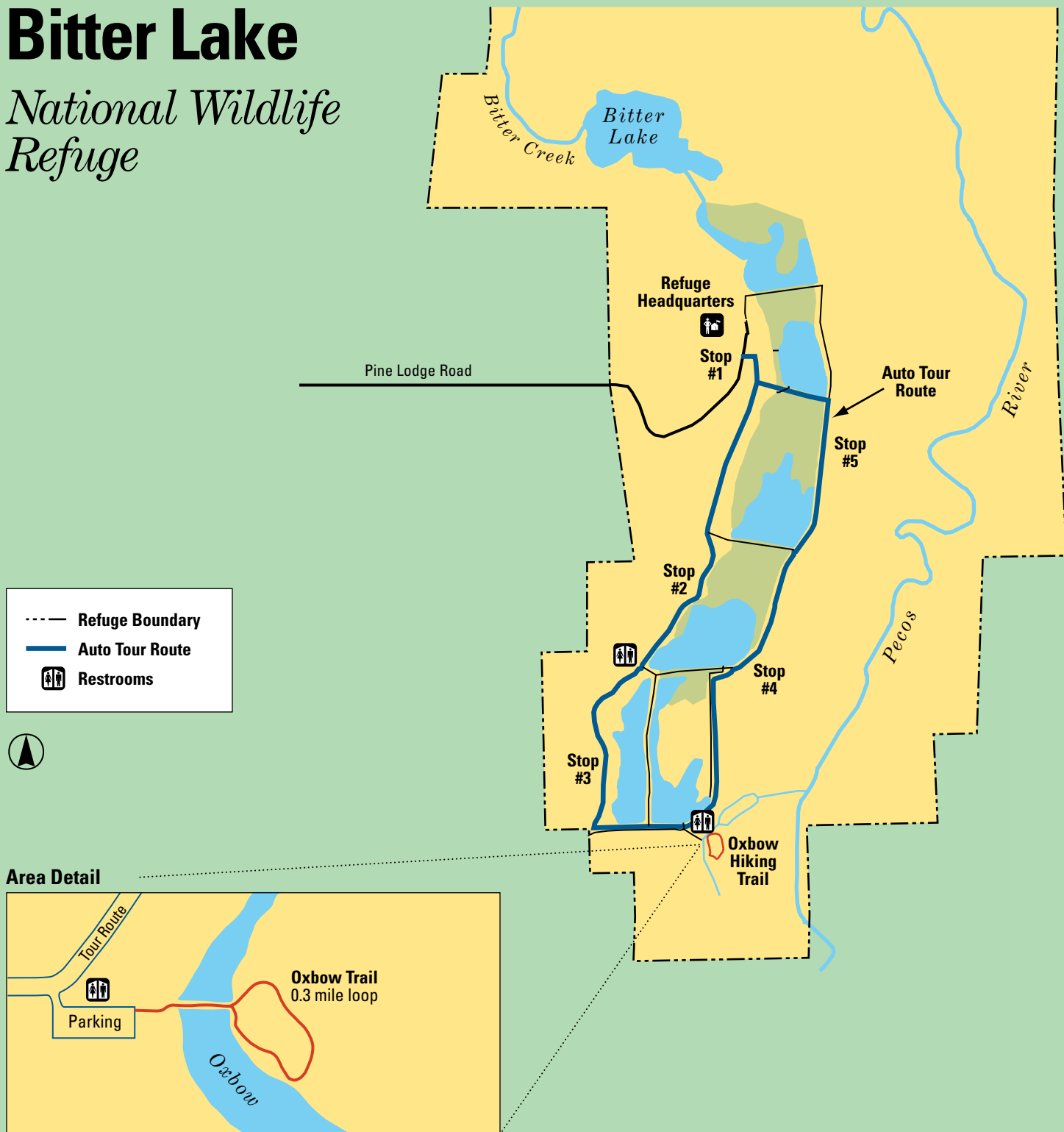
Likewise, ranchers in the late 1800s who pronounced the alkaline waters "bitter" had no idea those same waters support some of the more strange and wonderful life forms found on our planet.

After the Civil War, the Pecos Valley spelled riches for only one reason—grasses to support huge cattle drives. As many as 300,000 head of cattle crossed the valley between 1866-69 on their way from Roswell to Colorado. Charles Goodnight and Oliver Loving were the first to trail cattle here in 1866. A few years later one rancher, John Chisum, controlled the whole valley. He laid claim to the largest single cattle drive in New Mexico, at 110,000 strong.

By 1900, poor grazing practices and falling beef prices marked the end of the cattle era. After homesteading fervor was defeated by drought years, the wild inhabitants drew the attention of Congress. In 1937, Bitter Lake joined the National Wildlife Refuge System to protect the winter home of sandhill cranes and waterfowl. Even then, people did not realize the deeper wealth found here.

# Bitter Lake

## National Wildlife Refuge



## Things to do at the Refuge

Whether looking for dragonflies, birds, or entirely new species, Bitter Lake NWR offers plenty of places for discovery. Observation platforms lend expansive views. Take an 8-mile, self-guided auto tour around lakes brimming with life. Experience the desert oasis on foot along established hiking trails.

Before you begin your visit, note that this refuge falls into three distinct areas along the Pecos River:

- The 9,620-acre Salt Creek Wilderness to the north protects native grasses, sand dunes, and brush bottomlands.
- The middle unit features refuge headquarters and the auto tour, which winds among lakes, wetlands, croplands, and desert uplands.
- The southern part of the refuge belongs exclusively to wildlife and is closed to all public access. Here, refuge croplands support tremendous flocks of wintering birds. From this observation platform, you can gaze fields that spread like a rich banquet for wildlife.

## Dramatic Wilderness

For the prepared adventurers, enter the Salt Creek Wilderness in the shadow of a dramatic red bluff outlining the refuge northern boundary. The refuge does not allow overnight camping, except by special use permit.

## Auto Tour: 8-mile Adventure



Every season brings a new wealth of wildlife discoveries along the 8-mile (round trip) auto tour. April features shorebird migrations, and songbirds pass through in May. Summer offers the chance to see nesting black-necked stilts and least terns. By September, the Pecos sunflower blooms in a blaze of yellow. In winter, share the refuge with crowds of snow geese and sandhill cranes.

## Wildlife Watching Tips

Dawn and dusk are the best times to see wildlife.

In warmer seasons, little is moving on hot summer afternoons or on windy days.

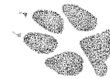
Observe from the sidelines. Leave “abandoned” young animals alone. A parent is probably close by waiting for you to leave. Don’t offer snacks; your lunch could disrupt wild digestive systems.

Cars make good observation blinds. Drive slowly, stopping to scan places wildlife might hide. Use binoculars or a long lens for a closer look.

Try sitting quietly in one good location. Let wildlife get used to your presence. Many animals that have hidden will reappear once they think you are gone. Walk quietly in designated areas, being aware of sounds and smells. Often you will hear more than you will see.

Teach children quiet observation. Other wildlife watchers will appreciate your consideration.

Look for animal signs. Tracks, scat, feathers, and nests left behind often tell interesting stories.



## *Unit-5 Overlook.*



The tour starts at the visitor registration building near refuge headquarters. Numbered signs identify each stop along the way and correspond with the following paragraphs.

### *Stop 1: Precious Water*

Springs flowing into this lake assure plentiful water in every season. Most of the other refuge lakes are dry during summer's scorching heat. Look for geese and ducks loafing and fish rising. To the east, seasonal wetlands offer a haven for waterfowl, cranes, and shorebirds. The striking red bluffs beyond the wetlands mark the fault line that traces the path of the Pecos River. This lake forms one of six major impoundments developed since the 1940s along the ancient river bed of the Pecos River Valley.

Look to the east and you'll see wetland riches for waterfowl, egrets, cormorants, and a kaleidoscope of other birds. Raccoons and ribbon snakes visit the shorelines. Turn west to see shrub-grasslands that are home to jackrabbits, coyotes, roadrunners, scaled quail, and a variety of lizards and snakes.

### *Stop 2: Life on the Edge*

Where two habitats meet, you'll often find excellent wildlife watching. The entire refuge lies on the transition zone of the Chihuahuan Desert and the Southern Plains.

### *Stop 3: Mirage or Lake?*



*Cranes on Unit-6.*

### *Stop 4: Salt Cedar Farewell*

Depending on when you visit, you may or may not find a lake here. Refuge staff actively manage water levels, following nature's plan for this part of the world. In spring and fall, you'll see shallow waters, just right for migrating shorebirds. In summer, the waters dwindle to expose mudflats and playas for nesting terns and plovers. In winter, lakes brim full to shelter waterfowl. Your best bet for seeing winter flights of sandhill cranes, snow geese, and Ross' geese is at sunrise when birds fly from the refuge or late afternoon, when birds return from feasting in fields.

Simply drawing a line around a refuge doesn't always assure that all will be well for wildlife. Just east of you are thickets of trees that do not naturally occur here and are causing havoc. That's why refuge staff are taking out salt cedar from the uplands you see, as well as from sinkholes and streamsides. The benefit? Control of salt cedar increases water flows and helps to remove salt deposited by the exotic trees. While checking out the uplands, keep a sharp lookout for deer, coyotes, and possibly a bobcat.

Salt cedar removal counts as one of many stewardship projects throughout the refuge. As you travel, watch for signs of controlled burns. Fire recycles nutrients and energizes native grasslands. In other places, you'll see farming to raise cereal grains for wintering cranes and waterfowl. The crops keep the birds healthy and feeding on the refuge, rather than on neighboring farms.

### *Stop 5: Duck Diner*

Ducks and other waterfowl find plenty of aquatic plants to dine on when they arrive each fall from the north. Refuge staff duplicate a natural process here by growing natural vegetation in summer and flooding the areas in fall.

Thanks for taking the tour and helping us conserve the wildlife and wild places you saw today in this oasis for rare wildlife.

### Refuge Hours

The refuge is open every day from one hour before sunrise to one hour after sunset. The tour road may be closed due to adverse road or weather conditions. Please contact refuge headquarters for weather updates, wildlife lists, refuge regulations, and other brochures.

### Bitter Lake NWR Facts

*Where is it?*

Bitter Lake National Wildlife Refuge is located about 10 miles northeast of Roswell, in Chaves County, New Mexico. From Roswell, take US 380 (Second Street) east about three miles to a refuge sign at Red Bridge Road. Or, take US 285 (Main Street) north to Pine Lodge Road. From the turnoff, it's 8 miles to refuge head-quarters, following directional signs.

*When was it established?*

October 8, 1937

*How big is it?*

24,536 acres

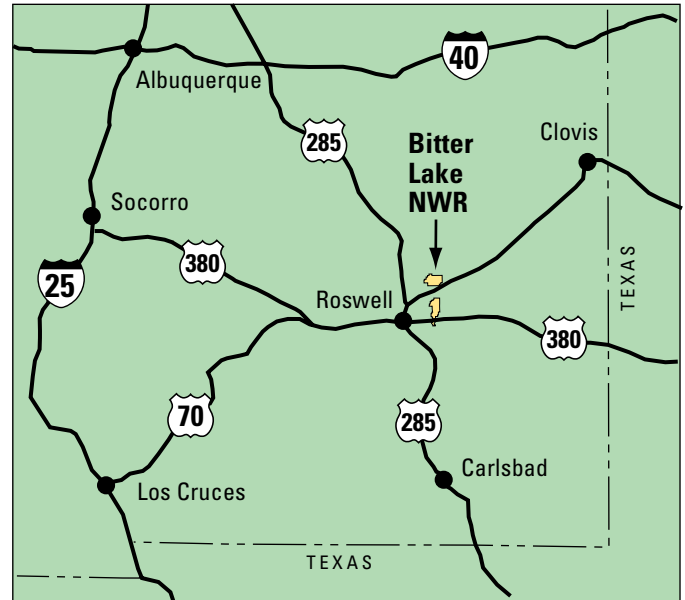
*Why is it here?*

To protect migratory birds and other wildlife.



*Snowy egrets.*

### Vicinity Map





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**<http://southwest.fws.gov>**

**U.S. Fish & Wildlife Service  
1 800/344 WILD**

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**Photographs, unless  
otherwise noted,  
by William R. Radke.**