

U.S. Fish & Wildlife Service

San Bernardino/ Leslie Canyon

*National Wildlife
Refuges*



*“Adjoining
the rancho are
numerous springs,
spreading out into
rushy ponds, and
giving issue to a
small stream of
running water.”*

*– William Emory,
surveying the U.S./Mexico
boundary in 1854*



Welcome to the San Bernardino and Leslie Canyon National Wildlife Refuges



This blue goose, designed by J.N. “Ding” Darling, has become the symbol of the National Wildlife Refuge System.

San Bernardino and Leslie Canyon National Wildlife Refuges are located in southeast Arizona’s Cochise County, adjacent to the United States/Mexico border. This region is characterized by linear mountain ranges separated by broad, flat basins. Relatively recent volcanic activity left numerous volcanic plugs and cinder cones throughout the San Bernardino Valley. Earthquakes further altered the region and initiated the flow of many springs and seeps. These dynamic geological events shaped the valley, creating a picturesque landscape, establishing permanent water sources, and allowing for a variety of plants and animals to flourish here.

The San Bernardino Valley once supported permanently flowing creeks, springs, and marshy wetlands. The giant sacaton grassland in the valley was described as “a luxuriant meadow some eight or ten miles long and a mile wide.” The dependable source of water and grass made the area invaluable to fish and wildlife, and a hub of human activity.



Rare thrive in Twin Pond at San Bernardino National Wildlife Refuge.

Beginning in the late 1800's, increased human development brought farming, mining, and livestock production to the region, bearing pressure on the precious water. While the area's extensive wetlands once provided habitat for eight different kinds of native fish, the lowering water table led to severe changes in the habitat and the eventual local extinctions of many species.

Today, San Bernardino and Leslie Canyon National Wildlife Refuges offer oases within the surrounding arid lands, providing resting, breeding, and year-round habitat for a significant number and variety of animals.

Species worth protecting

Administered by the U.S. Fish and Wildlife Service, San Bernardino and Leslie Canyon National Wildlife Refuges are two of the few units in the National Wildlife Refuge System created specifically to protect native fish. Refuge staff work toward maintaining populations of native fish and restoring habitat to enable the fish to thrive once again. Protection and restoration of area springs, ponds, and streams in the U.S. and Mexico by private landowners, conservation organizations, and government agencies will help maintain the delicate ecological balance that has been in place for centuries, providing quality habitat for fish, wildlife, and people dependent upon the Río Yaqui Basin.

Beautiful Shiner

(federally-listed as threatened)
The male beautiful shiner is iridescent blue with bright orange fins. Historically, this fish occurred in the U.S. in the San Bernardino Valley of Arizona and in the Mimbres River of New Mexico. By 1970, this species was eliminated from the U.S. due to the loss of suitable wetland habitat. Current populations on San Bernardino NWR were reintroduced from rivers in Mexico's Sierra Madre.

Yaqui Chub

(federally-listed as endangered)

The Yaqui chub can grow up to five inches long, and is normally dark olive green or brownish; the breeding male turns blue. This species has the most restricted geographic range of all the Río Yaqui fish. Historically confined to the upper Río Yaqui Basin along the U.S./Mexico border, the fish currently occurs on San Bernardino NWR, Leslie Canyon NWR, and on the Coronado National Forest. It is also protected on private land at Slaughter Ranch and El Coronado Ranch in Arizona, and on the Rancho San Bernardino in Mexico. Most Yaqui chub populations are threatened due to infestations by the non-native Asian tapeworm.



Yaqui Chub

Yaqui Catfish

(federally-listed as threatened)

The Yaqui catfish is the largest native fish in Southeastern Arizona, and the only native catfish found west of the Continental Divide. This species was eliminated from the U.S. due to habitat destruction, and competition with non-native channel catfish and blue catfish. Since 1996, Yaqui catfish have been reestablished on San Bernardino NWR and on protected private lands at Slaughter Ranch and El Coronado Ranch in Arizona.

Yaqui Topminnow

(federally-listed as endangered)

The Yaqui topminnow is a small, live-bearing fish which occurs in shallow, warmer waters within the Río Yaqui Basin. Females are tan or olive colored, while breeding males are black with orangish fins.



Chiricahua Leopard Frog

Yaqui topminnow eat vegetation and aquatic insects, including mosquito larvae. This species was severely impacted by increasing competition with non-native mosquitofish and the loss of wetland habitat through plant succession. It is now well protected on San Bernardino NWR and Slaughter Ranch in Arizona, and Rancho San Bernardino in Mexico.

*Chiricahua
Leopard Frog*

(federally-listed as threatened)

Chiricahua leopard frogs were once widespread throughout the wetlands of southeast Arizona. Their future is threatened by habitat degradation, predation by non-native bullfrogs, and exposure to a lethal fungal skin infection. While unprecedented steps have been taken to manage and protect this species by private landowners, the Douglas High School, the Arizona Game and Fish Department, the University of Arizona, and the U.S. Fish and Wildlife Service, leopard frog populations continue to decline.

*Mexican Garter
Snake*

*(state-listed as a Species of
Special Concern)*

The Mexican garter snake is the rarest of the three kinds of garter snakes found on San Bernardino NWR and Leslie Canyon NWR. This snake grows to about three feet long, and requires wetland habitat to survive. It typically eats fish, frogs, toads, and tadpoles. The population is threatened by the non-native bullfrog,



San Bernardino Springsnail

which feeds on young snakes. Restoration of densely vegetated ciénega wetland habitats on San Bernardino NWR and the adjacent Rancho San Bernardino in Mexico should aid the recovery of this unique snake.

San Bernardino Springsnail

The tiny brown springsnail is known to exist only within a small spring located adjacent to San Bernardino NWR on Slaughter Ranch in Arizona, and at two locations on Rancho San Bernardino in Mexico. As with many of the species in the Río Yaqui Basin, limited habitat threatens the springsnail's survival. Cooperative research, supported by the Arizona Game and Fish Department's Heritage Fund, the U.S. Fish and Wildlife Service, and the Johnson Historical Museum of the Southwest, is being conducted to learn more about the habitat requirements of this rare animal.

Huachuca Water Umbel

(federally-listed as endangered)
The water umbel is a small, semi-aquatic, perennial plant with slender, erect leaves that grow from root stems. Protected on both San Bernardino NWR and Leslie Canyon NWR, this plant is vulnerable to extinction due to the increasing loss of wetland habitat it requires to survive, and from competition with other plants.

Cultural heritage

The presence of dependable water in this otherwise arid environment has helped support an eventful human history. Populations of Native Americans occupied pit house village sites here from the 1200's through the 1400's. The Coronado expedition passed through this area in search of the fabled seven cities of Cibola during 1540. Beginning in the early 1600's, the Apache frequented this region to hunt, gather food, and conduct raids. Jesuit priests established a mission in the San Bernardino Valley during the 1700's, and a Spanish presidio was established in 1774.

Ranching began in 1822 with the acquisition of the San Bernardino Land Grant. Widespread cattle grazing continued for many years until the Apache drove out the ranchers. In 1884, cattle ranching resumed on a large scale when John Slaughter, rancher and sheriff of Tombstone, established the 65,000-acre San Bernardino Ranch. Two years later, the Apache leader Geronimo and his band of warriors surrendered for the last time at Skeleton Canyon just north of the springs at San Bernardino. In 1889, local bartender, gambler, cattleman, and known murderer Frank Leslie



View toward Gila Monster Canyon, Leslie Canyon National Wildlife Refuge.



Autumn cottonwoods near Twin Pond at San Bernardino National Wildlife Refuge.

shot and killed his girlfriend on the 7-UP Ranch. He escaped through what is now known as Leslie Canyon.

The Mexican Revolution reached this border area in 1915 when Pancho Villa and his army fought in nearby Aqua Prieta. Rock fortifications remain on San Bernardino NWR and Slaughter Ranch nearly 100 years after they sheltered U.S. Cavalry troops. Cattle ranching and farming continued here until 1979 when The Nature Conservancy began to acquire the properties. Eventually, the sites were transferred to the U.S. Fish and Wildlife Service and became national wildlife refuges.

Wetlands in the desert

Wetlands reserve water during desert droughts and serve as settling ponds, cleansing contaminated or silted waters. Historically, this part of the Río Yaqui Basin provided habitat for a multitude of plants and animals, including eight kinds of native fish. The fish adapted to the drought/flood cycle of desert streams, surviving in perennial pools during dry times, then dispersing when rains rejuvenated the streams. These native fish have been impacted by competition with introduced, non-native fishes and changes to hydrology caused by increased human settlement.



Castle Dome and Pedregosa Mountains.

Altering the delicate balance

More than 100 years ago, farming, mineral extraction, fire control, and livestock production began to alter and eliminate much of the natural habitat in the Río Yaqui Basin. Some wetlands were drained to increase croplands. Streams were diverted to irrigate farm fields and fill impoundments. Grasslands were often diminished by non-sustainable grazing practices. Ultimately, many of the surface waters that provided the unique habitats for native fish and wildlife were eliminated.

Land use takes a toll

The vast, marshy, spring-fed San Bernardino Ciénega that once straddled the international border has been replaced by isolated artesian wells and artificial ponds. As water tables dropped and native grasslands deteriorated, thickets of mesquite trees and thornscrub spread. Additional habitat changes allowed non-native species, such as the western mosquitofish, bullfrog, Asian tapeworm, and Lehman's lovegrass, to become well established and threaten native fish populations.



Yaqui Beautiful Shiner

Recovery actions underway

San Bernardino NWR and Leslie Canyon NWR were established to help protect the fish and wildlife associated with the unique habitats in the Río Yaqui watershed. To recover fish species, managers are stabilizing existing populations, establishing self-sustaining populations, and restoring wetlands.



Malachite Darner

Extensive habitat restoration is occurring on the refuges and on adjacent private lands. Eroded stream channels are being refurbished through the placement of rock-filled, wire-basket gabions, and through the planting of cottonwoods and willows. Managers are revegetating upland areas with native grasses, and reclaiming old farm fields to recreate valuable *ciénega* wetland conditions. Invasive, non-native species are being removed or controlled. Slowly, the land and the associated fish and wildlife are recovering.

Fire as a management tool

Historically, fire played a crucial role in maintaining healthy habitats within this ecosystem. Early human settlers suppressed fire, preventing periodic natural fires from removing decadent vegetation and recycling important nutrients into the soil. As a result, plant species such as mesquite, with its deep root structure, were able to out-compete native plants. Today, fire is used as an effective tool in habitat restoration. Controlled fires help rejuvenate native grasses and aid in controlling the spread of mesquite trees.



Buckeye Butterfly

Collective efforts

Cooperative efforts between the U.S. government and environmentally sensitive landowners in the U.S. and Mexico are providing opportunities to secure habitat and water sources, conduct additional scientific research, and introduce and maintain self-sustaining fish and wildlife populations. Wetlands are being restored to provide habitat for waterfowl to rest, feed, and nest. Riparian gallery forest is being established to benefit raptors, migratory birds, and other wildlife. Measures are in place to reduce erosion, protect groundwater levels, and reclaim and reseed mesquite-infested lands. Studies are underway to record the results of habitat management actions, and to learn more about the complex ecological relationships that exist here.

Ongoing concerns

Water development and pumping of underground aquifers continue to constitute the greatest threats to the survival of the Yaqui fish species.

Enjoy your visit

San Bernardino and Leslie Canyon National Wildlife Refuges are special places that protect and conserve a diversity of fish and wildlife. At least 283 bird species, 62 mammal species, 42 reptile and 13 amphibian species, and eight species of fish have been documented on the refuges. More than 490 different kinds of plants, including 77 species of grass, have been identified at the sites. While many of these species are abundant, some are quite rare. A few of these species are found nowhere else in the United States.

Refuge activities

The refuges provide outstanding birding opportunities. Look for gray hawks, vermilion flycatchers, yellow-billed cuckoos, Bell's vireos, Lucy's warblers, yellow-breasted chats, black-throated sparrows, and summer tanagers.

The refuges support a variety of mammals, including the desert shrew, lesser long-nosed bat, banner-tailed kangaroo rat, gray fox, ringtail, coati, mountain lion, javelina, and mule deer.

Native amphibians and reptiles, such as the Chiricahua leopard frog, Sonoran mud turtle, Gila monster, collared lizard, Sonoran whipsnake, Mexican garter snake, and the Western diamond-backed rattlesnake, make these refuges their home.



Mojave Rattlesnake

Both refuges attract an abundance of butterflies, dragonflies, damselflies and other invertebrates, including many unique “tropical” species, and some that have only been documented within the U.S. at San Bernardino NWR or Leslie Canyon NWR.

*Leslie Canyon
National Wildlife
Refuge*

While the majority of Leslie Canyon NWR is closed to public access to minimize disturbance of the fragile habitat and protected wildlife, a portion of the refuge is open seven days per week during daylight hours. Leslie Canyon Road traverses through the refuge and affords views of the birds and other wildlife. Refer to the map to identify open areas of the refuge.

*San Bernardino
National Wildlife
Refuge*

San Bernardino NWR is open seven days per week during daylight hours for wildlife viewing, photography and hiking. A posted section of the refuge is open seasonally to dove, quail and cottontail rabbit hunting. Refuge gates may occasionally be closed and locked, allowing only for foot traffic.



Collared Lizard, commonly found in southeast Arizona.

Viewing Tips

Dawn and dusk are the best times to see wildlife. Activity is lowest on hot summer afternoons and on windy days.

Remember, some animals can be dangerous when cornered or threatened. For your safety, view wildlife from a safe distance and never try to handle an animal. Leave “abandoned” young animals alone; the parent is probably nearby waiting for you to leave.

Do not feed wildlife; your lunch could disrupt wild digestive systems.

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

Try sitting quietly in one spot. Animals will come out of hiding once they think you are gone. Walk quietly in designated areas, keying in on sounds and smells.

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

Look for animal signs, such as tracks, scat, feathers and nests.



Black Draw Trail

The 2.2-mile hiking trail is located in San Bernardino NWR. Hunting is not allowed in this section of the refuge.

Prime habitat

As you follow the trail, imagine how the landscape has changed through time. Springs supported extensive ciénega wetlands. Lush meadows of giant sacaton grass stretched for miles along the valley's bottomlands. Stands of cottonwood, willow, box elder, Arizona ash, and Mexican elderberry covered the land. This portion of the Río Yaqui Basin provided habitat for eight species of native fish; one-quarter of all the native fish species in Arizona!

Signs of past change

Can you tell where farming once occurred? Do you see the scars of erosion on the land? Look for remnants of the vast ciénega wetlands of the Río Yaqui Basin that once covered this area. The Black Draw is all that remains of the once free-flowing San Bernardino River that now only flows occasionally with seasonal rains. Can you spot where this river used to flow year-round?

Work in progress

As you walk the trail, can you tell where mesquite trees have been thinned or burned? Look for farm fields being replaced with native grass plantings. Can you find where the stream channel in Black Draw has been restored with rock and wire dams to catch sediments during flood flows? Watch for newly-developed wetlands that provide habitat for native fishes, birds, and amphibians such as the Chiricahua leopard frog.

Activity guide

The refuges, including the roads, are closed to all-terrain vehicles. Vehicle parking is restricted to existing parking areas and along roadsides. Do not block gates. San Bernardino NWR is open to foot traffic when roadway gates are closed. Refer to the map for parking areas and access.

Hunting



Sport hunting with shotguns and non-toxic shot is permitted in designated hunting areas of San Bernardino NWR. Dove, quail, and rabbit hunting are allowed in accordance with applicable State and Federal regulations. Contact the headquarters for information regarding hunting areas and seasons. *All other wildlife is protected within the refuges.*

Fishing



No angling or fishing of any kind is permitted.

Firearms



Carrying or discharging firearms or other explosives (including fireworks) is prohibited on the refuges. Legal shotguns are only permitted during hunting season and are restricted to the hunting area on San Bernardino NWR.

Pets



Pets and other domestic animals are not allowed on the refuges, with the exception of retrievers and upland game bird dogs on San Bernardino NWR under the control of their owner during hunting season.

Camping



No camping or overnight parking is permitted. The nearest public campgrounds are located in Douglas.

Picnicking



No picnic facilities are available on the refuges, however, visitors may enjoy casual “blanket and basket” picnicking. Fires are prohibited.

Littering



Please take your litter with you when you leave the refuges.

Wildlife Disturbance



Do not gather or disturb any plants, flowers, insects, wildlife, or artifacts. Take home photographs and memories.



San Bernardino NWR facts

Where is it?

San Bernardino NWR is located adjacent to the Republic of Mexico, 16 miles east of Douglas, Arizona along Geronimo Trail Road. The road continues through the Peloncillo Mountains to New Mexico.

*When was it
established?*

1982

How big is it?

2,369 acres

Why is it here?

To protect and help in the recovery of several species of federally listed threatened and endangered fish, to provide habitat for other fish and wildlife, and to restore important wetlands.

Leslie Canyon NWR facts

Where is it?

Leslie Canyon NWR is located on the edge of the Swisshelm Mountains, 16 miles north of Douglas, Arizona on Leslie Canyon Road, or 11 miles east of McNeal, Arizona on Davis Road. Follow the road signs to Leslie Canyon. The roadway continues through the Refuge to Rucker Canyon in the nearby Chiricahua Mountains.

*When was it
established?*

1988

How big is it?

2,765 acres

Why is it here?

To protect populations of federally-listed endangered fish and plants, to provide habitat for other fish and wildlife, and to preserve a rare and unique Arizona ash-Arizona black walnut-Fremont cottonwood riparian corridor.

Headquarters

Location

Situated in Arizona about ten miles north of Douglas and about six miles south of McNeal on the west side of Highway 191 at the end of San Gabriel Road.

Hours

Open weekdays, 8:00 a.m.–4:00 p.m.



Slaughter Ranch near Douglas, Arizona.

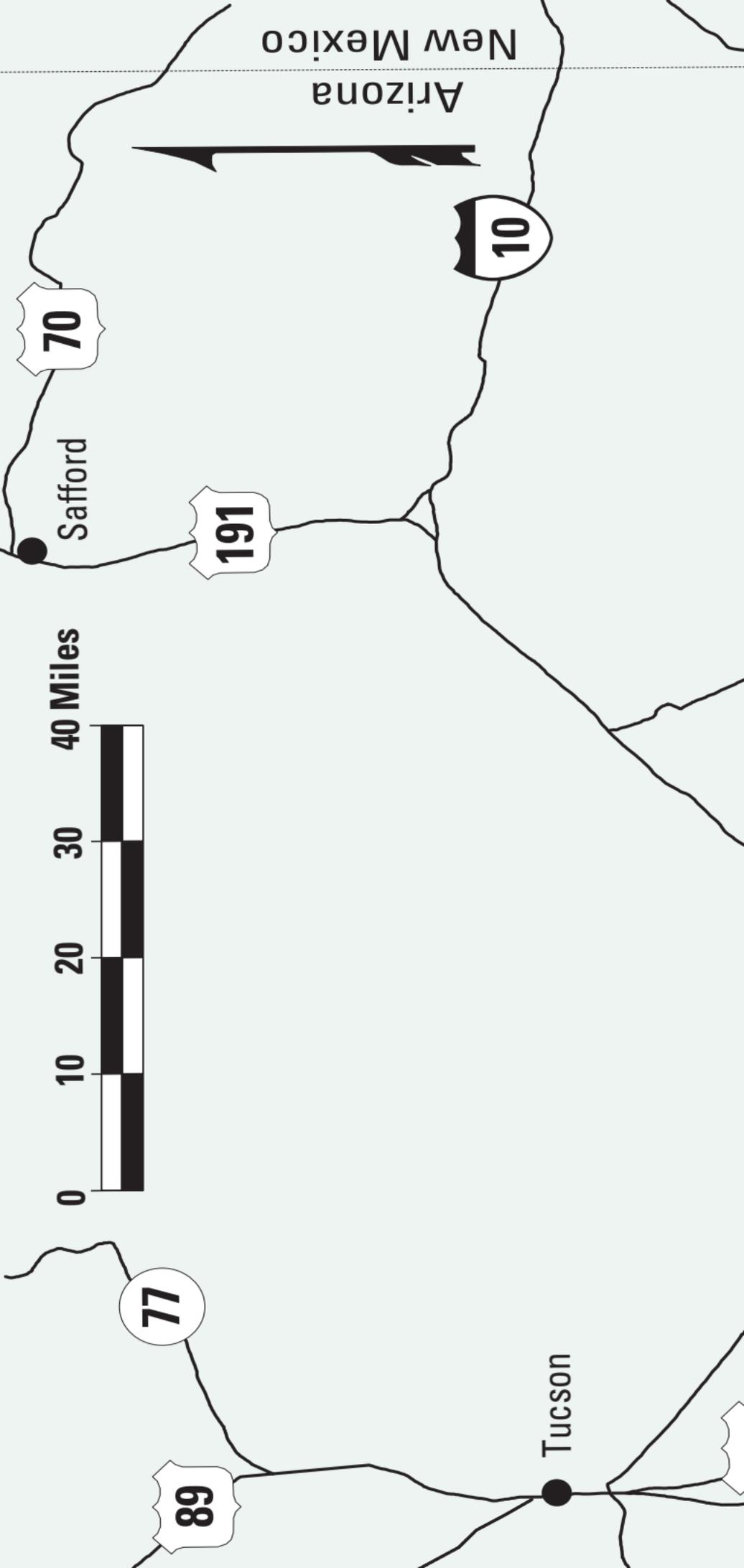
Nearby attractions

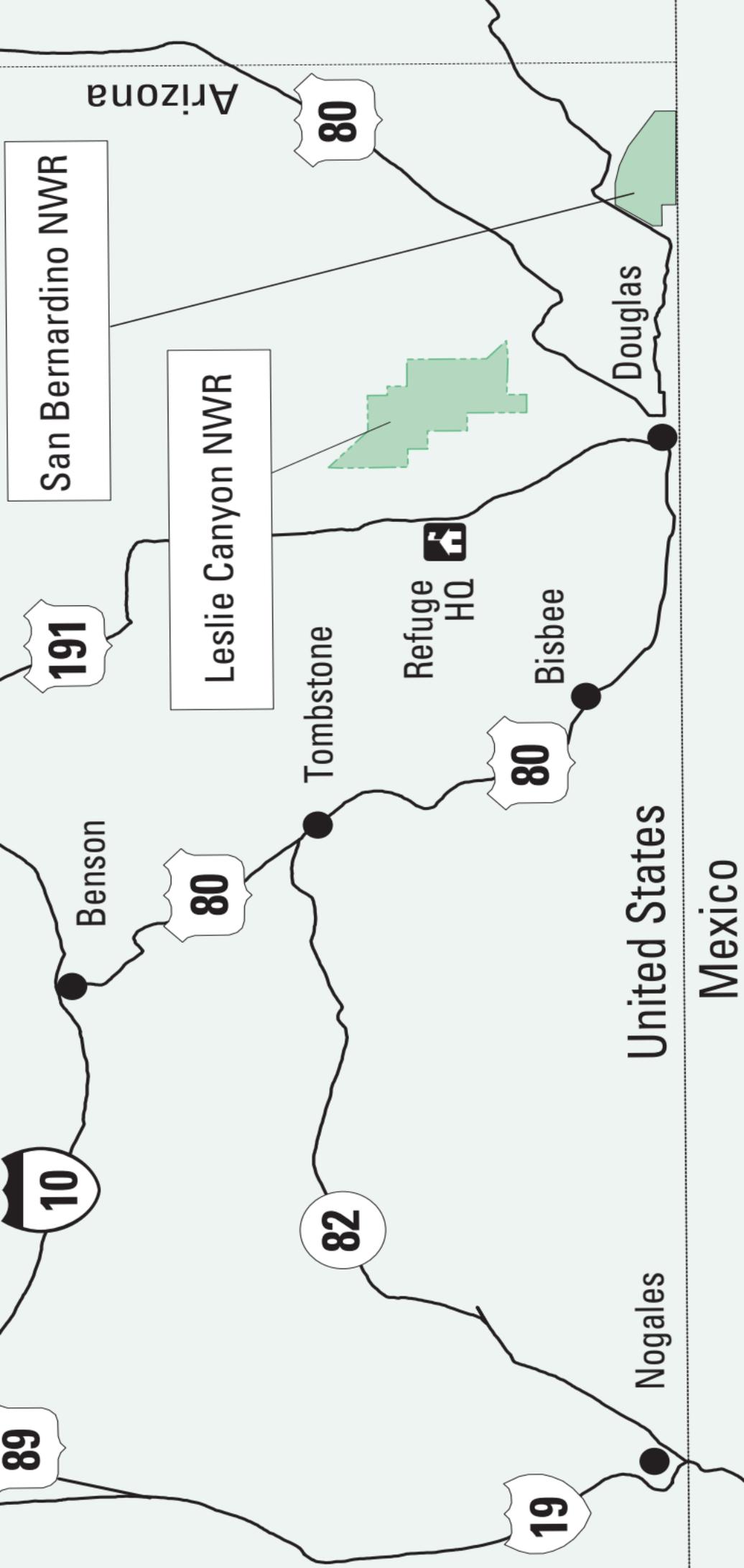
The historic and scenic Slaughter Ranch, located adjacent to San Bernardino NWR, is operated by the Johnson Historical Museum of the Southwest. Call 520/558-2474 for information.

The Whitewater Draw Wildlife Area, located west of Leslie Canyon NWR in the Sulphur Springs Valley, is operated by the Arizona Game and Fish Department. Call 520/642-3763 for information.



Two-tailed Swallowtail





Arizona

San Bernardino NWR

Leslie Canyon NWR

Douglas

191

Tombstone

Refuge HQ

Bisbee

80

80

United States

Mexico

Benson

10

82

Nogales

89

19

San Bernardino/Leslie Canyon National Wildlife Refuges
7628 North Highway 191
San Gabriel Road
Douglas, Arizona 85608
520/364-2104
520/364-2130 FAX

U.S. Fish and Wildlife Service
<http://www.fws.gov/southwest/>

For Refuge Information
1 800/344-WILD

Arizona State Relay System
1 800/367-8939

Twin Pond, San Bernardino National Wildlife Refuge
Cover photograph and all other photographs by William Radke, FWS

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