

U.S. Fish & Wildlife Service

# Ash Meadows

*National Wildlife  
Refuge*



*Warm water from  
underground bubbles  
up through sand into  
clear spring pools.*

*Silvery blue pupfish dart  
between swaying strands  
of dark green algae.*

*Pebbled streams gurgle  
from hillside springs,*

*sheltering snails smaller  
than a grain of rice. Birds  
bicker in nearby mesquite  
trees. A lizard scurries  
along the white powdery  
ground into shadows cast  
by a clump of rare Ash  
Meadows blazingstar.*





## A Rare Haven in the Desert

Ash Meadows National Wildlife Refuge is a haven for rare native wildlife and for people. In a world of dwindling natural areas, especially wetlands, the refuge protects a unique piece of the Earth. Here you can escape the rush and blare of the city, admire the beauty of desert and wetlands, marvel at the variety of plant and animal life, and know it will be here for generations to come.

Ash Meadows National Wildlife Refuge was established June 18, 1984. Managed by the U.S. Fish and Wildlife Service, the refuge protects threatened and endangered species, many of which occur nowhere else in the world. It encompasses over 23,000 acres of spring-fed wetlands and alkaline desert uplands. The name Ash Meadows refers to the abundance of ash trees once found in the area.

*Yerba mansa at Crystal Springs*  
©John & Karen Hollingsworth

## Endemic = found here and nowhere else on earth



*Endemic spring-loving centaury.*  
Cyndi Souza/USFWS

*The threatened Ash Meadows naucorid water bug is only 1/4 inch long at maturity. (right)*  
©Pete Rissler/USGS

## Why Save Endangered Species?

*Threatened Ash Meadows milkvetch.*  
Shawn Goodchild/  
USFWS

Ash Meadows has the greatest concentration of endemic life in the United States and second greatest in all of North America. At least 26 endemic species have adapted to live in and around the waters of Ash Meadows.

Approximately 10,000 years ago, large lakes and rivers were common in southern Nevada. As the climate warmed, these waters began to dry up, recede, and separate. This left behind isolated species within and around small bodies of water.

Of these endemic species, five are listed as endangered and seven threatened with extinction. This is due to habitat destruction and competition with non-native species.



The purpose of the Endangered Species Act is to protect threatened and endangered species and to conserve them in the wild. Ash Meadows National Wildlife Refuge has one of the highest numbers of threatened and endangered species of any national wildlife refuge.

Endangered means there is still time. When a species becomes endangered, it indicates something is wrong with the ecosystem. The measures we take to save endangered species help ensure the world we leave for our children is at least as healthy as the world our parents left for us.





## Water



*Alkali seep habitat.*

Alyson Mack/USFWS

Water is the key natural resource that makes Ash Meadows a unique ecosystem in the dry Mojave Desert. Where does it come from? Over 100 miles to the northeast, water enters a vast underground aquifer system. This water, also known as fossil water, takes thousands of years to move through the ground. A geologic fault acts as an underground dam partially blocking the flow of water and forcing it to the surface into over 50 seeps and springs. Over 10,000 gallons per minute flow year round, most of which come from seven major springs.

## Habitats of the Refuge



*Sand dunes by Peterson Reservoir.*

Cyndi Souza/USFWS

Wetlands, springs, and small streams are scattered throughout the refuge. Sandy dunes, rising up to 50 feet, appear in the central portions. Mesquite and ash groves flourish near wetlands and stream channels, while saltbush dominates drier areas. Creosote bush habitat occurs along the east and southeastern portions of the refuge. Alkali seeps are one of the most important habitat types, supporting the largest number of rare and threatened plants in the refuge.

Because it is such a unique environment, Ash Meadows National Wildlife Refuge has been listed as a Wetland of International Importance by the Ramsar Convention, an international treaty of 154 countries. The goal of this convention is to conserve special wetlands throughout the world.



*Crystal Spring.*

©Judy Palmer/  
Amargosa Conservancy



## Wildlife on the Refuge

### Wildlife Observation



*Pygmy blue butterfly feeding on an alkali mariposa lily.*

Alyson Mack/USFWS

The best seasons for wildlife viewing are spring and fall. In the heat of summer, many animals are active after dark. Some animals hibernate in the winter. Being patient, coming early in the day and quietly observing from a respectful distance will allow you to see more wildlife. Protect yourself and the homes of wildlife by watching where you step. Never put your hands or feet where you cannot see them, such as in crevices or dense brush.

Our boardwalks identify species, and interpret natural and cultural history of the refuge.

### Mammals



*Blacktail jackrabbit.*  
USFWS

*Antelope ground squirrel.*  
©Gerry Wykes

Watch for over 27 species of mammals such as blacktail jackrabbits, bats, and kangaroo rats. In the spring, baby desert cottontails hop along the boardwalk. These rabbits have adapted to handle the hot summers. Their light-colored fur keeps them cool, while their large ears help release heat, like a car's radiator.

In summer, antelope ground squirrels are often seen with their white tails up over their backs, acting like a sunshade to keep them cool. This unique desert animal's body temperature can go up to 110° F. To cool off, they lay down and stretch out their bodies on their burrow floor.

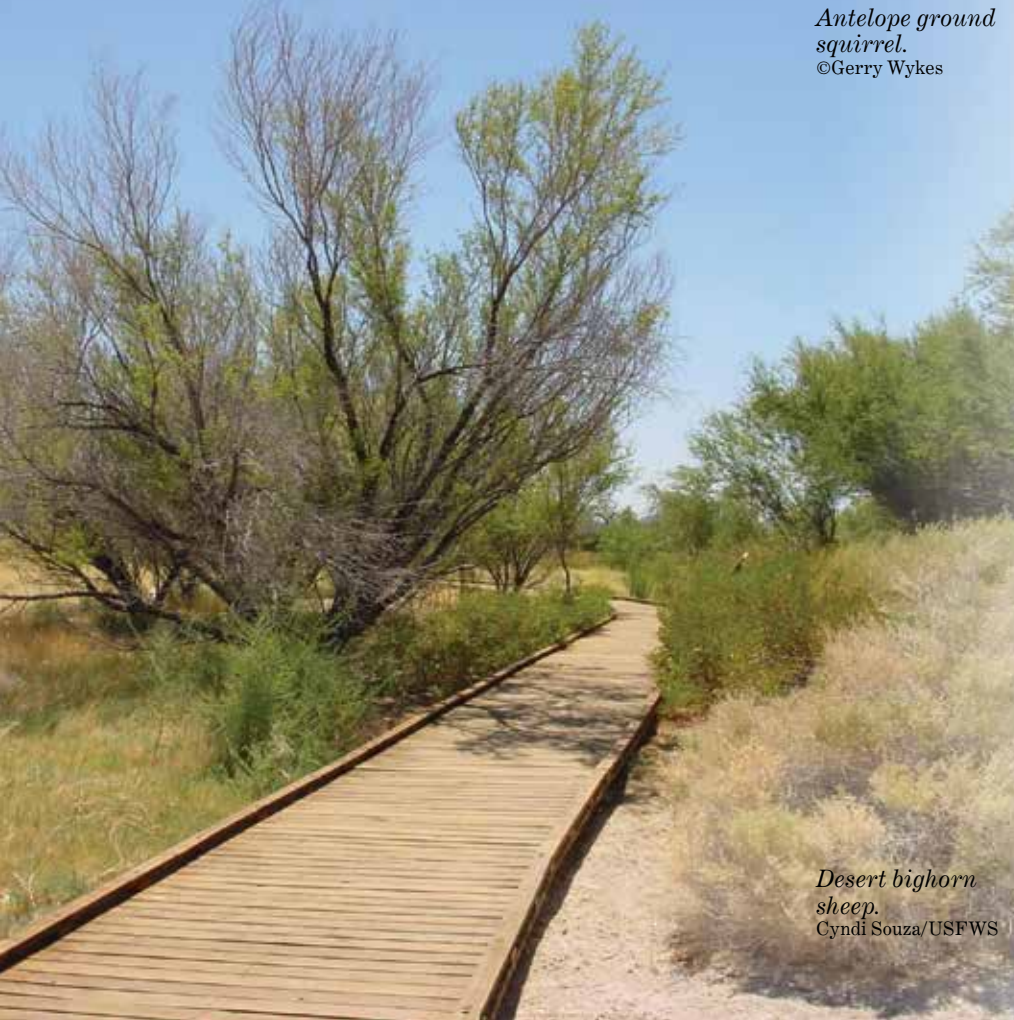


As the weather begins to cool, bobcats may become more active during daylight hours. These carnivores (meat-eaters) are well-camouflaged, and can run up to 30 miles per hour, making them difficult to see.

Winter brings a welcome surprise as desert bighorn sheep come to Point of Rocks Springs for a drink. They are able to survive in the desert by going as long as eight days without water, then drinking nearly five gallons at one time.



*Desert bighorn sheep.*  
Cyndi Souza/USFWS





*Endangered Ash Meadows Amargosa pupfish.*  
Cyndi Souza/USFWS

## Native Fish

There are four native fish species found on the refuge. The easiest fish to see is the endangered Ash Meadows Amargosa pupfish. Walk around Kings Spring at Point of



*Kings Spring at Point of Rocks.*  
Cyndi Souza/USFWS

Rocks to look for the blue-colored males defending their territories. They are larger than the greenish females and most colorful during the spring and summer breeding season. These tiny fish can also

be seen year-round at other major springs and streams such as Crystal and Longstreet.

The endangered Warm Springs pupfish habitat is less than one square mile. These amazing omnivores (animals that eat both plant and animal material) can survive in an inch or less of water. They have adapted to live in water as warm as 93°F.

*Endangered Ash Meadows speckled dace.*  
USFWS



Unlike the pupfish, endangered Ash Meadows speckled dace like to live in faster and cooler streams. They can grow to almost four inches and may live up to four years.

## Reptiles and Amphibians



*Gopher snake.*  
David St. George/  
USFWS

Over twenty reptile and four amphibian species have been counted on Ash Meadows. In spring, snakes, such as the Great Basin gopher snake and California kingsnake, are seen coming out of hibernation.

Lizards, such as the yellow-backed spiny and Great Basin whiptail, also begin to emerge. Look for the most commonly seen reptile, the Nevada side-blotched

lizard, sunning itself on rocks.



*Nevada side-blotched lizard.*  
Alyson Mack/USFWS

Watch for large chuckwalla lizards around



*Western zebra-tailed lizard.*  
Cyndi Souza/USFWS

Point of Rocks feeding on buds, flowers, and fruits of a variety of desert plants. Chuckwallas, when alarmed, run into rock crevices and inflate their bodies by gulping air. This wedges them in place and makes it hard for a predator to capture them.

During the heat of mid-summer, many reptiles and amphibians become nocturnal, but a large variety of lizards can still be seen on the refuge boardwalks. Watch for the fast sprinting western zebra-tailed lizard. These lizards can run up to 18 miles per hour standing on just their two back feet. Please don't try to pick them up. They have adapted to make their tail break off to escape predators. By late fall, as temperatures drop to the 40s, larger lizards and snakes begin to hibernate.

*Chuckwalla.*  
Cyndi Souza/USFWS







*Greater roadrunner.*  
©Aaron Ambos

## Birds

Ash Meadows is one of the largest oases in the Mojave Desert, frequented by a wide diversity of migratory birds.

Over 275 different species have been recorded on the refuge. Visit the refuge visitor center to pick up a complete bird checklist.

Birds are most visible during spring migration (April-May) and fall migration (August-September). Look for roadrunners and phainopepla at Crystal Spring and Point of Rocks.

A year-round resident, the topnotted Gambel's quail is the best adapted to arid environments of any quail. Quails are generally monogamous (one mate for life). Their family group is often two adults and up to 16 young. Watch for their covey (a large social group usually of 40 or more individuals) foraging for plants and sometimes insects in early morning or late afternoon.

Walk around the wetlands in the winter to see the largest variety of water birds. You can often see northern harriers and mountain bluebirds hovering over the drab winter landscape in search of their prey.



*Phainopepla.*  
©Aaron Ambos



*Gambel's quail.*  
©L. Page Brown/  
Cornell Laboratory  
of Ornithology

*Northern harrier.*  
(right)  
©Martin Meyer



## Plants and Flowers



*Endangered Amargosa niterwort.*  
Gina Glenne/USFWS

*Along the roads in late spring, look for the bright yellow desert prince's plume (below). This plant, high in selenium, can poison animals grazing on its leaves. Native Americans boiled the plant to remove the selenium and used it as a spinach-like food.*

Gina Glenne/USFWS

The average rainfall in Ash Meadows is three inches per year. In years of abundant rainfall, the refuge may have a display of over 330 species of flowers and shrubs in bloom. The threatened Ash Meadows milkvetch and threatened Ash Meadows sunray begin flowering early in spring. Walk around the slopes of Point of Rocks to see some of our eight species of cacti.



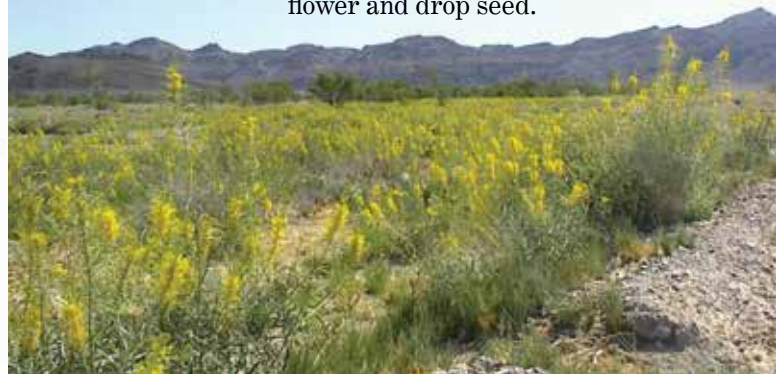
*Threatened Ash Meadows sunray.*  
Alyson Mack/USFWS

The most common tree on the refuge is screwbean mesquite. In the hot summer months, animals and people use it as shade. The tree gets its name from the coiled or screw-shaped pods found in bunches during summer. Native Americans cured the pods and ground them into flour.



*Screwbean mesquite pods.*  
Beth St. George/USFWS

How do the plants survive the heat? Many desert annuals avoid the heat and drought by surviving as seeds in the soil, often for decades, until favorable conditions occur. When the time is right they quickly sprout, flower and drop seed.





# Humans Leave Their Mark

## Early History

Native Americans lived in Ash Meadows for thousands of years, settling around spring pools and meadows. Families managed mesquite groves to enhance the size and taste of the nutritious seed pods. For hundreds of years, Native Americans cultivated corn, beans, squash, and sunflowers in small fields irrigated with spring water. From their Ash Meadows homes

they traveled to the mountains to gather pinyon pine nuts, hunt mountain sheep, and exchange news with friends and relatives.

Many descendants of the Ash Meadows Native Americans live today among the nearby Pahrup Southern Paiute and Timbisha Shoshone of Death Valley. The old archaeological sites, historical home locations, mesquite groves, and crystal pure water of Ash Meadows remain important elements of modern Paiute and Shoshone culture.

*Southern Paiute women, 1873.*

©Nevada Historical Society

## Later History

*Jack Longstreet settled in Ash Meadows from 1894 to 1899. This infamous prospector, gunman, and horse breeder used spring water to cool his stone cabin. The restored cabin stands near Longstreet Spring.*

©Nevada Historical Society, ca. 1920



The Amargosa Valley is also rich in pioneer history. Many settlers were interested in the prospects of mining or farming.



## Maintaining a healthy desert ecosystem



*Replanting after wildfire.*

USFWS

*Non-native salt cedar trees use a lot of water and add salt to the soil, making it difficult for native plants to survive. The refuge strives to replace salt cedar with natives.*

©Jeff Foott



Humans used Ash Meadows for thousands of years with few impacts to the wildlife. Large-scale disturbance began in the early 1960's when Carson Slough was drained and mined for peat. It was once the largest wetland in Southern Nevada, teeming with ducks and wading birds, pupfish and speckled dace, snails, and insects.

Development continued in the 1970's and early 1980's as more streams were diverted and channelized. In a "blink" of evolutionary time, wetlands were drained, earth moved, and roads developed.

The sensitive endemic species barely survived this habitat destruction and today are continually threatened with new challenges. One of the biggest challenges for native species is competition with over 100 species of non-native plants and animals, such as crayfish, bass, and salt cedar trees for the available habitat—food, water, shelter and space.

Refuge staff have started the difficult process of reconstructing and restoring this unique habitat. We work to increase public knowledge and understanding through environmental education and wildlife-related recreational opportunities. Ash Meadows, with your help, will once again be a wetland flourishing with endemic plant and animal life.



## Devils Hole

The entire population of the Devils Hole pupfish live in a water-filled cavern cut into a rocky hillside where they've been isolated for 10,000 to 20,000 years. The pupfish, which are less than one inch in length, primarily feed and spawn on a small rock shelf near the surface.

In 1952, Devils Hole became part of Death Valley National Monument.

Ten years later, the National Park Service began monitoring the water levels and by 1967 the Devils Hole pupfish was officially listed as endangered. Water levels in Devils

Hole dropped in the late 1960's to early 1970's as Ash Meadows was intensively farmed and developed. In 1976, the U.S. Supreme Court ruled to limit groundwater pumping to guarantee enough water to cover part of the rock shelf needed by the fish.

By the early 1980's, the U.S. Fish and Wildlife Service listed three more fish as endangered and designated 21,000 acres around Devils Hole as essential habitat. This area protected the groundwater needed for the pupfish and other listed species to survive. By 1984, the Service purchased the nearby land and designated it Ash Meadows National Wildlife Refuge.

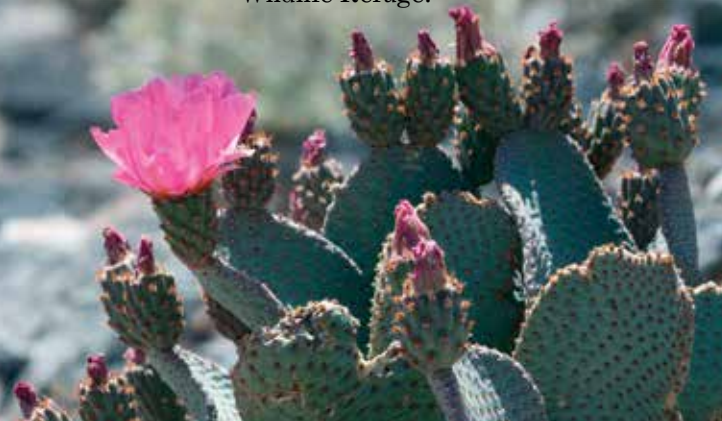


*Endangered Devils Hole pupfish.*

©Tom Baugh

*Beavertail cactus blooming near Devils Hole.*

Alyson Mack/USFWS



## Enjoying the Refuge

### Hours

The refuge is open daily from sunrise to sunset. Please contact the refuge headquarters for current information on visitor center hours.

### Refuge Access



All motorized vehicles and drivers must be properly licensed and are restricted to designated roads.

All roads on the refuge are unpaved. During wet fall and winter months, roads may be flooded. Some roads are unimproved and impassable for passenger cars. Please contact the refuge headquarters for current access information.

### Restrooms and Trash



Non-flush toilets and trash cans are provided at various locations throughout the refuge. Littering is strictly prohibited. Please help us put litter in its place by taking it with you when you leave the refuge.

### Pets



Pets must be leashed at all times, except when used in association with legal hunts. During the hot summer months, please do not leave pets in vehicles; we suggest you leave them home. Please help protect our fragile soil and habitats by keeping pets out of the water and on the boardwalk.

### Hunting



Seasonal hunting is permitted in designated areas subject to all applicable state, federal and refuge regulations. Please refer to the hunting flyer or contact the refuge headquarters for more information. Only species listed on the flyer may be hunted.

### Picnicking



Picnic facilities are available at refuge headquarters and Point of Rocks.

*Merriam's kangaroo rat.*

© Jeff Foott







*Birdwatching at Crystal Marsh.*  
Cyndi Souza/USFWS

### Boating



Only non-motorized boats or boats with electric motors are permitted on the refuge, and only on Crystal and Peterson Reservoirs. Watercraft must be in compliance with all applicable state and federal rules. Help protect your boat and Nevada's waters by checking for aquatic hitchhikers, such as the quagga mussel. For more information, visit <http://100thmeridian.org>.



*Threatened Ash Meadows gumplant.*  
Gina Glene/USFWS

### Hiking



Year-round hiking is permitted along designated refuge roads and trails. Refuge boardwalks provide an up-close view of the springs, fish, and plants of Ash Meadows without disturbing the fragile habitat.



*Fall represents change as the ash and cottonwood trees turn yellow.*  
Cyndi Souza/USFWS

## Regulations Protect Visitors

### Fishing



Due to the presence of endangered fish, fishing is prohibited. Fish that are not native to the area compete with and/or eat our native endangered fish. **Placing fish in the springs, streams, or other water on the refuge is in violation of state and federal laws.**

### Swimming



Swimming in or entering spring pools and streams is strictly forbidden. The endangered fish rely upon algae for food and as a place to lay their eggs. Swimming destroys the fragile algae. Please help conserve this valuable habitat.

### Camping & Fires



Camping and overnight parking are prohibited. The nearest public campgrounds are located in Death Valley National Park. No open fires, wood cutting, or collecting permitted.

### Animal and Plant Life, Artifacts



Disturbance of cultural resources of any kind is strictly prohibited. Artifacts, such as arrowheads, grinding stones and rock art, are protected under federal law. Collecting or attempting to collect animals, plants or other natural objects is prohibited.

### Firearms



There is no target shooting allowed on the refuge. Discharging firearms unless participating in a hunting program is illegal. Contact the refuge headquarters for current hunting regulations.

### OHVs



Operation of all off-highway vehicles (OHVs) is prohibited on the refuge. To protect the fragile habitat, please park in designated parking areas.

### Horseback Riding



Horseback riding is not allowed on the refuge.

*Yellow-backed spiny lizard.*  
Cyndi Souza/USFWS





## Safety Tips Be Prepared

The desert is a harsh, unpredictable environment where conditions can be extreme! Few visitor facilities exist, cell phone coverage is very limited, and water is not available ... so be prepared! Don't travel or hike alone. Leave your travel plans with someone and carry a first-aid kit.

Protect yourself from the sun by wearing a hat, light-colored clothing, and by using sunscreen. Avoid extreme mid-day heat and always drink plenty of water—don't ration it! During the summer, a person can require at least one gallon of water per day.

## Weather

Summer temperatures regularly exceed 100° F (38° C), broken by occasional quick, severe thunderstorms. By mid-September the temperature will drop into the 90s. Winter temperatures frequently drop below freezing with occasional snow or rainstorms.

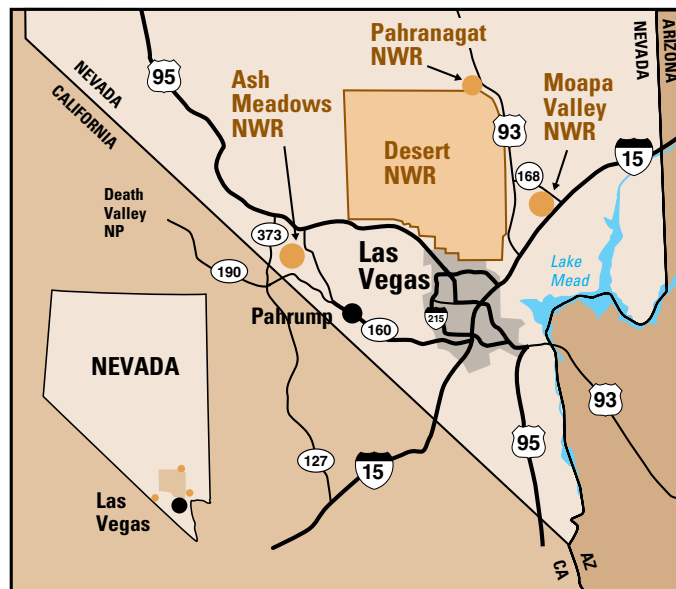
## Signs Protect Visitors and Resources

Please respect all signs posted on the refuge.



*Parasitic desert mistletoe covering a mesquite tree.*  
Cyndi Souza/USFWS

## Visit Nearby Refuges



### Desert National Wildlife Refuge



USFWS

The largest refuge in the lower 48 states with over 1.6 million acres. Drive through scenic desert bighorn sheep habitat, get a glimpse of the endangered Pahrump poolfish or the many bird species at Corn Creek Field Station, hike in the backcountry, or spend a night camping under the stars. 702/879 6110

### Moapa Valley National Wildlife Refuge



USFWS

Warm water springs from the hillsides giving life to the Moapa Valley. Refuge staff and their partners work to restore habitat for the endangered Moapa dace. See the dace and other native wildlife along an interpretive trail and scenic overlook. 702/515 5225

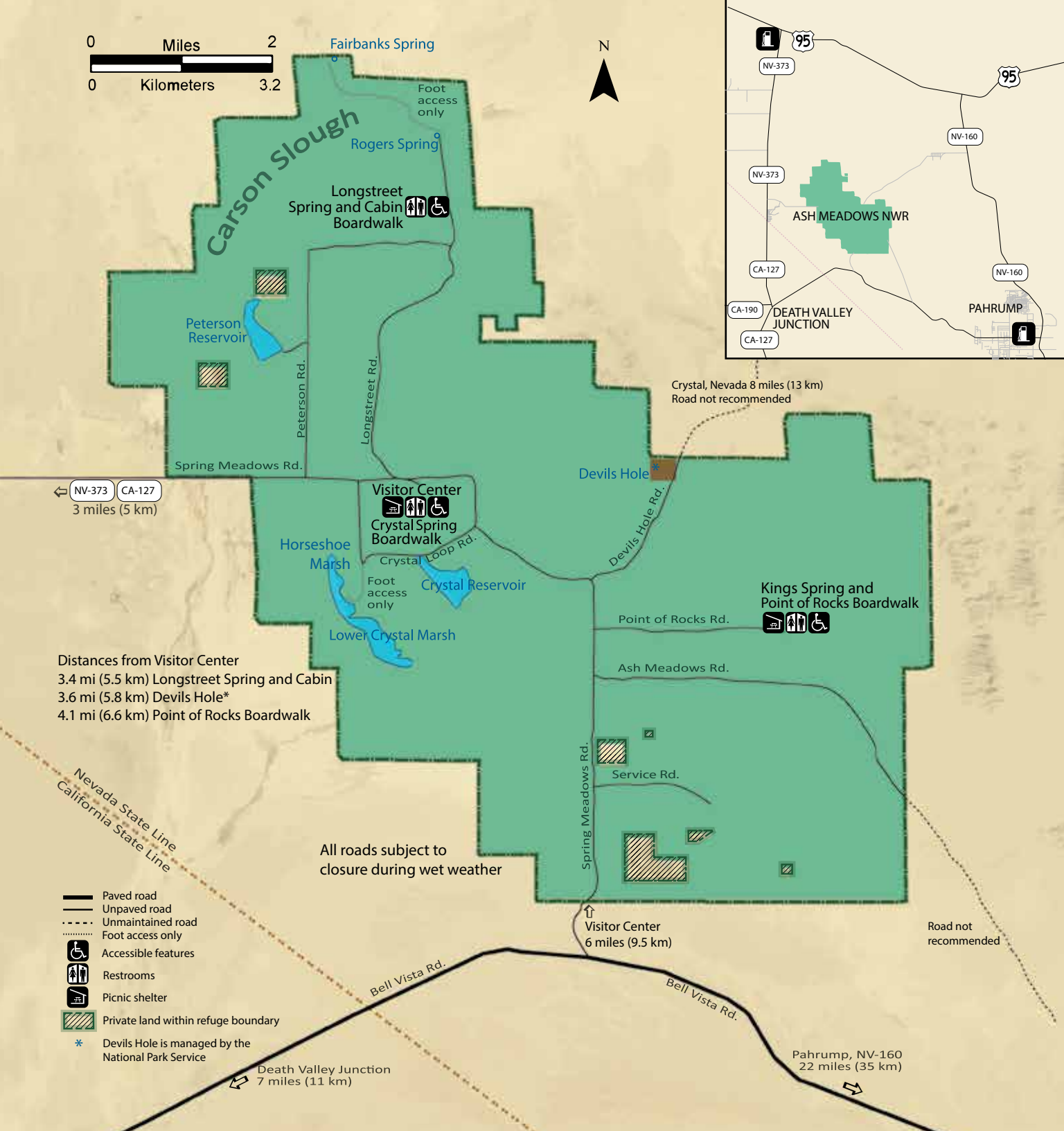
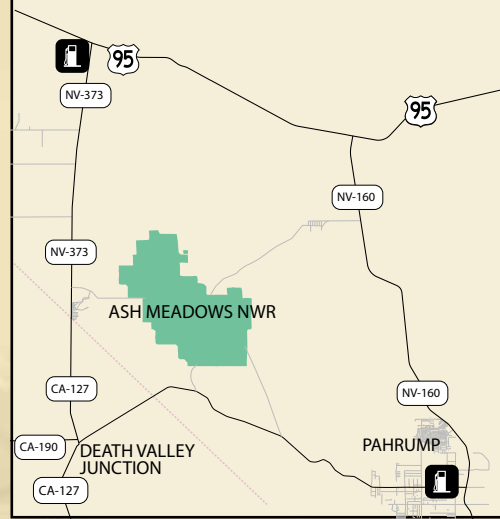
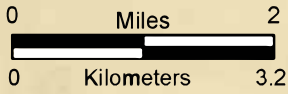
### Pahrnagat National Wildlife Refuge



Dave Menke/USFWS

This “valley of shining waters” bordering the Mojave and Great Basin deserts offers a resting spot for migratory birds and waterfowl. Enjoy this desert oasis while camping, fishing, hunting or observing wildlife. 775/725 3417





- Paved road
- Unpaved road
- Unmaintained road
- Foot access only
- Accessible features
- Restrooms
- Picnic shelter
- Private land within refuge boundary
- \* Devils Hole is managed by the National Park Service

**Ash Meadows  
National Wildlife Refuge  
610 E. Spring Meadows Road  
Amargosa Valley, NV 89020  
775/372 5435**

**Nevada Relay Service  
TTY 800/326 6868  
Voice 800/326 6888**

**Federal Relay Service  
TTY and Voice 800/877 8339**

**[http://www.fws.gov/refuge/ash\\_meadows](http://www.fws.gov/refuge/ash_meadows)**

**Visit the U.S. Fish & Wildlife Service  
on the internet at  
<http://www.fws.gov>  
800/344 9453**

**Visitors/persons with disabilities may request  
reasonable accommodations by calling the  
refuge manager.**

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