

# HABITAT!

Volume 18, 2012



## Bosque Behind-the-Scenes



Marvin DeJong

### On the cover:

- **Ashley Inslee, Refuge Biologist, and Matt Roberts, Volunteer, duck banding. Photographer: Joe Zinn**
- **Landscape. Photographer: Sandra Noll**
- **Deer. Photographer: Marvin DeJong**
- **Successful youth turkey hunter. USFWS**
- **Festival raptor photography workshop. Photographer: Linda Rockwell**

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Welcome to Bosque del Apache National Wildlife Refuge. Many of you come to Bosque to see the thousands of cranes, geese, and waterfowl that winter here every year, but one of the most important aspects about this Refuge is something the public rarely has an opportunity to see: the amount of behind-the-scenes work that goes into managing this magical place. As you tour the Refuge's wetlands, trails, and Auto Tour Route and observe and photograph wildlife, I invite you to consider what it takes to manage this diverse oasis in the desert.

When the Refuge was created in 1939, Congress tasked it with creating suitable winter habitat for migratory birds and other wildlife. That was a tall order considering the fact that most of the natural processes that made the Bosque del Apache such an ideal spot for wildlife had been heavily impacted by man's attempt at managing the Rio Grande. Yet the Service rose to the challenge by creating waterways and impoundments to capture and hold water for the annual arrival of the birds.

We continue the process today, only now we have gone far beyond creating waterways and impoundments. Using tools such as moist soil management and fire management, we have replicated the natural processes that once occurred here annually. These management tools produce natural foods and habitat that wildlife use during their winter stay. The Refuge also utilizes an active agricultural program that produces corn, alfalfa and other cereal grains to supplement the birds' diet. Throughout the spring, summer and early fall, the Refuge is alive with the sound of heavy equipment as staff and volunteers work together to prepare the habitat for the fall migrants and winter residents.

Bosque del Apache NWR is also a U.S. Fish and Wildlife Service Land Management Research and Demonstration Area, where wetland and riparian restoration and management techniques are tested in an arid environment. Techniques developed here are shared with other land management areas across the Western U.S. and Mexico. At any time of the year, over a dozen researchers may have on-going projects throughout the Refuge.

Finally, the roads you drive on, the decks you stand on, the trails you hike, and the facilities you use while you are visiting require no less an effort to develop and maintain. While Bosque serves first and foremost to offer quality habitat for wildlife, visitors are just as much a part of this Refuge as the cottonwood trees and coyotes. As you drive, walk, and/or bicycle through the Refuge today, keep in mind that the beautiful place you are experiencing requires a lot of behind-the-scenes work from staff and volunteers. It is truly a labor of love.

--Tom Melanson, Refuge Manager



Louisiana State University graduate student Drew Fowler samples corn as part of his Master's research project.

# They Came to Bosque: A Look Back at Some of the Unusual & Wonderful Feathered Friends Who Visited the Refuge



Jerry Oldenettel

**Elegant tern at Bosque del Apache.**

Cranes, geese, ducks. Ask most visitors what they might see at the Bosque and you will get a similar answer. Even non-birders will know these big splashy birds that descend on the Bosque in huge numbers every winter. Over the years the Bosque has also played host to a number of “unusual, wonderful, exotic feathered tourists,” who stay a day or a week before continuing on their way.

One of the earliest exotic visitors to the Refuge was a groove-billed ani, a bird of south Texas that showed up near the Eagle Scout Deck during the Festival of the Cranes in 1994. An all black bird, it could easily be mistaken for a grackle except for its massive hooked bill. It was very tolerant of people and was soon suspected of not being well. It was determined to have lead poisoning and after a period of rehabilitation was transported to south Texas and released.

Our most celebrated exotic visitor was the sungrebe, who appeared just prior to the Festival of the Cranes in 2008. This is a brightly plumaged orange, white and blue bird from South America with no history of vagrancy i.e. showing up in odd places. Birders from all over the USA arrived to add this bird to their list. After a few days it disappeared. There is no doubt that the sungrebe was here from the numerous photos taken, but how it arrived and where it went remain a mystery.

The ruff is a shorebird that breeds in the high arctic of Eurasia and gets its name from an extravagant feathered ruff the male uses to attract a female. It's a long legged plump bird with a smallish head that first appeared in New Mexico in 1994 at the Bosque. This species does have a history of vagrancy but is more often found on both the east and west coast. In 2010 a female, called a reeve, showed up at the Bosque. While waiting for a chance to photograph the reeve, birders were treated to another rare bird from the West Coast – a slender long-winged elegant tern.



**Sungrebe at Bosque del Apache**

Jerry Oldenettel

Another state first for the Bosque was a clapper rail that was discovered in 2009 across the road from the Eagle Scout Deck. Related to coots, this large, long billed rail is a very secretive coastal marsh bird most often identified by its distinctive clapping

call giving the bird its name. The following year the bird was back in the same small marsh and stayed until the water dried up.

Bosque has seen many “unusual, exotic feathered tourists” that draw birders from throughout the state and sometimes, as with the sungrebe, from throughout the US. Most of the time the identity of these unusual birds is not in question, but how it arrived here so far out of its range is. Some birds have a history of wandering, some are blown off course by storms, others might be people-assisted (reintroductions such as Aplomado falcon or the cage bird trade in Mexico), and some we'll never know. Generally, the birds are here only a short time before moving on, some will return another year, and some-



**Groove-billed Ani**

Jerry Oldenettel

times the birds will actually expand their range and become regulars, which has happened with the white-tail kite and Neotropical cormorant.

Next time you visit the Bosque keep your eyes open for the next “exotic tourist” to join the ranks of visitors such as white ibis, roseate spoonbill, brown thrasher, and black-bellied whistling duck.

*--Cathie Sandell, Volunteer*

## The Art of Moist Soil Management

Bosque del Apache National Wildlife Refuge is one of the most actively managed wetland complexes in the National Wildlife Refuge System. Key to the success of the Refuge's management is the manipulation of man-made components to mimic the complex actions of a natural system. At the core of these manipulations is the drying (drawdown) and flooding of wetlands.

To better understand this it is important to understand what a wetland is. Wetlands are the transitional areas between uplands and aquatic habitats. Wetlands must have one or more of the following attributes: 1) the land supports water loving/tolerant plants; 2) the soil is poorly drained or undrained (hydric); or 3) the ground is saturated or covered by shallow water at some time during the growing season. Within this definition wetlands have a wide range of flooded periods ranging from ephemeral (a few days to weeks) to semi-permanent (flooded for many years). However, at the core of what "makes" a wetland to scientists is a period of drying. These periods of drying and the variability in the duration of these drying events are essential for plants to germinate and nutrients to be cycled. The flooded period allows aquatic invertebrates such as dragonflies, midges, and mosquitoes to thrive and reproduce, providing a rich food resource to an array of bird, mammal, reptile, and amphibian species. The Refuge strategically uses precise drying and flooding periods to create a diversity of wetland habitats and food resources for waterbirds of all types.

At Bosque del Apache NWR we have three main types of wetland habitats – seasonal, semi-permanent, and ephemeral – with the most common being the seasonal wetlands. Examples of seasonal wetlands can be seen at several of the decks including Flight, Scout, Marsh,

Chupadera, Willow and Coyote. Semi-permanent wetlands can be seen on the Boardwalk and the Marsh Trail. Ephemeral wetlands, which are the least common on the Refuge, can be seen along Highway 1 as you come south from San Antonio.

Each wetland type supports a different plant community, which in turn meets different energetic (food and cover) needs for wildlife. Seasonal wetlands are our most productive wetlands and the core of waterfowl food production. They support seed-producing annuals with some perennial vegetation. The Refuge manages seasonal wetlands with a technique called moist soil management, which is a catch all term for managed wetland drying and flooding to mimic the natural or historic conditions of a location. The Refuge implements moist soil where we are trying to produce foods for migratory waterbirds and restore shrub and forest communities. The semi-permanents are the least productive in terms of food production for our common waterfowl, but they are essential for Virginia sora rails, bitterns, colonial waterbirds (e.g. ibis and night herons), waders (e.g. egrets), and fish-eating birds (e.g. cormorants). These wetlands are characterized by open water and tall perennial vegetation such as cattail and bulrush. Ephemeral wetlands in our system are more alkali (salty) and support salt grass, muhli, and foxtail barley. Depending on the time of year you visit, some or most of these wetlands will be in some state of drying.

The success of seasonal wetland drying is based on a combination of several factors, including time since last disturbance (tillage, disking, and fire) and the previous year's plant community. Disturbing a wetland resets the plant community; older perennial plants are removed and faster growing annual plants

establish themselves. Mechanical mixing of soils mimics processes historically accomplished through the actions of large debris washed down the Rio Grande during runoff or monsoonal flooding. These actions activate seeds dormant in the soil and release nutrients tied up in the soil profile or on the surface in decadent plant material and make those nutrients available for the next plant community.

Recently disturbed wetlands are dried early in the spring (usually April), when conditions tend to be cooler and riparian evapotranspiration (movement of water through actively growing plants) has not started. April drying favors early succession broad leafed herbs and grasses such as smartweed, pigweed, and millet. Wetlands that are one to three years past their last disturbance have a slightly delayed drying period (May). Delaying the drying allows established perennial plants, including certain desirable sedges and rushes, to have a prolonged irrigation. These delayed periods of drying also promote some of the warmer season grasses such as swamp timothy, sprangle-top, millet, and cup grass. Beyond four years without disturbance, wetlands at Bosque del Apache NWR tend to shift towards perennial plant communities that provide limited value to waterbirds. These older wetlands will be held wet a bit longer to stress plants during the growing season, followed up with some type of disturbance (tillage, disking, and fire) later in the summer.

When the objective of management is to establish a riparian forest community, drawdown is delayed into June to mimic the attenuation (recession) of the historic hydrograph following peak runoff in the Middle Rio Grande. Timing the drying period with this historic event matches the annual release of black willow and cottonwood seeds ("cotton"). Most New Mexicans are familiar with "cotton" as seeds floating through the air



**Managed wetland drying and flooding mimics natural or historic conditions.**

clogging swamp coolers and filling yards and gutters every June. The Refuge has effectively used delayed and slow drying to restore more than a thousand acres of riparian forest.

Typically, beginning in mid-June and continuing through July, all seasonal wetlands are mowed and then flooded for a minimum of three days to reduce cocklebur. This short duration flooding and drying stresses and kills a large percentage of the non-desirable cocklebur and provides the water loving plants including millet, sprangletop, and smartweed a much needed irrigation. If your visit to the Refuge is timed with these management floods, you will have the opportunity to see wildlife generally not seen during the winter months.

Wetland flooding is dictated by several factors as well. Plant productivity, average timing of waterfowl migration, average population peaks, and ensuring public viewing opportunities without compromising bird use of wetland foods are all factored into how and when the Refuge will flood a particular wetland. Wetlands that have poor productivity are the first (earliest in the fall) to be flooded. These would include those wetlands scheduled for disturbance the following summer. Although low in food production, these wetlands can provide adequate resources during the early migration period (September - October), which matches well with the last of the fall migrant shorebirds, blue-winged teal, and early northern pintails. The next to be flooded are

those units that produced the highest yields of wetland foods (2-4,000 lbs/acre). The start of flooding for these high seed yield wetlands is managed so that each day during the peak of migration (mid-November - mid-December) new feeding areas are made available to ensure birds get enough food. The last units to flood are a series of small wetlands near the Coyote and Willow decks that produce dense stands of millet and sprangletop. These plants provide the birds food that is easy to digest and use to build the muscle and fat needed to prepare for spring migration. The Refuge floods one of these small wetlands per week beginning in mid-January to meet this pre-migratory need. If you are fortunate enough to be visiting the Refuge at that time of the year, you will be treated to thousands of ducks pouring into these units.

Regardless of when the fall flooding happens (early fall - late winter) on a particular wetland the water will be maintained until the spring drying period starts. During this time aquatic invertebrates (snails, beetles, and smaller bugs) begin the breakdown of plant material. These invertebrate populations grow at exponential rates and are the dietary foundation for female ducks heading north to the breeding grounds and later tens of thousands of migratory shorebirds. With the onset of spring the process begins again with the first wetlands drying in preparation for the next fall's migration.

All of this management requires careful planning and hard work, but a managed

wetland full of feeding waterfowl, egrets chasing frogs, and plovers running after insects shows the true value of these habitats to wildlife and provides a wonderful spectacle for the visitors of Bosque del Apache NWR.

—John Vradenburg, *Land Management Research and Demonstration Biologist*

## **First Ever Refuge Youth Turkey Hunt A Success**

In April and May 2011, four young hunters, between the ages of 9 and 17, participated in the first Bosque del Apache NWR Youth Turkey Hunt. They were successfully drawn from a pool of more than over 50 applicants, representing young hunters from all over the state, who had applied for one of four coveted weekend hunting slots during the state turkey hunt season. Each young hunter was accompanied by a parent and a Refuge volunteer guide, who led them through the hunting area. All of the hunters successfully bagged one bearded turkey each, the heaviest of which weighed in at approximately 21.2 pounds.

“This program has done a great job of providing quality recreational opportunities for youth and, more importantly, memories that will last a lifetime,” said Shawn Gillette, Supervisory Outdoor Recreation Planner for the Refuge. There have already been requests to extend the available hunt opportunities. Word about this youth hunt is spreading.” Calls and inquiries have come in from as far north as Taos and as far south as El Paso, TX. The popular hunt wouldn't have come about if not for the cooperation and support of the New Mexico Department of Game and Fish, Friends of the Bosque del Apache, the Armendaris Ranch, the National Turkey Federation, Ducks Unlimited, and the Turner Foundation.

--see “Youth Hunt” page 10



In 2012, Bosque del Apache NWR will host the 25th Annual Festival of the Cranes from November 13-18. The Festival started small – one day of activities – and eventually grew to six formal days in 2002. Since that time we have focused more on growing “better” than growing “bigger.” Unlike many other birding festivals, the Festival of the Cranes has incorporated various interests related to culture, history, art, photography, and ecology, in addition to various workshops, tours, and lectures on birds and birding. The Festival has always been run as an outreach and educational event for the Refuge and the local community. Thanks to a strong coalition of the Refuge, Friends of the Bosque, the City of Socorro, and many others, the enhancement of Festival has not come at the expense of our commitment to provide affordable activities for individuals, families, and even small groups. Many events are still free or a minimal fee of \$5.

We are proud to have become the single greatest income-generating event for Socorro County, and we always strive to produce a first-rate event. Festival is always the week before Thanksgiving, operating on the “average” arrival period for

the first large waves of migrating sandhill cranes and snow geese, and a typical Festival can see 3,000-8,000 cranes and 30,000-40,000 geese. We emphasize that the birds don’t keep a calendar and that the Festival is a celebration of their arrival, not necessarily their peak numbers (come back and see them anytime through mid-February!). Despite recent years’ downturn in the economy and high gas prices, we have seen attendance and revenues holding strong, testament to the reputation and consistency of the Festival as a premier event. With more than 100 workshops, tours, hikes, and lectures, in addition to a wildlife art show, exhibits, kids programs and various activities throughout the community, the Festival is worth the drive or flight.

We are planning year-round to create a special event that you can return to year after year and experience something new (how about orienteering!?!), so if you haven’t made plans for November 2012, the hotels in Socorro are awaiting your reservation. Festival agendas from the previous year are always available online at [www.festivalofthecranes.com](http://www.festivalofthecranes.com), and the current year’s schedule is usually online and available by mail in mid-August. Registrations start September 1. See you in November!



## **New Beginnings: Fulfilling John Taylor’s Visions of the Future**

In 2004, long time Bosque del Apache NWR Biologist John Paul Taylor, Jr. passed away. In the years following his passing, his career defining visions of a restored Rio Grande ecosystem, a fluid sharing of knowledge with scientists in Mexico, and a philosophy of planning with long term impacts in mind have continued to assist and influence the successors to his legacy. Restoration of a vast tract of saltcedar-choked land on the south end of the Refuge to productive wetlands, farm fields, and wildlife habitat was a life dream for John Taylor. In the fall of 2009, the John Taylor Memorial Trail opened to the public, allowing visitors to view the efforts to realize his dream.

John Taylor was a pioneer in the research, control, and eradication of invasive saltcedar in the Southwest. Before John started his research, saltcedar was viewed as an invasive so prevalent across the Southwest that most assumed it could not be controlled and restoration efforts were a waste of time and resources. John’s early research, first in the active floodplain and later in managed portions of the Refuge, proved that saltcedar could be controlled and native plant/animal communities reestablished. What was needed was an assurance that critical river processes like flooding in the spring and a shallow groundwater table would be mimicked seasonally. Once these were in place, native plants could thrive and easily compete with saltcedar. Working with professors from many different universities, John established partnerships that led to numerous research projects, publications, and outreach to others along the river and in other southwestern watersheds.



**Bobcat at the Bosque.**

Marvin DeJong

Grande Valley. John was one of the first American biologists to systematically survey habitat conditions and waterbird populations in Mexico and the US, linking the entire cycle of migration. He saw that often a bad year in Mexico, due to weather or changes to wetland use, meant that more food would be needed on the bird's migration. These observations led him

John focused his research on the most efficient methods for removing saltcedar. He was an experimenter who would try nearly any technique that might work. Over time he pioneered a saltcedar management toolbox suitable for a wide range of conditions and habitats using methods ranging from aerial application of herbicide to mechanical control using bulldozers equipped with specially designed implements. Today, the wetlands you see to the north and east and farmlands to the west of the John Taylor Memorial Trail are all sites restored using the techniques he pioneered. These areas provide critical food and habitat for Refuge wildlife. Work removing saltcedar continues on the Refuge and up and down the Rio Grande, a result John would respect and view with pride.

Early in his career at Bosque del Apache NWR, John recognized that the Refuge is only a small part of the annual needs of migratory waterbirds. He observed that wildlife knows no borders, and neither do ecosystems. Sandhill cranes and other waterbirds spend much of their time in the wetlands of Mexico in the winter after passing through the Rio

to forge new research partnerships with biologists throughout Mexico. This passion for his colleagues in Mexico paved the path for numerous young biologists to conduct research at Bosque del Apache NWR and take their experience back to Mexico.

To this end, the John P. Taylor, Jr. Internship was established in 2006 at New Mexico State University (NMSU). The internship is a collaborative effort between the Taylor family members and NMSU to facilitate field-based learning opportunities for students in NMSU's Department of Fish, Wildlife, and Conservation Ecology and Department of Animal and Range Science. Bosque del Apache NWR serves as the field location for NMSU student interns who are provided an opportunity to work with Refuge staff or conduct field research

on Refuge projects. Bosque del Apache NWR provides housing and a vehicle, while NMSU provides the students with a summer stipend. The program emphasizes recruiting interns who are Mexican nationals attending NMSU for their education. It is our hope that John's passion for habitat management, waterfowl ecology, and across border mentorship is captured in the internship program.

John Taylor tried to incorporate the ideals of "7th Generation Sustainability" into his projects. Seventh generation sustainability is an ecological concept that urges the current generation of humans to live sustainably and work for the benefit of the seventh generation into the future. It originated with the Iroquois who urged tribal leaders to think seven generations ahead (a couple hundred years into the future) and decide whether the decisions they make today would benefit their children in the future. As visitors walk the John Taylor Memorial Trail now and in the future, they will experience a beautiful, restored ecosystem used by wildlife, available as a learning experience and a true representation of the visions of John Taylor.

*--Sean Brophy, Wildlife Refuge Specialist*



**Birding along the John Taylor Trail.**

USFWS

## Re-examining Visitor Safety at Bosque del Apache

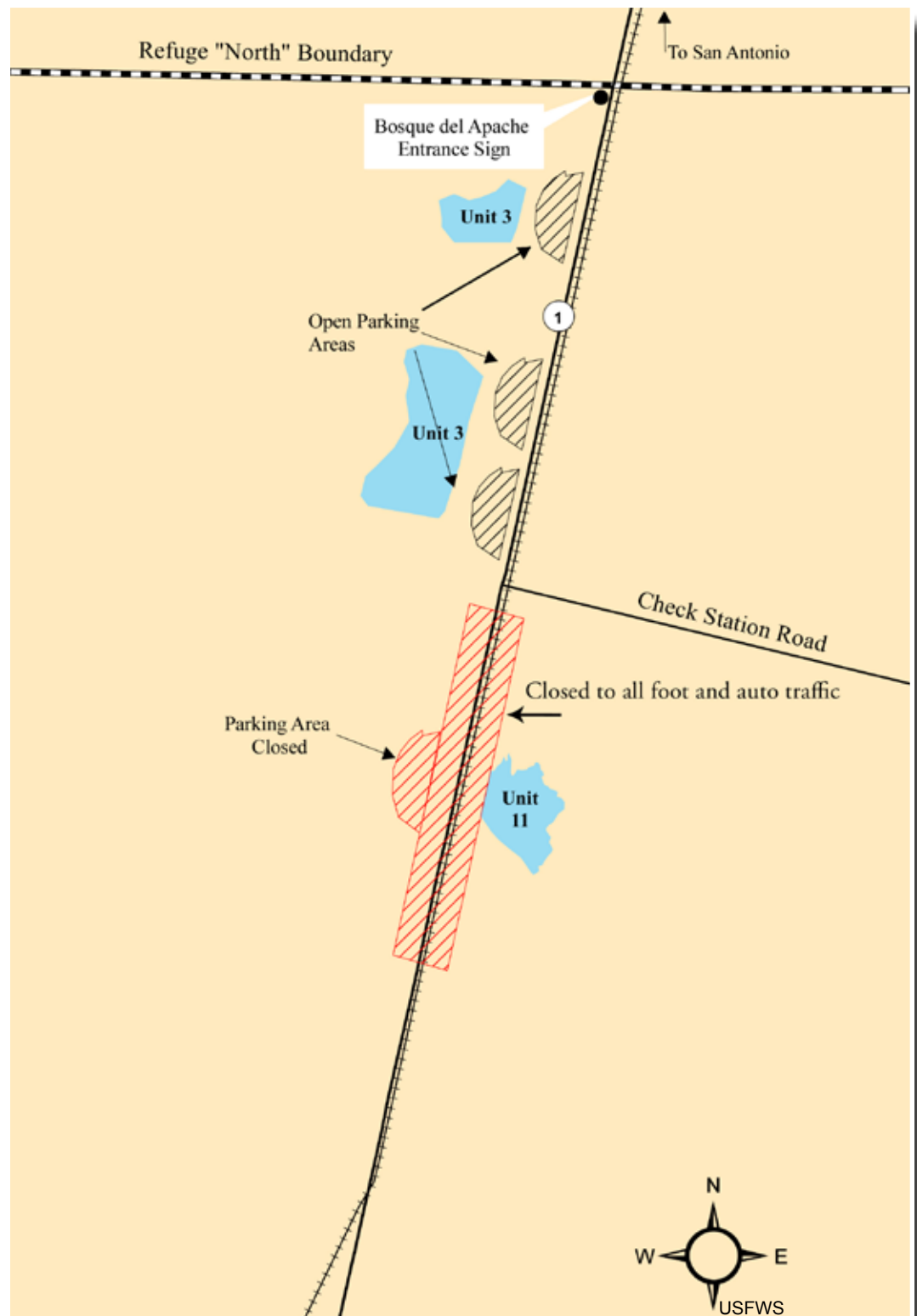
The gravel parking area on Hwy 1 just north of where the railroad tracks cross the road is going to be closed to the public until further notice. This parking area once provided viewing access to the flooded wetlands, known as Unit 11, on the east side of the highway and railroad tracks.

### A Dangerous Situation

The area in question is adjacent to the railroad right-of-way. In past winters, visitors have parked their vehicles on the side of the highway, where no roadway shoulder exists, to view/photograph the birds in the wetlands just beyond the railroad tracks. In the process, visitors frequently crossed the highway to set up their scopes/cameras on or near the busy roadway and even on the railroad tracks! This has resulted in many near “misses” between pedestrians and cars.

### Looking toward the Future

Protecting public safety and ensuring that all visitors enjoy their time at Bosque del Apache continues to be a top priority for the Refuge. To eliminate the dangerous situation until a safer alternative can be developed, the gravel parking area that provided viewing access to Unit 11 has been removed and the shoulder of both sides of the highway has been closed to all parking. The Refuge is actively working with its partners at the New Mexico Department of Transportation (NMDOT) and the Burlington Northern Santa Fe Railroad (BNSF) to develop a strategy to allow for wildlife observation/photography in this area. “We will see a resolution that is a ‘win-win’ situation for Refuge visitors, wildlife, NMDOT and BNSF” said Tom Melanson, Refuge Manager. “But it is going to take time and in the



short term, we ask that visitors understand the reasons we have put these safety measures in place.”

Unit 11 will continue to provide essential wetland habitat for many species of migrating birds. However, please observe the closed parking areas and enjoy Unit

11 as you drive past this year; there are countless other opportunities down the road to get out and enjoy the spectacular wildlife resources of the Bosque del Apache.



## New Bicycle Routes are for the Birds

Bicyclists will be able to explore the Refuge in an exciting new way beginning in Fall 2011. The East Low Flow Conveyance Channel service road, which offers almost 9 miles of contiguous gravel roadway with no vehicular traffic, provides a relaxing bicycle ride with the opportunity to catch a glimpse of some of the more secretive wildlife that call the Refuge home. Other portions of the Refuge open to year round bicycling include NM Highway 1, the Point of Lands Scenic Overlook, and the two-way road bisecting the Auto Tour Loop (see Map on back page).

During the summer months the Farm and Marsh Loops of the Auto Tour Loop will be open to bicycle traffic. To reduce disturbance to migratory waterfowl during times of peak migration, these same Loops are now closed to bicycle traffic from October 1 through March 31. Years of observations by Refuge biologists have shown that during the fall

and winter, bicycling along the Tour Loops significantly disturbs the cranes, geese and ducks for which the Refuge was established. The birds are more likely to be stressed and waste energy fleeing the erratic, predator-like movement of bicycles than a vehicle or person on foot. Increased stress levels can also make wildlife more vulnerable to disease or predators.

The Refuge encourages visitors to utilize bicycles, an environmentally friendly form of alternative transportation, to enjoy their National Wildlife Refuge. These seasonal changes in bicycle use will provide miles of new trails while minimizing disturbance to the wildlife at Bosque del Apache NWR.



John Coxon

### Friends of the Bosque del Apache Membership Application

Name \_\_\_\_\_

Family Members (for Family Membership) \_\_\_\_\_

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

#### Membership Level:

- Individual \$20
- Family \$25
- Student \$15
- Senior \$15
- Special Friend \$60 or more
- Best Friend \$100 or more
- Lifetime \$1000 or more
- Business Sponsor \$200

#### Interests:

- Help with Friends activities
- Help with the Festival
- Serve on a Friends Committee

- Check to receive Newsletter electronically

**Please mail with your check to:**  
**Friends of the Bosque del Apache**  
**PO Box 340**  
**San Antonio, NM 87832**

### Bosque del Apache National Wildlife Refuge

Refuge Manager - Tom Melanson  
PO Box 280, San Antonio, NM 87832  
[www.FriendsoftheBosque.org](http://www.FriendsoftheBosque.org), Phone 575-835-1828

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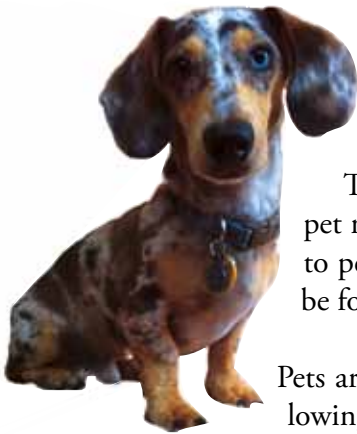
Address correspondence to:  
Habitat!  
c/o Friends of the Bosque del Apache  
PO Box 340, San Antonio, NM 87832

### --Youth Hunt continued

The Refuge is preparing for the 2012 spring youth turkey hunt. Information and applications will be available in March. An application processing fee of \$6.00 is required per application for interested parties. Selected youth hunters (age 17 and under) must possess a state completion certificate for a New Mexico Hunters Education Course and be accompanied by a parent or guardian age 21 or older. For more information about hunting opportunities on the Refuge, call (575) 835-1828 or visit [www.fws.gov/southwest/refuges/newmex/bosquel/huntfish.html](http://www.fws.gov/southwest/refuges/newmex/bosquel/huntfish.html).



USFWS



## Pets on the Refuge

To ensure that you and your pet enjoy a safe visit, follow all pet regulations while inside the Refuge. Wildlife may be drawn to pets and their owners; pets can wander away and may never be found – the Refuge is a wild place!

Pets are allowed on the Bosque del Apache NWR under the following conditions:

### From October 1 thru March 31

- 🐾 Pets must be inside the vehicle at all times while on the Auto Tour Loop.
- 🐾 Pets are not allowed on any trails adjacent to the Auto Tour Loop (this includes: Marsh Boardwalk, Taylor Memorial Trail/Overlook, Rio Viejo Trail, and the Photo Blind/Trail).
- 🐾 Pets are not permitted on observation decks, or inside the Visitor Center.
- 🐾 Pets are permitted on all hiking trails west of Highway 1 (this includes: Chupadera Trail and Canyon Trail) though they must be physically restrained at all times on a leash no more than six feet in length.
- 🐾 Pets are not permitted on the Low Flow Conveyance Channel East Service Road year round.

### From April 1 thru September 30

- 🐾 Pets are permitted on all hiking trails though they must be physically restrained on a leash no more than six feet in length.
- 🐾 Pets are not permitted on observation decks, or inside the Visitor Center.
- 🐾 Pets are permitted out of vehicles along the Auto Tour Loop though they must be physically restrained at all times on a leash no more than six feet in length.
- 🐾 Pets are not permitted on the Low Flow Conveyance Channel East Service Road year round.

# You Are In Mountain Lion Country

Mountain lions have been observed inside Bosque del Apache NWR. Mountain lions can be dangerous; being smart, cautious, and aware may prevent incidents or attacks.

### DID YOU KNOW:

- Attacks are extremely rare
- Running and unleashed pets can trigger an attack
- Individuals are more vulnerable than groups
- Lions are most active at dusk and dawn, so be aware

### DON'T RUN:

- If you see a lion, face the lion and slowly back away
- DO NOT run or play dead
- Pick up small children immediately and calm them
- Leave room for the lion to escape, do not approach
- Make noise, make yourself look larger
- Lift arms and shout loudly
- If the lion attacks – FIGHT BACK HARD

### BE ALERT:

- Do not approach dead animals, lions defend their prey
- Hike in groups and make noise to prevent surprising a lion
- Carry a walking stick and bear/pepper spray if you have it
- Keep pets leashed at all times

### PARENTS:

- Keep children close at hand when hiking
- Don't let children run ahead or fall behind

# What You Need To Know While at the Bosque...

**Hours** The Auto Tour Loop is open from 1 hour before sunrise to 1 hour after sunset every day of the year.

The Visitor Center is open from 7:30 - 4:00 on weekdays and 8:00 to 4:30 on weekends, except Christmas Day, New Year's Day, Thanksgiving Day, and July 4.

**Entry Fees** The one-day entry fee is \$5.00 per passenger vehicle with all occupants or \$50 for a commercial tour bus. The fee can be paid at the Visitor Center during regular business hours, or at the seasonal fee booth at the entrance to the Auto Tour Loop. If the fee booth is not open, a self-pay station is provided. Federal Passes are available for purchase at the Visitor Center and fee booth during business hours.

**Restrooms** The restrooms are in a separate building to the west of the Visitor Center, and are fully accessible. There are also permanent, accessible restrooms on the east side of the Wildlife Drive where the Marsh and Farm Loops come together. From November through February additional porta-potties are located around the tour loops.

**Picnicking** The Refuge provides a picnic pavilion near the Visitor Center with trashcans. You may also eat at other locations of your choice, but be careful not to leave litter. If you packed it in, pack it out. No fires or grills are allowed anywhere on the refuge.

**Vehicles and Parking** The Refuge lies along both sides of NM Highway 1, which connects to I-25 at exit 139 in the town of San Antonio and with I-25 exit 115 south of the refuge. NM Highway 1 is a 55 mph state highway. Stopping suddenly on the roadway to look at birds or other wildlife is dangerous, so please use the wide turnouts along both the north and south approaches.

The Visitor Center parking lot can accommodate motor homes as well as cars. You are welcome to unhitch and use your tow vehicle on the Auto Tour Loop, but it is not required.

Please drive carefully on the gravel roads and stay on the designated roads and turnouts. The speed limit is 25 mph. There are both one-way and two-way sections so observe signs carefully.

You should expect vehicles ahead of you to stop - sometimes suddenly - as visitors spot interesting birds or other wildlife. Auto Tour Loop roads are wide, so pull over to allow others to pass safely.

**Camping** There is no camping on the Refuge for the public. This rule also applies to RVs; no overnight parking allowed. Staff at the Visitor Center can advise about camping and RV parks in the area. (The group camping signs refer to scout, school, or college groups who are carrying out work projects for the Refuge.)

**Hiking and Biking** The refuge provides many opportunities for hiking and limited biking. Some routes are only for hikers, others permit either. There are kiosks, signs, and staff in the Visitor Center to provide further details about a particular route. For either activity, it is important that you stay on the designated trails and roads.

**Photography** Photography is welcome in areas to which public access is permitted. Signage restrictions apply to all visitors, including photographers. Normal courtesy with respect to viewing rights of others is expected. (See "Other Uses of the Refuge" section covering commercial photography workshops).

**Hunting and Fishing** Both hunting and fishing are allowed in designated areas during certain seasons, subject to New Mexico Game and Fish license and regulation requirements. Check with the staff in the Visitor Center for specific information on locations and regulations.

**Swimming** No wading, swimming, canoeing, boating, or floating is allowed in Refuge waters, including the Rio Grande.

**Horseback Riding** Limited horseback riding in support of hunting only is allowed, restricted to areas of the refuge east of the Rio Grande during state hunt seasons. No horseback riding is allowed west of the Rio Grande. Call the Refuge for more information.

**Signs** Read the signs. Some prohibit all public access. Others prohibit vehicles but invite hiking and biking. Temporary barricades protect nest-

ing, roosting and feeding areas and protect visitors from hazardous situations. Please respect them.

**Animals** Only service animals are allowed in Refuge buildings. Please clean up after your pet.

Releasing fish, other pets, or plants on the Refuge is prohibited. They disrupt the biology by compromising the habitat and/or wildlife we are trying to preserve and are a source of disease. Do not attempt to feed birds or other wildlife - observe and enjoy them as they are.

**Collecting** Do not pick, disturb, or collect any plants, animals, rocks, or artifacts on the Refuge. If you wish to study or research an item later, take photos or make sketches. Virtual geocaching is permitted in areas open to the public; however, physical geocaching is not permitted on the Refuge.

**Climate** The Refuge is at the northern edge of the Chihuahuan Desert at about 4500' elevation. Days are usually sunny, and a temperature change of 30° and more between dawn and noon is common. Thus, a hat and other sun protection plus layers of clothing that can be added and removed are recommended.

**Nature Store** The Friends of Bosque del Apache NWR operates a nature store inside the Visitor Center with an excellent selection of books, water and snacks, clothing, and a broad selection of nature-related items from the southwest.

**Other Uses of the Refuge** Workshops, such as photography workshops, commercial tours, film crews, and other commercial uses of the Refuge are allowed by special permit and upon payment of the appropriate fee. Such activities must not impede public use of the Refuge. Specific information is available at the Visitor Center.

**Wilderness Area Access** The Indian Well, Chupadera, and Little San Pascual Wilderness Areas are accessible by hiking year round via designated access points only. You may hike off trail in these areas; travel is at your own risk. Be aware that these areas are also open to hunting during certain seasons. Horses, bikes, and overnight camping are not allowed in refuge Wilderness Areas.

## Shop on-line at our Bosque Nature Store!

Caps • T-shirts • Denim • Shirts • Mugs • Pins • Patches • Bags • Books • Kids' Stuff • Jewelry • Water Bottles

[friendsofthebosque.org/store](http://friendsofthebosque.org/store)

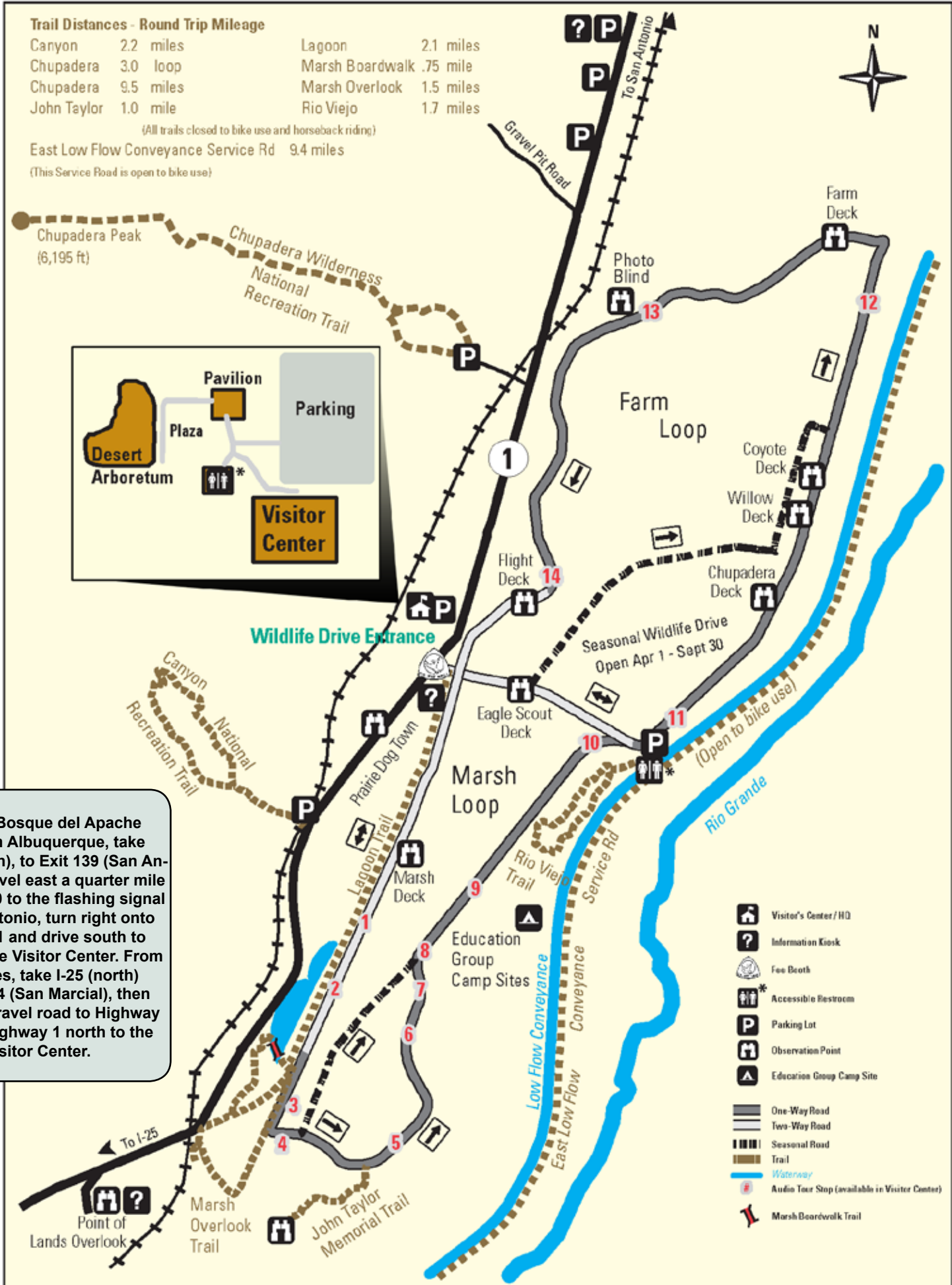
**Trail Distances - Round Trip Mileage**

|             |           |                 |           |
|-------------|-----------|-----------------|-----------|
| Canyon      | 2.2 miles | Lagoon          | 2.1 miles |
| Chupadera   | 3.0 loop  | Marsh Boardwalk | .75 mile  |
| Chupadera   | 9.5 miles | Marsh Overlook  | 1.5 miles |
| John Taylor | 1.0 mile  | Rio Viejo       | 1.7 miles |

(All trails closed to bike use and horseback riding)

East Low Flow Conveyance Service Rd 9.4 miles

(This Service Road is open to bike use)



To reach Bosque del Apache NWR from Albuquerque, take I-25 (south), to Exit 139 (San Antonio), travel east a quarter mile on US 380 to the flashing signal at San Antonio, turn right onto Highway 1 and drive south to the Refuge Visitor Center. From Las Cruces, take I-25 (north) to Exit 124 (San Marcial), then east on gravel road to Highway 1. Take Highway 1 north to the Refuge Visitor Center.