



**Coconino National Forest  
Red Rock Ranger District**

**Tonto National Forest  
Cave Creek Ranger District**

**Wilderness Education Plan:  
Mazatzal Wilderness  
September 2012**



"Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wilderness is a necessity; and that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers, but as fountains of life."

John Muir, 1901

## 2012 Mazatzal Wilderness Education Plan

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## I. Introduction and Overview

### What is the purpose of a Wilderness Education Plan?

The creation and implementation of individual Wilderness Education Plans under the 10-Year Wilderness Stewardship Challenge is part of a growing tradition of wilderness preservation that ultimately began with the 1964 Wilderness Act—an act designed “To establish a National Wilderness Preservation System for the permanent good of the whole people, and for other purposes.” The National Wilderness Preservation System itself is the heart and soul of the Wilderness Act, built upon the following groundwork:

“In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.”

Furthermore, inherent in the Wilderness Act of 1964, its National Wilderness Preservation System, *and* the US Forest Service wilderness management, is education. The Forest Service Manual chapter 2323.12 dictates that all forests “use information, interpretation, and education as the primary tools for management of wilderness visitors.” This brings us to the Wilderness Stewardship Challenge and the Wilderness Education Plan.

The 10-Year Wilderness Stewardship Challenge, as stated in its Executive Summary, was “developed by the Chief’s Wilderness Advisory Group as a quantifiable measurement of the Forest Service’s success in Wilderness stewardship.” The Challenge itself is divided into ten elements; number four is the creation and implementation of a Wilderness Education Plan. According to the *10-Year Wilderness Stewardship Challenge Guidebook*, a Wilderness Education Plan must be conceived for each federally designated Wilderness so that “Existing and potential wilderness visitors will understand the values of wilderness beyond recreation and have a better appreciation for the importance of wilderness and how to protect it.”

## **Executive Summary**

The Mazatzal Wilderness is expansive and diverse, requiring foresters to consider a range of education goals. At the extreme southern end of the wilderness area, which is easily accessed by Phoenix residents, motorized intrusion is leading to erosion, the displacement of native species, and is negatively effecting visitors' wilderness experiences. While an attempt has been made to patrol this area more aggressively, it is clear that more patrols—including law enforcement—are necessary, along with the presence of volunteer stewards at trailheads, the construction/ repairing of fences, and the installation of educational signs.

The other primary access to the wilderness is along the Verde River, one of five watersheds in the Mazatzal. The Verde is used year-round by boating enthusiasts, and has proven a challenging management area due to its remoteness. Search and Rescue operations occur regularly, and are particularly challenging due to the topography surrounding the river. Initiating a comprehensive PSAR (Preventative Search and Rescue) Program would help the forest to reach visitors who may endanger themselves without knowledge of wilderness and/or river travel. Beyond SAR, problems along the river primarily include issues related to a lack of LNT ethics; for instance, human waste, campsite impacts, and litter are all key issues on the Verde. Education goals include: informing the public of eagle closures through the continued use of signage, updating the *Boater's Guide to the Verde River* to include current information and LNT messages, and increasing the Forest Service presence on the river and in online education forums while emphasizing LNT ethics.

Finally, a number of large lightning-started wildfires have swept through the Mazatzal Wilderness in the past decade, leaving over half of the wilderness area burned. Residents in the surrounding area have expressed a growing concern over the Tonto National Forest's use of fire as a natural forest management tool. Residents' justifiable fear of wildfire must be carefully addressed by forest managers, who must emphasize the need for fire safety while educating the public on the importance of wildfire in a remote wilderness ecosystem. Forest patrollers can most effectively spread this message, followed by educational information published in newspapers and posted at trailheads.

## **An Overview: Mazatzal Wilderness and Its Characteristics**

The Mazatzal Wilderness Area was established by the Chief of the Forest Service on May 27, 1938. Then, on September 3, 1964, it was designated by Congress to be part of the National Wilderness Preservation System. Originally, it contained a total of 205,346 acres, but with the

passage of the Arizona Wilderness Act of August 28, 1984, it was increased to 250,517 acres. The Mazatzal Wilderness is administered by the Tonto National Forest, yet it lies within the jurisdiction of five Ranger Districts and two National Forests. It is located on the Payson, Cave Creek, Mesa, and Tonto Basin Ranger Districts of the Tonto National Forest, and on the Beaver Creek Ranger District of the Coconino National Forest. The Arizona Wilderness Act also designated a 40.4-mile section of the Verde River as a Wild and Scenic River. A 23.5-mile segment of the river is within the Wilderness and is designated as “Wild.”

The Mazatzal Wilderness is as unique as it is expansive. The northernmost edges skirt up against the Mogollon Rim and the largest contiguous ponderosa pine stand in the world. This area provides unique contrasts between the streamside environments and surrounding high desert as well as desert grassland and chaparral vegetation. The watersheds have carved out a deep rugged canyon with attendant riparian habitat and supporting a wealth of wildlife and vegetation.

### **Native Wildlife**

Due to its size, topography, and remoteness, this wilderness area provides habitat for a wide variety of species and the opportunity for species reintroduction, viewing, scientific study, hunting, fishing, and trapping. The area abounds in wildlife, supporting southern bald eagles, golden eagles, river otters, beaver, javelina, deer, bear, waterfowl, kit fox, and many other native Sonoran species. Efforts are ongoing to enhance nesting eagle habitat and to reintroduce river otters. In addition to wildlife, however, several active grazing allotments exist in the Mazatzal wilderness. The structural facilities necessary for their management are authorized by law. A number of threatened or endangered species are found in the Mazatzal Wilderness, including: Mexican Spotted Owl, Yuma Clapper Rail, Chiricahua Leopard Frog, Razorback Sucker, Gila Topminnow, Colorado Pikeminnow, Loach Minnow, and Spikedace. Some sensitive species include: Headwater Chub, Roundtail Chub, Sonora Sucker, Desert Sucker, Gila Longfin Dace, Yellow-billed Cuckoo (Western U.S. DPS), American Peregrine Falcon, Bald Eagle – Sonoran, Desert Population, Common Black-Hawk, Northern Goshawk, Sonoran Desert Tortoise (Morafkai's D. Tortoise), and Northern Mexican Gartersnake, and Lowland Leopard Frog.

### **Recreation and Use**

While the Mazatzal Wilderness is rugged and relatively remote, its southern portals are located just a short drive from the bustling greater metropolitan Phoenix area, offering escape from the stress and work of city life. Many locals and avid outdoor enthusiasts retreat to the Mazatzal to take in the magnificent views and quiet harmony it has to offer. Renowned for its rugged trail system, the Mazatzal Wilderness offers 31 trails, which cover 250 miles within the wilderness.

There are over 20 entry points by trail into the wilderness but only 14 are recognized as main trailheads. The Barnhardt, City Creek, Mormon Grove, Sheep Bridge, Deer Creek, and Mineral Creek Trailheads have limited facilities available. Other trailheads are essentially undeveloped. The Verde River itself also provides major access into this wilderness, particularly at Beasley Flat and Childs boat launches. Also, Forest Road 502 provides access to the Wild and Scenic corridor. State Highway 87 and nine unpaved Forest development roads provide access to the entry points. A few of the roads may be traveled by passenger car.

The east side of the Mazatzal can be accessed by nine trailheads, the most popular being Barnhardt and City Creek trailheads. From the west, hikers can access four trailheads, including Sheep Bridge, a historic landmark bridge to cross over the Verde River into the Mazatzal wilderness. The Sheep Bridge trailhead offers hikers the choice of the Verde River trail #11, Dutchman Grave trail #22, or the Willow Springs trail #223, all of which intersect the eastern side trailheads. Of the eastern side trails, the most popular is the Mazatzal Divide trail #23 which is 29 miles in length stretching from City Creek trailhead in the north near Payson off FR406 down to Mt. Peely in the south. This trail is a section of the 800 mile long Arizona trail that spans across Arizona from Mexico to Utah. The Arizona Trail has been designated to encompass parts of the following trails: Saddle Ridge #14; Mazatzal Divide #23; Bull Spring #34; Saddle Mountain #91; Thicket Spring #95; Little Saddle Mountain #244; Brush #249; Red Hills #262. The Mazatzal Divide trail, popular for overnight backpackers, can be accessed through three wilderness portals: City Creek trailhead in the north near Payson, from the south out of Duncanville, and the Barnhardt trailhead south of Payson. From the Barnhardt trail, hikers can view a spectacular 120ft waterfall near Horse Camp Seep.

In addition to hikers, hunters, and fishers, many groups are authorized to operate in this wilderness, including pack and stock users, youth rehabilitation groups, and educational outfitter guides. River-running outfitter/guides have been authorized within this wilderness since 1986.

### **Watersheds**

At over 250,000 acres, Natural resources abound in the Mazatzal Wilderness, offering more than meets the eye. It includes five watersheds, the largest of which is the Verde River Watershed, covering 62 percent of the Wilderness. The East Verde covers 25 percent, Tonto Creek is 9 percent, Sycamore Creek is 3 percent, and Fossil Creek is 1 percent. Although run-off is limited, it is of great importance to the State of Arizona and the Phoenix metropolitan area. Run-off from much of the Wilderness flows into the reservoirs on the Salt and Verde Rivers. The Phoenix Active Management Area to the south has been so designated because the recharge to that area has been insufficient to match withdrawals. Annual precipitation ranges from less than 12 inches in the lower elevations to 24 inches in the highlands. Relatively light snowfall

occurs during the winter months. The waters within the Mazatzal Wilderness are protected according to "Water Quality Standards for Waters of the State", which is administered by the Arizona Department of Environmental Quality (ADEQ).

Tonto Creek Watershed lies in the northeasternmost corner of the Mazatzals. Tonto Creek is a perennial stream with a considerable water flow that has formed a deep, remote, and often narrow canyon below the Mogollon Rim in central Arizona. For 30 miles it snakes through the steep land at the north edge of the Tonto National Forest, starting right beneath the Rim at an elevation of 6,600 feet.

Sycamore Creek Watershed is a small watershed located in the southeastern section of the Mazatzals and is managed by the Mesa Ranger District. Much of the streamflow originates in the mountainous areas and disappears quickly into the alluvial deposits adjacent to the mountains. As well, the Fossil Creek watershed is another small watershed common in the Southwest that lies northeast of Horseshoe Lake. This watershed is primarily consistent of runoff from the mountainous areas that disperse into the Verde River.

Fossil Creek is one of Arizona's two Wild and Scenic Rivers, the last few miles of which flow into the northern reaches of the Mazatzal Wilderness before converging with the Verde River. The waters of Fossil Creek are incredibly unique—its turquoise water is supersaturated with calcium carbonate ( $\text{CaCO}_3$ ), which precipitates out and forms travertine dams, terraces, and other depositional features. Conservation efforts are ongoing throughout the Fossil Creek corridor, and protecting the variety of native flora and fauna is a top priority. Not only does the Fossil Creek area support a high diversity of common wildlife species, it also supports many rare species that have special management status. In fact, all but one of the native fish species in Fossil Creek have special status.

The Verde River is arguably the Mazatzal's hidden gem. The river's ecological and cultural importance is made clear in the 2004 *Verde Wild and Scenic River Comprehensive River Management Plan*:

The Verde has outstandingly remarkable scenic values. The scenic qualities of the landforms, vegetation and water within the Wild & Scenic River Area are distinctive, seen from a variety of viewpoints and settings. The terrain varies from steep, rock canyons framing the river, to plateaus dropping to wide flood plains, with the river as a central feature. Vegetation varies according to the terrain, from broad oak/sycamore savannas to narrow bands of riparian box elder/willows, with all variations surrounded by the arid Sonoran Desert. This perennial stream changes in character from shallow,

still pools or slowly moving water to high flow seasonal rapids and waterfalls. Recreationists view the river from the high edges of plateaus or canyons, within the floodplains, along the banks and by floating the river itself.

Outstandingly remarkable fish and wildlife values along the Verde Wild & Scenic River result from the high quality habitat that the river and its associated riparian areas provide for threatened and endangered fish and wildlife species. There are 57 threatened, endangered, sensitive or special status species present, or potentially present, within the VWSR. The River Area contains important nesting habitat for the bald eagle, and provides habitat for several listed fish species. In addition, the River and its riparian area provides habitat for over 60% of the vertebrate species that inhabit the Coconino, Prescott, and Tonto National Forests. The high variety of both resident and visitor wildlife species found in the VWSR illustrates the corridor's value for these species within Arizona and the Southwest.

Information gained from limited historic and cultural resource surveys along the Verde River shows the area contains outstandingly remarkable historic and cultural values. The Verde River Valley has long been known for its wealth of prehistoric and historic sites dating back to 12,000 B.C. Hundreds of archaeological sites have been found or are suspected to be present in the River corridor. Most of these sites, depending on their condition, are significant and eligible for the National Register of Historic Places, either individually or as part of a group.

## **Current Resource Status and Problem Identification**

With the Mazatzal Wilderness' proximity to the Phoenix metropolitan area, many visitors lack knowledge of methods used to minimize their impacts on wilderness resources—a large proportion of violations are based in ignorance, not intent. The Tonto National Forest Map and the "Backcountry Ethics" brochure are available to the public, and limited educational information explaining the concept of Wilderness, recommended visitor behavior, and backcountry ethics for wilderness is available at all National Forest offices upon request. Information about the biotic and abiotic characteristics of the Mazatzal Wilderness is available from a very limited number of sources including publications, college texts, and popular books which discuss the plants, animals, and geology of the general region, as well as its human history. Little or no information is presently posted at trailheads, but trail maps and trail sign-in logs are currently being updated.

With such an extensive trail system, the Mazatzal Wilderness benefits from foot patrols to accomplish the forest's education goals. Fieldwork and education is usually performed by wilderness rangers and volunteers operating on the Payson District and on the Cave Creek District of the Tonto National Forest. Foot travel, horses, mules, and/or (non-motorized) watercraft are used as the primary means of travel to maintain appropriate access to and inside the Mazatzal Wilderness. To aid in the implementation and the coordination of management efforts, the Payson and the Cave Creek Ranger Districts will fill full-time and/or seasonal Wilderness Ranger positions when budgets permit. Wilderness Rangers will be responsible for initiation and completion of specific, coordinated management actions, organizing and supervising volunteer efforts, and to apply for and request grant funding opportunities when they become available. The Rangers will also function in the field, and initiate recommendations and set priorities for management actions. Their efforts may be supplemented by youth job corps and volunteers whenever possible to carry out on the ground field projects.

Today, annual visitation is relatively low, and the trails are primarily used for recreation and outfitter/guide activities. Portions of the trail system contribute to management problems by concentrating visitors in heavily used areas. Inadequate maintenance of existing trails is a contributor to accelerated erosion and could be a hazard to the public. Efforts are being made to bring the Mazatzal trail system up to standard. In 2011, the Tonto National Forest was awarded grant funds to maintain and rehabilitate over 50 miles of the trails system and the work has been implemented and is ongoing throughout the 2012-2013 winter seasons. Trail rehabilitation, however, is not complete without the accompanying signage. Many directional signs have been installed, but continued maintenance and replacement is required, especially where wildfire activity has destroyed signs. Some sign replacement is taking place in the fall of 2012, and updated maps of the wilderness and its trail system is available at the Tonto Supervisors office, Cave Creek, Tonto Basin, Payson, Mesa, and Pleasant Valley Ranger Districts. An electronic downloadable copy is available on the Tonto National Forest website at: <http://www.fs.usda.gov/tonto/>.

Wildfire has played a major role in the Mazatzal Wilderness ecosystem in recent years. In June of 2012, the Sunflower Fire burned the southern portion of the Mazatzals up to Mt. Peely. Eight years earlier, the Mazatzal Wilderness experienced wildfire activity that left much of its scenic beauty decimated. The Willow Fire of 2004 engulfed 120,000 acres—nearly half—of the Mazatzal Wilderness. Over the last few years regrowth has begun, leaving breathtaking views for wilderness visitors. This regrowth can also serve as a reminder of the importance of wildfire as a tool to control diseases and insects. Many residents living close to the Mazatzal Wilderness argue against the use of fire, fearful of its sometimes devastating consequences to life and

property. The Tonto National Forest hopes to allow fire to play its natural ecological role in the Wilderness ecosystem to the maximum extent, except where such activity will adversely affect resources adjacent to the Wilderness or human lives within the wilderness.

Other challenges facing the Tonto National Forest are implicitly destructive activities, both legal and illegal. Prospecting and exploration have been present to some extent for many years, and some mining activity has significantly disturbed the natural landscape and impacted wilderness values. Also, vandalism to historic and prehistoric sites continues to occur. Along the Verde River Corridor, prehistoric sites have been devastated by the illicit use of aircraft that improve access and make looting easier.

Motorized intrusion has become more prevalent over the last decade. Off-highway vehicle use has become a widely favored and thriving sport in Arizona. Many legal roads and trails reaching the outer perimeters of this wilderness are seeing “cherry stem” roads fingering off into the wilderness. In the south, Mormon Grove and Cross F trailheads are seeing a high volume of motorized intrusion, largely due to the near vicinity of the popular Sycamore Creek/Sugar Loaf mountain OHV areas being managed by the Mesa Ranger District. Forest Road 406 leading to LF ranch outside Payson is having serious compliance issues pertaining to motorized intrusion. The LF ranch is a grazing permittee with allowed motorized access to their private land parcel located within wilderness boundaries. The western sides of the Mazatzals have reported motorized intrusion activity at the Davenport trailhead and at the Red Creek trailhead to the north. Wilderness enthusiasts have helped restore many of the illegal routes and are a vital asset to wilderness managers for reporting this illegal activity. Currently, wilderness managers are ensuring proper signage and fence installation is implemented in hopes of deterring future motorized intrusions in wilderness areas. Beyond land vehicles, it is important to ensure that any helicopters and vehicles are approved by the authorized Forest Officer prior to use.

Another thriving Arizona sport is boating, and the Mazatzal Wilderness sees its share of boaters. The Verde and other rivers of the Mazatzal Wilderness provide relief from the otherwise stark Mazatzal landscape, but these delicate riparian areas are easily disturbed. On the Verde River, many regulations are in place limiting the numbers and types of use along the watercourse. Boaters are required to use fire pans, use portable toilet systems for proper waste disposal, and encouraged to travel in groups fewer than 12 individuals. Also, boaters are prohibited from landing on beaches included in any eagle closure areas which are clearly signed with carsonites. Of the 12 nesting pairs of eagles along the Verde, 4 are located within the wilderness. Regardless of these restrictions and the boater education efforts, human waste, social trails, fire rings, and other disturbances continue to affect the waterway. Other impacts on the waterway stem from both human and natural events. Each year, hundreds of pounds of

trash (including refrigerators, Porta-Jons, and boats) are removed from the Verde River as it washes down from Verde Valley communities during flood events. River Rangers and volunteers from the Coconino National Forest have made tremendous tamarisk-removal efforts, hand-pulling thousands of the invasive trees from Verde River banks.

The waterways of the Mazatzal Wilderness are not only seeing invasive weeds, but nonnative wildlife impacts as well. Crawfish are currently making their way up stream beds and waterways via the Verde River. They are multiplying in numbers and killing off native fish and wildlife. The wilderness is susceptible to invasion when natural disturbances (such as wind, water, fire, and a wide variety of wildlife, including birds and mammals) open niches in the plant community and distribute plant parts and seeds.

Invasive weeds are unwanted, non-native plants that have substantial negative impacts to the environment. Within the Mazatzal wilderness, invasive weeds will typically appear in highly disturbed areas such as river and stream banks, trailheads, dispersed camping spots trails, and overgrazed areas. These weeds tend to migrate by wind, animals, and contaminated hay. It is important for horse riders to carry in weed free hay or use pellets. Hikers and other wilderness recreationists should avoid camping in weedy areas because seeds can attach to clothing and gear making seed spreading more active. Some prominent invasive weeds in the Mazatzals include Salt Cedar near rivers and streams, Malta Star Thistle and Scotch Thistle in open areas where grazing and camping usually occurs.

## II. Goals and Objectives

The Tonto National Forest's objectives are numerous. A primary goal is to make information about the Mazatzal Wilderness available to all persons requesting it, but without advertising or promoting its use. Other goals include diverting use not dependent on the wilderness to alternative areas, and providing information that will minimize visitor impact on the resource and encourage voluntary compliance with restrictions.

This document is a revision of the 2011 Mazatzal Wilderness Education Plan. The Tonto and Coconino National Forests hope to delve deeper into the previously identified goals and objectives, and to elaborate further. By collaborating on this updated document, the two forests hope to formulate a stronger plan that takes into account the complexities inherent in sharing a Wilderness Area. For instance, while only a small portion of the Mazatzal Wilderness lies on the Coconino side, it includes a popular boat launch area of the Verde Wild and Scenic River and the lower half of Fossil Creek, another Wild and Scenic River. River and Wilderness Rangers from the Coconino would like to emphasize the importance of monitoring the recreational use of whitewater boats. Monitoring has been ongoing on the Verde River and Fossil Creek, along with major efforts to maintain a clean and weed-reduced environment.

The previously identified goals and objectives for the Mazatzal Wilderness Education Plan are:

- Increase awareness of wilderness history, philosophy, values of wilderness, and role of wilderness in ecosystem management.
- Instill and strengthen an appreciation for the value of resources in development of a wilderness ethic that results in informed decision making.
- Influence behavioral changes that promote the preservation of wilderness quality.
- Demonstrate and promote attitudes and behaviors appropriate to wilderness resource protection. Promote the sustainability of the wilderness ecosystem by ensuring its health, diversity, and productivity.
- Recognize the unique characteristics of wilderness that distinguish it from more traditional and environmental education efforts (historical perspective and cultural legacy, spiritual and emotional renewal, challenge and risk and preservation of natural systems).
- Provide accurate, accessible, and meaningful wilderness information via web pages, trailhead signage, booklets and brochures, and training of internal personnel with wilderness responsibilities, including VIS and frontliners.
- Collaborate with stakeholders, other agencies, and publics in fostering Wilderness awareness through the development of partnerships.

### III. Priority Issues and Effects

**TABLE ONE**

ISSUE ITEM	PROBLEM DEFINITION	AFFECT ON RESOURCE
<p><b>Motorized and Mechanized Intrusion</b></p>	<p>Motorized recreationists regularly operate immediately adjacent to lower elevation areas of the wilderness and utilize a 'cherry stem' road, often beyond the wilderness boundary. Also, the road to the LF Ranch is under a special use permit for access to the grazing permittee for access to their private land parcel located in the wilderness. Unauthorized motorized use of the LF Ranch access road is a serious compliance problem. Finally, it is important to ensure that any helicopters and vehicles are approved by the authorized Forest Officer prior to use.</p>	<ul style="list-style-type: none"> <li>• Soil degradation, erosion, water run-off displacement</li> <li>• Ground vegetation loss</li> <li>• Impacts on water quality</li> <li>• Impacts on air quality</li> <li>• Noise pollution</li> <li>• Impacts on visual quality</li> <li>• Loss of solitude</li> <li>• Litter</li> <li>• Wildlife displacement and death</li> </ul>
<p><b>Campsite Impacts</b></p>	<p>Campsites are usually defined by evidence of a campfire. Dispersed camping along the trail system and the Verde river see heavy use. Loss of vegetation, soil degradation, tree damage scars and felling, social trails, and litter are associated impacts.</p>	<ul style="list-style-type: none"> <li>• Litter</li> <li>• Noise Pollution</li> <li>• Illegal campfires</li> <li>• Human waste</li> <li>• Loss of solitude</li> <li>• Tree loss/limb damage</li> <li>• Ground Vegetation loss and erosion</li> <li>• Impacts on water quality</li> <li>• Impacts on riparian areas</li> <li>• Impacts on a Wild and Scenic River</li> <li>• Social trails</li> </ul>
<p><b>Trail Impacts</b></p>	<p>Different user groups have varying degrees of impacts on the trail. Wilderness trail users include hikers, and horse/stock users. Poor design can cause soil displacement and erosion. Hiking in groups opens the width of trails and causes vegetation and resource loss.</p>	<ul style="list-style-type: none"> <li>• Litter</li> <li>• Noise pollution</li> <li>• Human waste</li> <li>• Loss of solitude</li> <li>• Weeds spreading from horse waste</li> </ul>

ISSUE ITEM	PROBLEM DEFINITION	AFFECT ON RESOURCE
<b>River Impacts</b>	<p>The Verde River faces a wide array of challenges, including:</p> <ul style="list-style-type: none"> <li>• High numbers of search and rescue operations</li> <li>• Social trails leading away from the river and along its banks</li> <li>• Authorized intrusion (gauging stations)</li> <li>• 12 nesting pairs of eagles on the Verde River, 4 of which are in the Wild and Scenic section.</li> <li>• Wood collection for campfires, need for fire pans</li> <li>• Wild and Scenic River requirements limiting group size to 12</li> <li>• Need for boaters to use portable toilet systems</li> <li>• Flood trash from Verde Valley communities</li> <li>• Only two outfitter/guides are allowed in the Wild and Scenic Verde River. It is important to monitor illegal guiding throughout the river.</li> </ul>	<ul style="list-style-type: none"> <li>• Helicopters landing in wilderness</li> <li>• Impacts on soil stability</li> <li>• Impacts on riparian areas</li> <li>• Impacts on native species</li> <li>• Health and safety</li> <li>• Aesthetic quality</li> </ul>
<b>Stock and Horse-Packing Impacts</b>	<p>While equestrians are required by a special order to use weed-free hay, it is difficult to purchase it in the area. Along the river corridor, many abandoned horse camps have been removed, although it is an ongoing issue.</p>	<ul style="list-style-type: none"> <li>• Invasive species</li> <li>• Overgrazing</li> <li>• Impacts to water quality</li> <li>• Impacts on soil quality/ trail surface tread issues</li> <li>• Health and Safety</li> </ul>
<b>Cattle and Grazing</b>	<p>Livestock are permitted in sections of the wilderness, however not in the Wild and Scenic Verde River corridor. Cattle are sometimes found along the delicate riparian areas of the Verde River.</p>	<ul style="list-style-type: none"> <li>• Overgrazing</li> <li>• Invasive species</li> <li>• Impacts on water quality</li> <li>• Impacts on soil quality/ trail surface tread issues</li> <li>• Health and Safety</li> </ul>
<b>Water Quality</b>	<p>Human waste causes elevated fecal coliform levels that threaten human health. In addition to human waste, litter can harm aquatic species. Finally, it is clear that the Verde River's summer flows are diminishing due to Verde Valley water consumption, which leads to warmer, slower currents.</p>	<ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Impacts on native species</li> </ul>
<b>Archaeological Impacts</b>	<p>Numerous archaeological sites exist along the Verde River corridor, and looting has long been a problem. In the past, motorized vehicles (including small planes) were used to reach sites and to loot them.</p>	<ul style="list-style-type: none"> <li>• Vandalism</li> <li>• Destruction of protected heritage resources</li> </ul>

ISSUE ITEM	PROBLEM DEFINITION	AFFECT ON RESOURCE
<b>Litter</b>	Along the Verde River, trash is often left in campsites, but is additionally deposited after flood events from the upstream Verde Valley communities. Otherwise, litter is generally found in high-use areas, but not in any substantial quantities.	<ul style="list-style-type: none"> <li>• Sanitation</li> <li>• Aesthetics</li> <li>• Impacts on native species</li> <li>• Impacts on water quality</li> </ul>
<b>Wildfire</b>	Since the Mazatzal Wilderness has frequent natural fire events, recreationists and nearby landowners need to understand the role fire plays in the wilderness ecosystem. Well-intended but uninformed users fail to support decisions in favor of prescribed natural fire.	<ul style="list-style-type: none"> <li>• Trail destruction</li> <li>• Visual, aesthetic impacts</li> <li>• Health and Safety</li> <li>• Extreme weather conditions</li> </ul>
<b>Invasive Weeds</b>	Along the Verde River corridor, an ongoing effort to control tamarisk has been successful, but is far from complete. Other problem invasives include malta star thistle, Russian thistle, and scotch thistle. These weeds are often distributed by horse waste, hikers, and natural elements (wind, water). If bad enough, wilderness managers must consider native tree and herbaceous revegetation in disturbed riparian areas and provide streamside zones with adequate vegetative filter strips to trap sediments and prevent its entry into streams.	<ul style="list-style-type: none"> <li>• Negative impacts to native plants</li> <li>• Direct competition with water source</li> <li>• Loss of ground cover</li> <li>• Loss of wildlife forage</li> <li>• Deterioration of wildlife habitat</li> <li>• Inaccessibility to invaded areas</li> </ul>

#### IV. Action Items

**TABLE 2:**

ISSUE ITEM	TARGET AUDIENCE	KEY MESSAGE	PAST EDUCATION EFFORTS
<b>Motorized Intrusion</b>	<ul style="list-style-type: none"> <li>• OHV users</li> <li>• Mountain bikers</li> <li>• Land owners</li> <li>• Local governments</li> <li>• Forest users</li> <li>• Partners</li> <li>• Media</li> <li>• Internal</li> </ul>	<ul style="list-style-type: none"> <li>• Motorized recreation is explicitly prohibited by the Wilderness Act of 1964. There is adequate motorized recreation opportunity provided by the designated road system on the forest.</li> </ul>	<ul style="list-style-type: none"> <li>• Signs informing the public of laws and regulations</li> <li>• Fence installation at wilderness boundaries</li> <li>• Field patrols</li> <li>• Visitor contacts and reporting</li> </ul>

ISSUE ITEM	TARGET AUDIENCE	KEY MESSAGE	PAST EDUCATION EFFORTS
<b>Campsite Impacts</b>	<ul style="list-style-type: none"> <li>• Outfitter guides</li> <li>• Hikers</li> <li>• Backpackers</li> <li>• Horse/Stock users</li> <li>• Day hikers</li> <li>• Campers</li> <li>• Hunters</li> </ul>	<ul style="list-style-type: none"> <li>• Patrol contacts</li> <li>• Signage at wilderness portals explaining LNT ethics and wilderness values; signage in Spanish</li> <li>• No campfires within 100-200 feet of the water</li> <li>• Choose durable surfaces and try to not overuse a single area</li> <li>• Use a lightweight stove for cooking and enjoy a candle lantern for light.</li> <li>• Where fires are permitted, use established fire rings, fire pans, or mound fires.</li> <li>• Keep fires small. Only use sticks from the ground that can be broken by hand.</li> <li>• Burn all wood and coals to ash, put out campfires completely, then scatter cool ashes.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretive signage, including LNT principles</li> <li>• Visitor contacts</li> <li>• Trail patrols</li> <li>• Field patrols</li> <li>• Volunteer support</li> </ul>
<b>Trail Impacts</b>	<ul style="list-style-type: none"> <li>• Outfitter guides</li> <li>• Organized group events</li> <li>• Hikers, Backpackers</li> <li>• Day hikers</li> <li>• Dog owners</li> <li>• Volunteers and Partners</li> <li>• Wildfire personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Concentrate use on existing trails and campsites.</li> <li>• Walk single-file in the middle of the trail, even when wet or muddy.</li> <li>• Disperse use to prevent the creation of campsites and trails.</li> </ul>	<ul style="list-style-type: none"> <li>• Field Patrols</li> <li>• Interpretive signage; LNT principles</li> <li>• Primitive trail design</li> <li>• Rehabilitation project press releases</li> </ul>

ISSUE ITEM	TARGET AUDIENCE	KEY MESSAGE	PAST EDUCATION EFFORTS
<b>River Impacts</b>	<ul style="list-style-type: none"> <li>• Boaters</li> <li>• Outfitter guides</li> <li>• Day hikers</li> <li>• Backpackers</li> <li>• Equestrians</li> <li>• Media</li> <li>• Advocacy groups</li> <li>• Volunteers &amp; partners</li> <li>• Internal</li> </ul>	<ul style="list-style-type: none"> <li>• Group size limited to 12 by Wild and Scenic River standards</li> <li>• Fire pans required</li> <li>• Collect only dead and down wood</li> <li>• Required portable toilet systems</li> <li>• No transporting native plants</li> <li>• Use of appropriate personal flotation devices</li> <li>• No stopping in eagle closure</li> </ul>	<ul style="list-style-type: none"> <li>• The <i>Boater's Guide to the Verde River</i> includes education on LNT ethics, limited group sizes, the use of fire pans and dead and down wood, required portable toilets, personal safety on the river, and information on eagle closures.</li> <li>• Carsonites with eagle closure information posted along the river corridor</li> </ul>
<b>Stock and Horse-Packing Impacts</b>	<ul style="list-style-type: none"> <li>• Equestrians</li> <li>• Outfitter guides</li> <li>• Media</li> <li>• Internal</li> </ul>	<ul style="list-style-type: none"> <li>• Close gates</li> <li>• Dispose of horse waste properly</li> <li>• Brush horse before entry to prevent seed dispersement</li> <li>• Use of weed free hay and pellets required</li> <li>• Pack animals not permitted to travel off trails</li> </ul>	<ul style="list-style-type: none"> <li>• Stock regulations; requirements and guidelines</li> <li>• Pack animal group numbers limited</li> <li>• Trail condition reporting</li> </ul>
<b>Cattle and Grazing</b>	<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• Close gates</li> <li>• Cattle tanks and troughs are not safe for drinking</li> </ul>	<ul style="list-style-type: none"> <li>• Permittees follow an annual operating plan</li> <li>• Periodic inspections</li> <li>• Grazing vegetation assessments conducted</li> </ul>
<b>Water Quality Impacts</b>	<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• On the river, portable toilet systems are required</li> <li>• Deposit solid human waste in catholes dug 6 to 8 inches deep at least 200 feet from water, camp, and trails. Cover and disguise the cathole when finished.</li> </ul>	<ul style="list-style-type: none"> <li>• The <i>Boater's Guide to the Verde River</i> includes education on LNT ethics</li> </ul>

ISSUE ITEM	TARGET AUDIENCE	KEY MESSAGE	PAST EDUCATION EFFORTS
<b>Archaeological Impacts</b>	<ul style="list-style-type: none"> <li>• Day hikers</li> <li>• Overnight backpackers</li> <li>• Hunters</li> <li>• Organized group events</li> <li>• Volunteers and Partners</li> </ul>	<ul style="list-style-type: none"> <li>• Do not move/remove artifacts</li> <li>• Do not displace archeological structures</li> <li>• Stay on the trail</li> </ul>	<ul style="list-style-type: none"> <li>• A large number of site-specific surveys have been conducted within this wilderness and are ongoing.</li> </ul>
<b>Litter</b>	<ul style="list-style-type: none"> <li>• Day hikers</li> <li>• Overnight backpackers</li> <li>• Hunters</li> <li>• Organized group events</li> <li>• Outfitter guides</li> <li>• Dog owners</li> <li>• Media</li> <li>• Local businesses</li> </ul>	<ul style="list-style-type: none"> <li>• Practice Leave No Trace principles. Pack it in, pack it out. Pack out all trash, leftover food, and litter.</li> <li>• Deposit solid human waste in catholes dug 6 to 8 inches deep at least 200 feet from water, camp, and trails. Cover and disguise the cathole when finished.</li> <li>• Pack out toilet paper and hygiene products.</li> <li>• To wash yourself or your dishes, carry water 200 feet away from streams or lakes and use small amounts of biodegradable soap. Scatter strained dishwater.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpretive signage and Kiosks, including LNT principles</li> <li>• Field patrols</li> <li>• Press releases, newscasts, websites</li> <li>• Visitor contacts and reporting</li> </ul>
<b>Wildfire</b>	<ul style="list-style-type: none"> <li>• Land owners</li> <li>• Forest visitors</li> <li>• Local governments</li> <li>• Information Specialists</li> <li>• Media</li> <li>• Partners</li> </ul>	<ul style="list-style-type: none"> <li>• Fire is a natural part of the wilderness ecosystem and when appropriate conditions exist, it will be managed to benefit the resource.</li> </ul>	<ul style="list-style-type: none"> <li>• Fire prevention education</li> <li>• LNT principles education</li> <li>• Fire suppression management</li> </ul>

ISSUE ITEM	TARGET AUDIENCE	KEY MESSAGE	PAST EDUCATION EFFORTS
<b>Invasive Weeds</b>	<ul style="list-style-type: none"> <li>• Land owners</li> <li>• Information specialists</li> <li>• Forest visitors</li> <li>• Hunters</li> <li>• Dog Owners</li> <li>• Day Hikers</li> <li>• Overnight Backpackers</li> <li>• Equestrians</li> <li>• Media</li> <li>• Internal</li> </ul>	<ul style="list-style-type: none"> <li>• Hikers and Backpackers should avoid camping in weedy areas because seeds will spread easily by attaching to clothing and horses can carry airborne seeds on their fur.</li> <li>• Stock and horse packers carry in weed free hay to reduce spread of invasive plants.</li> <li>• Noxious weeds displace native plants and disrupt wilderness ecosystems often reducing forage available for birds and wildlife.</li> <li>• Stay on existing trails and campsites to avoid creating newly compacted areas</li> </ul>	<ul style="list-style-type: none"> <li>• Brochures</li> <li>• Online information regarding native weed issues</li> <li>• News releases regarding control efforts</li> <li>• Weed inventories and reporting</li> <li>• Volunteer efforts/ events</li> <li>• Mitigation efforts</li> </ul>

## V. Future Education Goals and Effectiveness Monitoring

**TABLE THREE**

ISSUE ITEM	FUTURE EDUCATION GOALS	EFFECTIVENESS MONITORING
<b>Motorized Intrusion</b>	<ul style="list-style-type: none"> <li>• Field patrol contacts</li> <li>• Increased Law enforcement presence/regulations</li> <li>• Increased signage regarding laws and regulations, including signs in Spanish</li> <li>• Increased volunteer/trailhead steward presence</li> <li>• Rehabilitate fencing structures and signage needs</li> </ul>	<ul style="list-style-type: none"> <li>• Law enforcement presence</li> <li>• Signage</li> <li>• Fence barriers</li> </ul>
<b>Campsite Impacts</b>	<ul style="list-style-type: none"> <li>• Patrol contacts</li> <li>• Signage at wilderness portals explaining LNT ethics and wilderness values; signage in Spanish</li> <li>• No campfires within 100-200 feet of the water</li> </ul>	<ul style="list-style-type: none"> <li>• Patrol monitoring</li> <li>• Disturbed ground surveys</li> <li>• Dispersed campsite inventories</li> </ul>
<b>Trail Impacts</b>	<ul style="list-style-type: none"> <li>• Patrol contacts</li> <li>• Interpretive signing explaining wilderness rules; LNT messages</li> <li>• Promote the use of weed free hay</li> <li>• All signage in Spanish</li> </ul>	<ul style="list-style-type: none"> <li>• Increased grant funding, project implementation</li> <li>• Volunteer events</li> <li>• INFRA trail assessment surveys</li> <li>• Field patrols following severe weather</li> </ul>
<b>River Impacts</b>	<ul style="list-style-type: none"> <li>• Obtaining a special order to back up the Wild and Scenic River protocol of limiting group size to 12</li> <li>• Updating the <i>Boater's Guide to the Verde River</i></li> <li>• LNT ethics</li> <li>• Reach out to boating community through publications and up-to-date online information</li> </ul>	<ul style="list-style-type: none"> <li>• Special order is written and enacted</li> <li>• Boater's guide completed and made available to the public</li> </ul>
<b>Stock and Horse-Packing Impacts</b>	<ul style="list-style-type: none"> <li>• Packers can bring their own feed pellets in lieu of weed-free hay if it is not available</li> </ul>	<ul style="list-style-type: none"> <li>• Invasive species educational signage</li> <li>• Land management contacts</li> </ul>

ISSUE ITEM	FUTURE EDUCATION GOALS	EFFECTIVENESS MONITORING
<b>Cattle and Grazing</b>	<ul style="list-style-type: none"> <li>• Patrol contacts</li> <li>• Increase cluster reporting</li> <li>• Increase overgrazing analysis</li> <li>• Field patrol contacts</li> <li>• Obtaining Special/Forest orders regulating riparian area time use</li> <li>• Range/ wilderness management planning Permittees have knowledge of impact grazing has on the natural ecological succession of vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Updated allotment maps</li> <li>• Field patrols</li> <li>• Limited allotment use</li> <li>• Cluster reporting and land surveys</li> <li>• Annual permittee operating plans</li> </ul>
<b>Water Quality Impacts</b>	<ul style="list-style-type: none"> <li>• Patrol contacts</li> <li>• Interpretive signing explaining wilderness rules; LNT messages, signage in Spanish</li> <li>• The Verde River watershed assessment suggests more monitoring during the recreation season to maintain EPA standards for recreation water (perhaps via additional public education about proper disposal of human waste or additional restroom facilities)</li> </ul>	<ul style="list-style-type: none"> <li>• ADEQ will be working with the US Geological Survey and the AZ Game and Fish Department so that their future monitoring efforts will better support Arizona's surface water assessments.</li> </ul>
<b>Archaeological Impacts</b>	<ul style="list-style-type: none"> <li>• Signs at wilderness portals explaining laws and regulations forbidding the altering of artifacts and cultural sites</li> <li>• Archeological site stewards available to explain the importance, history and fragility of sites and artifacts</li> </ul>	<ul style="list-style-type: none"> <li>• No new soil disturbances within a heritage site</li> <li>• Interpretive volunteer site steward events</li> <li>• Para Archeology training for desired FS employees</li> <li>• Sites not disclosed on maps</li> </ul>
<b>Litter</b>	<ul style="list-style-type: none"> <li>• Educational signs explaining the impacts of litter, including LNT principles and all signs in Spanish</li> <li>• Increased law enforcement presence and regulations</li> <li>• Increased field patrol contacts</li> <li>• Visitor reporting and contacts</li> </ul>	<ul style="list-style-type: none"> <li>• Patrol monitoring</li> <li>• Reduced trash</li> <li>• Signage</li> </ul>
<b>Wildfire</b>	<ul style="list-style-type: none"> <li>• Increased fire prevention measures</li> <li>• Heavy fuels reduction</li> <li>• Educating residents of the benefits of fire</li> </ul>	<ul style="list-style-type: none"> <li>• Fuels management reporting</li> </ul>
<b>Invasive Weeds</b>	<ul style="list-style-type: none"> <li>• Increased education/ signage at trailheads</li> <li>• Increased media, news, and website coverage</li> <li>• Protect areas with increased LNT education</li> </ul>	<ul style="list-style-type: none"> <li>• Watershed condition assessments</li> <li>• Invasive species survey reporting</li> </ul>

## VI. References

*Boater's Guide to the Verde River*. Coconino National Forest. 2007. Department of Agriculture: US Forest Service.

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