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Tonto National Forest's Needs to Change Management Direction of Its Existing 1985 Forest Plan

Tonto National Forest
Gila, Maricopa, Pinal, and Yavapai Counties
Arizona

Forest Service　　　　**Tonto National Forest**　　　　**March 2017**

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Cover Photos: Top left: dead trees in a stream. Top right: Road eroding. Bottom left: fire burning through the forest. Bottom Right: recycle bin overflowing with trash.

Introduction

The Tonto National Forest is a unit of the United States Forest Service (USFS), a land management agency in the U.S. Department of Agriculture (USDA). The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. The principal document that guides management on the Tonto National Forest is the "Land and Resource Management Plan for the Tonto National Forest" (Tonto National Forest Plan). The Tonto National Forest Plan was originally approved in 1985 and has since been amended 28 times to accommodate situations in specific projects or to reflect changes in social, economic, or ecological conditions. The Tonto National Forest is the fifth largest forest in the United States, covering 2,964,308 acres of rugged and spectacularly beautiful country. It is located in central Arizona, with Phoenix to the south, the Mogollon Rim to the north, and the San Carlos and Fort Apache Indian Reservations to the east.

The National Forest Management Act of 1976 requires each national forest to develop a land and resource management plan (commonly referred to as a forest plan) and amend or revise the plan every 10 to 15 years. The Tonto National Forest, under the direction of the 2012 planning rule and associated directives, is utilizing best available scientific information to inform the planning process (36 CFR 219.3). Under the 2012 Planning Rule, planning and revision for a national forest plan is an iterative process that includes three phases:

1. Assessment
2. Revision
3. Monitoring

The following diagram (Figure 1) shows the current status of the Tonto National Forest plan revision effort, and steps involved to complete Phase 1 of planning:

Figure 1: Steps to Complete Phase 1

The Tonto National Forest final assessment is now available at www.fs.usda.gov/goto/tontoplan and focuses on current conditions, trends, and risks to sustainability for various resources based on management direction from the 1985 plan. It basically describes the current "state of the forest". Preparation for this draft assessment included evaluating existing information, forest plan amendments, and annual monitoring reports. Additionally, outcomes from public meetings and other outreach efforts were considered. All these sources provide valuable information about changes that are needed in the existing forest plan. The need to revise the Tonto National Forest 1985 Forest Plan is driven by the changing conditions identified in the assessment including the changing public values and uses associated with the forest.

This document represents the transition from the assessment to the forest plan development phase.

Needs to Change Process

The Tonto National Forest's current land and resource management plan (forest plan) is over 30 years old. The forest is about to begin the process of developing a new plan that guides how the Tonto National Forest will be managed over the next 10 to 15 years. In order to accurately revise the forest plan there needs to be a good understanding about which direction to move towards, or needs to change. A needs to change statement paints a picture of the strategic changes necessary to address issues identified by the assessment and present a vision for future management of the Tonto National Forest. The overarching question to be answered in developing a needs to change statement is:

- What strategic, current plan content needs to be revised (added, modified, or deleted) to address the conditions, trends, and risks?

Using the results and trends from the assessment report (available on the above website), the forest's planning team developed themes describing overarching needs and concepts that need to be considered and addressed through the plan revision process in order to create sustainable resources, goods, and services. These themes were:

- Theme 1. Maintain, improve, or restore ecosystems on the Tonto National Forest

- Theme 2. Provide for plant and animal habitat diversity, including at-risk species

- Theme 3. Increase resiliency of ecosystems and incorporate adaptive management

- Theme 4. Sustainably manage water resources+

- Theme 5. Facilitate accessible, sustainable, and diverse recreation opportunities to a growing public

- Theme 6. Preserve the unique cultural and historic character of the land while providing opportunities to engage with local heritage

- Theme 7. Ensure the sustainability of key ecosystem services and forest attributes that contribute to values associated with the Forest

- Theme 8. Recognize and enhance the Tonto National Forest's role in contributing to local economies

- Theme 9. Emphasize on-going collaborative efforts and partnerships while striving to develop new and long lasting relationships

- Theme 10. Develop a monitoring strategy that provides information for rapid responses to changing conditions.

- Theme 11. Allow for adapting to fluctuations in forest budgets over the life of the plan when planning towards desired conditions

These general themes were used during a series of public meetings to help guide and focus discussion about needs for change in those areas. There were seven Needs to Change Public Meetings that took place between September and October 2016. The public was presented with the Draft Assessment Summary Report and the preliminary needs to change themes, and asked to discuss the importance of these themes, indicate where additional themes might be needed, and provide new or alternative examples to describe each theme. The meeting notes from each meeting, as well as a meeting summary, is available on the plan revision website (www.fs.usda.gov/goto/tontoplan).

Input from the Needs to Change Public Meetings and internal resource focused meetings, were used to develop the draft needs to change statements. These statements were posted to the plan revision website for review between December 15, 2016 and January 11, 2017. Based on additional comments and feedback received the needs to change statement were updated. All comments received during the above period were compiled and any updates to the needs to change statements were documented in the [Needs to Change Response to Comment document](link) (website above). The needs to change statements, identified later in the document, are a reflection of the results of the Assessment and input gathered during public meetings and two rounds of public comment.

The parts of the forest plan that need to be changed, needs to change statements, will ultimately be summarized in the Federal Register when the forest publishes a notice of intent (NOI) to prepare an environmental impact statement related to forest plan revision. This announcement will convey the Tonto National Forest's intent to develop a revised forest plan (and alternatives) based on identified needs to change and analyze their respective effects on the environment.

Plan Content

A forest plan provides broad, program-level direction for management of National Forest System lands and its resources. The purpose of a plan is to address the risks to sustainability of resources, goods, and services the forest produces and to provide a vision for the future management of the forest. Although the forest plan does not contain a commitment to select any specific project, future projects are carried out based on guidance provided in the plan. A forest plan:

- Applies to only those lands within the National Forest System;

- Is developed through an ongoing public process;

- Uses the best available scientific, local, and native knowledge to inform the planning process;

- Provides a framework for integrated resource management and for guiding project and activity decision making;

- Does not authorize projects or activities, commit the Forest Service to take action, or regulate uses by the public (in other words, no site-specific decisions are expected to be made in a forest plan); and

- Should not repeat laws, regulations, or program management policies, practices, and procedures that are in the Forest Service Directive System.

A forest plan consists of (1) plan components; (2) identification of where plan components apply; (3) other plan content, and (4) optional plan content. Each of these is discussed below:

Plan Components

A forest plan consists of components that will be developed from the needs to change statements and guide future project and activity decision-making. Plan components will apply forest-wide, to specific parcels of land (management areas), or to land of specific character (e.g. riparian areas, roads, seeps, springs). These components are:

Desired conditions are specific social, economic, and ecological characteristics of the plan area, or a portion of the plan area, that are described in terms specific enough to allow for progress toward their achievement. Desired conditions are what drive the plan. All project-level management activities should be aimed at the achievement of the desired conditions for those resources in the area where the project is located. Desired conditions can be thought of as goals that help define a collective vision for the National Forest in the future.

Objectives are concise, measurable, and time-specific statements of a desired rate of progress toward desired conditions and should be based on reasonably foreseeable budgets. Objectives, along with the strategies (from management approaches or Forest Service handbook direction) used to accomplish them, can be thought of as the tools we will use to prioritize project activities to reach desired conditions. Objectives are mileposts along the road toward desired conditions.

Standards can be thought of as the rules we will operate within as we develop projects to accomplish objectives and achieve desired conditions. These are mandatory constraints on project and activity decision-making.

Guidelines describe constraints on project and activity decision-making that allow for departure from its terms, so long as the intent of the guidelines is met. In other words, guidelines are mandatory unless they are replaced by something that is equal, or better, in meeting the intent of the existing guideline.

Suitability of lands is identified in a plan as specific lands within a plan area that are suitable for various uses or activities based on the desired conditions applicable to those lands. The plan also identifies lands within the plan area as not suitable for uses that are not compatible with desired conditions for those lands. The suitability of lands need not be identified for every use or activity; however, every plan must identify those lands that are not suitable for timber production (required by the National Forest Management Act).

Where Plan Components Apply

Every plan must identify **management areas** or **geographic areas,** or a plan may have both. The plan may identify designated or recommended designated areas as management areas or geographic areas.

Other Required Plan Content

In addition to plan components the forest plan must include other plan content. These are also linked to needs to change statements. Other plan content are not plan components.

Priority watersheds: Every plan must identify watersheds that are impaired or at risk for priority maintenance or restoration.

Roles and contributions: Every plan must describe the roles and contributions of the plan area to ecological, social, and economic sustainability within the broader landscape.

Monitoring program: Every plan must include a monitoring program. Monitoring information enables the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed.

Proposed and possible actions: Every plan must describe proposed and possible actions that may occur during the life of the plan on the plan area. Possible actions are not a commitment to do work, but possible actions which could be performed to move toward desired conditions and objectives.

Optional Plan Content

Forest plans may include other optional plan content, such as existing conditions, explanatory narrative, and management approaches. Optional plan content are not plan components.

Management approaches and associated information do not offer plan direction, but describe an approach or strategy to manage the unit to achieve a desired condition. Management approaches

often convey how plan components work together to achieve the desired condition. They may also describe context, intent, priorities, partnership opportunities or coordination activities, needs to surveys, inventories or assessments, or approaches to risk and uncertainty. Not every resource topic area may have an associated management approach heading. Changes to management approaches do not require plan amendments.

Background and description and associated information do not offer plan direction, but give a brief sense of the history and/or description of the resource topic area being addressed, as of the writing of the plan. The background and description information also provide a context for the desired conditions identified as part of a plan component.

Other sources of information include existing laws, regulations, policies, memorandums of understanding and other guidance that will be incorporated into the plan as an appendix. These sources are important in designing projects and activities to achieve desired conditions. Most of these documents are available from Forest Service offices. Many are posted on the Tonto National Forest Internet Web site www.fs.usda.gov/goto/tontoplan.

Needs to Change the Existing Forest Plan

The needs to change statements are listed following the summary of each resource area. Forest-Wide Management represents a cross cut of topics that cover all resources on the forest, how we manage the resources, collaboration, and partnerships. Ecological Sustainability represents the total needs to change identified form results of the Draft Assessment Volume I. Social, Cultural, and Economic Sustainability represents the total needs to change identified from results of the Draft Assessment Volume II. Each of these categories have a summary of community feedback (see full report on the website listed above) related to the needs to change statements. Each resource from the assessment is summarized with their needs to change below. It is important to note that the draft needs to change are not a complete list of what will be changing through the plan revision process and that components from the 1985 plan that are functioning properly will not have needs to change statements.

Forest Wide Management

Input from public comment

Topics that emerged from Forest-wide Management discussions included collaboration and partnerships, education, monitoring, Forest Service staffing and internal workings, Forest Plan components, technology, communication, enforcement, transparency, resource protection, and project management.

Workshops participants stated again and again that the Forest Service needs to better communicate within their agency as well as to the public. Transparency came up in most meetings especially regarding how the Forest Service uses comments from the public in decision making and how they can better acknowledge community input throughout the Forest Plan Revision process. The concept of the Forest Service maintaining working relationships and partnerships with existing volunteer groups was brought up frequently.

Education and outreach were highly discussed at most meetings especially in the context of youth and how to get young people involved in public lands. There were also many conversations about the number of visitors to the Tonto National Forest that are not from neighboring communities and that some education needs to be directed at those people too.

Participants at each meeting were asked to indicate which topic they felt were the most important for the Tonto National Forest to focus on. The results showed that communities want the Forest

Service to "emphasize on-going collaborative efforts and partnerships while striving to develop new long lasting relationships" above all else. This was also evident through the extent to which the discussions revolved around collaboration and partnerships and how the Forest Service could better be involved and foster these among user groups.

Changes throughout the Plan

Each National Forest is governed by a management plan in accordance with the National Forest Management Act (NFMA) of 1976. These plans set management, protections, use goals, and guidelines. Monitoring conditions on a forest ensures projects are done in accordance with plan direction and determines effects that might require a change in management. Since the release of the current Tonto National Forest Land Management Plan (Forest Plan) in 1985, the Forest and surrounding communities have experienced considerable socioeconomic and ecological change and there have been significant improvements in technology and science. As a result of these continuously dynamic conditions, the Forest Plan has to be a flexible and adaptable document. To date our current Plan has 28 amendments. Many of the constraints in our current plan will be alleviated with the 2012 Planning Rule requirements. It is the intent of the Tonto National Forest to ensure the revised plan incorporates innovative science, new tools, and technologies, and databases in order to achieve the best available scientific information (BASI) for better resource management.

Plan Needs to Change

1. There is a need for plan components that incorporate best available scientific information (BASI).

2. There is a need to reduce the complexity of plan components related to management areas that fragment the landscape by their arrangement, boundaries, and differing management direction.

3. There is a need to remove plan components that require developing additional planning documents, many of which require updates on a regular cycle.

4. There is a need for plan components that are adaptable to changes in technology, tools, and communication style demands.

5. There is a need for management approaches that emphasize public education about the Tonto National Forest's diverse ecological, social, and economic resources, the multiple-use philosophy, public laws and regulations, and management strategies.

Monitoring

The purpose of monitoring and evaluation is to determine if our management is meeting conditions and objectives laid out by the Forest Plan. However, the type and scale of monitoring in the current plan does not always answer those questions. The current monitoring plan is lengthy, and the forest has had a difficult time carrying out all components of the program as a result of increasingly limited resources. The monitoring questions are often focused on very prescriptive components of the forest plan, such as comparing actual and planned outputs for timber harvest. Also, monitoring components do not take into account how monitoring is conducted beyond the Tonto NF boundary, limiting the ability to compare and integrate monitoring data of surrounding areas and limiting the ability to compare resources on the forest with their status at a larger context scale or even between neighboring forests. Finally, the monitoring plan has not been amended since the current forest plan was published in 1985 and it is out of date with current science and trends in resources, such as the emergence of new recreational opportunities. Since monitoring is an essential component of adaptive management,

the problems cited above make it difficult to determine if resource management as described by the plan is working as desired.

Plan Needs to Change

6. There is a need for a monitoring program that tracks progress toward desired conditions and allows for a responsive adaptive management program with available resources.

Collaboration & Partnerships

Relationships are a key factor that can impact the success of how the forest plan is implemented. With the challenges faced by the Forest today, strong relationships are not a convenience, but a requirement in order to protect the land and serve the people. In addition, the forest does not always capitalize on partners who are willing to help. For example, stakeholder involvement is not reaching its potential for the recreation resource, resulting in missed opportunities for positive interactions. Finally, the Forest struggles to reach all stakeholders, which include both rural and urban communities and customers, and relationships are weak because of this. Poor relationships are costly because they can cause increased time and energy through the planning process, misperceptions and miscommunications regarding the Forest's intentions and actions, and ultimately negatively impact resource management. While the forest plan cannot provide direction beyond the scope of managing resources, such as individuals, beyond the Tonto National Forest, better relationships and partners may be part of strategies that help to achieve resource desired conditions.

Plan Needs to Change

7. There is a need to include management approaches that strengthen existing relationships, promote new relationships, and incorporate strategies that prioritize partnerships (e.g. local, state, and federal agencies, tribal governments, law enforcement, permitees, recreation and forest user groups, environmental groups, users with historic ties to the forest, and youth groups).

8. There is a need for management approaches that promote seeking outside assistance in addition to working with partners and volunteers to manage resources and monitor activities.

9. There is a need for management approaches that emphasize better coordination and collaboration with other forests, local governments, and tribes to minimize conflict between local planning and zoning direction as a result of our decisions, while at the same time becoming more aware of how local regulation might enhance our own management goals, or alternatively, interfere with our own desired outcomes.

10. There is a need for management approaches that integrate forest restoration and tribal needs, for working across boundaries in partnership with tribes to manage landscapes, and to address threats to tribal resources to meet common objectives.

Ecological Sustainability

Input from public comment

Topics that emerged from the Ecological Sustainability discussions included watershed health, forest health, fire and fire management, invasive species, water resources protection, wildlife, grazing and rangeland management, climate change, science and monitoring, restoration, forest thinning, and preservation concerns.

Most discussions across the communities centered on watershed and forest health characteristics, the danger of large fires and using fire as a management tool, and the protection of local water resources. Species and species management were prevalent topics across most meetings, this included wildlife species and invasive species (both terrestrial and aquatic); much of the invasive species conversations were tied to fire discussions and centered on post-fire vegetation.

Terrestrial Ecosystems

Terrestrial ecosystems are comprised of upland vegetation that are not located near or influenced by streams or wetlands. The Tonto National Forest uses Ecological Response Units (ERUs) to describe vegetative communities and are a classification of sites with similar plant species composition, succession patterns, and disturbance regimes. Therefore, ERUs do not represent current vegetation conditions but rather the potential range of plant associations along with vegetation structure and processes that would occur when natural disturbance regimes (e.g., fire) and biological processes prevail.

Fire exclusion and past management activities have led to the high to moderate departure from historic conditions (reference conditions) for most ecosystems, specifically among woodland and forested ERUs on the Tonto National Forest. These ERUs have much larger patch sizes, high stand densities (trees and shrubs), a loss of grass and forb diversity, have an overall reduction of herbaceous cover, and are more prone to atypical wildfires (generally high severity fires). Also, these ERUs have lower structural diversity where, on average, more acres are in closed-canopy-states (specifically forested ERUs). These changes can negatively impact wildlife species as they generally benefit from a diversity of structural attributes (canopy complexity, forest patchiness, etc.). Desert ERUs are experiencing much more frequent fires, have higher post-disturbance-exotic-states than reference conditions, and projections (100-year state-and-transition modeling) under current management show high departure from reference conditions.

Native grasses have been replaced with exotic and invasive species for many ERUs on the forest which lowers site productivity, reduces soil productivity and are not as effective in the prevention of erosion (especially during droughts) or as productive for forage. Soil loss can lead to shifts in species composition with increases in shallow rooted grasses which are less effective in stabilizing soils. These shifts and increases in bare soil can lead to the increased chance of noxious weed and other non-native invasive plant infestations and lower biodiversity.

Multiple models are in agreement that the southwestern United States is in a drying trend that will continue well into the latter part of the 21st century. Models also agree that conditions and trends will continue to depart from reference conditions. Increased precipitation is predicted; however, temperatures are also expected to increase. The balance between precipitation and evaporation would likely result in an overall decrease in available moisture. This ultimately results in fewer precipitation events and more precipitation in a shorter period, with larger, more destructive flooding. Herbaceous cover is likely to die-off in prolonged drought and leave larger areas devoid of groundcover, creating an increased amount of bare soil. Storms may become more intense. More intense storms, coupled with a lack of groundcover, will increase erosion resulting in unsatisfactory soil conditions degraded ecological integrity.

Plan Needs to Change

11. There is a need to develop desired conditions and other plan components that support heterogeneity and habitat diversity at multiple spatial scales.

12. There is a need to include plan components that focus on addressing the impacts of exotic and invasive species on terrestrial and aquatic ecosystems.

13. There is a need to develop desired conditions, standards, and guidelines that address terrestrial and aquatic habitat linkages and connectivity for species migration and movement across the landscape.

14. There is a need for plan components that incorporates adaptive management strategies that increase ecosystem resiliency to changing environmental conditions and stressors.

15. There is a need for standards or guidelines that prioritize use of native plant materials (the use of local and genetically appropriate seed sources) for revegetation, restoration and rehabilitation of native plant communities to provide for the conservation of ecosystem diversity and maintain healthy ecosystem function.

16. There is a need to add plan components that emphasize landscape scale restoration.

17. There is a need to develop desired conditions (at multiple scales) for vegetation structure by promoting a diversity of seral states, vegetation function, and species composition.

Frequent Fire Ecosystems

Frequent fire ecological response units (ERUs) are the most highly departed ecosystems on the Tonto National Forest. Historic logging practices, fragmentation through the construction of roads and trails and grazing with unintended consequences during the 19th and early 20th centuries have greatly reduced fine surface fuels (forbs and grasses) that typically carried frequent low-severity fire on the ground. These changes along with fire exclusion and suppression have contributed to higher densities of trees, increased fuel loadings, wildfire atypical of historic fire regimes, and altered species composition. As a result, many ecosystems are highly stressed, are more prone to insect and disease outbreaks and experience higher severity fires (atypical fire regimes). The encroachment and/or increase of woody species produce fuel loadings that can act as ladder fuels, helping surface fire to climb into the canopy of tree crowns and resulting in increased occurrences of crown fire. Most frequent fire ERUs have much longer fire return intervals, more acres in closed-canopy states, larger patch sizes and an excess of litter, duff, and coarse woody debris. Both, the Ponderosa Pine Forest and Mixed Conifer-Frequent Fire ERUs have coarse woody debris exceeding 40 tons per acre which can increase the loss of soils through intense heating from wildfires.

Fire is also a significant ecosystem characteristic for Grassland (Semi-Desert Grassland), and woodland (Juniper Grass, Piñon-Juniper Grasslands) ERUs because it removes litter, limits woody species germination and growth, and allows new lush grasses and shrubs to germinate and take advantage of the short-term release of nutrients in the ash. Today, without frequent fires, many Semi-Desert Grassland sites resemble an atypical community (e.g., soft chaparral types) where soil-binding, perennial grasses have been replaced by shrubs and annuals (native and exotic) that compete with native grasses. Other negative impacts from altered fire regimes include loss of soil function (hydrophobic soils that repel water), erosion, severely burned soils that changes the chemical, physical and biological properties of the soil, the development of uncharacteristic plant communities (e.g., type conversions) and successional pathways – all of which ultimately threaten the viability of these ecosystems.

Plan Needs to Change

18. There is a need for plan components, including desired conditions and objectives that recognize fire-adapted ecosystems, the role of fire on the landscape (including wilderness), and its use as a management tool, including planned and unplanned ignitions.

Desert Ecosystems

Desert ecosystems on the Tonto NF (Mojave Sonoran Desert Scrub and Sonora-Mojave Mixed Salt Desert Scrub ERUs) make up a significant proportion of the forest. These systems largely evolved without fire as a key ecological process and therefore many species are not fire adapted (such as succulents). Historically, when fires did occur, negative impacts were minimal because naturally occurring fuel loads (patches of vegetation) were separated by large unvegetated interspaces that limited the spread of fires. Past land use practices, such as the increase in forage for grazing during the late 19th and early 20th centuries, and other activities (ground disturbance activities, off road vehicle use, roads and trail construction and use) have influenced the introduction of exotic and invasive species and increased wildfires in these systems. As exotics, such as annual grasses and forbs, increase in these systems, fuel loads shift from discontinuous to contiguous patches and result in higher wildfire risk. Over time, increased fire frequency and severity can shift dominance from succulents and cacti to species with superior post-fire regeneration. The cacti and succulent component is most negatively affected following fires. For example, the Cave Creek Complex Fire in 2005, fueled by red brome (*Bromus rubens*), killed a significant proportion (estimated 20 percent) of the cacti and succulent vegetation of the Sonoran Desert scrub on the Tonto NF. Increased fire frequency and severity over time may greatly reduce important Sonoran species (such as the iconic Saguaro cactus) and long-lived dominants (such as creosote bush) at sites. While poorly understood, recovery from fire is slow among desert shrublands and depends on factors such as topography, species composition, the amount of precipitation following fire and species' post-fire response. Changing precipitation regimes from climate change in the Southwest along with higher fuel loads, are likely to increase wildfire risk and impair ecological integrity of these ecosystems.

Plan Needs to Change

19. There is a need for plan components, including desired conditions and standards and guidelines, to address current and foreseeable stressors in desert ecosystems (e.g., fire, exotic species, and other disturbances) and to better understand post-disturbance recovery of desert species.

Soils

Historic grazing with unintended consequences, other management practices, increased canopy cover with associated decreased herbaceous cover and increased bare soil, and prolonged drought are negatively affecting soil condition for many ERUs on the forest. Over half (53 percent) of the ecological response units on the forest, particularly in the Pinyon-Juniper and Mojave Sonoran Desert Scrub ERUs, have over 50 percent the soils rated as impaired and unsatisfactory. The Cottonwood riparian ERU also shows at least 40 percent unsatisfactory for soil condition. The lack of effective vegetative groundcover and organic matter has resulted in unstable soils with reduced hydrologic function and nutrient cycling in these ecological response units. Repeated ground disturbance, such as OHV use (particularly in desert ecosystems), can lower site productivity (compacted soils, reduced hydrological function) and shift dominance of long-lived species to disturbance-adapted species. Repeated ground disturbance can significantly reduce or eliminate biological crusts that can negatively affect seedling germination, plant growth and nutrient availability. Intact biological soil crust have also been shown to reduce some exotic species germination, establishment and spread. Nearly 60 percent of the soils in the Semi-Desert Grassland ERU have impaired to unsatisfactory soils. The loss of frequent fires in the Semi-Desert ERU is physically changing the surface soils over time and resulting in the dominance of deep-rooted shrubs and trees and elimination of shallow-rooted grasses.

Generally, soils are at risk in areas where severe soil erosion hazards coexist with high fuel loadings (high risk of wildfire) and a drying trend that, when combined, may result in high levels

of accelerated erosion and decreased site productivity with some areaspotentially experiencing a permanent loss of soils or type change (change in species composition). In the Mojave Sonoran Desert Scrub, Semi-Desert Grassland, Ponderosa Pine Forest, Mixed-Conifer Frequent Fire, Madrean Encinal Woodland, Juniper Grass and Interior Chaparral ERUs, current soil loss rates exceed tolerable rates and risk for sustaining inherent site productivity.

Plan Needs to Change

20. There is a need to develop standards and guidelines that promote the maintenance, restoration and monitoring of soil condition and function (e.g., hydrology, stability, and nutrient cycling) by improving and maintaining sufficient ground cover (biotic and abiotic components).

Riparian Ecosystems

Riparian systems have been degraded and are at risk across the Forest. Shallow water tables, cooler temperatures, and greater productivity typically characterize riparian areas. However, human alterations to the landscape such as impoundments, diversions, and pumping, introduction of invasive plants, grazing, and recreational impacts are altering these systems. Roads, grazing, and recreational uses (including trails and dispersed recreation) remove vegetation and compact soils in riparian areas, causing significant departures from reference condition in terms of species composition, proportion of bare soils, and stream bank stability, ultimately causing erosion and sedimentation downstream.

Increased water demand (water withdrawal) and climatic changes (e.g., long-term drought) have also affected these systems. Water tables are lower and there have been decreases in periodic flooding which is necessary for the regeneration of some important riparian species (e.g., cottonwood). This results in shifts in species composition and a reduction in available soil moisture. Bare soil and reduced native species provide conditions suitable for establishment of invasive species. Invasive species, in combination with adjacent uncharacteristically dense upland vegetation, lead to an increased risk of fire from the uplands entering riparian areas, where fire is not a natural part of the ecosystem. Loss of riparian vegetation leads to higher water temperatures, increased erosion and sedimentation, and an overall decrease in water quality which negatively affects aquatic biota and wildlife. The impact on wildlife is significant; an endangered species that is a riparian obligate and fifteen species of conservation concern are dependent on the riparian area for their habitat.

Plan Needs to Change

21. There is a need for desired conditions that identify appropriate riparian characteristics (e.g., biodiversity, connectivity, water availability) that promote functionality and resiliency while taking into account multiple stressors.

22. There is a need for standards and guidelines that minimize ecological impacts of multiple uses in riparian areas.

Watersheds and Water Resources

Both natural and human caused disturbances impact the condition of water resources across the forest. Although some wildfires are a natural disturbance, high burn severity areas within wildfires from both natural and man-caused ignitions lead to increased rates of erosion and sedimentation, negatively impacting water quality. Drought also impacts water resources through reduced flow in streams and springs. Roads in close proximity to stream channels increase delivery of water and sediment to stream networks on and off the Forest. Likewise, grazing, recreation, and other multiple uses continue to impact water resources into the future.

Human-caused and natural disturbances across the landscape result in water quality designation of 34% of the assessed stream miles on the forest as not attaining or impaired. Impairments vary but can include heavy metals, sediment, nutrients, dissolved oxygen, bacteria and mercury in fish tissues.

The majority of the sub-watersheds on the forest, 89%, are classified as functioning-at-risk or impaired. Water quantity, aquatic habitat, aquatic biota, riparian vegetation, roads and trails, and soil condition are the watershed conditions indicators that have the greatest impact on overall watershed condition scores.

Plan Needs to Change

23. There is a need for standards and guidelines that reduce pollutant runoff into streams.

24. There is a need for providing plan components on the sustainable management of groundwater and groundwater dependent ecosystems (springs, wetlands, riparian areas, perennial waters) and their interconnections.

25. There is a need to develop plan components for the long term health and sustainability of watersheds utilizing best available scientific information.

26. There is a need to develop plan components to ensure stream channels and floodplains are dynamic and resilient to disturbances.

At-Risk Species

In accordance with the 2012 Planning Rule, the Tonto National Forest identified at-risk species that occur on the forest. First, this involved identifying species listed as threatened, endangered, proposed, or candidate species under the Endangered Species Act. Additionally, we identified species of conservation concern (SCC). This list of SCC consists of species that 1) are native to and known to occur on the forest, and 2) have a substantial concern regarding their persistence in the planning area over the long-term.

We identified a total of 22 federally listed species and 51 species identified as SCC, for a total of 73 at-risk species. All identified at-risk species were associated with ecosystem response units (ERUs; see the "Terrestrial Ecosystems" write-up earlier in this document), and, where applicable, special habitat features, water bodies (i.e., perennial streams, springs, and constructed waters), and specific threats to persistence. These associations exposed which habitat types, features, and threats were most important for at-risk species. Two ERUs stood out during this process: the riparian and Mohave-Sonoran Desert Scrub. The riparian ERU provides significant habitat for 42 of the 73 at-risk species found on the Tonto NF, including 18 federally listed species. The Mohave-Sonoran Desert Scrub was also important habitat for many at-risk species. Aquatic features (e.g., riparian areas, springs, and permanent water) were identified as important for at-risk species (36 of the 73 at-risk species total, of which 17 are federally listed). Threats from non-native species were identified as a major threat to 16 of the 73 at-risk species on the forest, 12 of which are federally listed.

Plan Needs to Change

27. There is a need to develop standards or guidelines to provide for the conservation and recovery of federally listed species, as well as maintain viable populations of species of conservation concern.

Climate Change, Carbon Stocks, and Air Quality

Although regional climates persist for centuries, they do change, and vegetation responds on a similar scale (Delcourt et al. 1983). Recent anthropogenic climate change may shift ecological processes beyond the natural range of variability, posing risks to ecological integrity. Climate change will profoundly affect the frequency and severity of fires, and ultimately vegetation, in many regions and ecosystems in response to factors such as earlier snowmelt and more severe or prolonged droughts. Land managers need to assess ongoing and potential effects of climate change and coordinate a response for ecosystems, species, and human communities.

Out of all ecosystems on the Tonto National Forest, the woodlands have the highest vulnerability to climate change effects, specifically both the Pinyon Juniper Woodland and Juniper Grass ERUs. Additionally, both of these ERUs have greater than 96 percent certainty in climate change projections between different global circulation models. Pinyon-juniper ecosystems (Pinyon Juniper Woodland, Pinyon Juniper Evergreen Shrub and Pinyon Juniper Grass ERUs) make up nearly 20 percent (526,746 acres) of the Tonto National Forest. While the existing canopy structure in these ecosystems may provide trees a buffer against drought, severe multiyear droughts may overwhelm local buffering and periodically cause dieback of piñon pines. Additionally, ecosystem change may arise form large-scale severe fires that lead to the colonization of invasive species, which further compromises the ability of pinyon pines to re-establish.

As part of the assessment process, trends in carbon stocks were assessed on the Tonto National Forest. Models forecast that, for all ecosystems (except for the Ponderosa Pine-Evergreen Oak and Ponderosa Pine forest ERUs), carbon stocks are projected to increase on the Tonto National Forest, in part due to low fire frequency and minimal forest density management. Because soil organic carbon is strongly influenced by growth and yield of vegetation, it is predicted to remain the same or potentially increase under current rates of decomposition. The exception to this would be the grasslands and shrublands ERUs where surface biomass has decreased due to consumptive harvesting by ungulates, erosion (wind and water), and other disturbances (for example, fire).

If predicted warming trends continue, species of conservation concern (SCCs) may be impacted by their inability to adapt to the increased rate of habitat loss and/or the encroachment from non-native species. Invasive species are continually being introduced and can pose serious threats. Flexibility in management options is essential to maintaining the ability to accommodate both predicted and unpredicted changes as they arise.

Overall, air quality on or near the Tonto National Forest is in fair to good condition and are trending stable. Some violations of air quality standards for ozone, particulate matter 10 (particulate matter measured at 10 microns or less in diameter), lead, and sulfur dioxide have been documented. However, air pollutant trends appear steady or improving for most pollutants. The major issues with air quality involve particulates coming from the Phoenix-metro area and from prescribed burns, wildfires, and recreation on the Tonto National Forest. Additionally, urban and agricultural activities, as well as climate change and drought, generate particulate emissions upwind and within the Tonto resulting in degraded visibility on the forest. Prescribed burns and wildfires in or near the Tonto National Forest produce smoke and gaseous air pollutants that degrade air quality and visibility and adversely affect the respiratory health of its citizens. Climate change, along with increasing wildfires, is likely to result in an increase in fugitive dust that may reduce visibility and air quality.

Plan Needs to Change

28. There is a need to include plan components that consider potential climate change impacts (e.g., increases in storm events, uncharacteristic wildfire, drought, flooding, and other extreme weather) to ecosystems and natural resources.

Social, Cultural, and Economic Sustainability

Input from public comment

Topics that emerged from the Social, Cultural and Economic Sustainability discussions included recreation, cultural resources, education, law enforcement, economics, events, multiple use, access, population and resource concerns, grazing, outreach, managed use, public involvement, communities, stewardship, and road maintenance.

The topic of recreation - its impacts and sustainability, was actively discussed at every community workshop, many of these discussions also focused on safety for all recreation types and that there may need to be distinct areas for specific types of recreation (e.g. shooting). Discussions within the topic of recreation also addressed access and concerns surrounding limiting forest access to communities. Access was also addressed as a concern regarding cultural resources and the perception that with enhanced access vandalism or cultural resource degradation would increase. The topic of law enforcement was raised as its own topic of concern and in many other contexts including recreation, cultural resources, multiple-use, increased population, and resource concerns.

Social and Economic Conditions

Socioeconomic data shows a clear disparity between cities in the Phoenix metropolitan area and those outside Maricopa County in the area of assessment for the forest. Over the past two decades, continued population growth in predominantly rural areas has brought about significant changes in the dynamic relationships between human communities and publicly administered lands throughout Arizona. Although the potential for population growth can enhance the economic vitality of these areas through greater employment opportunities and an expanding tax base, it can also challenge the capacity of communities and public land managers to provide a wide array of services. Together, these shifts in the demographic makeup of communities surrounding the Tonto National Forest carry important implications for the development of good relations between management agencies and the local public.

Arizona communities are experiencing rapid economic and demographic transformation, resulting in considerable changes in racial and economic diversity, multiculturalism, and social values. These trends have been well documented in the draft assessment through analysis of both quantitative and qualitative data which point to the challenges the national forests' face as they try to accommodate diversity while delivering forest-based goods and services to the public.

The task of planning for multiple resource use is further complicated by the number and nature of interest groups and stakeholders that interact with the forest in a given community. Evidence of the dynamic nature of relationships between the forest and various groups, individuals, and organizations is found in ongoing debates over the preservation of open space, the administration of recreation and grazing fees, and the protection of water resources and wildlife. Although the information above represents a fraction of the elements that may be addressed in any single assessment of social and economic sustainability for community-forest relations, it reflects the diversity and urgency of the issues facing forest personnel as they take positive steps to respond to a rapidly-changing demographic, political, and physical environment.

Plan Needs to Change

29. There is a need to add plan components that recognize the Tonto National Forest's role in contributing to local economies, including service-based sectors such as recreation and tourism, timber, grazing, and other multiple-use related activities and products.

Ecosystem Services

Ecosystem services are the benefits that people obtain from ecosystems. They are a product of functioning ecosystems that affect social, cultural, and economic conditions both on the forest and the broader landscape. Ecosystem services provide a useful framework for land and resource planning by helping the public and land managers identify and understand services provided by a landscape, and human use and dependence on those services (Smith et al. 2011). Consideration ensures that the complete value of the forest is incorporated into the planning process.

The key ecosystem services identified and evaluated for this assessment were chosen because they (1) were characterized as important to the public as a resource that they either valued, or were concerned with, during a round of community meetings held between May and July 2014; and/or (2) have been identified as important by forest leadership. Key ecosystem services on the forest include: water for consumption; water for recreation; habitat for hunting, fishing, and watchable wildlife; sustainable and productive rangelands; and cultural heritage.

Water for Consumption

The human and social values of water resources on the forest are evidenced by the fact that the forest was originally established in 1905 to protect the watersheds above the proposed Roosevelt Lake to ensure provision of long term reliable water supplies for the Salt River Valley water users. Consumption of water resources is essential to the economy and quality of life of communities in and around the Tonto National Forest. The Tonto contributes to the supply of water used by households, industry, power suppliers, and agriculture, helping to sustain human populations in and around a number of rural communities, towns, and cities in central Arizona – including the greater Phoenix area.

Water for Recreation

The Tonto National Forest provides a range of recreation settings and facilities and offers a variety of water-based and on-shore activities adjacent to rivers, streams and reservoirs. Water features provide the physical settings for many different outdoor recreation activities – creeks and rivers for swimming, fishing, water kayaking, canoeing, rafting, and tubing; and reservoirs for fishing, motor boating, jet skiing, water skiing, and wakeboarding. Six of the ten largest lakes/reservoirs contained entirely in the state are found on the forest. Visitors from across the state travel to Mogollon Rim area streams (East Verde River, Tonto Creek, Canyon Creek, etc.), the Salt River Lakes (Roosevelt, Apache, Canyon, and Saguaro), and the Verde River Lakes (Bartlett and Horseshoe) to experience water-based recreation and relax near the water.

Habitat for Hunting, Fishing, and Watchable Wildlife

Fish and wildlife are a key part of the unique character inherent to the Tonto National Forest and are enjoyed by the many visitors who come to the forest to hunt, fish, and view wildlife in the dramatic landscapes of the southwest. The forest provides diverse opportunities for the public to enjoy fish and wildlife by managing habitats that support healthy populations of plants and animals, and by providing access to these wild areas. While hunting, fishing, and wildlife viewing are well recognized as recreational activities, they also include social, cultural, and economic components.

Sustainable and Productive Rangelands

Forage production for domestic livestock has long been a key provisioning service provided by the Tonto. The production of forage, which includes grass and other plants cattle graze, depends on conditions such as soils and climate. Management decisions are often seeking a balance between forage production, livestock products, and other ecosystem services, including wildlife and recreation, through adjustments in permitted numbers and the implementation of improved management practices. Additional ecosystem services include the potential to store carbon in the soil and plant biomass, and food production. Further, the process of herding and managing the forage-consuming livestock has high cultural and social value for many Arizonans and often helps contribute to local economies.

Cultural Heritage

Heritage tourism is a valuable cultural service growing in popularity on the Tonto. Cultural sites that have been enhanced by interpretive developments and outreach activities, are useful in engaging and educating about our historic past. Access to cultural resources, traditional use areas, and sacred sites on the Tonto are important for tribal uses. Due to popularity, cultural sites on the forest are at risk to vandalism and degredation.

Plan Needs to Change

30. There is a need to include plan components for key ecosystem services identified in the Assessment including: water for consumption; water for recreation; habitat for hunting, fishing, and watchable wildlife; sustainable and productive rangelands; and cultural heritage.

31. There is a need for updating plan components that provide for the management of sustainable water supply for multiple uses (e.g. wildlife, grazing, and recreation) including public water supplies.

Timber and Forest Products

While the forest consists of approximately 302,436 acres of timberland, about half is considered unsuitable for timber production, and other areas have been designated as wilderness areas. Only 109,492 acres of the forest (4% of the total land area) is considered suitable as a timber base in the current 1985 forest plan.

Until recently, the forest's primary contribution of timber and forest products was fuelwood to local communities, but recent emphasis on fuel reduction and forest restoration has increased commercial timber harvest to rates that now exceed that of fuelwood. This increased emphasis in land restoration projects should allow the continued ability to contribute to both timber and fuelwood demands. An increase in forest restoration projects will be vital to help sustain forest and watershed health, prevent uncharacteristic wildfire, and improve or maintain wildlife habitat, and contribute to local economies. Christmas trees and plants collected for ceremonial use are a few examples of forest products the forest provides.

Plan Needs to Change

32. There is a need for plan components to ensure the sustainability and availability of forest products such as firewood, medicinal and ceremonial plants, and edible plants.

33. There is a need for desired conditions that incorporate a wide range of silvicultural practices to promote forest health, resiliency, and sustainability.

Rangeland Resources

Rangelands are shrublands, woodlands, wetlands, and deserts that are grazed by domestic livestock or wild animals. Livestock grazing began on the area now known as the Forest in the late 1800s. The forest is unique in that it is one of the few national forests that permits year-long grazing.

Currently, the forest is divided into 106 cattle and horse allotments and one sheep driveway. These allotments are held by 85 term grazing permit holders. Several of the permittees hold more than one grazing permit and run multiple herds or use one allotment for part of the year and move to another allotment later. Most permittees are dependent entirely on federal grazing permits due to the scarcity of private lands in Arizona.

A collaborative rangeland monitoring program called Reading the Range, led by the University of Arizona, was initiated on the forest in 2001. The monitoring program now includes 57 allotments encompassing 1.48 million acres on the forest. In a coarse review of approximately 265 Reading the Range monitoring sites, most monitoring sites are stable or upward in trend for the time monitored. Some rangelands are continuing to heal after large wildfires. Other areas are recovering from drought. Invasive and exotic grasses on the forest continue to increase, and other noxious or invasive species remain a threat to rangelands.

Plan Needs to Change

34. There is a need to add plan components for rangeland management that maintain or restore ecological integrity of rangelands.

35. There is a need for plan components to allow flexibility in rangeland management to prepare for changing conditions such as drought, fire, social and economic needs.

Recreation

The Tonto National Forest has a very large and complex recreation program. The range of recreation opportunities on the forest complements opportunities available on adjacent lands managed by different administrative units, such as Bureau of Land Management, National Park Service, State of Arizona, Tribal lands, counties, and cities. While serving many local visitors and contributing to the quality of life for local residents, the forest also plays an important role in sustaining the recreation and tourism-related economy within the four-county area (Maricopa, Pinal, Yavapai and Gila counties). The 2008 National Visitor Use Monitoring results estimated the total annual visitation was 4.8 million people on the forest. The forest is one of the most visited national forests in the country.

The current recreation program on the forest is not economically sustainable. While volunteers and partners assist with trail maintenance and wilderness stewardship, their contributions do not bridge the gap in total program management costs. Federal appropriations account for approximately half of fee program operations and maintenance. Fee revenue is reinvested directly into fee sites and cannot be spent on non-fee areas or dispersed recreation. The total estimated recreation program cost for 2014 was estimated at $4.6 million. There is an estimated $1 million gap between what is available in program funds andwhat the forest needs to provide a fully functional recreation program.

The underlying conditions of the natural environment are the foundation for sustainable recreation opportunities. Some of these environmental conditions are affected by events such as climate change, natural disasters, and declining ecosystem health, as well as localized factors such as unmanaged recreation use, vandalism, and deferred maintenance of recreation

infrastructure. Several recent uncharacteristic, stand-replacing wildfires on the forest have affected the quality of recreational settings.

In addition to environmental conditions, unmanaged recreation has been identified by the Forest Service as one of four key threats to the nation's forests and grasslands. Exploration activities such as geophysical surveys, core drilling, and potential subsequent copper mining activity, may impact recreation settings as well. High levels of visitor use on the forest have the potential to impact natural resources, especially in popular high use areas. Changes in technology, local trends, and equipment design have brought forward new types of recreation activities and hobbies. Increased public interest in activities such as stand up paddle boarding, fly boarding, and utility terrain vehicles (UTVs) have altered the facility and capacity needs at recreation sites and trailheads. As the population near Phoenix and in the state continues to increase, it is expected that recreational visitor use of the forest will also continue to increase.

Plan Needs to Change

36. There is a need to include plan components for sustainable recreation management to ensure that recreation resources are integrated into all resource management decisions.

37. There is a need for desired conditions to address the long-term sustainability of recreation infrastructure (e.g., trails, facilities, roads), maintenance, design, and improvement.

38. There is a need for management approaches to address changing trends in services, activities, and types of facilities desired by the public, while balancing those trends with other resources.

39. There is a need for plan components to address user conflicts (e.g., recreational shooting and hikers, equestrians and bicyclists, and motorized and non-motorized users).

Scenic Character

Scenic character is a combination of the physical, biological, and cultural images that give an area its scenic identity and contribute to its sense of place. It provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity (36 CFR 219.19). In the development of the 1985 Tonto National Forest Plan, all lands were inventoried to determine the landscape scenic attractiveness (variety class inventory) and the public's visual expectations (sensitivity level inventory). The Scenery Management System is today's best science to achieve high-quality scenery through ecosystem management practices. Through the Scenery Management System process, scenic character goals are developed in concert with other resource and social demands or expectations, and scenic integrity objectives are established. Scenery in natural settings across the forest is a key component of sustainable recreation management as it serves not only as a backdrop for all types of recreation, but also a resource for tourism.

Plan Needs to Change

40. There is a need for plan components to incorporate scenery management with all forest management (e.g., restoration, habitat diversity, timber management) to further positive outcomes for all resources.

Renewable and Nonrenewable Energy Resources, Mineral Resources, and Geologic Hazards

In Arizona, power generating energy resources are provided by both non-renewable and renewable sources. While some renewable resources are considered to have low development

potential (e.g., wind, geothermal, and large-scale hydroelectric projects), biomass and solar resources have potential for increased growth. Currently, Arizona is ranked second in the nation for solar photovoltaic capacity and photovoltaic capacity installed per capita.

Over 20 mining districts recognized within the planning area are past or current producers of nonrenewable mineral commodities. The largest of these districts, the Globe-Miami mining district is well known for its large disseminated copper deposits and has been identified as one of America's premier copper mining districts. The Pioneer mining district, located just west of the Globe-Miami district, continues to attract interest with the discovery and development of the Resolution Copper project, considered to be one of the world's top ten undeveloped copper resources (Rio Tinto, 2014).

The forest has a legacy of unreclaimed mine and prospecting sites from the early prospectors. The remediation of abandoned mine land features is publicly funded, with the purpose of reducing hazards and health risks associated with these legacy sites. The abandoned mine lands remediation program identifies abandoned mine land features within a defined project boundary on an annual basis. The most widespread and common geologic hazards found in Arizona are earthquakes, floods, mass movement, and subsidence and fissures. Mass movement hazards include landslides, rock falls, and debris flows. Steep sided escarpments, and slopes are constantly subjected to the erosional forces of wind, rain, and gravity. Coupled with other geologic events, such as earthquakes or substantial rainfall, the potential for mass movement becomes even greater.

Plan Needs to Change

41. There is a need for desired conditions that address transmission corridors and renewable energy generation, including wind, solar, biomass, and geothermal, while protecting natural resources, heritage and sacred sites, traditional tribal activities, and scenery.

42. There is a need for plan components regarding the use of common variety mineral materials, such as commercial contracts, personal use, and free use permits.

43. There is a need for standards and guidelines for meteorite collection, rock hounding and mineral collection.

Infrastructure

Infrastructure consists of the physical facilities and systems constructed to support the use of National Forest System lands. The predominant trend affecting the forest's transportation system is decreasing budgets for repairs, maintenance, and improvements. Road construction and maintenance budgets declined 40 percent between 2009 and 2014 and are expected to continue to decrease. At the same time, there is increased emphasis on implementing resource protection measures, higher demand for access to the national forest, increased traveler expectations for higher maintenance level road conditions, and an increased demand of roads as recreational opportunities.

Aviation facilities for the forest include airstrips, helipads, and other developed facilities. There is no earmarked funding for maintenance costs for airstrips. It is likely that interest in airstrip use will remain strong and will increase with growing populations and desires for access as a recreational opportunity.

The current trail system of the forest is not sustainable without assistance from resources outside of the Forest Service. Federal budgets are expected to continue to decline, challenging manager's ability to operate and maintain trails. Deferred maintenance costs continue to accumulate with

below cost operating budgets. Demand for trail use will likely increase with growing populations and desires for access to recreation opportunities.

Despite the challenges faced in terms of budget limitations and resource protection concerns, the forest has generally been able to meet the current plan objectives in the management of administrative facilities and has been successful in providing safe recreational experiences for its visitors. Although the trend for funding is declining, there is no known resource damage occurring as a result of the management of administrative and recreational facilities on the forest.

Plan Needs to Change

44. There is a need for plan components that ensure sustainable infrastructure (e.g., roads, trails, recreation and administrative facilities, range improvements, maintenance backlog, etc.).

Cultural and Historic Resources and Tribal Uses

The forest has a deep and rich cultural heritage with over 10,000 documented archaeological, cultural, and historic sites spanning the past 11,000 years. These include remnants of the early inhabitants of the regions, such as the Hohokam, Anchans, Apache and Yavapai, and evidence of the miners and ranchers that latter settled the region that would become the forest. Cultural resources are nonrenewable. Their integrity is wholly dependent on the contextual relationship between artifacts, architecture, and the environment in which they are found, something that cannot be recreated or restored once disturbed. They are also, by their very nature, in a perpetual state of decline, reduced by the transformation processes of erosion and decay from their original pristine state.

During the past 30 years, heritage resource specialists on the forest, permitted consultants, and volunteers have inventoried approximately 8 percent of the nearly 3 million acres that comprise the Forest. Surveying the remaining area remains a significant challenge, especially as most survey resources are focused on areas that may be affected by agency or agency-permitted activities that might disturb the ground surface. This restricts the Tonto's ability to address and reduce deferred maintenance issues associated with historic structure management and stabilization of vandalized, project-impacted, and eroding archeological sites.

Cultural resources may also be threatened by natural disturbances. Wildfire, flooding, and erosion have impacted historic structures, landscapes, sensitive organic artifacts, and have altered site environments, disrupting and eliminating traditional uses. Such impacts may be exacerbated by changes in climate.

All activities that have potential to affect traditional tribal areas, species, and activities as well as any activities that have the potential to adversely impact archeological sites or change traditional landscapes are of concern. The forest shares boundaries with reservations for the White Mountain Apache Tribe, the San Carlos Apache Tribe, the Salt River Pima-Maricopa Indian Community, the Fort McDowell Yavapai Nation, and the Tonto Apache Tribe. The Forest routinely consults with eleven tribes regarding proposed projects and management policies including: San Carlos Apache, Tonto Apache, White Mountain Apache, Mescalero Apache, and Yavapai-Prescott Tribes; the Yavapai-Apache, Tohono O'odham, and Fort McDowell Yavapai Nations; and the Salt River Pima-Maricopa, Ak Chin, Zuni, and Gila River Indian Communities.

Traditional tribal use of the Forest and its natural resources is growing and will continue to be an important part of the relationship between the affiliated tribes and the Tonto. Likewise, tribes are showing increased interest in protecting, preserving, and maintaining access to traditional use and sacred sites as well as long term management of various natural resources associated with those

uses. Across this cultural landscape, there is a trend toward the degradation and/or loss of places of traditional cultural importance. Land exchanges, mineral extraction, and road expansion put areas of historical and cultural significance at risk. Every management decision that adversely impacts these places contributes to the cumulative loss of traditional cultural properties (TCPs), sacred sites, American Indian holy places, and traditional-use areas across the region.

Plan Needs to Change

45. There is a need for plan components aimed at managing for Native American traditional cultural properties and sacred sites, and non-Native American traditional cultural properties, while conserving anonymity of such sites where appropriate.

46. There is a need for plan components that protect historic properties and tribal use areas at risk of damage or destruction during non-prescribed/unplanned fire.

47. There is a need to update plan components to protect areas that may be identified as a sacred site or part of an important cultural landscape by tribe.

48. There is a need for desired conditions in the plan that address the alignment of heritage resources management objectives (the management of historic properties and landscapes, sacred sites, contemporary uses) with other resource management objectives (ecosystem restoration, rangeland management, recreation).

Land Ownership, Status, Use, and Access

The ability of the Lands program on the Tonto NF to keep up with demand for access, encroachments from private land onto Forest Service land, title claims, evolving requests for communication sites, the ever growing Wildland Urban Interface (WUI) area, completing legal surveys, fragmentation, and a litany of associated problems, is a serious concern. The Forest cannot keep up with the increasing demands on this resource area.

Property owners within areas considered WUI often requestfor access and utility infrastructure across NFS lands. When wildfires threaten large scale destruction of private property, millions are spent defending these private lands, and additional pressure is placed on the Tonto NF management to accommodate the rebuilding process after damage occurs through road and other infrastructure reconstruction. In recent years the real estate industry has enforced tighter standards for marketable and insurable title, which has resulted in a larger workload for lands and boundary management on the Forest. Private parcels are seeing more and more fragmentation, which leads to more demands and issues associated with access to the forest.

The Tonto NF's resources to address easement acquisition and defend title to NFS lands have been greatly diminished. Competing demands resulting from fragmentation of private lands and the pressure to authorize access and utilities severely limits our ability to address what is becoming a serious and important issue.

Plan Needs to Change

49. There is a need to develop, modify, or remove plan components to allow flexible and efficient management of special uses while balancing resource protection with public needs.

50. There is a need to develop plan components related to Forest Service lands acquisitions, disposals, and exchanges.

51. There is a need for plan components that encourage the protection of existing public access and address the acquisition of new public access opportunities.

52. There is a need to include management approaches to develop a strategy to address issues related to known and suspected trespass and encroachment issues present on the forest.

Designated Areas

A designated area is defined in the Forest Service Land Management Planning Handbook as an area or feature identified and managed to maintain its unique special character or purpose. The draft assessment documents the locations, purposes and types of existing and proposed designated areas from the 1985 Forest Plan. Designated areas on the forest include 8 wilderness areas, 2 wild and scenic rivers (38 miles), 13 inventoried road-less areas, 3 state designated scenic roads, 1 state designated historic road, 2 national recreation trails, 1 national scenic trail, 9 significant caves, 3 research natural areas, 1 wild horse and burro area, and 1 experimental forest. There are proposed designated areas on the forest that are also discussed in the draft assessment.

The designated areas on the forest (especially Wilderness, Wild and Scenic Rivers, and National Trails) serve as destinations for many visitors will continue to receive high visitor use levels. This level of use, in some areas, are not compatible with the purposes for which these areas were designated. Management considerations will need to emphasize public education on the values and contributions of designated areas, and on resource protection efforts. During the forest plan revision process, inventories and evaluations will be conducted for wilderness, wild and scenic rivers, and research natural areas to determine if additional areas should be designated, and, in some cases to determine if proposed areas should be carried forward into the new forest plan.

Plan Needs to Change

53. There is a need for the revised plan to identify and evaluate potential additions to the National Wilderness Preservation System and eligibility of rivers for inclusion in the National Wild and Scenic Rivers Systems, and potentially other types of designated areas.

54. There is a need to reevaluate designated and proposed special areas that no longer suite the original purpose for designation (i.e., research natural areas, botanical areas, burro territories, etc.), excluding congressionaly designated areas.