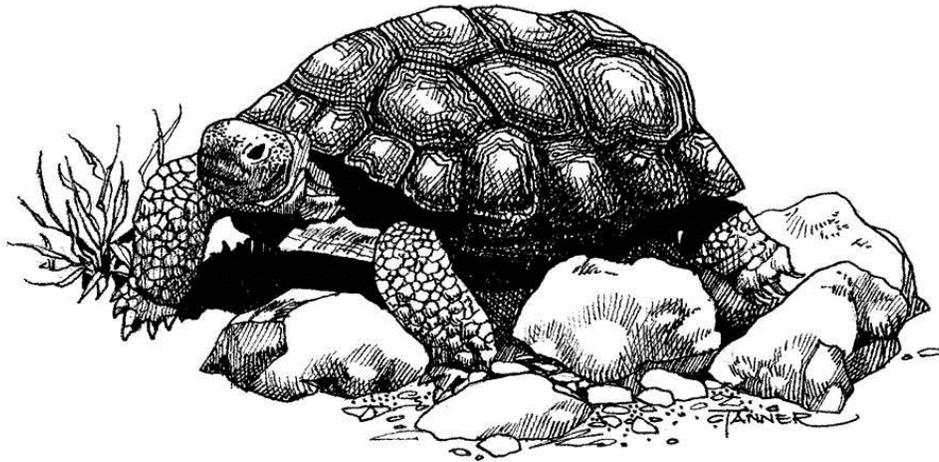


WINKELMAN
NATURAL RESOURCE CONSERVATION DISTRICT
CONSERVATION PLAN
FOR



THE
SONORAN DESERT TORTOISE
(GOPHERUS MORAFKAI, FORMERLY
GOPHERUS AGASSIZII)

INKELMAN NATURAL RESOURCE CONSERVATION DISTRICT CONSERVATION PLAN FOR THE SONORAN DESERT TORTOISE

The purpose of this Conservation Plan for the Sonoran Desert Tortoise (hereafter referred to as “Conservation Plan”) is to provide guidance to avoid impacts to the Sonoran desert tortoise (SDT) population and its habitat located within the Winkelman Natural Resource Conservation District (WNRCD) (Figure 1). If impacts to SDT or their habitat cannot be avoided, this Conservation Plan outlines measures to ensure that every effort is made to minimize and mitigate the effects of activities on the SDT and its habitat.

The goal of the Conservation Plan is to reduce conflicts between the species and important economic activities associated with research, education, recreation, mining, ranching, development and construction to assure SDT populations and their habitat are not jeopardized.

Description

Desert tortoises (*Gopherus agassizii* Cooper) have been documented as widespread in arid and semiarid regions of the southwestern United States and western Mexico by several acclaimed tortoise researchers (Woodbury and Hardy 1948, Germano 1988, Lamb et al. 1989, Germano et al. 1994). Three sub-populations of desert tortoises are recognized based on habitat, behavioral and morphological differences, life history and population status variations (Bailey 1992, Boarman and Beaman 2002, Meyer 2008.) The Mojave population is found in the high Mojave Desert of southwestern Utah, southern Nevada and southeastern California. The Sonoran population occupies western and southwestern Arizona and is also found in western Sonora and extreme northern Sinaloa, Mexico. The Sinaloan population is found in eastern Sonora and extends into northern Sinaloa (Germano et al. 1994, Grover, Lesley and De Falco 1995 and Berry et al. 2002).

The desert tortoise is recognized by its gray to orange-brown, high, domed upper shell. The shell measures 8 to 15 inches (20 to 38 centimeters) in length. Adult desert tortoises may weigh 8 to 15 pounds (3.6 to 6.8 kilograms). Hind limbs of the desert tortoise are stocky and elephantine in appearance while the forelimbs are paddle-shaped and used for digging (Brennan and Holycross 2006).

The SDT is closely associated with rocky bajadas (lower slopes of mountains) and hillsides, and, to a lesser extent, flat areas (including incised washes between or adjacent to flat terrain) (Riedle et al. 2008). SDTs generally occur at elevations ranging from 510 to 5,300 feet (155 to 1,615 meters) (Arizona Game and Fish Department 2001, p. 4).

In the United States, the SDT occurs within Mohave desertscrub, Sonoran desertscrub, and semi-desert grassland habitat (Germano et al. 1994; Van Devender 2002; Brennan and Holycross 2006). In Mexico, the SDT occurs in Sonoran desertscrub and semi-desert grassland (Germano et al. 1994; Fritts and Jennings 1994; Bury et al. 2002; Van Devender 2002; Edwards et al. 2009, p. 8). The SDT may also occasionally occur in the lower elevations of Madrean oak woodland (Germano et al. 1994; Fritts and Jennings 1994; Bury et al. 2002; Van Devender 2002).

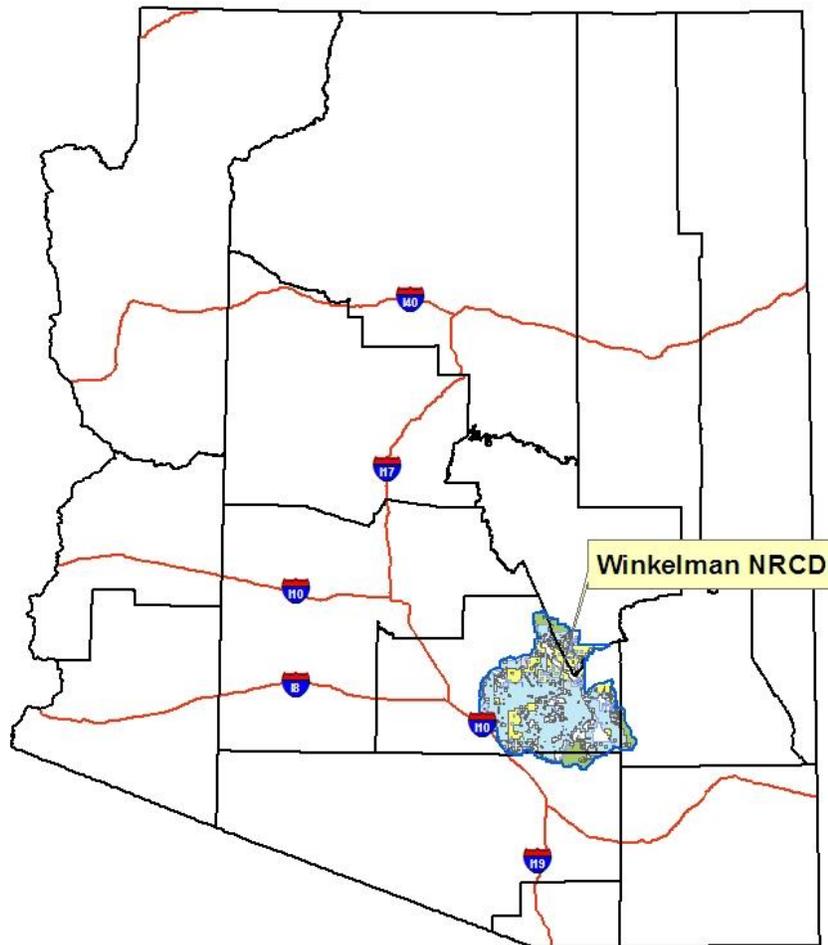


Figure 1. Winkelman Natural Resource Conservation District.

Primarily herbivores, SDTs consume a variety of plant material in their diet (Van Devender 2002). SDTs are largely inactive from mid-October to late February or early March when they overwinter in constructed burrows or rocky cavities or crevices (Averill-Murray 2000). SDTs tend to use or construct burrows differently, depending on habitat. Riedle et al. (2008) found that the availability of adequate shelter sites strongly influenced SDT densities.

Tortoise activity spikes in the spring, especially following average or above-average winter precipitation that enhances annual plant production (Averill-Murray 2000). However, the peak activity for the SDT occurs at the onset of the monsoon (summer rainy season) in mid- to late-summer when annual and perennial plants reach peak abundance and availability, and water sources become more widely dispersed across the landscape (Averill-Murray 2000). During the hot and dry late-spring/early-summer season, SDTs are less active or may become entirely dormant until the onset of the monsoon (Averill-Murray 2000).

The monsoon also marks the height of social interaction and reproductive behaviors for the SDT. During this time, female Sonoran desert tortoises lay their eggs, with an average clutch size of 5 (Averill-Murray and Klug 2000). Hatchling SDTs will emerge from the nest site (burrow) in late summer or they may overwinter, emerging the following spring (Wilson et al. 1999; Averill-Murray 2000). SDTs reach sexual maturity at approximately 10 to 12 years of age (Averill-Murray 2000).

Protection Status

The removal of tortoises from the wild has been prohibited since 1988. AGFD offers guidelines for handling desert tortoises encountered on development projects to reduce potential impacts on tortoise populations. The AGFD's Adobe Mountain Wildlife Center and Arizona Sonoran Desert Museum manage adoption programs for legally held tortoises including those propagated in captivity.

The AGFD and the U.S. Fish and Wildlife Service co-chair the Arizona Interagency Desert Tortoise Team, which serves as a forum for discussion of desert tortoise issues, with the specific objectives of conducting and coordinating research and management efforts and exchanging information (ADITT 1996).

Legislation of primary importance which currently or historically has benefited the conservation status of the SDT includes the Endangered Species Act, National Environmental Policy Act, and the Wilderness Act. The SDT in Arizona currently enjoys significant legally mandated protection, including laws against collection. It is illegal to kill or capture tortoises from the wild (with the exception of special permits), and possession for trade, sale or other commercial purposes is illegal (Howland and Rorabaugh 2002). The SDT is also on the USDI Bureau of Land Management (BLM) and US Forest Service lists of sensitive species (Averill-Murray 2000). Internationally, the tortoise is considered a threatened species in Mexico and the 1986 Convention on International Trade in Endangered Species of Wild Fauna and Flora requires a permit for the export of tortoises to member countries (Fritts and Jennings 1994, Grover et al. 1995, Bury et al. 2002, Howland and Rorabaugh 2002).

On December 13, 2010, the U.S. Fish and Wildlife Service, (FWS) issued a positive 12-month finding in the Federal Register that Sonoran desert tortoise (*Gopherus morafkai*)(SDT) warrants protection under the Endangered Species Act (ESA) but is precluded by the need to

address other higher priorities. The Sonoran desert tortoise was added to the list of candidates for ESA protection where its status is reviewed annually.

The primary agencies currently involved in the conservation of the desert tortoise in Arizona are the Arizona Game and Fish Department (AGFD), BLM, US Forest Service, and the National Park Service. Additionally, agencies and entities with some involvement in monitoring and mitigating impacts to desert tortoises include the Arizona State Land Department, the Bureau of Reclamation, the Bureau of Indian Affairs, Pima County, the Yuma Proving Grounds, the Barry M. Goldwater Range, and the Florence Military Reservation.

The BLM has designated almost 470,000 acres of land as Areas of Critical Environmental Concern (ACEC) with specific directives to be managed as desert tortoise habitat: the Black Mountains Ecosystem Management Area, the White-Margined Penstemon ACEC, the McCracken Desert Tortoise ACEC, and the Poachie Desert Tortoise ACEC (Oliva et al. 2004)

Current WNRCD Efforts

Within the WNRCD there is a long-term study of the SDT in existence that began in 1980 (Meyer, W.W., et al. 2010). This SDT study (hereafter referred to as the Meyer Study) was initiated in the San Pedro Valley in southern Arizona as a result of an unusual natural resource concern, the collection of Jojoba nuts. Jojoba (*Simmondsia chinensis* (Link) C.K. Schneid) had become the object of major interest because the oil made from its seed was purported to be a substitute for “whale oil” and was used in the manufacture of skin care products, shampoos, cosmetics and lubricants (Daugherty, Sineath and Wastler 1958). The resulting increase in the value of jojoba seeds encouraged a large number of “nut pickers” who ravaged the natural resources within the valley without regard to the plant and animal life of the desert community. The pickers were often without adequate provisions and therefore began taking many of the small animals in the area for food, including desert tortoises. The number of charred tortoise shells in their abandoned camp sites initiated concern and curiosity about tortoise numbers in the area. (Meyer, W.W., et al. 2010). Because little data existed about the SDT population status at that time, the Meyer Study was initiated.

The Meyer Study reveals that the SDT population in the WNRCD has been steady or possibly increasing over the last thirty years. As part of this Conservation Plan the WNRCD will continue the study into the foreseeable future with periodic reports that will be available through its website. Also, there needs to be an ongoing inventory of known SDT cells and a mapping program within the WNRCD so future planning by the agencies and counties can take these populations into consideration in their planning. As part of this study a new inventory of all known SDT cells within the WNRCD will be commissioned and SDT habitat within the WNRCD will be classified and managed as such. This will enable efficient future planning for these populations by the agencies, the counties and the WNRCD.

It is the responsibility of the WNRCD to “provide for the restoration and conservation of lands and soil resources of the state, the preservation of water rights and the control and prevention of soil erosion, and thereby to conserve natural resources, conserve wildlife, protect the tax base, protect public lands and protect and restore this state’s rivers and streams and associated riparian habitats, including fish and wildlife resources that are dependent on those habitats, and in such manner to protect and promote the public health, safety and general welfare of the people.” (ARS Title 37, Chapter 6)

The WNRCD achieves its mandate through working with landowners on a voluntary basis and operates solely for the purpose of providing technical and educational information to its cooperators and coordinating agencies/governments to better manage the natural resources within the WNRCD.

Within the purview of our mandate the following mitigation strategies are made by the WNRCD for any private, county, state, or federal action that may affect the current population of SDT or its habitat within the WNRCD.

The WNRCD Conservation Plan includes SDT mitigation that will involve but not be limited to cooperation and coordination, including development of management protocols with the Pinal County Board of Supervisors, AGFD, Arizona State Land Department, BLM, NRCD, Tonto and Coronado National Forest, Arizona State Parks, Gila River Indian Reservation, Ak Chin Indian Reservation and Central Arizona College.

Major components of the WNRCD Conservation Plan are education and research. In addition the five listings factors recognized by the Endangered Species Act will be used for development and implementation of this Conservation Plan.

Of particular concern is lack of knowledge about the SDT and the need for more study of the species and its habitat. The WNRCD will partner with agencies and the counties to fund these studies. The Conservation Plan will be long term but will be updated at five year intervals.

The Endangered Species Act recognizes five threats to an endangered plant or animal. The WNRCD Conservation Plan addresses the potential for each of these threats in relation to the SDT. They are:

A. Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range.

Livestock grazing has been listed as a perceived threat to the SDT. Generalities about the effects of livestock grazing on desert tortoises should be avoided unless they can be placed in the context of a grazing regime, effective precipitation, habitat type, topography, and tortoise behavior and requirements (Meyers 2010).

Compilation of data across several vegetation types and at least three livestock grazing regimes did not show any trampling of either tortoises or burrows by livestock. It appeared

that tortoise densities were affected by soil, topography and vegetation and had little or no relationship to livestock grazing or grazing systems (Meyer et al. 2010).

Because the SDT's behavior is different from the Mojave population, Meyer et al. 2010 have found that the competition between the STD and livestock is much less than was ascertained for the Mojave. That considered, whenever any improvements are made to a grazing unit that might disturb a population or its habitat, such as fence building, pipeline or dirt tank construction, etc., protocols will be designed to avoid or mitigate interference with the SDT. Often ranch improvements are designed and partially funded through the WNRCD. The WNRCD will have these protocols built in through the Local Work Group process in partnership with the Natural Resources Conservation Service.

The WNRCD, in cooperation with Central Arizona College operates an Education Center on the Central Arizona College Aravaipa Campus. Through this Education Center the WNRCD will train cooperators and others on the protocols that protect the SDT.

Mining is also listed as a perceived threat to the SDT. There is one large active copper mine in the WNRCD as well as several decorative rock and limestone quarries. The WNRCD will work with the mining companies to develop protocols to protect the SDT, especially during exploration work. Those protocols will be offered as training by the Central Arizona College Education Center.

Another perceived threat listed to the SDT is habitat destruction caused by urbanization and development. Although Pinal and Pima counties as a whole are two of the fastest growing counties in the nation, the WNRCD, whose boundaries encompass the eastern half of Pinal County, parts of Pima, Graham, and Gila counties, has had no population growth over the last several decades except on our southern boundary. All of the growth has been on private land. The WNRCD will work in cooperation with the State Land Department to implement protocols for developers to whom the State sells land for development to protect the SDT. The WNRCD will work with the municipalities within its boundaries to enact ordinances within their jurisdictions to empower these protocols.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

The WNRCD, through its Education Center, will offer instruction to schools, municipalities, etc. regarding threats to the SDT due to handling, transporting, diseases, etc. The AGFD has already prepared excellent information about SDT handling for hunters and campers.

C. Disease or Predation.

The long running Meyer study in the WNRCD has found that disease is not currently a threat in the study populations. Although claims have been made by inference from the Mojave population that disease in the SDT is a major threat, there needs to be more study to determine if, indeed, Upper Respiratory Tract Disease (URTD) is a threat to the SDT. To

that end the WNRCD will work with AGFD, the University of Arizona and other agencies and organizations to incorporate studies of disease incidents into the Meyer study.

Predation is perceived to be a major threat to the SDT. In the WNRCD's long term study, predation on the SDT was documented. However, few tortoise shells were found that would confirm predation as a major source of death. The WNRCD has a predator policy for control of coyotes and lions. The only predator that has significantly increased in recent years in the WNRCD seems to be ravens which are considered to be a significant threat to the SDT. Power lines are prime nesting habitat for ravens, as well as perching places to take advantage of movement below by tortoises and other prey. The WNRCD has a policy in place to oppose the construction of any new major energy, transportation, or communication corridors not within existing corridors through or across WNRCD lands. Through coordination, the WNRCD will work with regulatory agencies to ensure that threats from predation as a result of power lines are properly addressed and considered during the application process and construction designs. The WNRCD will work with power providers to modify existing structures if needed.

It is claimed that humans subsidize ravens by the trash they leave. Pinal County and municipal ordinances require covering of trash containers and landfills and the WNRCD has had a long standing committee that publishes information about the problem to the public and distributes it throughout Pinal County. The WNRCD will add information about ravens and SDT to the publication.

D. The Inadequacy of Existing Regulatory Mechanisms.

The USFWS has stated that existing regulatory mechanisms are inadequate to protect the SDT and its habitat. Although the WNRCD has no regulatory powers, we are working with Pinal County which includes the vast majority of the WNRCD, to include our Conservation Plan into their Comprehensive Plan referenced earlier.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence.

Off-highway vehicle (OHV) use has been considered to be a significant threat to the SDT. The BLM along with the AGFD are now working on Travel Management Plans within the WNRCD that will include road signage and road closures. The WNRCD will work with the agencies to add information regarding the threats to SDT by OHVs. The WNRCD has a member on the Pinal County Special Event Committee that approves all applications for special events in the County. As part of the approval process we will require training and mitigation measures are attached to special events that occur in tortoise habitat areas in the WNRCD.

The WNRCD will make the following information and training available at the WNRCD Education Center located on the Central Arizona College Aravaipa Campus and at a variety of other locations such as libraries, schools, and government complexes for education of

people on the SDT.

Proposed Actions to Minimize the impacts to SDT and their habitat

1. General Guidelines for all Activities

These guidelines are in accordance with the Recommended Standard Mitigation Measures For Projects In Sonoran Desert Tortoise Habitat as adopted by the Arizona Interagency Desert Tortoise Team, June 2008.

- Pinal County, in cooperation with the NRCs within the County will survey and classify the County into SDT habitat categories in order to define which level of impact future projects or actions might have on the SDT.
- Pinal County will restrict activities that have significant resource disturbance (degradation) to SDT habitat whenever possible. If activities must be performed in habitat category 1 or 2 for SDTs, wait until periods of high tortoise activity are over for the year.
- Pinal County will work with each project manager to have a SDT coordinator available on site to provide guidance on how to avoid harm to SDTs and their habitat.
- Pinal County will coordinate with each project manager to minimize the project footprint and to restore and enhance the habitat upon completion of the project.
- Project proponents will install temporary tortoise fencing around the perimeter of project areas for projects such as power lines, fiber optic cables, gas lines, road and railroad building and/or maintenance, building construction or any other construction project with disturbance of the soil.

Should tortoises need to be removed, AGFD must be notified for they are the only entity that can authorize handling of SDTs.

- SDTs will be removed from within the perimeter by a qualified SDT biologist prior to start of the project in order to reduce or eliminate encounters with SDTs on the project site. All projects which will or might disturb SDTs or their habitat will be required to designate a qualified SDT person to document the effects of the construction activities on SDT during and at the conclusion of the project.
- The SDT monitoring and reporting requirements should document the effectiveness of the desert tortoise mitigation measures and include actual acreage of SDT habitat disturbed, the numbers of SDTs removed from burrows, the number of SDTs moved from the site and the location of the new site for each SDT. A copy of the report will be submitted to the WNRCD, Pinal County and to the AGFD.
- The WNRCD will coordinate with AGFD on approval of all permits for studies of the

SDT within the WNRCD.

2. Over-utilization for Commercial, Recreational, Scientific, or Educational Purposes.

- The WNRCD, through its Education Center, will offer instruction and education material developed by AGFD and USFWS to schools, municipalities, project managers, ranchers, hunters, mining, recreationists, and others regarding the dangers to the SDT caused by handling, transporting, diseases etc.
- The WNRCD will coordinate with AGFD on approval of all permits for studies of the SDT within the WNRCD.

3. Disease

- Through the ongoing Meyer Study, the WNRCD will continue to monitor diseases and report new findings to AGFD and FWS. The WNRCD will encourage and continue to work with AGFD and the University of Arizona to perform studies on possible SDT diseases within the WNRCD.
- As part of the Education Program, the WNRCD will inform people of the dangers of introduction of disease when tortoises are released into the wild.

4. Predation

Implement the following guidance to prevent attraction of predators and to prevent enhancement of predator populations on or near SDT habitat:

- Restrict illegal dumping of trash including offal, dead urban pets.
- Promote properly designed livestock grazing management to maximize livestock vitality and minimize losses.
- Identify predator projects and report to appropriate state agency for corrective action.
- Require dog owners to have control of their dogs within SDT habitat.
- Coordinate with counties for appropriate actions to remove all feral dogs.

5. Urbanization and Development

- The WNRCD will coordinate with the State Land Department to implement protocols for developers that purchase State trust land for development.
- The WNRCD will coordinate with the municipalities within District boundaries to enact ordinances within their jurisdiction to empower these protocols.

- The WNRCD will offer instruction to towns and cities on surveying and classifying undisturbed lands for SDTs within their jurisdictions.

6. Construction and/or Maintenance of Transportation and Utility Corridors and Buildings

- Construct barrier fences to exclude tortoises from the project site.
- Maintain a trained SDT person on site until the construction area is fenced and the land inside the fence has been cleared of tortoises whenever the project is in a class 1 or 2 SDT area.
- All construction design will be coordinated with and meet the requirements of the authorizing State and Federal agencies.
- Roads constructed for specific non-public purposes should be limited to administrative use only.
- Temporary access routes created during any project construction will be restored to natural state at the conclusion of the project.
- Brief all project personnel on SDT protocols prior and during project.

7. Off Highway Vehicle (OHV)

- Limit OHV and other recreational activities to specific areas that are not SDT habitat.
- Limit OHV to designated roads, existing roads, courses and trails
- Allow only noncompetitive use
- Limit number of participants
- Reduce speed in project area.
- Survey and remove SDTs from the area prior to an event by a designated SDT biologist.
- Brief all event personnel on SDT protocols prior to and during event.

8. Livestock Management/Grazing

- Livestock grazing will follow guidelines of “Best Management practices For Ranching in Sonoran Desert Tortoise Habitat (Ranching and Sonoran Desert Tortoise Working Group 2013)”.

9. Mining

- Have a qualified tortoise biologist on site for any new soil disturbances until the area is fenced and the area inside the fence is cleared by a qualified tortoise biologist.
- Remove and relocate all SDTs found on project sites prior to start of projects.
- Locate, flag, and avoid SDT burrows prior to surface disturbance.
- Brief all project personnel on SDT protocols prior and during project.

10. Cities, towns and county government

- Implement Arizona Interagency SDT Team Mitigation protocols for any new soil disturbance whether by local government personnel or as a result of a permit issued by that government.
- Conduct training for all personnel.
- Conduct SDT habitat classification surveys within each jurisdiction.
- Designate an employee to interact with WNRCD and AGFD whenever impacts to SDT are contemplated.

Funding

The WNRCD will work in association with National Resource Conservation Service, AGFD, Pinal County, Arizona State Land Department, Arizona Mining Association and Arizona Association of NRCDs to secure grants, county tax funds, and donations to fund the research and operations required for this conservation plan.

The long running Meyer Study has been privately funded for thirty years by the study authors. The WNRCD will supplement the costs to keep the ongoing study through its Education Center and WNRCD Funds.

Certainty of Implementation

Pinal County has the authority to implement the majority of ordinances required to give this Conservation Plan the force of law. Within the cities and towns in the WNRCD, they too have the ability to enforce regulations. AGFD has regulatory authority per the Arizona Legislature. The National Resource Conservation Service has the ability to write conditions into their rangeland and water funding projects to protect the SDT and its habitat. When combined, these agencies and governments have the ability to enforce this conservation plan.

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