

FINAL ENVIRONMENTAL ASSESSMENT

ABERT'S SQUIRREL MANAGEMENT
IN SUPPORT OF MOUNT GRAHAM RED SQUIRREL RECOVERY
IN ARIZONA

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ACRONYMS USED

ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
APHIS	Animal and Plant Health Inspection Service
ARS	Arizona Revised Statutes
BO	Biological Opinion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CY	Calendar Year
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GMU	Game Management Unit
HHS	Human Health and Safety
IWDM	Integrated Wildlife Damage Management
LRMP	Land and Resource Management Plan
MIS	Management Information System
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NF	National Forest
NMFS	National Marine Fisheries Services
NOAA	National Oceanic and Atmospheric Administration
SOP	Standard Operating Procedure
T&E	Threatened and Endangered
USC	U.S. Codes
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WA	Wilderness Area
WDM	Wildlife Damage Management
WP	Work Plan
WS	Wildlife Services
WSA	Wilderness Study Area
WT	Work Task

Chapter 1. NEED FOR ACTION AND SCOPE OF THE ANALYSIS

This chapter provides the foundation for:

- Understanding why wildlife damage occurs and the practice of wildlife damage management (WDM);
- Knowing the statutory authorities and roles of federal and state agencies in managing wildlife damage in Arizona;
- Understanding how WS-Arizona cooperates with and assists private and commercial resource owners and federal, tribal, state and local government agencies in managing wildlife damage;
- Providing the framework for the scope of this National Environmental Policy Act (NEPA) document, the rationale for preparing an environmental assessment (EA), program goals, and decisions to be made by WS-Arizona;
- Understanding the reasons why private and commercial entities, tribes, and federal, state, and local government agencies request assistance from WS-Arizona;
- Understanding the effectiveness and cost-effectiveness associated with WDM in the United States; and
- The public involvement and notification processes used by WS-Arizona for this EA.

1.1 INTRODUCTION

Across the United States, wildlife habitat has been altered as human populations expanded and land was transformed to meet varying human needs. These changes have often caused increases in conflicts between people and wildlife. Some species of wildlife have adapted and thrived in the presence of people while others have not (Conover 2002). This, in combination with today's economic pressures and heightened awareness of environmental issues has increased the complexity of wildlife management.

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS)- Wildlife Service's (WS) activities are conducted to prevent or reduce wildlife damage to agricultural, industrial, and natural resources; property; livestock; and threats to public health and safety on private and public lands in cooperation with federal, state and local agencies, tribes, private organizations, and individuals. The APHIS-WS program uses an Integrated Wildlife Damage Management (IWDM) approach (WS Directive 2.105¹) in which a combination of methods may be recommended or used sequentially or concurrently to reduce wildlife damage. These methods may include nonlethal methods, such as cultural practices, habitat manipulation, exclusion, or behavioral modification of the offending species. Implementation of IWDM may also require the relocation or lethal control of specific offending animals or the reduction of a local population by lethal means. Use of the APHIS-WS Decision Model (WS Directive 2.201) facilitates development of site-specific IWDM strategies for each wildlife/human conflict addressed by APHIS-WS.

This EA identifies the issues analyzed in detail and describes the proposed action and alternatives evaluated in detail, with the rationale why some alternatives are not further considered in detail, as required by the Council on Environmental Quality (CEQ) implementing regulations for NEPA at 40 CFR 1502.14(a). Details of the different wildlife damage management (WDM) methodologies are also included in the EA. The EA also provides the detailed comparative analysis of the direct, indirect, and cumulative impacts of the proposed action and alternatives on the quality of the human environment.

¹ The APHIS-WS Policy Manual provides guidance for APHIS-WS personnel to conduct wildlife damage management activities through Program Directives. APHIS-WS Directives referenced in this EA can be found in the manual or online (https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/SA_WS_Program_Directives) but will not be referenced in the Literature Cited.

1.1.1 Wildlife Services Program

The resolution of conflicts caused by or related to the behavior of wildlife is termed wildlife damage management and is recognized as an integral component of wildlife management (The Wildlife Society 2016, Reidinger and Miller 2013). USDA APHIS-WS is authorized by Congress to manage a program to reduce human-wildlife conflicts; this Environmental Assessment (EA) evaluates methods by which this authority can be carried out in Arizona. Wildlife damage management is often misunderstood and many individuals consider management options as only lethal. Wildlife damage management is a specialized field within the wildlife management profession and decisions are not predicated solely on biological rationale. Responsible wildlife management requires adherence to professional standards as exemplified by The Wildlife Society (TWS). These objectives are to: 1) develop and promote sound stewardship of wildlife resources and the environments upon which wildlife and humans depend, 2) undertake an active role in preventing human-induced environmental degradation, 3) increase awareness and appreciation of wildlife values, and 4) seek the highest standards in all activities of the wildlife profession (The Wildlife Society 2016). The mission of the Wildlife Damage Management Working Group of The Wildlife Society is to promote better understanding of the challenges of managing human-wildlife conflicts and to provide a forum for TWS members to advance their skills and knowledge of wildlife damage management practices (<http://joomla.wildlife.org/WildlifeDamage/>).

APHIS-WS' mission (USDA APHIS WS 2009), developed through a strategic planning process (USDA APHIS WS 2009), is *“To provide Federal leadership in managing conflicts with wildlife. WS recognizes that wildlife is an important public resource greatly valued by the American people. By its very nature, however, wildlife is a highly dynamic and mobile resource that can cause damage to agriculture and property, pose risks to human health and safety, and negatively affect industrial and natural resources. WS conducts research and provides technical assistance and operational assistance programs to resolve problems that occur when human activity and wildlife conflict with one another.”*

The APHIS-WS authorities cited above plus other statutory authorities enable APHIS-WS to enter into cooperative agreements with federal and state agencies, local jurisdictions, individuals, and public and private agencies, organizations, and institutions to reduce the risks of injurious animal species and/or nuisance mammals and birds and those mammal and bird species that are reservoirs for zoonotic diseases. The need for action is derived from the specific threats to resources or the public.

The WS program in Arizona (WS-Arizona) is a cooperatively funded, service-oriented program that provides assistance to requesting public and private entities (WS Directives 3.101 and 3.110). WS-Arizona responds to requests for assistance when valued resources are lost, damaged, or threatened by wildlife. Responses can be in the form of technical assistance or operational damage management. The degree of WS-Arizona involvement varies, depending on the complexity of the wildlife problem. WS-Arizona activities are conducted in accordance with applicable federal, tribal, state, and local laws, cooperative agreements, work initiation documents, work plans, Memoranda of Understanding (MOUs), and other applicable documents. These documents establish the need for the requested work, legal authorities authorizing the requested work, and the responsibilities of WS-Arizona and its cooperators.

WS-Arizona WDM is conducted in cooperation with other federal, state, and local agencies, as well as private organizations and individuals and recognizes that wildlife is an important public resource greatly valued by the American people. By its very nature, however, wildlife is a highly dynamic and mobile resource that can damage agricultural and industrial resources, pose risks to human health and safety (HHS), and affect other natural resources. The WS-Arizona program carries out its federal responsibility to help solve problems that occur when human activities and wildlife conflict through:

- A) Training of wildlife damage management professionals;
- B) Developing and improving strategies to reduce economic losses and threats to humans from wildlife;

- C) Collecting, evaluating, and disseminating management information;
- D) Developing and conducting cooperative wildlife damage management programs;
- E) Informing and educating the public on how to reduce wildlife damage; and
- F) Providing technical advice and a source for management materials and equipment such as pesticides, cage traps, and pyrotechnics.

The WS Policy Manual outlines the mission of the program and provides guidance for engaging in wildlife damage management activities. WS-Arizona personnel abide by the WS mission and policies. Before wildlife damage management is implemented, a Work Initiation document (WID) must be signed by WS and the landowner or manager, or a Work Plan must be presented to the land management administrator or agency representative for their review. WS-Arizona cooperates with land and wildlife management agencies when appropriate and as requested to combine efforts to effectively and efficiently resolve wildlife damage problems in compliance with all applicable federal, state, and local laws and MOUs between WS and other agencies.

The Arizona Game and Fish Department (AGFD) is a primary cooperator with WS-Arizona for WDM. AGFD has management authority over native and introduced wildlife in Arizona (ARS 17-102).. AGFD manages many wildlife species, but species most likely to be involved in WDM include big game (mountain lions and black bears), furbearers (badgers, otters, raccoons, ringtails, and weasels), predators (coyotes, bobcats, foxes, and skunks) and nongame (opossum) under Arizona statutes. WS-Arizona and AGFD have an MOU that was signed on February 27, 1991, which lists responsibilities and authorities as they relate to WDM. Under the MOU, WS-Arizona has the authority to respond to damage requests resulting from mountain lions and black bears, predators, furbearers, and nongame, and provides information on take of these species annually to AGFD.

WS-Arizona obtains any necessary permits to conduct WDM from the U.S. Fish and Wildlife Service (USFWS) and/or AGFD. A national level MOU was signed between WS and U.S. Forest Service (USFS) in 2017. The MOUs transferred the responsibilities for wildlife damage management and related NEPA compliance from USFS to WS.

Further, federal agencies which fund, support, permit, or implement programs and activities are required to take into consideration the environmental consequences of Preferred Alternatives in their decision-making process under the NEPA. The intent of NEPA is to: 1) facilitate planning; 2) promote interagency coordination; 3) streamline program management; 4) clearly communicate to the public the analysis of individual and cumulative impacts of management alternatives; and 5) evaluate and determine any potentially significant or cumulative effects from the various alternatives for addressing the need for action. Normally, according to APHIS procedures for implementing NEPA, individual wildlife damage management actions could be categorically excluded (7 CFR 372.5(c), 60 Fed. Reg. 6,000-6,003, 1995). This EA was prepared to facilitate planning, interagency coordination, streamline program management, and to communicate with the public the analysis of cumulative impacts.

1.1.2 Background

The Mount Graham red squirrel (MGRS) (*Tamiasciurus hudsonicus orahamensis*) is an endangered species whose habitat is restricted to the coniferous forest areas of the Pinaleno Mountains in southeastern Arizona. Depending upon food resources and possibly other factors, the population experiences large fluctuations. According to AGFD the current population is approximately 109 individuals, an increase of 76 individuals following the devastating 2017 Frye Fire (AGFD 2020).

Over the last several decades, forests in the Pinaleno Mountains have experienced significant ecological changes, many of which are dramatic and detrimental to the survival of Mount Graham Red Squirrel. From 1986 to 1995 there was a relatively large amount of predicted MGRS habitat, with a generally level trend, followed by a gradual decline in predicted habitat between 1996 and 2003 (Hatten 2014).

This decline corresponds with the 1996 Clark Peak Fire and multiple outbreaks of forest insects (described below). From 2004 to 2006 a rapid decline in habitat occurred, corresponding with the 2004 Nuttall Complex Fire, followed by a low trough of available habitat between 2007 and 2009 (Hatten 2014). The large, stand-replacing fires in 1996 and 2004 affected approximately 35,000 acres of forested area, which could have significantly reduced survivorship of individual squirrels inside the fire boundary (Koprowski et al. 2006). In 2017, the Frye Fire affected the majority of habitat within the MGRS's range – the effects of this fire are still being analyzed.

Graham County in southeastern Arizona currently is experiencing abnormally dry conditions in the short-term and abnormally dry to exceptional drought conditions in the long-term (ADWR 2020). Extended drought creates severe physiological stress on trees, especially in the higher elevation forest types. While this drought is apparently within natural historical variation (Swetnam and Betancourt 1998), various emission scenarios suggest that by the end of the 21st century, average global temperatures are expected to increase 0.3 °C to 4.8 °C (0.5 °F to 8.6 °F) with the greatest warming expected over land (IPCC 2014). Localized projections suggest the southwestern U.S. may experience the greatest temperature increase of any area in the lower 48 states (IPCC 2007). Increasing temperatures in turn are predicted to be accompanied by a more arid climate (Seager et al. 2007), increasing insect outbreaks in Southwestern forests, and increasing wildfires (Betancourt 2004).

Of most relevance to the proposed project, the non-native Abert's squirrel (*Sciurus aberti*) (introduced in the Pinaleno Mountains in the 1940s) likely impacts MGRS through competition for food resources (Hutton et al. 2003, Edelman 2004, Edelman and Koprowski 2005), nest sites (Edelman and Koprowski 2006), and dispersal territory (Steele and Koprowski 2001), and potentially can increase predator density by providing an additional food source, leading to higher predation rates for red squirrels (Goldstein et al. 2018). Conversely, Abert's squirrels could decrease per capita predation on red squirrels by serving as an additional food source for predators. Rushton et al. (2006) determined that competition with Abert's squirrels has the potential for a much greater impact on MGRS population size when compared to plausible increases in predation. They suggested further research is needed into and monitoring the effects of competition and predation on red squirrels.

1.1.3 The WS-Arizona Program

The analysis in this EA includes a major effort to consider existing data contained in other NEPA and related documents. WS-Arizona completed a Biological Assessment (BA) proposing an Abert's Squirrel removal project at the request of AGFD and received a Biological Opinion (BO) from the USFWS (USFWS 2018a) identifying the impacts that may result from the proposed project. This EA combines the analysis in the BA, BO, and Draft MGRS Recovery Plan, First Revision (USFWS 2011) into one comprehensive EA to provide a uniform approach for WDM throughout the MGRS range. WS-Arizona conducts coordination with all cooperating agencies and promotes consistency in WDM activities by WS throughout the state.

This EA includes the following species (Table 2). All species are managed under federal and/or state law by the USFWS and AGFD.

Table 2. Species Included in Scope of this EA.

Common Name	Scientific Name	Managed By
Abert's Squirrel	<i>Sciurus aberti</i>	AGFD
Mount Graham Red Squirrel	<i>Tamiasciurus hudsonicus grahamensis</i>	USFWS

1.1.4 Purpose of this EA

This environmental assessment (EA) evaluates the impacts of three alternatives for the proposed Abert's Squirrel Removal Project located in the Pinaleño Mountains, Graham County, Arizona. The purpose of the EA is to assist APHIS-WS in understanding the options and the associated comparative impacts of each of the Alternatives.

This EA also provides sufficient analysis of impacts to determine if a Finding of No Significant Impact (FONSI) or an environmental impact statement (EIS) is appropriate. The three alternatives considered in this EA vary regarding the degree of WS-Arizona involvement in WDM for this project, the degree of technical assistance and operational assistance (advice, information, education, and/or demonstrations) and of operational field assistance (active management of offending wildlife), and the degree of lethal and non-lethal methods available for use.

The proposed action: involves WS-Arizona continuing use of all appropriate methods, used singly or in combination, to reduce Abert's squirrel numbers in the Pinaleño Mountains. The two proposed methods are trapping and shooting.

1.1.5 Objectives

APHIS-WS is conducting the Abert's Squirrel Removal Project at the request of AGFD and USFWS in collaboration with a team of Mount Graham red squirrel experts and managers to reduce the number of Abert's squirrels in historical MGRS habitat throughout the Pinaleño Mountains to assist in meeting the needs of the MGRS recovery plan (USFWS 1993) and Draft Recovery Plan for the Mount Graham Red Squirrel, First Revision (USFWS 2011) (Figure 1).

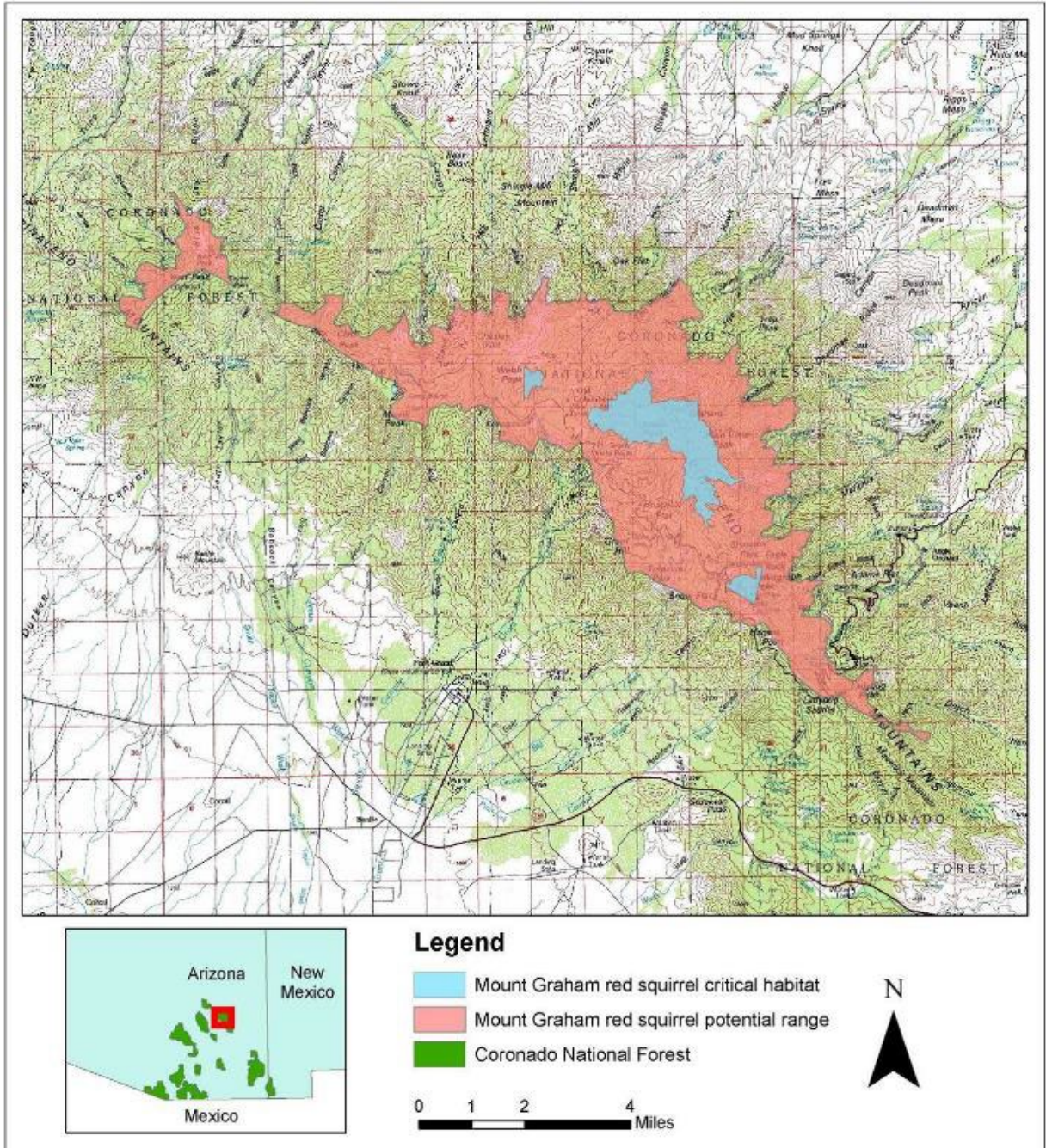


Figure 1. Map showing the proposed action area for removal of Abert's squirrels in the Pinaleno Mountains of the Coronado National Forest. The proposed action area includes all areas within the Mount Graham red squirrel's potential range except for West Peak (the westernmost polygon disjunct from the larger portion of the squirrel's range), and may also be occupied by Mexican spotted owls.

1.1.6 Summary of the preferred alternative

The Preferred Alternative is to continue implementing a WDM program in Arizona for the protection of MGRS, as assessed in this EA. The objective in the Preferred Alternative is to continue conducting lethal removal of Abert's squirrels with firearms. Personnel are trained to identify differences between Abert's and MGRS and will be up to date on all required training for firearms use. Shooting will only occur during daylight hours, and will be limited to locations where it is legal and safe to discharge firearms. Live traps may be used in areas with occupied buildings/cabins and/or campgrounds and

checked every 2 hours throughout the effort. Additionally, traps will be covered by pieces of bark, logs, or other debris to provide shade to animals within the trap, or placed in areas where direct sunlight cannot reach the trap. Traps will be removed from the trapping location when not in use. All non-target species, including MGRS incidentally captured in live traps, will be promptly released on site. Trapped Abert's squirrels will be humanely euthanized on site. WS-Arizona personnel will make an effort to recover all Abert's carcasses. The project may occur annually at the request of AGFD.

The project area is accessed via roads and on foot. USDA coordinates with USFS to access the MGRS Refugium (areas above 10,000 feet on some peaks for which a permit is required) and areas beyond gates that are shut during seasonal closures (November 15-April 15). Project activities will occur on average 4 days/month, but possibly up to 8-10 days/month (maximum) and will include one to two people conducting these activities by walking through the forest looking for Abert's squirrels or placing and checking traps. WS employees will use suppressed firearms to minimize noise disturbance to MGRS and MSO. WS preferably will also use non-lead ammunition; however, traditional lead ammunition may be used if non-lead is not accurate or available.

1.2 NEED FOR ACTION

The WS' Arizona Program is working with AGFD to remove introduced Abert's squirrels to reduce competition with MGRS under recovery action 3.4 in the Draft Mount Graham Red Squirrel Recovery Plan, First Revision (USFWS 2011).

1.2.1 Background information on Species included in this EA

Aberts Squirrel

The Abert's squirrel is the principal non-native vertebrate species of potential indirect and direct importance to the MGRS because it inhabits a similar niche in both low and high-elevation forests. Both Abert's and MGRS are members of the squirrel family, Sciuridae, subfamily Sciurinae, tribe Sciurini, with a divergence time estimated as prior to the Pleistocene and likely some three million years before present (Hafner 1984). Abert's squirrels are native to the northern Sierra Madre Occidental of Mexico and parts of Arizona, Colorado, New Mexico, Utah, and Wyoming (Nash and Seaman 1977). Although Abert's squirrels are often sympatric with red squirrels in the United States and are naturally found to the north in the Mogollon Rim in Arizona and to the south in the northern Sierra Madre Occidental, no evidence currently exists to suggest that Abert's squirrels coexisted with red squirrels naturally in the Pinaleño Mountains in recent geologic times (approximately 10,000 years before present).

Forty-nine Abert's squirrels were trapped in October 1941 and 20 in May 1943 at Fort Valley north of Flagstaff and released in the Pinaleño Mountains by the AGFD; this is likely the origin of the Abert's squirrel population in the Pinaleños (Hoffmeister 1956, Davis and Brown 1988). Abert's squirrels occur throughout the highest elevations in the Pinaleño Mountains, including the spruce-fir forests (Hoffmeister 1956, 1986; Hutton et al. 2003), but also use Gambel oaks in riparian areas low on Mount Graham (Brown 1986). Since the loss of most of the spruce-fir forest on the mountain, Abert's and Mount Graham red squirrels are in closer association and likely compete more for resources (Rushton et al. 2006).

Abert's squirrels likely impact Mount Graham red squirrels through competition for food resources (Hutton et al. 2003, Edelman 2004, Edelman and Koprowski 2005), nest sites (Edelman and Koprowski 2006), and dispersal territory (Steele and Koprowski 2001), and potentially can increase predator density by providing an additional food source, leading to higher predation rates for red squirrels (USFWS 2018a). Rushton et al. (2006) determined competition with Abert's squirrels has the potential

for a much greater impact on MGRS population size. As such, we believe this project will have a beneficial effect to MGRS in the long term.

The recovery plan (USFWS 2011) is currently under revision, with the Draft Mount Graham Red Squirrel Recovery Plan, Recovery action 3.4 in this document states “Investigate and analyze the effects of Abert’s squirrels on Mount Graham red squirrels, including the possibility of reducing and/or eliminating the threat to the MGRS due to competition with the Abert’s squirrel.” This project would fall under that recovery action of reducing competition from Abert’s squirrels.

Mount Graham Red Squirrel

Legal Status

The MGRS was listed as endangered in 1987 (52 FR 20994) (USFWS 1987). The final rule concluded that the MGRS was endangered because its range and habitat were reduced, and its habitat was threatened by a number of factors, including the (then) proposed construction of an astrophysical observatory, occurrences of high-severity wildland fires, proposed road construction and improvements, and recreational developments at high elevations on the mountain. The rule noted that the subspecies might also suffer due to resource competition with the introduced Abert’s squirrel. In 1990, the USFWS designated critical habitat for the MGRS (55 FR 425) (USFWS 1990). The USFWS finalized the first MGRS Recovery Plan in 1993 (USFWS 1993). However, it is currently undergoing revision (USFWS 2011).

Habitat

MGRS inhabit a narrow selection of habitats in the high-elevation areas of the Pinaleno Mountains that support primarily Engelmann spruce (*Picea engelmannii*) and corkbark fir (*Abies lasiocarpa* var. *arizonica*); in the mixed-conifer stands dominated by Douglas fir (*Pseudotsuga menziesii*), with white fir (*Abies concolor*) and Mexican white pine (*Pinus strobiformis*) sub-dominants; and in the ecotone life zone between these community types. The MGRS apparently do not inhabit pure stands of ponderosa pine (*Pinus ponderosa*) (USFWS 1993).

MGRS are highly territorial (C.C. Smith 1968) and create middens within their territory, which are areas that consist of piles of cone scales in which squirrels cache live, unopened cones as a food source for over-wintering and during times of cone failure (M.C. Smith 1968, Finley 1969, Steele and Koprowski 2001). Placement of these middens tends to be on gentler, non-southerly-facing slopes in healthier, older forested areas with higher canopy closure, basal area, and number of large live trees (Finley 1969, Zugmeyer and Koprowski 2009, Hatten 2014). This type of placement allows specific moisture levels to be maintained within the midden, thereby creating prime storage conditions for cones and other food items, such as mushrooms, acorns, and bones (Finley 1969, Brown 1984, USFWS 1993, Zugmeyer and Koprowski 2009). They also may prefer areas with snags, piles and tangles of downed timber, and a higher volume of logs that provide cover and safe travel routes, especially in winter, when open travel across snow exposes them to increased predation. Wood et al. (2007) determined that midden site selection occurs not only at the microclimate level (where conditions are appropriate for cone storage), but also on a larger scale that encompasses other features found on the landscape, usually in areas with a high number of healthy trees and correspondingly high seedfall. There appears to be no differentiation in selection of midden sites based on sex (Alanen et al. 2009).

Within their territory, MGRS build nests in hollow trees, hollow snags, hollow logs, outside trees in nests of grass or foliose lichens (called dreys or bolus nests), or in holes in the ground (C.C. Smith 1968). Nests may be built in natural hollows or abandoned cavities made by other animals, such as woodpeckers, and enlarged by squirrels (USFWS 1993). Nest site selection by MGRS is strongly influenced by stand composition, particularly density of corkbark fir, mature (large) trees, and decaying logs (Merrick et al. 2007). The availability of larger snags and cavity-containing trees, especially aspen,

is of particular importance for this population, as they provide preferred nesting locations (Merrick et al. 2007).

Distribution, Abundance, and Population Trends

MGRS are found only in the high-elevation forests of the Pinaleño Mountains (Hoffmeister 1986; Figure 1) in the Safford Ranger District of the Coronado National Forest in southeastern Arizona. The subspecies inhabits upper elevation, mature to old-growth associations in mixed conifer and spruce-fir above approximately 2,425 m (8,000 ft). As recently as the 1960s, the species ranged possibly as far east as Turkey Flat and as far west as West Peak, but it is now only located as far west as Clark Peak. A local extirpation occurred on West Peak, possibly due to a fire in the mid-1970s that both isolated the West Peak subpopulation from the rest of the range and destroyed red squirrel habitat. Suitable habitat on West Peak is thought to currently exist (Hatten 2009), but no systematic surveys have been conducted there.

The population size of MGRS throughout its range has been estimated and tracked since 1986 by an interagency team. Due to changes in analysis, population estimates before and after 1990 may not be comparable. Midden surveys show increasing numbers of MGRS into 1998-2000, with peaks over 500, after which the population declined due to a decrease in habitat from multiple insect outbreaks and wildfires (see **Threats**, below). Population estimates dropped 42% in 2001 as compared from 1998-2000; from then until 2017, population estimates remained fairly stable, varying from 199 to 346. In summer of 2017, however, the Frye Fire burned through the majority of the squirrel's habitat. The last survey (conducted in Fall 2019) resulted in a conservative estimate of 78 MGRS (AGFD 2019).

Diet

MGRS eat seeds and store live cones from Englemann spruce, white fir, Douglas-fir, corkbark fir, and white pine (Rushton et al. 2006). Midden surveys indicate that Englemann spruce and Douglas-fir are the most common tree species supplying MGRS food. MGRS also readily consume false truffles and other fungi, which appear during spring snowmelt and after summer rains begin (Brown 1984, Froehlich 1990). Those not eaten may be dried and stored (Brown 1984).

Threats

In recent years, forests in the Pinaleño Mountains have experienced significant ecological changes, many of which are dramatic and detrimental to the survival of MGRS. From 1986 to 1995 there was a relatively large amount of predicted MGRS habitat, with a generally level trend, followed by a gradual decline in predicted habitat between 1996 and 2003 (Hatten 2014). This decline corresponds with the 1996 Clark Peak Fire and multiple outbreaks of forest insects (described below). From 2004 to 2006 a rapid decline in habitat occurred, corresponding with the 2004 Nuttall Complex Fire, followed by a low trough of available habitat between 2007 and 2009 (Hatten 2014). The large, stand-replacing fires in 1996 and 2004 affected approximately 35,000 acres of forested area, which can significantly reduce survivorship of individual squirrels with middens inside the fire boundary (Koprowski et al. 2006). In 2017, the Frye Fire affected the majority of habitat within the MGRS's range – the effects of this fire are still being analyzed.

Graham County in southeastern Arizona currently is experiencing abnormally dry conditions in the short-term and abnormally dry to exceptional drought conditions in the long-term (ADWR 2020). Extended drought creates severe physiological stress on trees, especially in the higher elevation forest types. While this drought is apparently within natural historical variation (Swetnam and Betancourt 1998), various emission scenarios suggest that by the end of the 21st century, average global temperatures are expected to increase 0.3 °C to 4.8 °C (0.5 °F to 8.6 °F) with the greatest warming expected over land (IPCC 2014). Localized projections suggest the southwestern U.S. may experience the greatest temperature increase of any area in the lower 48 states (IPCC 2007). Increasing temperatures in turn are predicted to be accompanied by a more arid climate (Seager et al. 2007), increasing insect outbreaks in Southwestern forests, and increasing wildfires (Betancourt 2004).

Recovery Planning

The objective of the MGRS Recovery Plan (USFWS 1993) is “to increase and stabilize the existing Mt. Graham red squirrel population by protecting existing habitat and restoring degraded habitats.” The Recovery Plan does not contain recovery criteria for MGRS, as the goal of the plan is to first increase and stabilize the population by providing sufficient habitat to maintain a population of squirrels that never fluctuates below 300 adults and is distributed throughout the Pinaleño Mountains. The actions needed to stabilize the population include: 1) protect and monitor the existing population and habitat; 2) determine life history and habitat parameters; 3) reclaim previously occupied habitat; and 4) integrate species and habitat protection actions for the Pinaleño Mountains.

Critical Habitat

On January 5, 1990, the USFWS designated approximately 1,900 acres as MGRS critical habitat (Figure 1; 55 FR 425) (USFWS 1990). Critical habitat includes three areas: The area above 10,000 feet in elevation surrounding Hawk and Plain View peaks and a portion of the area above 9,800 feet; the north-facing slopes of Heliograph Peak above 9,200 feet; and the east-facing slope of Webb Peak above 9,700 feet.

The main attribute of these areas at that time was the existing dense stands of mature (about 300 years old) spruce-fir forest. The MGRS Refugium established by the Arizona-Idaho Conservation Act (1988) has the same boundary as the designated critical habitat boundary surrounding Hawk and Plain View peaks (about 1,700 acres), but does not include critical habitat on Heliograph or Webb Peaks. Unfortunately, most of the habitat in the Refugium and in critical habitat has been impacted by wildland fire and insect damage.

1.2.2 Damage data by resource affected

Current Species Status: The Mount Graham red squirrel (*Tamiasciurus hudsonicus orahamensis*) is restricted to the coniferous forest areas of the Pinaleño Mountains in southeastern Arizona. Depending upon food resources and possibly other factors, the population experiences large fluctuations.

Habitat Requirement's and Limiting Factors: Both food resources and habitat suitable for winter food caches are considered limiting. General habitat requirements include a mature forest with sufficient cone bearing trees to provide a winter food supply. The habitat characteristics most important for Mt. Graham red squirrel middens are foliage volume, canopy cover, log volume, and density of large snags. The middens are usually under a closed canopy. The closed canopy provides the cool, moist forest floor and soil needed to preserve cones and encourage mushroom growth. Additionally, the closed canopy provides a system of interlocking branches for squirrel escape routes. Suitable snags or cavities in live trees for Mt. Graham red squirrel nests near the cone storage areas may also be limiting (USFWS 2011).

The WS' Arizona Program was requested by AGFD and USFWS to remove Abert's squirrels to reduce competition with MGRS under recovery action 3.4 in the Draft Mount Graham Red Squirrel Recovery Plan, First Revision (USFWS 2011). This project may have a beneficial effect to the subspecies in the long term.

However, in the short term the project may affect MGRS in several ways. MGRS could be disturbed by human presence and the noise of gunshots (note that firearms will be suppressed to minimize noise disturbance to MGRS). Information regarding the effects of human presence and nearby gunshots on red squirrels is lacking. Gabrielsen and Smith (1995) summarize previous studies related to physiological and behavioral responses of several wildlife species to humans and predators, including fox squirrels (*Sciurus niger*) and grey squirrels (*Sciurus carolinensis*). These species were found to slip around a tree out of sight if approached by a human or a dog, then flee if approached too closely.

MGRS have been noted to react to the presence of people within their territory (USFWS observation), but human presence does not appear to influence survivorship, as the same red squirrel will occupy a territory even after multiple visits and multiple capture events (e.g., as observed by Koprowski 2005 and Koprowski et al. 2008). Because human presence and gunshots (which will be suppressed, thereby lessening the sound of the shot) will occur on average 4 days/month, up to a maximum of 8-10 days/month, and within those days for only short periods of time in any one location, we expect that disturbance will be minimized. The MGRS are located on USFS managed lands, which regulates the location and types of recreational uses (hunting, hiking, etc.).

Activities proposed by this project are currently allowed by the general public on these lands. However, some roads and trails are closed to public access in areas that can affect the MGRS and its habitat. The AGFD prohibits recreational hunting of the MGRS but maintains a year round hunting season for Abert's squirrels available to licensed hunters.

MGRS could also be directly impacted through misidentification in the field, which may result in an individual being injured or killed due to a gun shot. AGFD hunting regulation does not permit the take of MGRS. USFWS reported that this occurred one time during a different project and resulted in the death of one MGRS (USFWS files). In that project USDA/APHIS/WS was not involved. In this project several conservation measures will be implemented to minimize this possibility during the proposed action, which are outlined in section 2.5 of the EA.

With the removal of Abert's squirrels, a potential prey item for some avian and mammalian predators, it is possible that MGRS could be directly affected by an increase in predation pressure. However, because Abert's squirrels and MGRS share avian predators and overlap spatially in the Pinaleño Mountains, the presence of Abert's squirrels actually may contribute to higher predator densities and rates of predation on red squirrels (Goldstein et al. 2018). Goldstein et al. (2018) postulate that it is likely that introduced Abert's squirrels subsidize a diverse array of avian and mammalian predators in the Pinaleño Mountains, and that this is of concern for MGRS persistence. Removal of Abert's squirrels from areas with MGRS should therefore contribute to decreasing predation pressure on MGRS.

1.3 RELATIONSHIP OF THIS EA TO OTHER ENVIRONMENTAL DOCUMENTS

In July 2018, WS-Arizona requested formal consultation with the USFWS pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544), as amended (ESA). On July 18, 2018, a request for formal consultation and biological assessment pursuant to section 7 of the ESA was sent to the USFWS. At issue are impacts that may result from a proposed Abert's Squirrel Removal Project located in the Pinaleño Mountains, Graham County, Arizona. On November 21, 2018, the USFWS issued a BO on the proposed action that the action may affect, and is likely to adversely affect but is not likely to jeopardize the MGRS due to the conservation measures outlined in the BO. The proposed action is likely to be beneficial to the recovery of the MGRS as described in the BO and MGRS recovery plan. WS-Arizona will adhere to conservation recommendations to minimize or avoid adverse effects of a proposed action on listed species or critical habitat.

National Level Memoranda of Understanding. A MOU has been signed between WS and USFS which recognize WS' authority and responsibility for WDM, and related compliance with NEPA, on USFS lands. WS is recognized through the MOUs with USFS as being the lead agency concerning most WDM on public lands; USFS are responsible for NEPA compliance when WDM is to protect federal resources such as gopher control to planted seedlings. In the current MOU that WS has with USFS, it is recognized that the state of Arizona has management authority over resident wildlife. The AGFD is the entity that have been given the primary management authority for resident wildlife on federal lands and they establish the management objectives for these species and their damage. Ultimately, the USFWS is the final decision maker in cases of management authority to protect endangered and threatened species.

USFS Land and Resource Management Plans (LRMPs). The National Forest Management Act requires that each National Forest (NF) prepare an LRMP for guiding long-range management and direction. Arizona has 6 NFs that are managed under the direction of Forest Supervisors and are further subdivided into 26 Ranger Districts. WS provides USFS District Rangers, the Forest Supervisors, or both with Work Plans (WP) annually on those Ranger Districts where WS expects to conduct WDM. USFS considers the compatibility of the proposed WDM activities with the LRMP. WS conducts WDM activities according to all applicable laws and regulations.

AGFD Management Plans. AGFD has various plans that outline short- and long-term goals and management objectives for species populations in Arizona and within smaller geographic areas called Game Management Units (GMUs). These include a strategic plan that provides a long-term, broad overview of the Department's varied responsibilities, operational plans that are more specific and focus on a shorter time-frame, and implementation plans that provide guidance to all work units on the activities to be implemented by that work unit. Operational and implementation plans may include management focus area plans, species management plans, area-specific predation management plans, and other statewide plans. WS-Arizona relies on AGFD to determine what the species management objectives are in each GMU and ensure that management objectives are met.

1.4 WS-ARIZONA COMPLIANCE WITH NEPA

WS-Arizona WDM activities are subject to the NEPA (Public Law 9-190, 42 U.S.C. 4321 et seq.). The APHIS-WS program follows the Council on Environmental Quality (CEQ) regulations implementing the NEPA (40 CFR 1500 et seq.) along with USDA (7 CFR 1b) and APHIS Implementing Procedures (7 CFR 372) as part of the decision-making process. NEPA sets forth the requirement that all federal actions be evaluated in terms of:

- Their potential to significantly affect the quality of the human environment for the purpose of avoiding or, where possible, mitigating and minimizing adverse impacts;
- Making informed decisions; and
- Including agencies and the public in their NEPA planning in support of informed decision-making.

This EA describes the impacts of Abert's Squirrel management in the Pinaleño Mountains for which WS-Arizona has been requested to assist. The EA identifies the potential issues associated with reasonable alternatives and levels of providing that assistance. It then evaluates the environmental consequences of the alternatives compared to the proposed action.

WS-Arizona will make this EA available to the public, agencies, tribes and other interested or affected entities for review and comment prior to making and publishing the decision (either preparation of a FONSI or a Notice of Intent to prepare an EIS). Public outreach notification methods for an EA include postings on the national APHIS-WS NEPA webpage and on www.regulations.gov, a direct mailing to known local stakeholders, electronic notification to registered stakeholders on www.GovDelivery.com, and notification in the legal section of the Statesman Journal newspaper. The public will be informed of the decision using the same venues, including direct mailed notices to all individuals who submit comments and provide physical addresses.

1.4.1 Use of This EA to Inform WS-Arizona's Decisions

WS-Arizona will use the analyses in this EA to help inform WS-Arizona decision-making, including whether to prepare an EIS or a FONSI. And whether to continue WS-Arizona WDM activities and, if so, to determine how and to what degree such activities would be implemented.

1.4.2 The Relationship of the EA to Site-Specific Analyses and Decisions, Using the APHIS-WS Decision Model

WS-Arizona actions will be restricted to the coniferous forested areas of the Pinaleno Mountains in southeastern Arizona.

The APHIS-WS Decision Model Directive 2.201 (Figure 2) is the site-specific procedure for individual actions conducted by WS-Arizona personnel in the field when they respond to requests for assistance. Site-specific decisions made using the model are in accordance with NEPA decisions and include applicable WS' directives, relevant laws and regulations, interagency agreements and memoranda of understanding, and cooperating agency policy and procedures.

1.5 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

1.5.1 Actions analyzed

The three alternatives discuss how WS-Arizona and other entities could recommend or use methods to reduce competition to MGRS and threats associated with Abert's squirrel management in the Pinaleno mountains. Therefore, the actions evaluated in this EA are the use or recommendation of methods available under the alternatives and WS-Arizona' use or recommendation of methods to reduce or prevent damage and threats associated with Abert's squirrel management from occurring when requested by the appropriate state and federal agencies. Activities that could involve the lethal removal of target species by WS-Arizona under the alternatives would only occur when agreed upon by the requester.

It is important to remember that APHIS-WS does not have any authority to manage wildlife other than the authority provided by Congress for assisting with wildlife-caused damage. APHIS-WS policy is to respond to requests for assistance with managing wildlife damage. Managing wildlife populations and even individual wild animals is under the legal jurisdiction of state wildlife agencies, the USFWS, National Oceanic and Atmospheric Administration/National Marine Fisheries Services (NOAA NMFS) for Endangered Species Act (ESA) -listed species, the USFWS for migratory birds and eagles, and tribal governments on tribal lands, and APHIS-WS defers to the applicable laws.

APHIS-WS has no authority to determine national policy regarding use and commitment of local, state, tribal or federal resources or lands for economic use by private entities, such as livestock grazing or timber growth and harvest, nor use of private land, such as for livestock feedlots, or government, commercial, or residential development.

APHIS-WS does not make public land use management decisions. Policies that determine the multiple uses of public lands are based on Congressional acts through laws such as the Forest Service Organic Act of 1897 and the Multiple Use-Sustained Yield Act of 1960 for the Forest Service. Congressional appropriations support the implementation of these authorities. In contrast, WS-Arizona only addresses WDM upon request (WS Directive 2.201).

In Arizona, most native wildlife species are managed by AGFD per ARS § 17.102. The USFWS has authority regarding wildlife and plant species listed per the ESA (Public Law 93-205, 15 USC 1531 as amended).

WS-Arizona has no authority for determining the appropriate management of wildlife populations that are under the jurisdiction of AGFD per their statutes, regulations, and species management plans and strategies, or management of species regulated in accordance with the ESA, the MBTA, or the Bald and Golden Eagle Protection Act (BGEPA). Rather, WS-Arizona responds to governmental and non-governmental requesters for assistance in managing wildlife damage and threats.

1.5.2 Geographic scope of this EA

WS-Arizona WDM activities will occur in timber and forested areas; wildernesses and wilderness study areas where authorized, and other places within the Pinaleno Mountains in Graham County, Arizona, where Abert's squirrels may exist and create conflicts with MGRS.

1.5.3 Period of time that this EA will remain valid

If WS-Arizona determines that the analyses in this EA indicate that an EIS is not warranted (impacts are not significant per 40 CFR §1508.27), this EA remains valid until WS-Arizona determines that new or additional needs for action, changed conditions, new issues, and/or new alternatives having different environmental impacts need to be analyzed to keep the information and analyses current. At that time, this analysis and document would be reviewed and, if appropriate, supplemented if the changes would have "environmental relevance" (40 CFR 1502.9(c)), or a new EA would be prepared pursuant to the NEPA.

WS-Arizona monitors WDM activities conducted by its personnel and ensures that those activities and their impacts remain consistent with the activities and impacts analyzed in the EA and selected as part of the decision. Monitoring includes review of adopted mitigation measures, recovery goals (USFWS 2011) and target and non-target take reported and associated impacts analyzed in the EA. Monitoring ensures that program effects are within the limits of evaluated/anticipated take in the selected alternative.

1.5.4 Interdisciplinary Development of the EA

WS-Arizona solicited comments from the USFS, AGFD, USFWS, and Tribes to facilitate an interdisciplinary approach to analysis. Comments are maintained in an administrative file located at the WS-Arizona State Office, 8836 North 23rd Avenue, Suite 2, Phoenix, AZ 85021.

1.6 PUBLIC INVOLVEMENT

This pre-decisional EA will be made available for public comment for a minimum of 30 days to inform the public and stakeholders of the opportunity to comment.

1.7 COMPLIANCE WITH FEDERAL AND STATE LAWS

1.7.1 Compliance with Federal Laws and Executive Orders (EO)

Several laws or statutes authorize, regulate, or otherwise affect the activities of WS under the alternatives. WS would comply with applicable federal, tribal, state, and local laws and regulations in accordance with WS Directive 2.210. Below are brief discussions of those laws and regulations that would relate to WDM that WS-Arizona could conduct.

National Environmental Policy Act

All federal actions are subject to NEPA (Public Law 9-190, 42 USC 4321 et seq.). WS follows CEQ regulations implementing NEPA (40 CFR 1500 et seq.) along with USDA (7 CFR 1b) and APHIS Implementing Guidelines (7 CFR 372) as part of the decision-making process. Those laws, regulations, and guidelines generally outline five broad types of activities that federal agencies must accomplish as part of any project: public involvement, analysis, documentation, implementation, and monitoring. NEPA also sets forth the requirement that all major federal actions be evaluated in terms of their

potential to significantly affect the quality of the human environment for the purpose of avoiding or, where possible, mitigating and minimizing adverse impacts. In part, the CEQ, through regulations in 40 CFR, Parts 1500-1508, regulate federal activities that could affect the physical and biological environment. In accordance with regulations of the CEQ and the USDA, the APHIS has published guidelines concerning the implementation of NEPA (see 44 CFR 50381-50384).

Pursuant to NEPA and CEQ regulations, this EA documents the analyses resulting from proposed federal actions, informs decision-makers and the public of reasonable alternatives capable of avoiding or minimizing adverse impacts, and serves as a decision-aiding mechanism to ensure that WS infuses the policies and goals of NEPA into agency actions. WS-Arizona prepared this EA by integrating as many of the natural and social sciences as warranted, based on the potential effects of the alternatives, including the potential direct, indirect, and cumulative effects of the alternatives.

WS-Arizona developed this EA under the 1978 NEPA regulations and existing APHIS procedures since this EA was initiated prior to the September 14, 2020 NEPA revisions.

Animal Damage Control Act:

The Animal Damage Control Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C. 8351-352) states: "The Secretary of Agriculture may conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program.

The Act was amended in 1987 (Act of December 22, 1987 (101 Stat. 1329-331, 7 U.S.C. 8353) to further provide:

On or after December 22, 1987, the Secretary of Agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with state, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammal and bird species that are reservoirs for zoonotic diseases, and to deposit any money collected under such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities." The agency is funded by Congressional appropriations and by funds provided by governmental, commercial, private, and other entities that enter into an agreement with APHIS-WS for assistance.

Endangered Species Act

The ESA states that all federal agencies shall seek to conserve T&E species and shall utilize their authorities in furtherance of the purposes of the Act (Sec. 2(c)). WS-Arizona conducts consultations with the USFWS, as required by Section 7 of the ESA, to use the expertise of the USFWS, to ensure that "*any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species. . .*" (Sec. 7(a)(2)).

EO 13186: Responsibility of Agencies to Protect Migratory Birds

Migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the Migratory Bird Treaty Act (Act), the United States has implemented these migratory bird conventions with respect to the United States. This Executive Order directs executive departments and agencies to take certain actions to further implement the Act.

Bald and Golden Eagle Protection Act

The BGEPA (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

National Historic Preservation Act

WS-Arizona has reviewed its program per this EA and continues to conclude that the program is not an "undertaking" as defined by National Historical Preservation Act and that consultation with the SHPO is not necessary. WS-Arizona works closely with the USFS on public lands to ensure there are no conflicts with cultural resources. WS-Arizona has also reached out to tribes as discussed under "Consultation and Coordination with Indian Tribal Governments" in this section, and the tribes have not identified cultural issues of concern to the tribes. Each of the methods described in the EA that may be used operationally and locally by WS-Arizona does not cause major ground disturbance, does not cause any physical destruction or damage to property, does not cause any alterations of property, wildlife habitat, or landscapes, and does not involve the sale, lease, or transfer of ownership of any property. In general, such methods also do not have the potential to introduce visual, atmospheric, or audible elements to areas in which they are used that could result in effects on the character or use of historic properties. Therefore, the methods that would be used by WS-Arizona under the proposed action are not generally the types of activities that would have the potential to affect historic properties.

If an individual activity with the potential to affect historic resources is planned under an alternative selected as a result of a decision based on the analysis in this EA, then site-specific consultation as required by Section 106 of the National Historical Preservation Act would be conducted as necessary.

Consultation and Coordination with Indian Tribal Governments (EO 13175)

WS-Arizona recognizes the rights of sovereign tribal nations, the unique legal relationship between each Tribe and the federal government, and the importance of strong partnerships with Native American communities. WS-Arizona is committed to respecting tribal heritage and cultural values when planning and initiating wildlife damage management programs. Consultation and coordination with tribal governments is conducted consistent with EO 13175 and APHIS-WS' plan implementing the executive order. WS-Arizona has offered early opportunities for formal government-to-government consultation on its proposed program to all Tribes in Arizona, and has requested their involvement for this EA through direct invitations (October 2016) and agency draft EA review opportunities.

Executive Order 13045 "Protection of Children"

Children may suffer disproportionately from environmental health and safety risks, including their developmental physical and mental status, for many reasons. APHIS-WS policy is to identify and assess environmental health and safety risks and avoid or minimize them, and WS-Arizona has considered the impacts that alternatives analyzed in this EA might have on children. All WS-Arizona WDM is conducted using only legally available and approved damage management methods where it is highly unlikely that children would be adversely affected. See Section 3.1.5.4 for a detailed description and analysis of all damage management methodologies included in the WS-Arizona program.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (Public Law 101-106, 25 USC 3001) requires federal agencies to notify the Secretary of the Department that manages the federal lands upon

the discovery of Native American cultural items on federal or tribal lands. Work on federal projects is stopped until a reasonable effort has been made to protect the items and the proper authority has been notified.

The Wilderness Act

The Wilderness Act preserved management authority for fish and wildlife with the state for those species under state jurisdiction. Some portions of wilderness areas (WAs) and wilderness study areas (WSAs) in Arizona have historic grazing allotments and WS-Arizona may conduct limited damage management in those as identified in compliance with federal and Arizona laws, the Interim Management Policy for WSAs, MOUs, and after a Minimum Requirements Analysis is completed (for WSAs). WS-Arizona only provides assistance to requesting entities in designated wilderness areas when allowed under the provisions of the specific wilderness legislation and as specified in MOUs between APHIS-WS and USFS.

The Wilderness Act does not prohibit WDM within designated wilderness. With certain exceptions, the Act prohibits using motorized equipment and motorized vehicles such as ATVs and landing of aircraft. The Forest Service may approve wildlife damage management in wilderness study areas and wilderness (FSM 2323). WS-Arizona works closely with USFS in cooperatively implementing their respective interagency MOU for operations in wilderness and wilderness study areas (Section 1.6). WS-Arizona will not conduct any WDM on wilderness areas until a Minimum Requirements Analysis has been completed by the land management agency.

Occupational Safety and Health Act of 1970

The Occupational Safety and Health Act of 1970 and its implementing regulations (29 CFR 1910) on sanitation standards states that, *“Every enclosed workplace shall be so constructed, equipped, and maintained, so far as reasonably practical, as to prevent the entrance or harborage of rodents, insects, and other vermin. A continuing and effective extermination program shall be instituted where their presence is detected.”* This standard includes wildlife that may cause safety and health concerns at workplaces.

Environmental Justice in Minority and Low Income Populations - Executive Order (EO) 12898

EO 12898 promotes the fair treatment of people of all races, income levels, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice is the pursuit of equal justice and protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status. EO 12898 requires federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse HHS and environmental effects of federal programs, policies, and activities on minority and low-income persons or populations. This EA will evaluate activities addressed in the alternatives for their potential impacts on the human environment and compliance with EO 12898.

WS-Arizona would use only legal, effective, and environmentally safe damage management methods, tools, and approaches. The EPA through FIFRA, the DEA, MOUs with land managing agencies, and WS' Directives would regulate chemical methods that could be available for use by WS-Arizona pursuant to the alternatives. WS-Arizona would properly dispose of any excess solid or hazardous waste. WS-Arizona does not anticipate the alternatives would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations. In contrast, the alternatives may benefit minority or low-income populations by reducing threats to HHS and property damage.

Invasive Species - EO 13112

EO 13112 establishes guidance for federal agencies to use their programs and authorities to prevent the spread or to control populations of invasive species that cause economic or environmental harm or harm to human health. The EO states that each federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law: 1) reduce invasion of exotic species and the associated damages, 2) monitor invasive species populations and provide for restoration of native species and habitats, 3) conduct research on invasive species and develop technologies to prevent introduction, and 4) provide for environmentally sound control and promote public education of invasive species.

Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments

This EO was issued to ensure that there would be “*meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications...*” The goal of the EO is to provide for engagement with Tribal entities concerning activities that may impact them. WS-Arizona only conducts WDM on Tribal lands at a Tribe’s request, which provides the opportunity to discuss potential impacts from WDM activities on Tribal lands.

1.7.2 Compliance with State Laws

Several State laws authorize, regulate, or otherwise affect WS-Arizona WDM activities. WS-Arizona complies with these laws as applicable, and consults and cooperates with state agencies as necessary. State laws with which WS-Arizona complies include the following:

1.8 RATIONAL FOR PREPARING AN EA RATHER THAN AN EIS

The primary purposes of an EA are to (1) determine if the environmental impacts of the proposed action might be significant, which would warrant the preparation of an EIS; and (2) to determine whether an alternative to the proposed action would be more appropriate [40 CFR 1508.9(a)(3) and 40 CFR 1501.4]. As such, this EA was prepared so that WS-Arizona can make an informed decision on whether or not an EIS is warranted for the proposed action, and whether an alternative to the proposed action would be more appropriate.

If WS-Arizona makes a determination based on this EA that the selected alternative would have a significant impact on the quality of the human environment, then WS-Arizona will publish a Notice of Intent to prepare an EIS, and this EA would be the foundation for developing the EIS, per the CEQ implementing regulations (40 CFR §1508.9(a)(3)).

Chapter 2. ISSUES AND ALTERNATIVES

Chapter 2 contains a discussion of the issues and affected environment, including issues that will receive detailed environmental impacts analysis in Chapter 3: Environmental Effects. Pertinent portions of the affected environment are described in this chapter in the discussion of the issues. Descriptions of additional portions of the affected environment will be incorporated into the discussion of the environmental impacts in Chapter 3 and the description of the current program (the “No Action” preferred Alternative) in Chapter 3.

2.1 INTRODUCTION TO ISSUES AND ALTERNATIVES

NEPA requires federal agencies to determine if federal actions affect the quality of the *human environment*. As defined by NEPA implementing regulations, the "*human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment*" (40 CFR 1508.14). Therefore, when a federal action agency analyzes its potential impacts on the *human environment*, it is reasonable for that agency to compare the effects of the federal action against the human-caused effects that would occur or can be expected to occur in the absence of the federal action. This concept is applicable to situations involving federal assistance in reducing damage associated with state-resident wildlife or unprotected wildlife species. This section discusses the human environment that could or could not potentially be affected by WS-Arizona WDM.

2.2 ISSUES USED TO DEVELOP ALTERNATIVES

2.2.1 Effects on target species

AGFD provided statistics on take for many species. Since population estimates were not available for Abert's squirrel's, conservative population estimates were developed to determine the relative impacts of WS-Arizona WDM and cumulative take of Abert's squirrels.

Of most relevance to the proposed project, the non-native Abert's squirrel (introduced in the Pinaleno Mountains in the 1940s) likely impacts MGRS through competition for food resources (Hutton et al. 2003, Edelman 2004, Edelman and Koprowski 2005), nest sites (Edelman and Koprowski 2006), and dispersal territory (Steele and Koprowski 2001), and potentially can increase predator density by providing an additional food source, leading to higher predation rates for red squirrels (Goldstein et al. 2018). Conversely, Abert's squirrels could decrease per capita predation on red squirrels by serving as an additional food source for predators. Rushton et al. (2006) determined competition with Abert's squirrels has the potential for a much greater impact on MGRS population size when compared to plausible increases in predation, and suggested further research into and monitoring of the effects of competition and predation on red squirrels.

The MGRS recovery plan is currently under revision, with the Draft Mount Graham Red Squirrel Recovery Plan, First Revision is available at https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MGRS/MGRS_dRecov_Plan_Revision_Final_May2011.pdf. Recovery action 3.4 in this document states “Investigate and analyze the effects of Abert's squirrels on Mount Graham red squirrels, including the possibility of reducing and/or eliminating the threat to the squirrel due to competition with the Abert's squirrel.” This project would fall under that recovery action from the MGRS recovery plan.

2.2.2 Effects on nontarget species populations including T&E species

In the short term the Abert's squirrel removal project may affect MGRS in several ways. MGRS could be disturbed by human presence and the noise of gunshots (note that firearms will be suppressed to

minimize noise disturbance to MGRS). Information regarding the effects of human presence and nearby gunshots on red squirrels is lacking. Gabrielsen and Smith (1995) summarize previous studies related to physiological and behavioral responses of several wildlife species to humans and predators, including fox squirrels (*Sciurus niger*) and grey squirrels (*Sciurus carolinensis*). These species were found to slip around a tree out of sight if approached by a human or a dog, then flee if approached too closely. MGRS have been noted to react to the presence of people within their territory (USFWS observation), but human presence does not appear to influence survivorship, as the same red squirrel will occupy a territory even after multiple visits and multiple capture events (e.g., as observed by Koprowski 2005 and Koprowski et al. 2008). Because human presence and gunshots (which will be suppressed, thereby lessening the sound of the shot) will occur on average 4 days/month, up to a maximum of 8-10 days/month, and within those days for only short periods of time in any one location, we expect that disturbance will be minimized. The AGFD prohibits recreational hunting of the MGRS, but maintains a year-round hunting season for Abert's squirrels available to licensed hunters.

MGRS could also be directly impacted through misidentification in the field, which may result in an individual being injured or killed after being shot. This occurred one time during a different project and resulted in the death of one MGRS (USFWS files). This event did not involve any WS-Arizona employees and is unlikely to occur as WS-Arizona employees will attend identification training provided by the USFWS and AGFD. Several conservation measures will be implemented to minimize this possibility during the proposed action: personnel will be trained to identify differences between Abert's and MGRS, will have experience using firearms, and shall be knowledgeable at a professional level in identification of MGRS, their habitat and use of habitat, and their sign. Additionally, if an animal sustains a serious injury, WS shall take immediate steps to report the incident to USFWS and proceed under their direction. Following these conservation measures, we anticipate the potential to misidentify and shoot an MGRS instead of an Abert's squirrel is minimized.

MGRS may also be affected by trapping activities during which they are inadvertently captured, potentially causing stress to the individual. Conservation measures will be implemented to minimize this stress, including checking the traps every two hours and immediately releasing any MGRS that have been captured, as well as covering the traps with material such as bark or logs to provide shade to the animal inside the trap, or placing the trap in an area that does not allow exposure to the sun. These measures have been used in previous trapping activities (e.g., Koprowski 2005, Koprowski et al. 2008), and no MGRS have been documented as being seriously harmed or killed using this protocol. Therefore, we anticipate the effects of inadvertent capture of MGRS will be minimized.

Mexican Spotted Owl

MSO may be affected by the proposed action (including during the breeding season) through disturbance caused by 1-2 people walking through the woods conducting Abert's removal activities (including using suppressed firearms), and placing and checking traps (USFWS 2018a). Swarthout and Steidl (2001) found that Mexican spotted owls modified their behavior (e.g., increased perch height) and/or flushed in response to recreationists (hikers). Based on their results, they recommended placing buffer zones (conservative buffer = 180 feet; less conservative buffer = 40 feet) around known roosting sites to minimize impacts. In a study to assess the effects of hikers on the behavior of nesting Mexican spotted owls, Swarthout and Steidl (2003) noted that female owls decreased the amount of time they handled prey by 57% and decreased the amount of time they performed daytime maintenance activities by 30% while hikers were present. In addition, hikers caused both female and male owls to increase the frequency of contact vocalizations. Birds may respond to disturbance during the breeding season by abandoning their nests or young; by altering their behavior such that they are less attentive to the young, which increases the risk of the young being preyed upon or disrupting feeding patterns; or by exposing young to adverse environmental stress (Knight and Cole 1995). There is also evidence that disturbance during years of a diminished prey base can result in lost foraging time which, in turn, may cause some raptors to leave an area or not to breed at all (Knight and Cole 1995). Topographic screening between

the area of disturbance and the bird's location creates a noise buffer, and may assist in the reduction of noise disturbance (Knight and Cole 1995).

Disturbance caused by the proposed action will be short-term, with 1-2 people conducting project activities on average 4 days/month, up to a maximum of 8-10 days/month. Within these time periods WS personnel will walk through the woods while using firearms and placing and checking traps, thereby minimizing human disturbance in any one location. Personnel will also use suppressed firearms, which minimizes noise impacts to MSO.

2.2.3 Effects on public safety, pets, and the environment

Information on the potential impacts to pets, HHS and the environment are also necessary to present a full picture of the affected environment that could be impacted by the activities of this project. Issues relating to these aspects are discussed in more detail below.

The use of firearms is anticipated to have minimal potential to harm people or pets, or take non-target wildlife. WS personnel are trained and certified to use firearms to ensure operations are conducted safely. To ensure safe firearm use and awareness, WS employees will not use government or personal firearms in an official capacity until they have completed the NRA Basic Firearm Course pursuant to the Firearms the employee will use on the job. Once an employee has completed all the applicable NRA Basic Firearm Courses (documented by the official NRA Certificates of Completion), annual firearms training will consist of any of the options listed in the continuing education section of the WS Firearms Manual. Further, WS employees who carry firearms, as a condition of employment, are required to verify that they meet the criteria as set forth in the Lautenberg Amendment which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence. Further, the risk of a stray bullet or shot inadvertently striking non-target wildlife, an individual, or pet is virtually eliminated by WS' precautionary measures such as positively identifying target animals before shooting, ensuring a backstop should the bullet or shot miss, using rifles that fire single projectiles per shot and using only specially trained personnel. Shooting will only occur during daylight hours, and will be limited to locations where it is legal and safe to discharge firearms (WS Directive 2.615).

Shooting is a target specific method and only has a minimal risk to people, pets, and nontarget species. WS personnel are trained and certified to use firearms to ensure operations are conducted safely. Further, the risk of a stray bullet inadvertently striking nontarget wildlife, an individual, or pet is virtually eliminated by WS' precautionary measures such as positively identifying target animals before shooting, ensuring a backstop should the bullet miss, using rifles that fire single projectiles per shot and using only specially trained personnel.

To ensure safe trap use and awareness, WS employees who use traps to conduct official duties will set traps in accordance with conservation measures outlined in the 2018 Biological Opinion (USFWS 2018a). Additionally, traps will be covered by pieces of bark, logs, or other debris to provide shade to animals within the trap, or placed in areas where direct sunlight cannot reach the trap, and traps will be removed from the trapping location when not in use. All non-target species, including MGRS incidentally captured in live traps, will be promptly released on site. Trapped Abert's squirrels will be humanely euthanized on site. Abert's carcasses will be recovered and submitted to AGFD and/or their designee for research purposes.

2.3 ISSUES NOT CONSIDERED FOR COMPARATIVE ANALYSIS

The following issues are not considered in detail because they are outside the scope of this EA:

2.3.1 Abert's squirrel removal Should Be Conducted by Private Nuisance Wildlife Control Agents

Private nuisance wildlife control agents could be contacted to reduce wildlife damage for resource managers or managers could attempt to reduce their own damage problems. Some resource managers would prefer to use a private nuisance wildlife control agent because the nuisance wildlife agent is

located in closer proximity and thus could provide the service at less expense, they are not required to comply with NEPA, or because they prefer to use a private business rather than a government agency. However, some resource managers would prefer to receive assistance from a government agency. In particular, federal governmental agencies and state governmental agencies may prefer to use APHIS-WS because of security and safety issues, legal requirements to be accountable to the public through NEPA compliance, ESA, and reduced administrative burden.

2.3.2 No Abert's squirrel removal at Taxpayer Expense, Abert's squirrel removal Should Be Fee Based

WS is aware of concerns that wildlife damage management should not be provided at the expense of the taxpayer or that it should be fee based. APHIS-WS was established by Congress as the agency responsible for providing wildlife damage management to the people of the United States. Funding for APHIS-WS comes from a variety of sources in addition to federal appropriations. Such nonfederal sources include but are not limited to Arizona general appropriations, local government funds (state, county or city), livestock associations and related fees and taxes. Federal, state, and local officials have decided that wildlife damage management needs to be conducted and have allocated funds for these activities. Additionally, wildlife damage management is an appropriate sphere of activity for government programs, because wildlife management is a government responsibility. A commonly voiced argument for publicly funded wildlife damage management is that the public should bear the responsibility for damage to private property caused by "publicly-owned" wildlife. Funding for APHIS-WS for MGRS protections comes from cooperative agreement from Arizona Game and Fish Department. No federal appropriations are spent conducting MGRS protection.

2.3.3 Concerns that WS Personnel Might Unknowingly Trespass

WS is aware that it is sometimes difficult to determine land ownership in some areas, and WS field employees make diligent efforts to ensure that they do not enter properties where they do not have permission. Landowners who request assistance from WS typically provide WS representatives with very specific information not only about the property boundaries of their own land, but about the boundaries of neighboring lands as well. Therefore, we do not expect that inadvertent trespass incidents would rise to the level of presenting any significant environmental effects. Work within the MGRS recovery area will be confined to historical MGRS habitat throughout the Pinaleño Mountains, Graham County, Arizona. WS-Arizona will ensure that appropriate Work Initiation documents are in place to ensure that work is being conducted on authorized properties.

2.3.4 Potential Effects on Wildlife from the Mere Presence of WS Personnel Conducting Abert's squirrel removal.

Public comments have raised the concern that the mere presence of WS personnel in the field. To minimize potential effects of project activities on wildlife, WS-Arizona will limit activities to an average of 4 days/month, but possibly up to 8-10 days/month (maximum), and will include only one to two WS field personnel conducting the activities to minimize potential effects.

2.3.5 Effects of the Preferred Alternative on Sociocultural Resources

Effects of WDM on public lands used for recreation can be viewed as either negative or positive. Recreational activities in the MGRS recovery area include hunting, fishing, wildlife viewing, sightseeing, horseback riding, camping, and hiking among others. Some members of the public believe that WS-Arizona WDM activities conflict with recreation on public lands. In addition, some individuals believe their recreational experiences on public lands are impaired by knowing that any lethal WDM actions are occurring on these lands. Others feel that they are being deprived of the

aesthetic experience of viewing or hearing wildlife because of WS-Arizona WDM actions. On the other hand, some believe that WDM is wholly acceptable. WDM can help bolster populations of T&E species and big game, and remove individual animals that are a threat to natural resources.

Aesthetics is a philosophy dealing with the nature of beauty or the appreciation of beauty. Therefore, aesthetics is subjective in nature and is dependent on what an observer regards as beautiful. Wildlife generally is regarded as providing economic, recreational and aesthetic benefits (Decker and Goff 1987) and the mere knowledge that wildlife exists is a positive benefit to many people. There may be some concern that the proposed action or alternatives would result in the loss of aesthetic benefits to the public, resource owners or neighboring residents. An example of concerns pertaining to aesthetic impacts are concerns that viewing evidence of WDM activities would adversely impact aesthetic enjoyment of activities such as hiking on public lands.

Recovery of the Mount Graham red squirrel will likely be long and challenging. Its limited habitat, isolation to one mountain range, and demographic characteristics restrict its ability to rebound quickly from threats that impact both the squirrel and its habitat. Currently, threats to the red squirrel include habitat degradation and loss through high-severity wildfire, fire suppression activities, insect outbreaks, climate change, and human development, as well as competition with Abert's squirrels and predation (USFWS 2011). A critical first step is to protect and manage the remaining population of the MGRS and its habitat. Management will include, but is not limited to, maintaining and improving the spruce-fir and mixed conifer biomes while balancing the need to reduce risk of catastrophic wildfire with the needs of the squirrel (USFWS 2011). All of which will improve the aesthetic enjoyment on public lands within the MGRS recovery area. The WS Arizona program does not expect to significantly impact recreational activities in the MGRS recovery area include hunting, fishing, wildlife viewing, sightseeing, horseback riding, camping, and hiking among others. Therefore, the EA will not analyze those elements further.

2.3.6 Humaneness and Ethics

The issue of humaneness and animal welfare as it relates to killing or capturing wildlife is an important and very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns if “. . . *the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process.*” Suffering is described as a “. . . *highly unpleasant emotional response usually associated with pain and distress.*” However, suffering “. . . *can occur without pain . . .*” and “. . . *pain can occur without suffering . . .*” (American Veterinary Medical Association 1987). Because suffering carries with it the implication of a time frame, a case could be made for “. . . *little or no suffering where death comes immediately . . .*” (California Department of Fish and Game 1991), such as shooting. Defining pain as a component of humaneness and animal welfare in WDM methods used by WS-Arizona appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would “. . . *probably be causes for pain in other animals . . .*” (American Veterinary Medical Association 1987). However, pain experienced by individual animals probably ranges from little or no pain to significant pain (California Department of Fish and Game 1991). Pain and suffering, as it relates to damage management methods, has both a professional and lay point of arbitration. Wildlife managers and the public would be better served to recognize the complexity of defining suffering since “. . . *neither medical nor veterinary curricula explicitly address suffering or its relief*” (California Department of Fish and Game 1991).

The American Veterinary Medical Association states “. . . *euthanasia is the act of inducing humane death in an animal . . .*” and “. . . *the technique should minimize any stress and anxiety experienced by the animal prior to unconsciousness*” (Beaver et al. 2001). Some people would prefer accepted

methods of euthanasia to be used when killing all animals, including wild and feral animals. The American Veterinary Medical Association states that *“For wild and feral animals, many of the recommended means of euthanasia for captive animals are not feasible. In field circumstances, wildlife biologists generally do not use the term euthanasia, but use terms such as killing, collecting or harvesting, recognizing that a distress-free death may not be possible”* (Beaver et al. 2001).

Some individuals and groups are opposed to some management actions of WS. WS-Arizona personnel are experienced and professional in their use of management methods. This experience and professionalism allows WS-Arizona personnel to use equipment and techniques that are as humane as possible within the constraints of current technology. The WS Arizona program does not expect the use of cage traps and shooting to impact the humane treatment of animals and will conduct activities to minimize the pain and suffering of animals in the MGRS recovery area. The WS program will follow the AVMA guidelines on euthanasia (AVMA 2013). Therefore, the EA will not analyze those elements further.

2.4 WILDLIFE DAMAGE MANAGEMENT STRATEGIES AVAILABLE FOR INCLUSION IN THE ALTERNATIVES.

2.4.1 Integrated Wildlife Damage Management

The APHIS-WS program uses an IWDM approach (WS Directive 2.105) in which a combination of methods may be recommended or used sequentially or concurrently to reduce wildlife damage. Use of the APHIS-WS Decision Model facilitates development of site-specific IWDM strategies for each wildlife/human conflict addressed by APHIS-WS.

2.4.2 WS-Decision Model

For all alternatives in which WS-Arizona provides requested services, WS-Arizona uses the APHIS-WS Decision Model (Figure 2; WS Directive 2.201) as part of IWDM for evaluating the situation and determining the most effective strategy to address the situation.

The Decision Model is not a written documented process for each incident, but rather a mental problem-solving process. This process is similar to adaptive management strategies used by all wildlife management professionals when addressing a wildlife damage problem, including biologists who work for some of the lead and cooperating agencies for this EA. To use an analogy, it is also similar to assessment processes used by fire departments when they arrive on a scene and determine the most effective and safe strategy for resolving the situation. WS-Arizona employees are trained and experienced in IWDM, and they respond to a request and assess the problem using the APHIS-WS Decision Model.

Under the APHIS-WS Decision Model, in accordance with agency directives and policy, APHIS-WS field personnel assess the problem and evaluate the appropriateness of available damage management strategies and methods based on biological, economic, and social considerations. Following this evaluation, methods deemed to be practical and effective for the situation are incorporated into a management strategy. After the selected strategy has been implemented, the property owner monitors and evaluates the effectiveness, sometimes with WS-Arizona assistance. If needed, management strategies are then adjusted, modified, or discontinued, depending on the results of the evaluation.

The thought process and procedures of the APHIS-WS Decision Model include the following steps (Figure 2):

1. **Receive Request for Assistance:** WS-Arizona only provides assistance after receiving a request for such assistance. The employee can respond by providing professional technical assistance, information, recommendations, and advice at any time, on-site or through verbal or written communication. If the

requester needs further on-site active assistance, the WS-Arizona specialist and the requester will agree to the level of service and enter into a work agreement.

2. **Assess Problem:** Once on site, the WS-Arizona field specialist makes a determination as to whether the assistance request was within the authority of WS-Arizona. If an assistance request is determined to be within agency authority, the specialist gathers and analyzes damage information in the field to determine applicable factors, such as what species was responsible for the damage, the type of damage, the extent of damage, and the magnitude of damage. Other factors that WS-Arizona's employees often consider include the current economic loss or current threat, such as the threat to human safety, the potential for future losses or continued damage, the local history of damage in the area, environmental considerations, and what management methods, if any, were used to reduce past damage and the results of those actions.
3. **Evaluate Management Methods:** Once a problem assessment is completed, the field specialist conducts an evaluation of available management methods to recommend the most effective strategy, considering available methods in the context of their legal and administrative availability and their acceptability based on biological, environmental, social, and cultural factors.
4. **Formulate Management Strategy:** The field specialist formulates a management strategy using those methods that the employee determines to be practical and effective for use, considering additional factors essential to formulating each management strategy, such as available expertise, willingness of the property owner, legal constraints on available methods, costs, and effectiveness.
5. **Provide Assistance:** After formulating a management strategy, technical assistance and/or direct operational assistance to the requester is provided as appropriate (see WS Directive 2.101).
6. **Monitor and Evaluate Results of Management Actions:** When providing direct operational assistance, effectiveness of the management strategy is monitored, primarily by the cooperator, with assistance by WS-Arizona when appropriate. Monitoring is important for determining whether further assistance is required or whether the management strategy resolved the problem and if additional work is necessary.
7. **End of Project:** When providing technical assistance, a project normally ends after the WS-Arizona field specialist provided recommendations and/or advice to the requester. A direct operational assistance project normally ends when WS-Arizona's field specialist is able to eliminate or reduce the damage or threat to an acceptable level to the requester or to the extent possible.

The most effective approach to reducing wildlife damage is to integrate the use of several methods simultaneously or sequentially. IWDM is the implementation and application of safe and practical methods for the prevention and reduction of damage caused by wildlife based on local problem analyses and the informed judgment of trained personnel. The philosophy behind IWDM is to implement effective management techniques in a cost-effective manner while minimizing potentially harmful effects on humans, target and non-target species, and the environment. IWDM draws from the largest possible array of options to create a strategy appropriate for the specific circumstances. IWDM may incorporate cultural practices, habitat modification, animal behavior, local population reduction, or any combination of these, depending on the characteristics of the specific damage problems.

WS-Arizona uses an adaptive IWDM approach, sometimes called Integrated Pest Management (WS Directive 2.105), in which a combination of methods are considered and may be used or recommended to reduce wildlife damage. These methods may include alteration of cultural practices and habitat and behavioral modification to prevent or reduce damage. The reduction of wildlife damage may also require that a local population of offending animal(s) be reduced through lethal means. However, killing the offending animal(s) is only one strategy considered by WS-Arizona in developing management approaches. The alleviation of wildlife damage is the main focus of WS-Arizona, whether addressed by WS-Arizona professionals or other individuals, and consists of one or a combination of three basic strategies:

- Physical separation of the resources and the species in order to minimize the damage
- Manage the resource being damaged so it is more difficult for the wildlife species to cause the damage
- Manage the wildlife species responsible for, or associated with, the damage so the species cannot continue to cause damage.

WS-Arizona personnel apply IWDM approaches in WDM activities using the WS Decision Model (Slate et. al. 1992, WS Directive 2.105, 2.201, 2.201). The Decision Model describes the procedures used by WS-Arizona personnel to determine the appropriate combination of management strategies or methods applied to specific damage problems. Using the general process depicted in the Decision Model (Figure 2), consideration is given to the following factors before selecting or recommending control methods and techniques:

- Species responsible for damage
- Magnitude, geographic extent, frequency, and duration of the problem
- Status of target and non-target species, including T&E species
- Local environmental conditions
- Potential biological, physical, economic, and social impacts
- Potential legal restrictions
- Costs of management
- Prevention of future damage (lethal and nonlethal techniques)

2.4.3 WDM Methods Available

WS-Arizona will utilize cage trapping and shooting to reduce Abert's squirrel populations throughout the Pinaleno Mountains, Graham County, Arizona. The use of firearms is anticipated to have minimal potential to harm people or pets, or take non-target wildlife. WS personnel are trained and certified to use firearms to ensure operations are conducted safely. To ensure safe firearm use and awareness, WS employees will not use government or personal firearms in an official capacity until they have completed the NRA Basic Firearm Course pursuant to the Firearms the employee will use on the job. Once an employee has completed all the applicable NRA Basic Firearm Courses (documented by the official NRA Certificates of Completion), annual firearms training will consist of any of the options listed in the continuing education section of the WS Firearms Manual. Further, WS employees who carry firearms, as a condition of employment, are required to verify that they meet the criteria as set forth in the Lautenberg Amendment which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

Further, the risk of a stray bullet or shot inadvertently striking non-target wildlife, an individual, or pet is virtually eliminated by WS' precautionary measures such as positively identifying target animals before shooting, ensuring a backstop should the bullet or shot miss, using rifles that fire single projectiles per shot and using only specially trained personnel. Shooting will only occur during daylight hours, and will be limited to locations where it is legal and safe to discharge firearms. Shooting is a target specific method and poses no risk to people, pets, and non-target species. The risk of a stray bullet or shot inadvertently striking non-target wildlife, an individual, or pet is virtually eliminated by WS' precautionary measures such as positively identifying target animals before shooting, ensuring a safe backstop and using only specially trained personnel.

WS-Arizona understand that both target and nontarget animals could be captured when using cage traps. However, trap design, trap size, attractants, and trap placement can minimize the risk of non-target capture. Cage traps generally allow the safe release of nontarget species and result in a lower potential for stress and injury compared to other trapping methods such as foothold traps (Mowat et al. 1994, Powell and Proulx 2003, Kolbe et al. 2003, Schutz et al. 2006, Iossa et al. 2007, Munoz-Igualada

et al. 2008). WS-Arizona will be following the Conservation Measures outlined in the Biological Opinion (USFWS 2018a) including using cage traps in areas with occupied buildings/cabins and/or campgrounds, and cage traps will be checked every 2 hours throughout the effort. Additionally, cage traps will be covered by pieces of bark, logs, or other debris to provide shade to animals within the trap, or placed in areas where direct sunlight cannot reach the trap, and traps will be removed from the trapping location when not in use.

All non-target species, including Mount Graham red squirrels incidentally captured in live traps, will be promptly released on site and report the incident to the USFWS and AGFD within 24 hours. Human health and safety hazards associated with the use of cage traps in the WS program are minor since traps would only be operated by well-trained WS personnel following safety operation procedures in accordance with (WS Directive 2.450). Cage traps are mechanical methods that are activated by an animal entering into the trap; therefore, if left undisturbed by the public, cage traps would not pose a human safety concern.

Abert’s squirrel carcasses will be recovered from the field and submitted to AGFD or their designee.

2.5 CONSERVATION MEASURES TO REDUCE ADVERSE EFFECTS

The measures listed in this section improve the safety, selectivity, and efficacy of WDM activities, and reduce or eliminate unwanted environmental effects. WS-Arizona WDM activities have incorporated these measures into the current program, and these measures are also incorporated into any other described alternative in which some level of operational WS-Arizona activities would occur (Alternatives 2 and 3), as relevant. For example, APHIS-WS policies involving lethal take included in its directives would not apply to alternatives in which WS-Arizona would not take lethal action, although the agency could recommend such actions under technical assistance.

While the following measures are implemented by WS-Arizona, not all procedures pertain to the prevention or minimization of environmental impacts, such as personnel safety procedures for firearms.

The measures in this section are organized into four major parts:

- A. APHIS-WS policies included in formal directives, categorized into sixteen topics
- B. WS-Arizona formal and informal consultations with the USFWS
- C. Additional measures
- D. Relevant State of Arizona laws and regulations

2.5.1 APHIS-WS policies in formal directives

Individual measures in *italics* are direct quotes from APHIS-WS policies and formal directives.

A1. APHIS-WS Administrative Policies

WS Directive 2.101: Preference for Non-Lethal Methods When Appropriate

WS Directive 4.130: Requests for Assistance

WS Directive 1.210: Compliance with Federal, State, and Local Laws and Regulations

a.	<i>Technical and direct control assistance may involve the use of either lethal or non-lethal methods, or a combination of the two. Preference is given to non-lethal methods when practical and effective. (WS Directive 2.101)</i>
b.	<i>Wildlife damage management services are provided only in response to requests for assistance. (WS Directive 2.201)</i>

c	<i>All employees (Federal and non-Federal) are responsible for conducting official duties in compliance with all Federal laws, and also applicable State and local laws that do not directly and substantively conflict with and frustrate WS' Federal statutory authorities. In a situation requiring a variance from a State of local law or regulations that does not directly and substantively conflict with and frustrate WS Federal statutory authorities, either a State or local authority agrees to carry out the action in cooperation with WS or a written authorization or concurrence must be obtained from the appropriate State or local authority. (WS Directive 2.210)</i>
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A2. APHIS-WS Policies Regarding Capture Devices

WS Directive 2.450: Traps and Trapping Devices

a.	<i>All employees whose duties involve animal capture should participate in a WS approved trapper education course as recommended by Best Management Practices guidelines. State Directors may provide for continuing trapping education for appropriate employees at district state, or regional meetings.</i>
b.	<i>Use of all traps, snares (cable device), and other animal capture devices by WS personnel will comply with applicable federal, state, and local laws and regulations related to animal capture for managing wildlife damage. [also WS Directive 2.210 "Compliance with Federal, State, and Local Laws and Regulations."]</i>
c.	<i>All traps and trapping devices will be set in a manner which minimizes the chances of capturing non-target species. If possible, non-target animals that are captured will be released.</i>
d.	<i>If an animal that appears to be a licensed pet is captured, reasonable efforts will be made to notify the owner, seek veterinary care if necessary, or deliver the animal to appropriate local authorities.</i>
e.	<i>Animals targeted for lethal control in direct control projects will be dispatched immediately, removed from capture devices, and properly disposed (also WS Directives 2.205 "Euthanizing Wildlife" [Part A9 below], 2.510 "Fur, Other Animal Parts and Edible Meat", and 2.515 "Disposal of Wildlife Carcasses") [Part A8 below]</i>
f.	<i>Captured animals intended for release, relocation, or captivity will be handled and transported appropriately to achieve project objectives (also WS Directive 2.501 "Translocation of Wildlife")</i>

A3. Use of Firearms

WS Directive 2.615: WS Firearm Use and Safety

a.	<i>All WS-Arizona use, storage, and transportation of explosives will be in compliance with applicable Federal, state, and local laws and regulations, employees will be trained and certified per WS Directive 2.615 "Firearms Use and Safety" and WS Directive 2.625 "Pyrotechnics, Rocket Net Charges and Incidental Explosive Materials" and its Attachment 1 for safe and secure storage and transportation of the materials.</i>
b.	<i>Shooting a firearm, projectile or pyrotechnic out of a vehicle is permitted as long as the firearm or device is not loaded (a cartridge in the chamber) until the muzzle is safely out of the window of the vehicle and a clear line of fire is established. The muzzle of the firearm or device may not be retrieved back into the vehicle until the device has no live round in the chamber.</i>
c.	<i>Whether a firearm is being stored in an office, vehicle, home, camp, or any other location, the maximum level of security available should be employed. Security devices</i>

	<i>may range from gun safes, vaults, locking gun racks, to cables through the receiver or frame opening locked to an immovable object. All firearm storage will be per this Directive.</i>
d.	<i>All WS personnel, regardless of employment status, and official volunteers who are required or requested to use firearms in the conduct of official duties must adhere to all basic rules of firearm safety, and will be provided firearm safety and handling training per the WS Firearms Safety Training Manual. Aerial crewmember training will consist of instruction from the WS Firearm Safety Training Manual as well as additional specialized instruction that may be contained in the WS Aviation Operations Manual, the WS Aviation Safety Program Manual, and the WS Aerial Operation Crew Member Training Manual.</i>

A4. Disposal of Carcasses

USFWS Biological Opinion for MGRS, dated November 21, 2018.

a.	<i>Abert's carcasses will be recovered and submitted to AGFD or their designee.</i>
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A5. Personnel Safety

WS Directive 2.601: Safety [of WS personnel]

WS Directive 2.635: Zoonotic Diseases and Personal Protective Equipment

a.	<i>WS supervisors will promote a safe working attitude among employees. Supervisors will identify hazards, including wildlife-borne diseases, in advance of work assignments. Supervisors will also provide employees with adequate information, training, and personnel protective equipment to optimize employee safety. (WS Directive 2.601)</i>
b.	<i>WS personnel will adhere to safety requirements and use appropriate personal protective equipment provided for assigned work. Employees are required to immediately report unsafe working conditions to their supervisor and work cooperatively to minimize hazardous working conditions. (WS Directive 2.601)</i>
c.	<i>WS personnel are advised to alert their physician that they may be exposed to wildlife-borne diseases. Serious diseases including rabies, hantavirus, plague, Lyme disease, psittacosis, <i>Clamidia psittaci</i>, or histoplasmosis may be misdiagnosed unless the physician is aware of the possibility of exposure. (WS Directive 2.601)</i>
d.	<i>WS personnel will be provided with a Physicians Alert Card (APHIS Form 260 or APHIS Form 260A) which identifies a number of the more significant zoonotic diseases personnel are likely to encounter. Personnel will use the Physician's Alert Card when conferring with their physician about any illnesses or suspicious symptoms. Physical injury events such as animal scratches or bites (including embedded ticks) should be reported to the supervisor as soon as possible and documented within 30 days on a US Department of Labor Form CA-1 ...If an employee experiences signs or symptoms of a suspected work-related illness, zoonotic disease, or parasitic infection/infestation, the employee should notify their supervisor as soon as possible and seek medical attention for a diagnosis and confirmation from a physician that the condition is in fact work-related. (WS Directive 2.635)</i>
e.	<i>All WS personnel who handle or are exposed to wildlife, biological samples, or equipment used to handle or process animals or biological materials will be provided disease safety, biosecurity, and PPE training as prescribed in the WS Biological Risk</i>

	<i>Management Training Manual. Specific PPE requirements will vary among positions and the specific duties of personnel. All PPE supplies (e.g. gloves, safety glasses, DEET) will be routinely monitored and supplemented or replaced as necessary. (WS Directive 2.635)</i>
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A6. Federally Threatened and Endangered Species

WS Directive 2.310: Endangered and Threatened Species

Please see previous sections of Part A for relevant APHIS-WS Directives related to capture, use of chemicals, carcass disposal, and firearm use and safety that could also minimize the risk of adversely affecting Federally-listed threatened and endangered species.

a.	<i>WS will conduct its activities to minimize impact on any federally listed endangered or threatened species or adversely modifying listed critical habitat.</i>
b.	<i>WS State Directors will assure that all of their WS personnel (Federal and non-Federal) are familiar with the requirements of Section 7 of the Endangered Species Act, as amended. WS personnel will also be familiar with Section 7 biological opinions on listed species potentially impacted by their wildlife damage management activities.</i>
c.	<i>WS State Directors will initiate consultation with the U.S. Fish and Wildlife Service (USFWS) if new damage management programs, new methods, or newly listed species result in the potential for adverse impacts.</i>
d.	<i>During routine work activities, incidents involving impacts on listed species will be reported by WS field personnel within 24 hours to the appropriate WS supervisor.</i>
e.	<i>Unless otherwise authorized, the location of dead or seriously injured listed species will be immediately reported to the appropriate USFWS Law Enforcement Office and State wildlife representative.</i>
f.	<i>When endangered species are responsible for causing damage, the WS State Director will work with the USFWS to determine if acceptable solutions for controlling damage can be agreed upon and implemented.</i>
g.	<i>When a managing agency (Federal, state, tribal) requests WS assistance in protecting listed species or controlling damages caused by listed species, the requesting agency will bear responsibility for funding the work. The WS State Director will coordinate with appropriate Federal, state, and local agencies to arrange funding and determine acceptable control procedures.</i>

2.5.2 Formal consultation measures from the USFWS

The USFWS Biological Opinion for MGRS, based on the WS-Arizona Biological Assessment dated November 21, 2018, requires use of the following conservation measures and reporting or program activities within MGRS occupied range where MGRS occur in historical habitat throughout the Pinaleno Mountains.

CONSERVATION MEASURES	
1.	<i>WS shall coordinate with the U.S. Fish and Wildlife Service USFWS and AGFD prior to conducting project activities.</i>
2.	<i>WS personnel conducting project activities in occupied MGRS range shall be knowledgeable at a professional level in identification of MGRS, their habitat and use of habitat, and their sign.</i>

3.	<i>WS shall release any MGRS inadvertently captured alive, and report the incident to the USFWS and AGFD within 24 hours, unless: (A) the animal has sustained an injury that appears to be life threatening without veterinary attention; or (B) a protocol has been established and agreed upon for handling, marking, radio-collaring, or maintaining such animals in captivity. This protocol has not been established for this project, but will be developed if all parties agree. If an animal sustains a serious injury, WS shall take immediate steps to report the incident to USFWS and proceed under their direction.</i>
4.	<i>WS shall conduct a trap check every two hours while using cage traps in MGRS range. Traps will be covered (e.g., bark, vegetation) or placed in areas to prevent exposure to the sun.</i>

2.5.3 Relevant state laws and regulations

Measures included in this section from relevant state laws and regulations are paraphrased.

Categories of Wildlife and Legal Take

The following are Arizona State Statutes regarding legal take of wildlife:

ARS §17-101: Definition: Small game are cottontail rabbits, tree squirrels, upland game birds and migratory game birds. Nongame animals are all wildlife except game mammals, game birds, fur-bearing animals, predatory animals and aquatic wildlife.

The 2020-2021 Arizona hunting regulations authorizes those with a valid hunting license or combination license the take of five Abert's squirrels per day with a possession limit of 15. The season dates within the Pinaleno Mountains (Unit 31) are year-round (July 1-June 30) (AGFD 2021).

2.6 ALTERNATIVES CONSIDERED IN DETAIL

2.6.1 ALTERNATIVE 1: WS-Arizona's proposed action

The proposed action is for WS-Arizona to continue assisting AGFD and the USFWS with the Abert's Squirrel Removal Project to reduce the number of Abert's squirrels in historical MGRS habitat throughout the Pinaleno Mountains (Figure 1). The primary goal of the project is to decrease resource competition with MGRS, which were reduced to extremely low numbers (approximately 109 individuals; Arizona Game and Fish Department (AGFD 2020) after the 2017 Frye Fire.

Proposed activities include lethal removal of Abert's squirrels with firearms (preferably using non-lead ammunition) or live-trapping and euthanasia. Personnel will be trained to identify differences between Abert's and MGRS, and will have experience in firearms and live-trapping small mammals. Shooting will only occur during daylight hours, and will be limited to locations where it is legal and safe to discharge firearms. Live traps may be used in areas with occupied buildings/cabins and/or campgrounds and checked every 2 hours throughout the effort. Additionally, traps will be covered by pieces of bark, logs, or other debris to provide shade to animals within the trap, or placed in areas where direct sunlight cannot reach the trap, and traps will be removed from the trapping location when not in use. All non-target species, including MGRS incidentally captured in live traps, will be promptly released on site. Trapped Abert's squirrels will be humanely euthanized on site. Abert's carcasses will be recovered and submitted to AGFD or their designee.

The project area will be accessed via roads and on foot. USDA will coordinate with USFS to access the MGRS Refuge (areas above 10,000 feet on some peaks for which a permit is required) and areas beyond gates that are shut during seasonal closures (November 15-April 15). Project activities will occur on average 4 days/month, but possibly up to 8-10 days/month (maximum), and will include one

to two people conducting these activities by walking through the forest looking for Abert's squirrels or placing and checking traps. WS employees will use suppressed firearms to minimize noise disturbance to MGRS and MSO. WS preferably will also use non-lead ammunition; however, traditional lead ammunition may be used if non-lead is not accurate or available.

2.6.2 ALTERNATIVE 2: WS-Arizona provides technical assistance only

Under this alternative, WS-Arizona would only provide technical assistance and make recommendations when requested with WDM techniques, such as cage traps, and shooting. This alternative would not allow WS-Arizona to conduct operational WDM. State agency personnel, or others could conduct WDM activities including the use of cage traps and shooting, and any other legal lethal or nonlethal methods they wish.

2.6.3 ALTERNATIVE 3: No involvement from WS-Arizona

This alternative would consist of no federal involvement in WDM in Arizona. Neither operational management nor technical assistance with the WDM methods described under Alternative 1 would be provided by WS-Arizona. Under this Alternative, WDM would be handled by AGFD, USFWS, private contractors, licensed hunters, non-federal government agencies or other federal government agencies.

2.7 ALTERNATIVES NOT CONSIDERED IN DETAIL

The CEQ regulations at 40 CFR §1508.14 state that agencies “shall rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.”

By definition, a “reasonable” alternative must be one that meets the underlying need for action or goal:

- “proposal exists at that stage in the development of an action when an agency...has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal...” (40 CFR §1508.23).
- “The statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.” (40 CFR §1502.13)
Guidance in the CEQs “40 Most Asked Questions” states that reasonable alternatives must emphasize what the agency determines “is ‘reasonable’ rather than on whether the proponent or applicant likes...a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical or economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.”

Consistent with NEPA regulations and CEQ guidance, WS-Arizona reviewed alternatives and ideas proposed in comments to APHIS-WS WDM EAs, and, in this section, identify and briefly describe those that are determined by the agency as not reasonable per the CEQ criteria, and provide the agency's rationale for not considering them in detail in this EA.

2.7.1 Use of Only Non-lethal WDM Technical Assistance

WS-Arizona would provide only non-lethal technical assistance and non-lethal operational assistance. WS-Arizona would not implement nor advise others on the use of lethal methods. This Alternative would not meet the project objective of reducing the number of Abert's squirrels.

2.7.2 Live-Trap and Relocate Individual Animals Causing Damage

Under this alternative, all requests for assistance would be addressed using live-capture methods or the recommendation of live-capture methods. Animals would be live-captured using live-traps or cages. All animals live-captured through direct operational assistance by WS-Arizona would be relocated. The relocation of animals by WS-Arizona would only occur as directed and in coordination with the USFWS, AGFD, and/or as authorized by state law.

Relocation is also discouraged by APHIS-WS policy (APHIS-WS Directive 2.501) because of concerns with spreading the damage problem to other areas, spreading disease, concern with the animal returning to the capture site, and concern that the animals may fail to survive in the new area.

Live trapping and relocation were considered to address the Abert's squirrel concerns, but was determined to be not economical or effective.

Therefore, this alternative is not considered in detail.

2.7.3 Use Regulated Hunting and/or Trapping to Reduce Abert's squirrel Numbers.

AGFD can and has used regulated hunting and trapping an effective population management tool in areas where animals are causing damage and/or adversely affecting wildlife populations managed by AGFD. WS-Arizona may certainly recommend to AGFD that a hunting season and an increase in regulated harvests may be helpful in reducing Abert's squirrels. Since this alternative is not within the authority of APHIS-WS to implement, it will not be considered in detail. The 2020-2021 AGFD Arizona hunting regulations authorizes those with a valid hunting license or combination license the take of five Abert's squirrels per day with a possession limit of 15. The season dates within the Pinaleno Mountains (Unit 31) are year round (July 1-June 30) (AGFD 2021).

2.7.4 Use Only Non-lead Ammunition

APHIS-WS' use of lead ammunition is a small fraction of total lead contamination from many sources. WS-Arizona will follow Department of Interior USFWS policies for regarding use of lead ammunition for management and research activities on all lands under their jurisdiction. USFWS issued and rescinded a policy on lead ammunition use on the National Wildlife Refuge System (Memorandum, Director USFWS, dated October 3, 2016, FWS/ANRS-NRCP/063775). While this policy is no longer in place, WS-Arizona will comply with future policies and land manager requests for non-lead ammunition.

WS-Arizona continues to review the availability and performance of non-lead ammunition options relative to program safety and ammunition performance needs and, as effective ammunition becomes available, will consider its use where appropriate. For this project the USFWS has authorized the use of lead ammunition by WS-Arizona in the MGRS Refugium, as non-lead ammunition has been determined to be inaccurate. WS-Arizona will also recover Abert's squirrel carcasses and will submit them to AGFD and/or their designee for research purposes. This will further reduce the threat of lead poisoning by WS-Arizona in this area.

Chapter 3. ENVIRONMENTAL EFFECTS

To determine impacts of federal actions on the human environment, an environmental baseline needs to be established so that the impacts of the alternatives can be compared against the baseline. Based on the existing human environment described above, and the numerous types of human relationships that are established components of that environment, the baseline appropriate to use for analysis in this EA is not a pristine or non-human-influenced environment. Instead, it is one that is already heavily influenced by human actions and other environmental factors.

WDM for MGRS recovery is being conducted to decrease resource competition between the introduced Abert's tree squirrels. The MGRS was listed as endangered in 1987 (52 FR 20994) (USFWS 1987). The final rule concluded that the MGRS was endangered because its range and habitat were reduced, and its habitat was threatened by a number of factors, including the (then) proposed construction of an astrophysical observatory, occurrences of high-severity wildland fires, proposed road construction and improvements, and recreational developments at high elevations on the mountain. The rule noted that the subspecies might also suffer due to resource competition with the introduced Abert's squirrel (USFWS 1987).

NEPA requires federal agencies to determine whether their actions have a *significant impact on the quality of the human environment*. The environmental consequences of the 3 alternatives are discussed below with emphasis on the issues presented in Chapter 2. The comparison of alternatives will be used to select the most appropriate alternative for WS-Arizona actions. The alternatives selected for detailed analysis provide the best range of alternatives that could potentially meet the purpose and the need identified in Chapter 1.

Significance Criteria

The CEQ regulations on implementation of NEPA (40 CFR 1500-1508) describe the elements that determine whether or not an impact is "significant." Significance is dependent upon the context and intensity of the impact. The following factors will be used to evaluate the significance of impacts in this EA as they relate to the context and intensity of biological and other ecological effects. Social and economic impacts will be evaluated similarly to the extent applicable.

- **Magnitude of the Impact.** Magnitude relates to the size, number or relative amount of the impact. It is a measure of intensity. Magnitude as it relates to biological impacts is a measure of the number of individual animals or species removed in relation to their abundance. Quantitative analysis is used wherever possible because it is more precise, rigorous and based on the best available population estimates. Qualitative analysis is based on population trends and modeling. Magnitude may be determined either quantitatively or qualitatively.
- **Duration and Frequency of the Impact.** The duration and frequency may be temporary, seasonal, year round or ongoing. Duration and frequency is a measure of intensity.
- **Likelihood of the Impact.** The likelihood of an impact is a measure of its intensity by estimating the possibility that an activity or impact may occur.
- **Geographic Extent.** The consideration of the geographic extent of an effect may be site specific, within a given management area, at the State/territory/tribal land area, regional and/or national. The geographic extent of an effect is a contextual consideration.
- **Legal Status.** The legal status of an affected resource is a contextual consideration. Legal status may range from fully protected by federal law, such as an endangered species, to unprotected by law, as is the case for skunks and raccoons in Arizona.
- **Conformance with Statutes, Regulations and Policies.** Statutes, regulations and policies provide contextual information in the analysis. Compliance with applicable statutes,

regulations and policies can also serve as mitigation to ensure that certain types of adverse impacts on the environment do not occur.

3.1 ABILITY OF EACH ALTERNATIVE TO MEET THE MANAGEMENT OBJECTIVE

3.1.1 Alternative 1: Continue the current Federal WDM program (No Action/ Preferred Alternative)

The objective of the preferred alternative is to minimize loss or the risk of damage to MGRS from Abert's squirrels by conducting operational management in the historical MGRS habitat throughout the Pinaleno Mountains, Graham County, Arizona. WS-Arizona employees would provide operational assistance to decrease resource competition with Mount Graham red squirrels by reducing the number of Abert's squirrels in the designated project area.

Under the Preferred Alternative, an IWDM approach is used, which encourages use of all effective legal methods, used alone or in combination, to meet the needs of reducing Abert's squirrel competition. WS-Arizona personnel activities will include lethal removal of Abert's squirrels with firearms and/or live-trapping and euthanasia. Personnel will be trained to identify differences between Abert's and MGRS, and will have experience in firearms and live-trapping small mammals. Shooting will only occur during daylight hours, and will be limited to locations where it is legal and safe to discharge firearms. WS will use traditional lead ammunition during the project as non-lead ammunition has been determined to be inaccurate. Live traps may be used in areas with occupied buildings/cabins and/or campgrounds and checked every 2 hours throughout the effort. Additionally, traps will be covered by pieces of bark, logs, or other debris to provide shade to animals within the trap, or placed in areas where direct sunlight cannot reach the trap, and traps will be removed from the trapping location when not in use. All non-target species, including MGRS incidentally captured in live traps, will be promptly released on site. Trapped Abert's squirrels will be humanely euthanized on site. Abert's carcasses will be recovered and submitted to AGFD or their designee.

The project area will be accessed via roads and on foot. USDA will coordinate with USFS to access the MGRS Refugium (areas above 10,000 feet on some peaks for which a permit is required) and areas beyond gates that are shut during seasonal closures (November 15-April 15). Project activities will occur on average 4 days/month, but possibly up to 8-10 days/month (maximum), and will include one to two people conducting these activities by walking through the forest looking for Abert's squirrels or placing and checking traps. WS employees will use suppressed firearms to minimize noise disturbance to MGRS and MSO.

The Preferred Alternative would continue to allow the use of cage traps and shooting to reduce the number of Abert's squirrels. Under the preferred alternative, WDM would be conducted in the historical MGRS habitat throughout the Pinaleno Mountains, Graham County, Arizona. WDM, as conducted by WS-Arizona, would comply with all applicable federal, state, tribal and local laws and the current USFWS Biological Opinion and MOUs between WS-Arizona and USFS and AGFD. WS-Arizona personnel communicate with other agency personnel as required and when necessary and participates on the monthly cooperating agency MGRS conference call.

3.1.2 Alternative 2: Technical Assistance Only

Under this alternative, WS-Arizona would only provide advice or guidance on WDM techniques and methods, but would not conduct any direct operational WDM for the MGRS recovery project. This alternative would allow WS-Arizona to provide technical assistance with WDM techniques, such as cage traps and shooting. WS-Arizona would not trap or shoot any Abert's squirrels in order to reduce MGRS competition for resources.

3.1.3 Alternative 3: No Federal WDM Program

Under this alternative, WS-Arizona would have no involvement in the MGRS recovery project in the Pinaleno Mountains, Graham County, Arizona. This alternative would consist of no federal involvement in WDM in MGRS historical habitat in Arizona. Neither operational management nor technical assistance with the WDM methods described under Alternative 1 or 2 would be provided by WS-Arizona. No supporting research on WDM methods would be conducted. Under this Alternative, WDM would be handled by AGFD, USWFS, licensed hunters or private contractors or not conducted at all.

3.2 ISSUES CONSIDERED IN DETAIL FOR EACH ALTERNATIVE

3.2.1 Effects on target species

In Arizona, AGFD has the authority for management of resident wildlife species. AGFD provides statistics on take for many species. However, specific population estimates were not available for Abert's tree squirrels. AGFD considers the population to be healthy and sustainable throughout its range in AZ (John O'Dell, AGFD, Pers. Comm. 8/6/2021). WS-Arizona will use the best available information to produce reasonable, but conservative population estimates to determine the relative impacts.

One important aspect that is germane to the determination of significance under NEPA is the effect of a federal action on the status quo for the environment. States have the authority to manage populations of resident wildlife with the exception of migratory and T&E species as they see fit without oversight or control by federal agencies. Management direction for a given species can vary among states, and state management actions are not subject to NEPA compliance. Therefore, the status quo for the environment with respect to state-managed wildlife species is the management direction established by the states. Federal actions that are in accordance with state management have no effect on the status quo. Wildlife populations are typically dynamic and can fluctuate without harvest or control by humans. Therefore, the status quo for wildlife populations is fluctuation, both within and among years, which complicates determining the significance of human impact on such populations.

3.2.1.1 Alternative 1: Continue the current Federal WDM program (No Action/ Preferred Alternative)

Under the Preferred Alternative, take by WS-Arizona and others will be considered statewide providing a more comprehensive analysis of impacts to Abert's tree squirrels. There currently is no requirement to report take for Abert's squirrels in the Pinaleno Mountains by licensed hunters. The goal of AGFD is elimination of Abert's squirrels within the Pinaleno Mountains.

As previously discussed in this EA, the AGFD have management authority over resident wildlife and their damage via the state's system of representative government. That system was established to represent the collective desires of the people of the State of Arizona with respect to the management of certain wildlife species. In this way, the state determines its desires for that component of the human environment which is comprised of wildlife.

A viable population can exist at many levels between one that is at carrying capacity (the maximum number of a species that a particular habitat can support) and one that is at only a fraction of carrying capacity. Density dependent rates of increase are a built-in defense mechanism of many wildlife populations to harvest, localized control, or non-man-induced mortality.

Specific Species Population Impact Analyses

To assess the potential impacts to Abert's squirrels, the species is discussed in more detail below. Population information, take data, and applicable sustainable harvest information are analyzed to determine the likelihood and amount (where applicable) of potential impact to Abert's tree squirrels.

Abert's Squirrel Populations Impact Analyses. WS-Arizona has not received any complaints for tree squirrel damage. In Arizona, there are four species and eight subspecies of tree squirrels found in Arizona's forests. Of these Abert's squirrels are most widespread and contributes most to the annual squirrel harvest. WS-Arizona took an average of 230 Abert's squirrels annually from FY19 to FY20 with a high of 266 in FY19 (Table 3). Hunters harvested an average of 40,736 tree squirrels annually (Table 4) from 2011 to 2015 statewide in Arizona (AGFD 2017). The average take of 230 Abert's squirrels represents only 0.56% of the average taken by hunters in Arizona from 2011 to 2015. WS-Arizona is likely to take 300 Abert's squirrels per year and is unlikely to exceed 400 Abert's squirrels per year.

Table 3. WS-Arizona Abert's squirrel take from FY19 to FY20.

	FY19	FY20	Average	Proposed Take
WS-Arizona Take	266	194	230	400

Table 4. AGFD Abert's squirrel hunter harvest from 2011 to 2015.

	2011	2012	2013	2014	2015	Average
Hunter Harvest	40,737	48,856	36,047	30,246	47,795	40,736

This level of take is not expected to have a negative impact on the species population or trend in Arizona as the population of Abert's squirrels in the Pinaleno Mountains was introduced in 1941 and 1943 by the Arizona Game and Fish Department (USFWS 1993, Hoffmeister 1956, and Davis and Brown 1988). Because of the non-native status of Abert's Squirrels in the Pinaleno Mountains the proposed take by WS-Arizona is unlikely to have any adverse effect on the species statewide population in Arizona.

The goal of the project is to reduce the population of non-native Abert's squirrels in the localized area of the Pinaleno Mountains. In the MGRS Recovery plan the USFWS states that the introduced Abert's squirrel poses the greatest threat to the Mount Graham red squirrel (USFWS 2011). The AGFD's recovery action plan for the MGRS is to reduce or eliminate the introduced population of Abert's squirrels that currently compete with the endangered MGRS for the limited resources.

3.2.1.2 Alternative 2: Technical Assistance Only

Under this alternative, WS-Arizona would only provide advice or guidance on WDM techniques and methods. WS-Arizona would not conduct any operational WDM for the MGRS recovery project, and therefore, would not have any impact on Abert's squirrels in the Pinaleno Mountains, Graham County, Arizona. As discussed under Alternative 3 (the No Federal Program Alternative), similar WDM would likely be conducted by private individuals, state agencies and organizations in proportion to federal services lost.

3.2.1.3 Alternative 3: No Federal WDM Program

Under this alternative, WS-Arizona would not provide assistance with WDM and, therefore would not have any effect on Abert's squirrel populations in the Pinaleno Mountains, Graham County, Arizona. However, AGFD or USFWS could increase their efforts in proportion to the reduction of WS-Arizona federal services. The primary concern with not having a federal program is that impacts on MGRS and the environment could increase due to non-professional, private individuals conducting

WDM or licensed hunters. Many of these individuals could be untrained and not licensed to use certain WDM methods that have the potential for significant negative impact when not properly used. Accountability, records maintenance, regulatory and policy compliance, and coordination with other agencies would not always be required or adhered to. Thus, the potential for negative impact to wildlife populations by non-WS entities could be higher.

3.2.2 Effects on Non-target Species Populations, Including T&E Species

Nontarget species can be impacted by WDM whether implemented by WS-Arizona, other agencies, or the public. Impacts can range from direct take while implementing WDM methods to indirect impacts resulting from implementing WDM methods (e.g., misidentification of target species) or harassment by walking thru the forest. Conservation measures outlined in the BO (USFWS 2018a) and in chapter 2 are used to reduce impacts to nontarget species for this project. WS-Arizona's primary goal is to decrease resource competition of Abert's squirrel with MGRS in the Pinaleño Mountains, Graham County, Arizona. To minimize potential issues to non-target species WS-personnel will be trained to identify differences between Abert's squirrels and MGRS. The WDM methods used to resolve competition are legal and biologically sound. Following is a discussion of the various impacts to nontarget species under the selected alternatives.

- **WS-Arizona Impact on Biodiversity and Ecosystem Resilience.**

Biodiversity refers to the variety of species within an ecosystem. Ecosystem resilience refers to the magnitude of disturbance that can be absorbed before the system redefines its structure by changing the variables and processes that control behavior (Gunderson 2000). In diverse ecosystems, there is a degree of redundancy in the roles species play within the different ecological levels (e.g., apex predators, mesopredators, herbivores, plants, decomposers). In general, ecosystems that are less complex in terms of biodiversity and trophic levels, are more susceptible to adverse impacts and stressors such as climate change; disease outbreaks, introduction of invasive species, disease, etc. (e.g., reduced ecosystem resilience; Beschta et al. 2013, Crooks and Soulé 1999, Ritchie and Johnson 2009, Estes et al. 2011, Bergstrom et al. 2014).

WS-Arizona WDM would occur in the historical MGRS habitat throughout the Pinaleño Mountains, Graham County, Arizona. Activities conducted to reduce threats of competition would likely occur on average of 4 days per month, but could be extended up to 8-10 days/month. WS-Arizona's activities will also be conducted by one to two people looking for Abert's squirrels. WS-Arizona will conduct activities on a small portion of the MGRS historical habitat in the Pinaleño Mountains allowed under an MOU. In addition, the number of Abert's squirrels killed annually by WS-Arizona is a small percentage of the actual take of tree squirrels in the State. Therefore, the effects on biodiversity would be of low magnitude.

WS-Arizona's actions will not result in long-term extirpation or eradication of any native wildlife species in the Pinaleño Mountains, so findings of most of these studies are not particularly relevant to the current analysis. WS-Arizona operates in accordance with federal and State laws and regulations enacted to ensure species viability.

The AGFD is leading the way in developing guidelines for the elimination of invasive species and re-establishment of native assemblages (AGFD 2012). The AGFD manages wildlife resources in the state in a manner consistent with the North American Model for Wildlife Management, regulated, traditionally consumptive (hunting trapping, fishing) uses have not had a negative influence on those species (AGFD 2012).

- **Effects from the Use of Lead in Ammunition**

Effects to the environment include important factors such as lead used in ammunition as part of WDM activities. WS Formal Risk Assessment for the use of lead ammunition in wildlife damage management activities found the environmental risk associated with WS use of lead ammunition is minimal (USDA 2017).

No evidence has indicated that any animals killed during WDM by WS-Arizona have resulted in indirect lead poisoning of condors or other scavenging animals in Arizona. This project occurs south of I-40 which is outside of the condor range in Arizona (USFWS 2018b). All squirrels lethally removed with lead ammunition will be immediately recovered and disposed of in order to prevent secondary toxicity to raptors or other scavenging animals.

3.2.2.1 Alternative 1: Continue the current Federal WDM program (No Action/ Preferred Alternative)

WS-Arizona has not taken any non-target species while conducting WDM since this project was initiated in 2018. The lack of lethal take of non-target species gives a good indication of the selectiveness of the WDM methods used.

Consideration of Impacts to T&E and Sensitive Species in Arizona.

Measures to avoid T&E and sensitive species impacts were described in Chapter 2. Those measures will ensure that the Preferred Alternative will minimize impacts on MGRS and MSO. WS-Arizona completed a biological assessment and determined that the use of firearms or live-trapping and euthanasia may affect, and is likely to adversely affect, the MGRS; and may affect, but is not likely to adversely affect, the Mexican spotted owl. No other listed species occur in the proposed action area; therefore, none will be affected. Critical habitat has been designated for both MGRS and MSO; however, neither critical habitat will be affected by this project.

Cumulative Effects to MGRS

The USFS manages almost all lands within the action area and administers projects and permits on those lands; thus, almost all activities that could potentially affect MGRS are Federal activities and subject to additional section 7 consultation under the Act. The exceptions are road improvements proposed by the Arizona Department of Transportation that could occur along Swift Trail. These could include paving the remaining portion of the road up to Riggs Lake, which could increase both the speed and number of vehicles through this part of the action area. Greater speeds and numbers of vehicles could impact MGRS by injuring or killing individuals crossing the road, as well as potentially further disrupting dispersal patterns due to an increase in traffic.

Adverse effects to MGRS from the proposed action are minimized to the greatest extent possible. Several conservation measures will be implemented to minimize this possibility during the proposed action: personnel will be trained to identify differences between Abert's and MGRS, will have experience using firearms, and shall be knowledgeable at a professional level in identification of MGRS, their habitat and use of habitat and sign. MGRS may also be affected by trapping activities during which they are inadvertently captured, potentially causing stress to the individual. Conservation measures will be implemented to minimize this stress, including checking traps every two hours and immediately releasing any MGRS that have been captured, as well as covering the traps with material such as bark or logs to provide shade to the animal inside the trap, or placing the trap in an area that does not allow exposure to the sun.

Therefore, WS has determined that the project may affect, and is likely to adversely affect, the MGRS but is not likely to jeopardize the MGRS. No vegetation or habitat features will be affected by the proposed action; therefore, there will be no effect to MGRS critical habitat. The USFWS, after reviewing the current status of MGRS, the environmental baseline for the action area, the effects of the proposed Abert's Squirrel Removal Project, and the cumulative effects, issued a biological opinion (USFWS 2018a) and noted that the Abert's Squirrel Removal Project, as proposed, is not likely to jeopardize the continued existence of MGRS. The WS -Arizona Program is working with AGFD to remove Abert's squirrels to reduce competition with MGRS under recovery action 3.4 in the Draft Mount Graham Red Squirrel Recovery Plan, First Revision (USFWS 2011). This project may have a beneficial effect to the subspecies in the long term in reducing Abert's squirrel likely impacts to MGRS through competition for food resources, nest sites, and dispersal sites (USFWS 2011).

Cumulative Effects to MSO

The USFS manages the lands within the action area and administers projects and permits on those lands; thus, almost all activities that could potentially affect MSO are Federal activities and subject to additional section 7 consultation under the Act. The exceptions are road improvements proposed by the Arizona Department of Transportation that could occur along Swift Trail. These could include paving the remaining portion of the road up to Riggs Lake, which could increase both the speed and number of vehicles through this part of the action area. Greater speeds and numbers of vehicles could impact MSO by injuring or killing individuals struck by cars.

Adverse effects to MSO from the proposed action are minimized to the greatest extent possible through the design of the project and the conservation measures for this project, although some disturbance could still occur. However, this disturbance is expected to be discountable due to the small number of people conducting project activities each month, the suppressed firearms being used, and the short exposure that an individual MSO may have to these activities. Therefore, USFWS has determined that the project may affect, but is not likely to adversely affect, the MSO. No vegetation or habitat features will be affected by the proposed action; therefore, there will be no effect to MSO critical habitat.

The USFWS reviewed the current status of MSO, the environmental baseline for the action area, the effects of the proposed Abert's Squirrel Removal Project, and the cumulative effects, issued a biological opinion and concur with our determination that the Abert's Squirrel Removal Project, as proposed, may affect, but is not likely to adversely affect the, MSO for the following reasons:

- A small number of people (1-2) will conduct squirrel removal activities each calendar month for a short period of time (on average 4 days/month, up to a maximum of 8-10 days/month). This work would occur during the Mexican spotted owl breeding season (March 1 - August 31) and in protected activity centers (PACs). Personnel will walk through the woods during these activities (minimizing disturbance in any one location) and will use suppressed firearms to reduce noise impacts to potentially nesting owls. Because there will not be a large number of people (>12) within PACs during the breeding season, noise will be limited in time and space, and decibel level are low, the proposed action will result in insignificant and discountable effects to nesting owls.
- Because Abert's squirrels are primarily active during the day and Mexican spotted owls are foraging mainly at night, Abert's squirrels do not provide a significant food source for Mexican spotted owls. Therefore, the proposed action will result in insignificant effects to prey availability for the owl.
- There will be no effects to the key habitat components of Mexican spotted owl PAC or recovery habitat, or to the primary constituent elements of critical habitat.

The use of WDM methods by WS-Arizona is not likely to place any of the species in jeopardy by following RPM to minimize potential impacts. These measures are outlined in the BO issued by USFWS MGRS and MSO and are included in section 2.5 of the EA. On November 21, 2018, the USFWS issued a Biological Opinion and completed the section 7 formal consultation on the Wildlife Service's WDM program Abert's Squirrel Removal Project in the Pinaleno Mountains. In the formal consultations for federally listed T&E species, Conservation measures were included along with an incidental take statement, where appropriate, with species-specific terms and conditions. WS-Arizona abides by all of the conservation measures and has not impacted any federally listed T&E species in Arizona while conducting WDM since the BOs were signed.

3.2.2.2 Alternative 2 - Technical Assistance Only

Under this alternative, WS-Arizona would only provide advice or guidance on WDM techniques and methods. WS-Arizona would not conduct any operational WDM for the MGRS recovery project, and therefore, would not have any impact on non-target Species Populations, including T&E species in the Pinaleno Mountains, Graham County, Arizona. As discussed under Alternative 3 (the No Federal Program Alternative), similar WDM would likely be conducted by private individuals, state agencies and organizations in proportion to federal services lost.

3.2.2.3 Alternative 3 - No Federal WDM Program

Under this alternative, WS-Arizona would not provide assistance with WDM and, therefore would not have any effect on non-target Species Populations, including T&E species in the Pinaleno Mountains, Graham County, Arizona. However, AGFD or USFWS could increase their efforts in proportion to the reduction of WS-Arizona federal services. The primary concern with not having a federal program is that impacts on non-target Species Populations, including T&E species and the environment could increase due to non-professional, private individuals conducting WDM. Many of these individuals could be untrained and not licensed to use certain WDM methods that have the potential for significant negative impact when not properly used. Accountability, records maintenance, regulatory and policy compliance, and coordination with other agencies would not always be required or adhered to. Thus, the potential for negative impact to wildlife populations by non-WS entities could be higher.

3.2.3 Effects on public safety, pets, and the environment

3.2.3.1 Alternative 1 - Continue the current Federal WDM program (No Action/ Preferred Alternative)

The use of WDM methods by WS-Arizona poses little potential hazards to WS-Arizona employees or to the public because all methods and materials are consistently used in a manner known to be safe. While some of the materials and methods used by WS-Arizona have the potential to represent a threat to HHS if used improperly, problems associated with their misuse have rarely occurred. This favorable record is due to training and certification programs for WS-Arizona personnel, such as for use of firearms (mandatory firearms training every year - WS Directive 2.615). WS-Arizona stresses the proper and safe use of WDM methods and safety through training, policies and SOPs. The risk to HHS is further reduced because WS-Arizona prominently posts warning signs to alert the public when and where, in the general area, traps are deployed. WS-Arizona coordinates with cooperators or landowners about where and when WDM methods are to be used, thereby decreasing the likelihood of conflicts with the public.

Impacts on HHS and environment under the Preferred Alternative would be no different than the current program since the WS-Arizona SOPs to protect the public and environment would remain the

same. Under Alternative 1, WS-Arizona has a uniform statewide policy which allows WS-Arizona personnel to use WDM methods in areas where they may not have been used before. Even so, WS-Arizona would have minimal, if any, effects on HHS on these new properties and the same positive effects as far as protecting the public from wildlife damage.

3.2.3.2 Alternative 2 - Technical Assistance Only

Under this Alternative, WS-Arizona would provide advice or guidance on WDM techniques and methods, but would not conduct any operational WDM in attempting to assist in resolving wildlife damage complaints. This Alternative would be almost identical to Alternative 1, except that those people receiving technical assistance would be more apt to conduct WDM with less risk to the public.

3.2.3.3 Alternative 3 - No Federal WDM Program

Under this alternative, WS-Arizona would not provide assistance with WDM and, therefore WS-Arizona would have no direct effect on public safety or pets. AGFD would probably still provide some level of WDM without federal supervision. Private efforts to reduce damage would likely increase. Compared to the current program alternative, private individuals could have negative effects on public and pet safety by incorrectly or irresponsible implementing WDM.

3.3 SUMMARY OF IMPACTS AND CONCLUSION

Impacts associated with activities under consideration here are not expected to be “significant” or substantial. Based on experience, impacts of the WDM methods and strategies considered in this document are very limited in nature. The addition of those direct and indirect effects and impacts to past, present and reasonably foreseeable future actions would not result in cumulatively significant environmental impacts. Monitoring the impacts of the program on the populations of both target and non-target species will continue. All wildlife control activities that may take place will comply with relevant laws, regulations, policies, orders and procedures, including the MGRS Recovery plan, MGRS Biological Assessment, and Biological Opinion.

The preferred Alternative and Current Program Alternatives are likely to have beneficial impacts to MGRS since a professional program with federal oversight would be expected to remove only those individuals or groups of competing with MGRS. After reviewing the current status of MGRS, the environmental baseline for the action area, the effects of the proposed Abert’s Squirrel Removal Project, and the cumulative effects, the USFWS in a biological opinion has stated that the Abert’s Squirrel Removal Project, as proposed, is not likely to jeopardize the continued existence of MGRS. This conclusion is based on the fact that WS Arizona will work closely with USFWS and AGFD, and personnel conducting project activities. WS Arizona personnel will be knowledgeable at a professional level in identification of MGRS, their habitat and use of habitat, and their sign, and skilled in the use of firearms and small mammal traps. WS Arizona will not impact any habitat or critical habitat by our activities. This project works toward recovery action 3.4 in the Draft Mount Graham Red Squirrel Recovery Plan, First Revision (USFWS 2011), and may have a beneficial effect to the subspecies in the long term.

Under the No Federal WDM Program Alternative, WS-Arizona would have no impact on the issues evaluated. This alternative may result in negative environmental impact when professional and accountable assistance is not available.

Chapter 4. RESPONSE TO PUBLIC COMMENTS

WS made the EA available to the public for review and comment by a legal notice published in the Arizona Republic newspaper from August 23, 2021 through August 25, 2021. WS also made the EA available to the public for review and comment on the APHIS website on August 15, 2021 and on the federal e-rulemaking portal at the regulations.gov website beginning on August 15, 2021. WS also sent a notice of availability directly to agencies, organizations, and individuals with probable interest in MGRS protection in the state. The public involvement process ended on September 24, 2021.

4.1 SUMMARY OF PUBLIC COMMENTS AND WS' RESPONSES TO THE COMMENTS

During the public comment period, WS did not receive any public comment responses related to the draft EA.

Chapter 5. LITERATURE CITED, LIST OF PREPARERS, LIST OF AGENCIES CONSULTED

5.1 LITERATURE CITED

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5.3 LIST OF AGENCIES CONSULTED

Arizona Game and Fish Department

U.S. Forest Service

U.S. Fish and Wildlife Service

APPENDIX