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ACRONYMS

ADC	Animal Damage Control
APHIS	Animal and Plant Health Inspection Service
AVMA	American Veterinary Medical Association
BLM	Bureau of Land Management
BO	Biological opinion
CDFG	California Department of Fish and Game
CE	Categorical Exclusion
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FY	Fiscal Year
IWDM	Integrated Wildlife Damage Management
LRMP	Land and Resource Management Plan
MFP	Management Framework Plan
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
RMP	Resource Management Plan
SHPO	State Historical Preservation Office
SOP	Standard Operating Procedures
T&E	Threatened and Endangered Species
UCA	Utah Code Annotated
UDAF	Utah Department of Agriculture and Food
UDH	Utah Department of Health
UDWR	Utah Division of Wildlife Resources
USC	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFWS	U.S. Fish and Wildlife Service
WS	Wildlife Services

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CHAPTER 1: PURPOSE and NEED

1.0 INTRODUCTION

Across the United States, wildlife habitat has been substantially changed as human populations expand and land is used for human needs. These human uses and needs often compete with wildlife which increases the potential for conflicting human/wildlife interactions. In addition, segments of the public strive for protection for wildlife which can create localized conflicts between human and wildlife activities, thus creating the need for wildlife damage management. The *Animal Damage Control Programmatic Final Environmental Impact Statement* (EIS) summarizes the relationship in American culture of wildlife values and wildlife damage in this way (United States Department of Agriculture (USDA) 1994):

"Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife is generally regarded as providing economic, recreational and aesthetic benefits . . . and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and value is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural and economic considerations as well."

Wildlife damage management is the alleviation of damage or losses, or other problems caused by or related to the presence of wildlife and is recognized as an integral component of wildlife management (The Wildlife Society 1992). Wildlife Services (WS) (formerly Animal Damage Control (ADC)) uses an Integrated Wildlife Damage Management (IWDM) approach, commonly known as Integrated Pest Management (ADC Directive 2.105¹) in which a combination of methods may be used or recommended to reduce wildlife damage (USDA 1994, 1:17). WS wildlife damage management is not based on punishing offending animals but as one means of reducing future damage and is used as part of the Wildlife Damage Management Decision Model (Slate et al. 1992). The imminent threat of damage or loss of resources is often sufficient for individual actions to be initiated (U.S. District Court of Utah 1993). The need for action is derived from the specific threats to resources or the public and the available methods for responding to those threats. These methods include humane techniques, both non-lethal and lethal, to prevent or reduce damage.

WS is authorized and directed by Congress to protect American agricultural and natural resources, property and threats to public health and safety from damage associated with wildlife. The primary, statutory authority for the WS program is the Animal Damage Control Act of March 2, 1931, as amended (7 United States Code (U.S.C.) 426-426c; 46 Stat. 1468) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988, Public law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C 426C). The [REDACTED] is responsible for managing all protected and classified wildlife in Utah, except Federally listed Threatened and Endangered (T&E) species, despite the land class the animals inhabit (Utah Code Annotated (UCA) §23-13-2). The UDWR is also authorized to cooperate with WS and the Utah Department of Agriculture and Food (UDAF) for controlling predatory animals (UCA, Title 4 Chapter 23).

Normally, according to APHIS procedures implementing the National Environmental Policy Act (NEPA), individual wildlife damage management actions are categorically excluded (CE) ((7 CFR 372.5(c), 60 Federal Register 6,000, 6,003, (1995)). To evaluate and determine if there are any potentially significant or cumulative impacts would result from the proposed and planned damage management program, this environmental assessment (EA) has been prepared.

¹ WS Policy Manual - Provides guidance for WS personnel to conduct wildlife damage management activities through Program Directives. WS Directives referenced in this EA can be found in the manual but will not be referenced in the Literature Cited Appendix.

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This EA documents the analysis of the potential environmental effects of WS proposed raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*) damage management in Utah. This analysis relies mainly on existing data contained in documents (Appendix A) and the *Animal Damage Control Program Final Environmental Impact Statement* (USDA 1994) to which this EA is tiered.

WS is a cooperatively funded service-oriented program with individuals, organizations and agencies that request WS assistance. Before any wildlife damage management is conducted, Cooperative Agreements, Agreements for Control or other comparable documents are signed by the landowner/administrator and coordinated with the appropriate management entity. As requested, WS cooperates with land and wildlife management agencies to reduce wildlife damage effectively and efficiently according to Federal, State and local laws (ADC Directive 2.210), regulations, policies, orders and procedures, including the Endangered Species Act (ESA).

Notice of the availability of this document will be published in newspapers to allow interested parties the opportunity to obtain and comment on the document.

1.1 PURPOSE

This EA analyzes raccoon and skunk damage management related to the protection of agricultural and natural resources, property, and to safeguard public health and safety on private and public lands in Utah. Damage management would be conducted when requested by cooperating agencies, the Utah Department of Health (UDH), or private citizens (private lands only) and when projects are requested and coordinated with the agency responsible for managing the resource (e.g., intermittent research projects, T&E species protection, etc.). Currently, WS responds to and conducts raccoon and skunk damage management for the protection of agricultural and natural resources (upland game birds and nesting waterfowl), property, and public health and safety under a CE. The area encompassed by the State and within the analysis area for this EA is more than 82,000 mi². WS currently has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State.

1.2 NEED FOR ACTION

The need for action is based on the necessity for a program to protect agricultural and natural resources, property and public health and safety from raccoon and skunk damage. In a recent District Court decision (U. S. District Court of Utah 1993), the court ruled that, “. . . *the agency need not show that a certain level of damage is occurring before it implements an ADC program*” and “*Hence, to establish need for an ADC, the forest supervisors need only show that damage from predators is threatened.*”

1.2.1 Summary of the Proposed Action

The proposed action would be to continue to implement a raccoon and skunk damage management program to protect agricultural and natural resources, property and public health and safety on all lands in Utah. Damage management would be conducted when requested by cooperating agencies, the UDH, or private citizens (private lands only) and when projects are requested and coordinated with the agency responsible for managing the resource (e.g., intermittent research projects, T&E species protection, etc.). WS would conduct raccoon or skunk damage management only in areas where a signed Cooperative Agreement, Agreement for Control, or other comparable document is in place. The locations where raccoon or skunk damage management would be conducted may vary from year-to-year, depending on where damage was occurring, but the area worked in any year would remain relatively stable. The WS program would use an IWDM (ADC Directive 2.105) approach to reduce damage, which would allow the prudent use of legal techniques, either singly or in combination, to reduce damage. Technical assistance would be provided to requesters as information regarding the use of humane non-lethal techniques. Wildlife damage management techniques used by WS would include shooting, hand capturing, cage and leg-hold trapping and snaring; captured animals could be euthanized or relocated if

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approved by the [REDACTED]. All WS damage management would be consistent with other uses of the area(s) and would comply with appropriate Federal, State and local laws, regulations and policies. (See Chapter 3 for a more detailed description of the current program and proposed action.)

At present, damage management activities are conducted at the request of the [REDACTED] for the protection of ring-necked pheasants (*Phasianus colchicus*) and waterfowl, and from land/home owners in urban/suburban areas where damage is occurring from raccoons or skunks. WS currently has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State.

1.2.2 Need for Raccoon and Skunk Damage Management

Public Health and Safety

The [REDACTED] is responsible for managing wildlife in Utah and has the primary authority for responding to threatening wildlife incidents, including skunks (UCA §23-13-2). Raccoons are considered unprotected wildlife not managed by the [REDACTED]. Previous to 1970, raccoons occurred only in isolated areas (Durrant 1952). By agreement, WS assists the [REDACTED] when requested and, thereby, requests from the public regarding potentially dangerous wildlife would be referred to WS. These requests are given a high priority and scrutinized using the wildlife damage management Decision Model (Slate et al. 1992, ADC Directive 2.201) described in Chapter 3 of this EA and USDA (1994). In Fiscal Year (FY) 98, WS responded to requests for raccoon and skunk damage management assistance (Table 1-1 and Table 1-2) (MIS 1998). Additionally, in FY98, WS provided direct damage management assistance in 73 cases of threats to pets (MIS 1998). When requests for assistance on Federal lands occur, the Federal land managing agency is also involved.

Agricultural Resources and Property

Utah has a domestic turkey cooperative located primarily in [REDACTED] County. Turkey producers for the cooperative purchase poults and feed from the cooperative and then sell live birds to the cooperative for processing. Estimated inventories in 1995 were 5.5 million birds valued at \$93,000,000 (WS 1996b). Both raccoons and skunks are predators of young turkeys, and can cause a great amount of damage to individual flocks. In addition to direct predation, either species can panic the birds, which cause the turkeys to “*bunch-up*” in fence corners where large numbers of birds can suffocate. Additionally, either raccoon or skunk can consume turkey feed and increase the risk of disease transmission, causing additional economic damage.

In 1996, Utah ranked second in the nation in mink (*Mustela vison*) pelt production, with 585,000 pelts produced. In 1993-94, Aleutians’ Disease struck the industry in [REDACTED] and [REDACTED] Counties, causing many producers to pelt all their mink, rebuild mink sheds on uninfected property and begin production again (USAF 1997). Both raccoon and skunk can serve as reservoirs for Aleutians’ Disease, and either species may be predators of young mink in pens. For these reasons, mink producers go to great lengths to reduce contact

Table 1-1. FY 98 Raccoon Damage
(does not include pheasant project)

Instances	Damage Type (Reported and Confirmed)
2	Sweet corn damage
1	Watermelon damage
2	Domestic duck predation
8	Garden damage
16	General property damage
1	Guinea fowl predation
16	Threat of rabies
32	Threat of raccoon roundworm
2	Trout predation (aquaculture)
66	Domestic chicken predation
50	Threat to pets

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between domestic mink and racoons and skunks.

The threat of property damage is also a concern. Raccoons may damage property through droppings, direct damage to structures or lawns and gardens, or by preventing property to be used, such as denning in chimneys. Skunks may damage lawns or gardens, den in or under buildings, or cause a nuisance from their odor. In FY 98, WS responded to 1412 requests for assistance resulting from actual damage or the threat of damage to property (Table 1-1 and Table 1-2).

Natural Resources

Research data show that wildlife damage management has the potential to benefit populations of both game and non-game wildlife. Conversely, a lack of predator damage management could adversely affect certain species (Connolly 1978, Schmidt 1986). Wildlife damage management requests may result from efforts to reintroduce species, intensively manage small critical habitats, or to temporarily assist species recovery. Long-term or widespread predator removal for the protection of wildlife species is not an objective of the [REDACTED], but a short-term strategy used to achieve management objectives. Below is a short literature review of the affects, both real and potential, of predation on some wildlife, and the results of predator damage management.

Instances	Damage Type (Reported and Confirmed)
5	Nuisance odor
3	Property damage
19	Threat of rabies
31	Threats to pets
4	Domestic chicken predation
1	Domestic pheasant predation
34	Damage to residential buildings

Upland Game Birds

Dumke and Pils (1973) reported that ringed-neck pheasant hens were especially prone to predation during the nest incubation period. In Minnesota, pheasant hatching success and brood production was more than doubled with a reduction of predators (Chessness et al. 1968). Trautman et al. (1974) stated that during a 5-year study in South Dakota, there was a 19% increase in ring-necked pheasant populations on areas with only red fox (*Vulpes vulpes*) damage management. During a second 5-year study in South Dakota, ring-necked pheasant populations increased 132% on areas with red fox, raccoon, badger (*Taxidea taxus*) and skunk damage management (Trautman et al. 1974).

Thomas (1989) and Speake (1985) reported that predators were responsible for more than 40% of nest failures of wild turkeys (*Meleagris gallopavo*) in New Hampshire and Alabama, respectively. Everret et al. (1980) reported that predators destroyed 7 of 8 nests on his study area in northern Alabama. Lewis (1973) and Speake et al. (1985) reported that predation was also the leading cause of mortality in turkey poults, and Kurzejeski et al. (1987) reported in a radio-telemetry study that predation was the leading cause of mortality in hens. Other researchers report that hen predation is also high in spring when hens are nesting and caring for poults (Speake 1985, Kurzejeski et al. 1987, Wakeling 1991). Currently, the [REDACTED] is overseeing a research project on predator removals for ring-necked pheasant protection in [REDACTED]

Waterfowl

Predator damage management could also be an important tool in maintaining migratory waterfowl populations. Among egg eating mammals, the striped skunk and red fox have the greatest effect on

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nesting success of ducks in uplands, and raccoons have the greatest effect on nesting success of ducks that nest over water (Sargeant et al. 1993). Gilbert et al. (1996) stated that waterfowl nest losses to predators were variable with 16.6%, 33.7% and 25.1% of all nests predated during the periods of 1964-1970, 1971-1980, and 1981-1990, respectively. The lowest predation occurred during 1964-1970 and was attributed to a combination of poison bait, trapping and aerial gunning to reduce predator densities (Gilbert et al. 1996). In 1994 and 1995, the Delta Waterfowl Foundation funded a predator (red fox, raccoon, striped skunk, badger, and mink) removal study on 1-2 mi² study areas in northeastern North Dakota to determine if duck nesting success could be improved (Garrettson and Rowher 1994, Garrettson et al. 1995). Predators were removed with traps and snares, and occasionally by shooting. Data from 1994 indicated that the removal of predators resulted in a duck nesting success rate of 51.7% vs. 5.5% nesting success on areas without predator removal (Garrettson and Rowher 1994). Data from 1995 also showed an increased duck nesting success rate (52%) on predator removal areas vs. areas with no predator removal (6% nesting success).

Balsler et al. (1968) determined that predator damage management resulted in 60% greater production by waterfowl in areas with damage management as compared with areas without damage management. In documenting an extensive study of the effects of red fox predation on waterfowl in North Dakota, Sargeant et al. (1984) and Williams et al. (1980) reported that a 72% hatching success of eggs following a predator poisoning campaign, but only 59% hatching success when predators were not poisoned.

Nesting colonies of wading birds can be rapidly destroyed by mammalian predators, such as red fox, gray fox (*Urocyon cinereoargenteus*) and raccoon, both through preying on nest contents and by causing the abandonment of nests (Burger and Hahn 1977, Southern and Southern 1979, Rodgers 1980, Rodgers 1987, Frederick and Collopy 1989). Frederick and Collopy (1989) stated that mammals and snakes accounted for 43% of nest failures in a wading bird colony and they suggested that raccoons were the primary mammalian predator.

Threatened and Endangered (T&E) Species

Predation can have a major impact on T&E species. Massey (1971) and Massey and Atwood (1981) found that the presence of predators alone can prevent least terns from nesting and cause them to abandon occupied sites. Mammalian predators were found to have significantly impacted the loss of least tern eggs on sandbars and sandpits (Kirsch 1996). Skunk (Massey and Atwood 1979) and raccoon (Gore and Kinnison 1991) are common predators of least terns. In Massachusetts from 1985-1987, predators destroyed 52 to 81% of all active piping plover nests (MacIvor et al. 1990). Raccoons, coyotes and skunks may also serve as reservoirs for disease which negatively affect black footed ferrets (i.e., Aleutians' Disease, distemper).

Balsler et al. (1968) recommended that when conducting predator damage management, to target the entire predator complex or compensatory predation may occur by a species not under control, a phenomena observed by Greenwood (1986). Trautman et al. (1974) concluded that a single species predator damage management program showed some promise for enhanced pheasant populations (pheasants are not a T&E species), but that a multi-species predator damage management program should substantially increase ring-necked pheasant populations. Clearly, predator damage management can be an important tool for achieving and maintaining game and non-game production and management objectives.

Economic Importance of Game Bird Populations in Utah

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Revenue derived from recreation, especially recreation related to wildlife and the outdoors, is important to the economy of Utah. Southwick (1994) estimated the total economic impact from hunting related activities in the United States in 1991 to be more than \$12 billion. In Utah, local economies benefit from these recreational activities. Migratory bird hunting alone provided 270 jobs to the residents of Utah and generated more than \$8 million in Utah in 1991 (Southwick 1994). As a result, the maintenance of game bird populations is important to the [REDACTED] which has the responsibility for managing wildlife for the benefit of the State of Utah and its residents. Wildlife damage management has been requested by the [REDACTED] to protect ring-neck pheasants, waterfowl and other wildlife.

1.3 RELATIONSHIP OF THIS EA TO OTHER MANAGEMENT AND ENVIRONMENTAL DOCUMENTS

WS has issued an EIS on the national APHIS-WS program (USDA 1994). This EA is tiered to USDA (1994) wherever pertinent information is applicable. The WS program in Utah prepared EAs for other wildlife damage management activities that may contain analysis pertinent to impacts from the proposed action. These EAs are incorporated by reference wherever pertinent information is applicable (WS 1996a, 1996b).

WS only conducts raccoon and skunk damage management at the request of home/land owners, resource managing agencies or leasees and in concurrence with land management plans or comparable documents. WS and the Federal land management agencies have signed national Master Memoranda of Understanding (MOU) which: (1) establish general guidelines to assist field personnel in carrying out wildlife damage management responsibilities consistent with agency policies (2) strengthens the cooperative approach to wildlife damage management through exchange of information and mutual program support, (3) reaffirms working relationships with State governments, and (4) identifies responsibilities in compliance with the NEPA of the respective agencies and fosters a partnership in discharging the Federal commitment under the Animal Damage Control Act and in accordance with the Federal Land Policy and Management Act. (See Appendix B for additional information).

1.4 DECISION TO BE MADE

Based on the scope of this EA, the decision to be made is:

- Should raccoon and skunk damage management as currently implemented be continued?
- If not, how should WS fulfill their legislative responsibilities for managing raccoon and skunk damage?
- Might the proposal have significant impacts requiring preparation of an EIS?

1.5 SCOPE OF THIS ANALYSIS

1.5.1 Actions Analyzed

This EA evaluates a reasonable range of alternatives for raccoon and skunk damage management to protect agricultural and natural resources, property, and safeguard public health and safety on private and public lands in Utah.

1.5.2 Resources Not Currently Protected by WS Raccoon and Skunk Damage Management

The current raccoon and skunk damage management program only operates on a small percentage (See section 1.2.1) of the area of Utah. The current program's mission is to provide assistance wherever requested and when funds permit. This EA analyzes impacts not only at current program levels, but at increased program levels should individuals or agencies decide to enter the program. Any increase is anticipated to be small.

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1.5.3 Period for Which This EA is Valid

This EA would remain valid until WS determines that new needs for action or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document would be revised as necessary. This EA would be reviewed each year to ensure that it is complete and appropriate to the scope of WS raccoon and skunk damage management.

1.5.4 Site Specificity

This EA analyzes potential impacts of raccoon and skunk damage management and addresses WS's raccoon and skunk damage management in Utah. At present, WS damage management is conducted at the request of the [REDACTED] for the protection of ring-necked pheasants and waterfowl, and from land/home owners in urban/suburban areas where damage is occurring from raccoons or skunks; actions may occur anywhere within Utah but only after Cooperative Agreements, Agreement for Control, or other comparable document is in place. Site selection is based on damage locations and resources to be protected, and damage sites may change from year-to-year. WS currently has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State. The EA, however, also addresses the impacts of damage management on areas where additional agreements with WS may be written in the reasonably foreseeable future. However, given the patterns of raccoon and skunk damage management, WS does not anticipate that actions will occur on more than 35,000 acres (0.06% of the state) in any one year. The current program's goals and responsibilities are to provide service, when requests are within the constraints of available funding and personnel. It is anticipated that the number of skunk and raccoon damage management requests WS responds to may increase in the future. This EA anticipates potential expansion and analyzes the impacts of such expanded efforts as part of the current program. The EA emphasizes significant issues as they relate to specific areas whenever possible. However, the issues that pertain to raccoon and skunk damage and resulting management are the same, for the most part, wherever they occur, and are treated as such. The standard Decision Model (Slate et al. 1992) and ADC (WS) Directive 2.105 are the site-specific procedures for determining methods and strategies to use or recommend for individual actions. Decisions made using the model would be in accordance with mitigation measures and Standard Operating Procedures (SOP) described herein and adopted or established as part of the Decision.

1.6 PREVIEW OF THE REMAINDER OF THIS EA

The remainder of this EA is composed of four (4) chapters and three (3) appendices. Chapter 2 discusses and analyzes the issues and affected environment. Chapter 3 contains a description of each alternative, alternatives not considered in detail, mitigation and SOPs. Chapter 4 analyzes the environmental impacts associated with each alternative considered in detail and determines the effectiveness of each alternative. Chapter 5 contains the list of preparers, reviewers and consultants of this EA. Appendix A is the literature cited in the EA, Appendix B is a summary of the Authority and Compliance of Federal and State laws, and Appendix C is Wildlife Damage Management Methods Authorized for Use or Recommended in Utah.

CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT

2.0 INTRODUCTION

Chapter 2 contains a discussion of the affected environment, issues that received detailed environmental impacts analysis in Chapter 4 (Environmental Consequences) and issues used to develop mitigation measures and SOPs.

2.1 AFFECTED ENVIRONMENT

The area of the proposed action include private, municipal, county, State and Federal lands to protect agricultural and natural resources, property, and public health and safety within Utah. The areas that would receive raccoon or skunk damage management are areas where WS has received a request to provide damage management and a signed Cooperative Agreement, Agreement for Control, or other comparable document is in place. At present, damage management activities are conducted at the request of the [REDACTED] for the protection of ring-necked pheasants and waterfowl, and from land/home owners in urban/suburban areas where damage is occurring from raccoons or skunks. WS currently has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State and given the patterns of raccoon and skunk damage management, WS does not anticipate that actions will occur on more than 35,000 acres in any one year.

Other pertinent portions of the affected environment are addressed in the discussion of issues used to develop mitigation measures. Additional dialogue of the affected environment is incorporated into the discussion of the environmental impacts in Chapter 4 and the description of the current program (the "no action" alternative) in Chapter 3.

2.2 ISSUES ANALYZED IN DETAIL IN CHAPTER 4

The following issues were identified as concerns requiring detailed consideration in Chapter 4 of this EA.

Issue 1. Risks posed by damage management to the public and domestic pets.

Issue 2. Influence of WS Raccoon and Skunk Damage Management on population viability.

Issue 3. Effectiveness of the WS damage management program to reduce economic losses.

2.3 ISSUES USED TO DEVELOP MITIGATION MEASURES AND SOPs

2.3.1 Effects of WS Raccoon and Skunk Damage Management on Non-target Species, Including T&E Species

A concern among members of the public and wildlife professionals, including WS personnel, is the effect of damage management on non-target species, particularly T&E species. WS's mitigation measures and SOPs presented in Chapter 3 are designed to reduce the effects on non-target species' populations.

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Special efforts are made to avoid jeopardizing T&E species through biological evaluations to assess potential effects and the establishment of mitigation measures. WS has consulted with the U. S. Fish and Wildlife Service (USFWS) concerning potential impacts of WS methods on T&E species and has obtained a biological opinion (BO) (USDA 1994, Appendix F). Utah WS consulted with the USFWS on the impacts to T&E species from the proposed action and concluded no adverse impacts (R. Harris 1999). To reduce the probability of impacts to non-target species, WS selects damage management methods that are as target-selective as possible and applied in ways to reduce the likelihood of capturing non-target species.

2.3.2 Animal welfare and humaneness of methods used by WS.

The issue of humaneness and animal welfare, as it relates to the killing or capturing of wildlife is an important but complex concept that can be interpreted many 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 has been 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 (AVMA) 1987). Because suffering carries 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 (CDFG) 1991), such as shooting.

Defining pain as a component in humaneness of WS methods 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 . . .*” (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to significant pain (CDFG 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 or veterinary curricula explicitly address suffering or its relief*” (CDFG 1991).

Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. Thus, the decision-making process involves tradeoffs between the above aspects of pain and humaneness. The challenge in coping with this issue is how to achieve the least amount of animal suffering with the constraints imposed by current technology and funding.

WS has improved the selectivity and humaneness of management devices through research and development. Research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some damage management methods are used in situations where non-lethal damage management methods are not practical or effective.

Utah WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology, workforce and funding. Mitigation measures and SOPs used to maximize humaneness are listed in Chapter 3.

2.3.3 Cultural and American Indian Concerns.

The National Historic Preservation Act of 1966, as amended, requires Federal agencies to evaluate the effects of any Federal undertaking on cultural resources and to consult with appropriate American Indian Tribes to

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determine whether they have concerns for cultural properties in areas of these Federal undertakings. The Native American Graves and Repatriation Act of 1990 provides for protection of American Indian burials and establishes procedures for notifying Tribes of any new discoveries.

WS actions on tribal lands are only conducted at the tribe's request and under signed agreement, thus, the tribes have control over any potential conflict to cultural resources on tribal properties. In most cases, wildlife damage management has little potential to cause adverse effects to sensitive cultural resources. The areas where wildlife damage management would be conducted are small and pose minimal ground disturbance. The Utah State Historical Preservation Office (SHPO) indicated that the potential for raccoon or skunk damage management methods to adversely affect cultural resources is extremely limited and the agency's finding is no effect for cultural resources (J. Dykman, Utah SHPO, pers. comm. 1999)

2.3.4 Environmental Justice and Executive Order 12898 - *"Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"*

Environmental Justice (EJ) promotes the fair treatment of people of all races, income and culture with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment implies that no person or group should endure a disproportionate share of the negative environmental impacts directly or indirectly from activities to execute domestic and foreign policies or programs.

EJ is a priority both within USDA-APHIS and WS. Executive Order 12898 requires Federal agencies to make EJ part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low-income persons or populations. A critical goal of Executive Order 12898 is to improve the scientific basis for decision-making by conducting assessments that identify and prioritize environmental health risks and procedures for risk reduction. WS developed a strategy that: 1) identifies major programs and areas of emphasis to meet the intent of the Executive Order, 2) minimize any adverse effects on the human health and environment of minority and low-income persons or populations, and 3) carries out the APHIS mission. To that end, APHIS operates according to the following principles: 1) promote outreach and partnerships with all stakeholders, 2) identify the impacts of APHIS activities on minority and low-income populations, 3) streamline government, 4) improve the day-to-day operations, and 5) foster non-discrimination in APHIS programs. In addition, APHIS plans to implement Executive Order 12898 principally through its compliance with the provisions of NEPA.

All WS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898 to insure EJ. WS personnel use wildlife damage management methods as selectively and environmentally conscientiously as possible. All chemicals used by WS in Utah are regulated by the U. S. Environmental Protection Agency (EPA) through the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), by the UDAF, by MOUs with Federal agencies, and by WS Directives. Based on a thorough Risk Assessment, APHIS concluded that when WS program chemicals are used following label directions, they are selective to target individuals or populations, and such use has negligible impacts on the environment (USDA 1994, Appendix P). The WS program, discussed in this document, properly disposes of any excess solid or hazardous waste. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations.

2.3.5 Protection of Children from Environmental Health and Safety Risks (Executive Order 13045).

Children may suffer disproportionately from environmental health and safety risks for many reasons, including their development physical and mental status. Because WS makes it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, WS has considered the impacts that this proposal might have on children. The proposed raccoon and skunk damage management

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would occur by using only legally available and approved damage management methods where it is highly unlikely that children would be adversely affected. For these reasons, WS concludes that it would not create an environmental health or safety risk to children from implementing this proposed action.

2.4 ISSUES NOT CONSIDERED IN DETAIL, WITH RATIONALE

2.4.1 WS's Impact on Biodiversity

No WS damage management in Utah is conducted to eradicate a native wildlife population. WS operates according to international, Federal and State laws and regulations enacted to ensure species viability.

Several State statutes direct agencies to consider biological sustainability when making management decisions (UCA §17A-2-1401, §73-3-3). Utah does not have a formal biodiversity policy, although it has some scattered policies related to wildlife habitat and preservation (Center for Wildlife Law 1996). Any reduction of a local population or group is frequently temporary because immigration from adjacent areas or reproduction can soon replace the animals removed. Impacts on target and non-target species populations because of WS's lethal damage management are minor. The impacts of the current WS program on biodiversity are not significant nationwide or statewide (USDA 1994). WS operates on a relatively small percentage of the land area of the State (see Section 1.2.1), and the WS take of any wildlife species analyzed in this EA is a small proportion of the total population and insignificant to the viability and health of the total population. Additional analysis on the cumulative impacts to wildlife and biodiversity can be found in WS (1996a, 1996b).

2.4.2 Appropriateness of preparing an EA (instead of an EIS) for such a large area.

As noted in section 1.1, WS only conducts raccoon and skunk damage management on about 35,000 acres of the 82,000 mi². that encompasses Utah, or less than 0.06% of the State. If in fact a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared.

2.4.3 Human Affectionate-Bonds with Individual Wildlife or Charismatic and Esthetic Wildlife.

The human attraction to animals has been well documented throughout history and may have instigated the domestication of animals. The American public is no exception and today many American households have pets. In addition, some people consider individual wild mammals and birds as "pets," or exhibit affection toward these animals, especially people who come in contact with wildlife such as homeowners and visitors to city/State parks, etc. Examples would be people who visit a city park to feed waterfowl or small mammals and homeowners who have bird feeders or bird houses.

Public reaction to damage management actions are variable because the public is comprised of different values toward wildlife. Some individuals that are negatively affected by wildlife support lethal removal or relocation. Other individuals affected by the same wildlife may oppose lethal removal or relocation. Individuals unaffected by the damage may be supportive, neutral, or opposed to the wildlife's removal based on personal views.

The public's ability to view wild mammals or birds in a particular area would be more limited if the wildlife are removed or relocated. However, immigration of wildlife from other areas could possibly replace the animals removed or relocated as a result of a damage management action. In addition, the opportunity to view or feed other wildlife would be available if an individual visits other parks or areas with adequate habitat.

Utah WS does respond to depredating, nuisance and threatening wildlife within Utah cities, parks and wild areas where capture and relocation or lethal removal would be the most appropriate damage management

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action. However, if WS did receive a request, WS would coordinate damage management activities with appropriate resource agencies/officials before implementing any actions. If questioned about the action, rationale would be provided to the public for the need to remove or relocate the wildlife and the disposition of the wildlife. Damage management actions would be carried out in a caring, humane, and professional manner.

2.4.4 Removal of Native Species to Benefit Non-native Species that are Unsustainable is Unacceptable.

Raccoons and skunks are removed by WS at the request of the responsible management agency, or home/property owners to protect agricultural and natural resources, property and public health and safety. WS is authorized and directed by Congress to protect American resources and threats to public health and safety from damage associated with wildlife. The primary, statutory authority for the WS program is the Animal Damage Control Act of March 2, 1931, as amended (7 U.S.C. 426-426c; 46 Stat. 1468) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988, Public law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C 426C). The [REDACTED] is responsible for managing all protected and classified wildlife in Utah, except Federally listed T&E species, despite the land class the animals inhabit (UCA §23-13-2). WS cooperates with the [REDACTED] to protect species, identified by the responsible management agency, which are in need of short-term protection to reach recovery goals or to maintain sustainable populations.

WS conducts most of their raccoon and skunk damage management in urban/suburban areas to protect property and public health and safety in situations where raccoons or skunks are living in very close proximity to home/property owners. Unless society is willing and able to remove the people, homes and farms/ranches from Utah, there will be a need to conduct raccoon and skunk damage management. WS recommends that home owners that experience raccoon or skunk damage, alter access to property or to make it less desirable to raccoon or skunks (i.e., install chimney caps, remove debris, remove food availability, etc.). In part, this issue is outside the scope of the EA, as WS is directed by congress to reduce wildlife damages and WS does not have the authority, or ability to remove people from Utah to eliminate raccoon and skunk damage situations.

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CHAPTER 3: ALTERNATIVES

3.0 INTRODUCTION

This chapter consists of four parts: 1) an introduction, 2) description of the alternatives considered and analyzed in detail, including the Proposed Action (Alternative 2), 3) alternatives considered but not analyzed in detail, with rationale, and 4) a discussion of mitigating measures and SOPs.

- 1) Alternative 1 - Technical Assistance Only - Consists of providing advice and consultation on raccoon and skunk damage management, including brochures, written and verbal instructions to homeowners and resource agencies, identifying sources for equipment and supplies and assisting with demonstrations of damage management techniques.
- 2) Alternative 2 - Integrated Wildlife Damage Management for Multiple Resources (No Action) Proposed Alternative - This alternative consists of technical and operational assistance provided by WS on lands under Cooperative Agreement, Agreement for Control or other comparable documents. This alternative would allow for WS raccoon and skunk damage management to be based on the needs of multiple resources (agricultural and natural resources, property and public health and safety) on all lands.
- 3) Alternative 3 - No WS Raccoon and Skunk Damage Management in Utah - This alternative would terminate the Federal raccoon and skunk damage management program in Utah.

3.1 DESCRIPTION OF THE ALTERNATIVES

3.1.1 Alternative 1- Technical Assistance Only -

Technical assistance consists of providing information regarding legal and responsible methods for reducing damage. This includes application procedures and the biological and environmental impacts of these methods. All pesticides recommended by WS personnel would be registered with the EPA, and when used as directed, comply with Section 7 of the ESA. Technical Assistance may require substantial WS effort to provide advice and training to the program recipient. However, the recipient of technical assistance is responsible for implementation of the actions. The WS program would not control the actions, if any, taken by others.

3.1.2 Alternative 2 - Integrated Wildlife Damage Management for Multiple Resources (No Action) (Proposed Alternative)

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The No Action alternative is a procedural NEPA requirement (40 CFR 1502.14(d)), is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action Alternative, as defined here, is consistent with the definitions provided by the Council on Environmental Quality (1981).

Overview: The No Action alternative continues the current Utah WS raccoon and skunk damage management. This alternative proposes to protect property, agricultural and natural resources and safeguard public health and safety using an IWDM approach (see Section 3.2). Damage management strategies, including strategies that would be developed, are based on the combined resources needs, mitigation measures and SOPs. The current program consists of technical assistance and operational damage management to requesters. All wildlife damage management is based on interagency relationships, which requires close coordination and cooperation because of overlapping authorities, policies, regulations and legal mandates.

Before management is conducted on private lands, *Agreements for Control on Private Property* are signed with the landowner or administrator that describe the methods to be used and the species to be managed. Wildlife damage management could be conducted on public lands when allowed under policy and coordinated with the land management agency. Damage management on public lands would be expected to be only a small portion of the program. Management is directed toward individual problem animals or populations in the localized area, depending on the circumstances. Mechanical and chemical management tools would be applied, where appropriate, under this alternative.

3.1.3 Alternative 3 - No WS Raccoon and Skunk Damage Management in Utah -

This alternative would terminate all WS or any other Federal program for raccoon and skunk damage management (operational and technical assistance) on all land classes in Utah. However, State and county agencies, and private individuals could conduct damage management. WS would not be available to provide technical assistance or make recommendations to individuals, organizations or agencies requesting assistance. A "no control" alternative was analyzed by the [REDACTED] and was dismissed as an invalid alternative. However, due to interest in this option, an analysis of this alternative has been included. A "no control" alternative was also evaluated in USDA (1994).

3.2 INTEGRATED WILDLIFE DAMAGE MANAGEMENT (IWDM)

During more than 80 years of resolving wildlife damage problems, WS has considered, developed, and used numerous methods reduce damage. These efforts have involved the research and development of new methods, and the implementation of effective strategies.

The most effective approach for 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 analyzes and the informed judgement of trained personnel. WS applies IWDM, commonly known as Integrated Pest Management (ADC Directive 2.105), to reduce damage using the Decision Model (Slate et al. 1992) discussed on page 3-4.

The philosophy behind IWDM is to implement effective management techniques, in an effective manner while minimizing the potentially harmful effects to humans, target and non-target species and the environment. IWDM draws from the largest possible array of options to develop a combination of techniques appropriate for the specific circumstances. IWDM may incorporate cultural practices, habitat modification, animal behavior, local population reduction, or any combination of these,

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depending on the characteristics of the specific damage problems².

3.2.1 The IWDM Strategies Authorized for Use by WS Personnel in Utah

Technical Assistance Recommendations (implementation is the responsibility of the requester): WS personnel would provide information, demonstrations and advice on appropriate and available damage management techniques. Technical assistance includes demonstrations on the proper use of damage management devices (scare device, exclosures, cage traps, etc.) and information on animal and habitat management, and animal behavior modification. Technical assistance is generally provided following an on-site visit or verbal consultation with the requester. Generally, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on risk, need and practical application. Technical assistance may require substantial effort by WS personnel in the decision making process, but the implementation of the recommendations is generally the responsibility of the requester.

Direct Damage Management (Operational) Assistance is implemented when the problem cannot be practically resolved through technical assistance and when Cooperative Agreements, Agreements for Control or other comparable documents provide for WS direct damage management (activities conducted or supervised by WS personnel). The initial investigation defines the nature and history of the problem, extent of damage, and the species responsible for the damage. WS personnel are often required to resolve problems, especially if restricted use pesticides are proposed, or the problem is complex requiring the direct supervision of a wildlife professional. WS personnel consider the biology and behavior of the damaging species and other factors using the Decision Model (Slate et al. 1992). The recommended strategy (ies) may include any combination of preventive and corrective actions that could be implemented by the requester, WS or other agencies, as appropriate. Two strategies are available:

1. Corrective Damage Management is applying wildlife damage management to stop or reduce current losses. As requested and appropriate, WS personnel provide information and conduct demonstrations, or take action to prevent additional losses from recurring. For example, in areas where raccoons or skunks are causing damage or nuisance problems, WS personnel may provide information about fencing or other enclosure techniques, cage traps, scare devices and/or conduct operational damage management to stop the losses.

2. Preventive Damage Management is applying lethal and non-lethal wildlife damage management strategies before damage occurs, based on historical damage problems and data. The rationale for conducting preventive damage management differs little in principle from holding controlled hunts for deer or elk in certain areas where agricultural damage has been a historic problem, or installing fencing or exclosures to prevent future damage. By reducing the number of deer near agricultural fields, or the number of raccoons or skunks, the likelihood of damage is reduced.

For preventive damage management on Federal lands, historical loss areas are reviewed and discussed with representatives of the land management agencies to identify areas where preventive wildlife damage management may be conducted. In addition, when conducting wildlife damage management on Federal lands, WS must receive a request from the entity that has experienced the damage or the resource management agency.

3.2.2 WS Decision Making

² The cost of management may be secondary because of overriding environmental, legal, public health and safety, animal welfare, or other concerns.

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USDA (1994, Chap. 2, and Appendix N) describes the procedures used by WS personnel to determine management strategies or methods, or to specific damage problems.

As depicted in the Decision Model (Figure 3-1), consideration is given to the following factors before selecting or recommending wildlife damage management 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 damage management options³

The WS decision making process is a procedure for evaluating and responding to damage complaints. WS personnel are frequently contacted only after requesters have tried non-lethal techniques and found them to be inadequate for reducing damage to an acceptable level. WS personnel evaluate the appropriateness of strategies, and methods are evaluated in the context of their availability (legal and administrative) and suitability based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situation are formed into a management strategy. After the management strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for management is ended.

In terms of the WS Decision Model, most damage management efforts consist of a continuous feedback loop between receiving the request and monitoring the results with the damage management strategy reevaluated and revised periodically.

3.2.3 Wildlife Damage Management Methods Authorized for Use or Recommended in Utah (see Appendix C for a more complete description of methods)

3.2.3.1 Mechanical Management Techniques:

Habitat modification alters habitats to attract or repel certain wildlife species, or to separate wildlife from the resource.

Animal behavior modification refers to tactics that alter the behavior of wildlife and reduce predation.

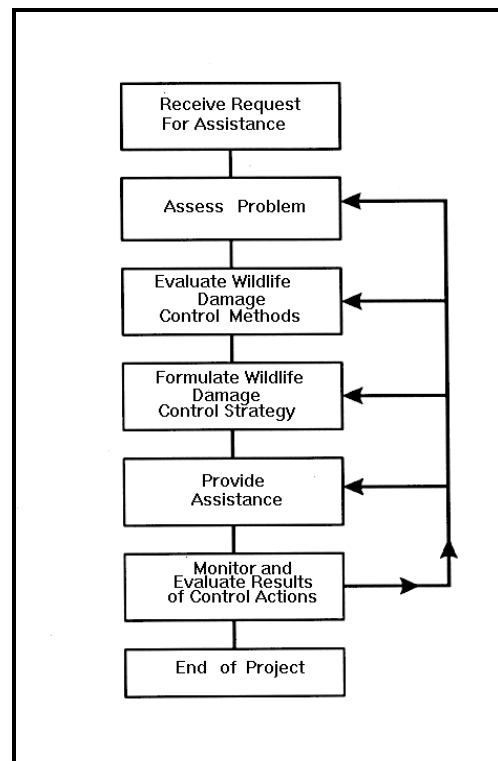


Figure 3-1. Decision Model

³ The cost of damage management may be a secondary concern because of overriding environmental, health and legal considerations.

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Physical exclusion removes the resource from raccoons or skunks, and may be the best method of reducing damage.

Cage traps pose minimal risk to humans, pets and other non-target animals, and they allow for on-site release or relocation of non-target animals.

Hand Capture techniques that would be used are generally catch poles.

Leg-hold traps can be effectively used to capture a variety of mammals and can be set under a variety of conditions. Pan-tension devices would be used to reduce the capture of smaller non-target animals.

Snares, like traps, may be used as either lethal or live-capture devices. Snares may be used wherever a target animal moves through a restricted area (i.e., crawl holes under fences, trails through vegetation, etc.).

Ground shooting is highly selective for target species and may involve the use of spotlights.

3.2.3.2 Chemical Management Techniques:

All chemicals authorized WS for raccoon and skunk damage management are administered under the EPA or Food and Drug Administration (FDA). Selected Utah WS personnel received training in the safe use of authorized chemicals and are certified by the UDAF or WS.

Gas Cartridge

The gas cartridge is registered as a fumigant by the EPA (EPA Reg. No. 56228-21) and contains 35% charcoal and 65% sodium nitrate by weight. When ignited, the cartridge burns in the den of an animal and produces large amounts of carbon monoxide (CO), a colorless, odorless, tasteless, poisonous gas. The combination of CO exposure and oxygen depletion humanely kills the animals in the den.

Immobilizing Agents

Telazol, Ketaset, and Capture-All 5 are rapid acting, non-narcotic, non-barbiturate injectable immobilizing agents, having a wide margin of safety. All three drugs produce unconsciousness known as "*dissociative*" which in general terms means reflexes needed to sustain life (breathing, coughing, swallowing, etc.) are not affected by the drugs. As other drugs are approved by the FDA and WS, they could be incorporated into the WS program in Utah.

Euthanizing Agents

Beuthanasia-D^R (sodium pentobarbital) is regulated by the Drug Enforcement Agency and the FDA for euthanization of dogs, but legally may be used on other animals if the animal is not intended for human consumption (ADC Directive 2.430). Sodium pentobarbital is approved by the AVMA as an euthanizing agent (Andrews et al. 1993).

Carbon monoxide is a colorless, odorless gas that combines with hemoglobin to form carboxyhemoglobin and blocks the uptake of oxygen leading to fatal hypoxemia. CO induces unconsciousness without pain and with minimal discernible discomfort and animals appear to be unaware.

3.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL, WITH RATIONALE

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3.3.1 Compensation for Wildlife Damage Losses

The Compensation Alternative would direct all WS program efforts and resources toward the verification of losses and providing monetary compensation. WS assistance would not include any direct damage management, technical assistance or non-lethal techniques recommendations.

This option is not currently available to WS because WS is authorized and directed by law to protect American agricultural and natural resources, property and public health and safety (Animal Damage Control Act of 1931, and Rural Development, Agricultural and Related Agencies Appropriation Act of 1988). Analysis of this alternative in USDA (1994) indicates that it has many drawbacks.

3.3.2 Skunk and Raccoon Eradication and Suppression

An eradication and suppression alternative would direct all WS program efforts toward planned, total elimination of raccoon and skunk populations in Utah.

Eradication or suppression of raccoons is legal in Utah but not supported by WS, [REDACTED]. Both skunks and raccoons are resilient, generalist species with high reproductive and biotic potential, therefore, eradication would be extremely difficult and very expensive to achieve and maintain. In addition, eradication of a native wildlife species would violate the ESA because the Act prohibits agencies from jeopardizing the existence of a species throughout all or part of its range. This alternative will not be considered by WS in detail because:

- WS opposes eradication of any native wildlife species.
- [REDACTED] opposes eradication of any native Utah wildlife species.
- [REDACTED] opposes eradication of any native Utah wildlife species.
- The eradication of skunks or raccoons would be extremely difficult if not impossible to accomplish, and cost prohibitive.
- Eradication is not acceptable to most members of the public and illegal under the ESA.

Suppression would direct WS program efforts toward managed reduction of certain problem wildlife populations or groups. Considering large-scale population suppression as the basis of the WS program is not realistic, practical, or allowable under present WS policy. Typically, WS activities would be conducted on a small portion of the area inhabited by problem species (see Section 1.2.1).

In localized areas where damage can be attributed to specific groups, [REDACTED] has the authority to lengthen trapping seasons; [REDACTED] has the authority to control unprotected predators, such as raccoons. When many requests for damage management are generated from a localized area, WS after consultation with [REDACTED] could consider suppression of the local population or groups of the offending species, if appropriate.

3.3.3 Relocation (rather than killing) of Raccoon and Skunks.

Relocation may be appropriate in some situations (i.e., if the problem species' population is at very low levels, there is a suitable relocation site and the additional funding required for relocation can be obtained.) However, the species addressed in this EA are relatively abundant in much of the suitable habitat in Utah and relocation is not necessary for the maintenance of viable populations. In addition, it is illegal to relocate raccoons in Utah (UCA §R58-14-3). Any decisions on relocation wildlife are coordinated with [REDACTED] officials.

The AVMA, the National Association of State Public Health Veterinarians, and the Council of State and Territorial Epidemiologist all oppose the relocation of mammals because of the risk of disease transmission, particularly for

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small mammals such as raccoons or skunks (Center for Disease Control 1990). Although relocation is not necessarily precluded in all cases, it would in many cases be logistically impractical and biologically unwise.

3.4 MITIGATION AND STANDARD OPERATING PROCEDURES FOR WILDLIFE DAMAGE MANAGEMENT

3.4.1 Mitigation in Standard Operating Procedures

Mitigation measures (Table 3-1) are any features of an action that serve to prevent, reduce, or compensate for impacts that otherwise might result from that action. The current WS program, nationwide and in Utah, uses many such mitigation measures and these are discussed in detail in USDA (1994, Chapter 5). The following mitigation measures apply to some or all of the alternatives, as indicated.

Table 3-1. Mitigation measures and their correlation to the alternatives analyzed in the EA

Mitigation Measures	1	2	3
<i>Animal welfare and humaneness of methods used by WS</i>			
Research on selectivity and humaneness of management practices would be monitored and adopted as appropriate.	X	X	
Pan-tension devices would be used to reduce the incidence of non-target animal capture in leg-hold traps.		X	
Breakaway snares have been developed and implemented into the program. (breakaway snares are designed to break open and release with tension exerted by larger non-target animals such as deer, antelope and livestock.)		X	
Chemical immobilization/euthanasia procedures that do not cause pain are used.		X	
Traps and snares would be checked at intervals consistent with State of Utah regulations.		X	
<i>Safety concerns regarding WS's use of toxicants, traps and snares</i>			
The Decision Model is designed to identify the most appropriate wildlife damage management strategies and their impacts.	X	X	
Traps and snares would be placed so that captured animals would not be readily visible from any designated recreation road or trail, or from Federal, State, or county roads.		X	
No leg-hold traps or snares would be allowed within ¼ mile of any residence, community, or developed recreation site, unless requested by the owner of a privately-owned property or an official from the appropriate land management agency.		X	
<i>Concerns about impacts of WS's activities on threatened and endangered species and other species of special concern</i>			

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Mitigation Measures	1	2	3
WS has consulted with the USFWS regarding the nationwide program and would continue to implement all applicable measures identified by the USFWS to ensure protection of T&E species.	X	X	

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.0 INTRODUCTION

Chapter 4 provides information needed for the decision maker to make an informed decision on the wildlife damage management program as outlined in Chapters 1 and 3, and the issues and affected environment discussed in Chapter 2. Chapter 4 consists of: 1) analyses of the environmental consequences and 2) analyzes of the issues analyzed in detail.

4.1 ENVIRONMENTAL CONSEQUENCES

This section analyzes the environmental consequences using Alternative 2 (the current program) as the baseline for comparison with the other alternatives to determine if the real or potential impacts are greater, lesser or similar. Table 4.1 (at the end of Chapter 4) summarizes a comparison of the issues and impacts of each Alternative.

The following resources within Utah (soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber and range, and cultural, archeological, and historic resources) would not be significantly impacted by any of the alternatives analyzed. These resources will not be analyzed further.

Social and Recreational Concerns: Social and recreational concerns are discussed throughout the EA as they relate to issues and they are discussed throughout USDA (1994).

Target and Non-target Wildlife Species: Cumulative impacts to potentially affected wildlife species are addressed in sections 4.2.2.

Cumulative and Unavoidable Impacts: This EA recognizes that the total annual removal of individual animals from wildlife populations by all causes is the cumulative mortality. It is not anticipated that the proposed action will result in any adverse cumulative impacts to any wildlife or T&E species populations. The areas that would receive raccoon or skunk damage management are areas where WS has been requested to provide damage management and a signed Cooperative Agreement, Agreement for Control, or other comparable document are in place. Currently, WS has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State and, therefore, cumulative impacts to target species would be minor (see Section 4.2.2). WS also consults with the UDWR and USFWS concerning classified wildlife in Utah, including T&E species, to insure that WS activities do not adversely affect non-

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target wildlife populations.

Irreversible and Irretrievable Commitments of Resources: Other than relatively minor uses of fuels for motor vehicles and electrical energy for office maintenance, no irreversible or irretrievable commitments of resources would occur. Based on these estimates, the Utah WS program produces negligible impacts on the supply of fossil fuels and electrical energy.

4.2 ISSUES ANALYZED IN DETAIL

4.2.1 Risks Posed by Damage Management Methods to the Public and Domestic Pets.

Raccoon and skunk damage management conducted by WS in Utah is guided by Directives, Cooperative Agreements, MOU and Federal and State laws. Effects on public health and safety include potential benefits caused by WS fostering a safer environment and potential negative effects that might result from the exposure of the public to wildlife damage management techniques. WS uses chemical and non-chemical methods that are appropriate to reduce or minimize a variety of wildlife damage problems and WS personnel are aware of the potential risks to non-target animals and humans. Along with effectiveness, cost, and social acceptability, risk is an important criterion for selection of an appropriate damage management strategy. Determination of potential risks to non-target animals, the public, and WS personnel is thus an important prerequisite for successful application of the IWDM approach. Based on a thorough Risk Assessment, (USDA 1994, Appendix P) APHIS concluded that, when WS program techniques are used according to Directives, policies and laws, they are selective for target individuals or populations, and such use has negligible impacts on the environment.

4.2.1.1. Alternative 1 - Technical Assistance Only

This alternative would result in no Federal operational wildlife damage management program in Utah. Therefore, the use of methods would be at the discretion of individuals or agencies that conduct the activity. The low risks associated with the WS use of wildlife damage management methods would be non-existent under this alternative. Utah WS would make recommendations, but implementation of the recommendation would be by another entity. However, increased use of the same methods by less skilled individuals and greatly reduced restrictions on how wildlife damage management is conducted may result in an increased risk to the public. This Alternative would likely result in increased risks to public and pet health and safety over those identified in Alternative 2.

4.2.1.2. Alternative 2 - Integrated Wildlife Damage Management for Multiple Resources (No Action, Proposed Alternative).

WS implements a Utah-wide program of raccoon and skunk damage management based on an IWDM approach described in Chapter 3 of this EA. Effects on public health and safety include potential benefits caused by WS fostering a safer environment (reduced disease risks) and potential negative effects that might result from the exposure of the public to wildlife damage management methods. The USDA (1994) identified risks to the public from WS chemical and non-chemical methods and concluded low public health risks were associated with use of all non-chemical methods and chemical methods risks were mitigated through specific direction provided by WS program policies. The risks to health or safety are generally limited to the WS Specialists associated with implementing the methods. Little risk to human and pet health and safety occurs from WS's use of chemical methods used to conduct damage management. The greatest risk to human and pet health and safety is from WS's use of snares, however any pet captured in a snare and accompanied by a human could be immediately released. WS limits the use of leg-hold traps and snares on public lands during bird hunting seasons, and warning signs are posted in those few areas where these devices are set on public or private lands. During the FY93 through FY97 analysis period, there were no reported injuries to WS personnel or members of

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the public related to WS's use of any of the techniques described in this EA. Mitigation measures that address safety concerns about WS's use of chemical methods, traps and snares are listed at the end of Chapter 3.

4.2.1.3. Alternative 3 - No WS Raccoon and Skunk Damage Management in Utah.

This alternative would result in no Federal raccoon and skunk damage management program in Utah. Therefore, the use of damage management techniques would be at the sole discretion of individuals or agencies that conduct damage management. The low risks associated with the Utah WS wildlife damage management program would be non-existent under this alternative. WS would not make recommendations and implementation of chemical strategies would be by another entity. However, increased use of the same methods by less skilled individuals and greatly reduced restrictions on how wildlife damage management is conducted could result in an increased risk to the public. No program would be available for the protection of agricultural and natural resources, property nor protect public health and safety, and the [REDACTED] would not have access to WS personnel if there is a zoonosis outbreak. This Alternative would likely result in increased risks to agricultural and natural resources, property, and public health and safety over those identified in Alternative 1 or 2.

4.2.2 Influence of WS Raccoon and Skunk Damage Management on population viability.

Raccoons and skunk population impacts were evaluated because they are taken by Utah WS personnel in response to agricultural, natural resources and property damage, and public health and safety threats. Both species can live in a variety of environments, including agricultural and range lands, suburban areas and high-density urban areas. Estimating wildlife densities is not precise, often dynamic and professional judgement is required to account for unknowns and variables, such as the ability of habitat to support populations.

Therefore, when assessments are used, they are based on conservative population estimates rather than higher population estimates to better insure that no adverse wildlife population impacts occur. The [REDACTED] believes that raccoon and skunk populations in Utah can change considerably from one year to the next due to environmental factors⁴. As a result, any population estimate would be for a given point in time and population levels could change rapidly if a disease outbreak occurs ([REDACTED], [REDACTED] pers. comm. 1998). As stated in Chapter 1, the area of the State is more than 82,000 mi². WS currently has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State (see Section 1.2.1) and removes skunks or raccoons only in situations where they cause damage. The WS take is not having an adverse impact on local or Statewide populations (Table 4-1) especially considering their recruitment and population density potential (see discussions below).

Raccoon Population Information

The raccoon is a member of the family *Procyonidae* that includes ringtails and coatis in North America. Raccoons are widely distributed across North America (Figure 4-1) and

Table 4-1. Target Raccoon/Skunk Take by Method in FY 98 (MIS 1998)

Method	# Raccoon	# Skunk
Dogs/shooting		
Drug Delivery Devices		
Hand Capture		
Shooting		
Neck Snares		
Cage Traps		

Figure 4-1. Range of the Raccoon

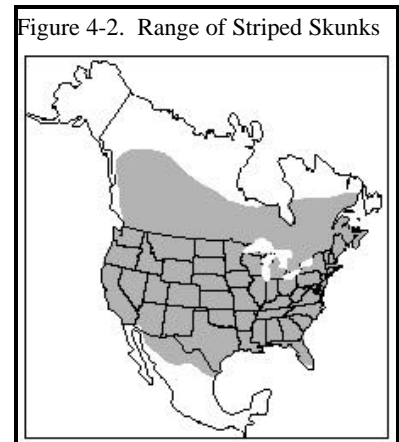
⁴ It is recognized that the other mortality of wildlife (i.e., road kills, disease, natural mortality, etc.) occurs throughout Utah but no reliable system exists for recording this information.

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one of the most omnivorous of animals, feeding on carrion, garbage, birds, mammals, insects, crayfish, mussels, other invertebrates, a variety of grains, various fruits, other plant materials, and most or all foods prepared for human or animal consumption (Sanderson 1987).

Sanderson (1987) stated that absolute population densities of raccoons are difficult if not impossible to determine because of the difficulty in knowing what percentage of the population has been counted or estimated, and the additional difficulty of knowing how large an area the raccoons are using. Twichell and Dill (1949) reported one of the highest densities, with 100 raccoons removed from a winter tree den area on 101 acres of a waterfowl refuge in Missouri during winter. Other studies have found raccoon densities that ranged from 9.3/mi² to 80/mi² (Yeager and Rennels 1943, Urban 1970, Sonenshine and Winslow 1972, Hoffman and Gottschang 1977, Rivest and Bergeron 1981). Previous to 1970, raccoons occurred in Utah only in isolated areas (Durrant 1952). Recent population increases are believed related to release of domestic animals (Kimball 1999). For purposes of this analysis, we will conservatively estimate raccoon densities at 2.0/mi² in 15% of Utah. This would equate to a total population in Utah of about 24,600 raccoons.

Raccoon populations can reportedly sustain a 49 to 59% annual harvest level (USDA 1994). In FY98, WS removed a total of 344 raccoons in Utah. The combined harvest by private trappers (3,025 raccoons in 1994-95, the most recent year data is available) and WS totaled about 3,369 raccoons, or about 13.7 % of the estimated population. Because raccoon populations are judged to be increasing in spite of the present level of harvest, the qualitative determination of the cumulative impacts on raccoon populations is of low magnitude (Kimball 1999).



Striped Skunk Population Information

Skunks primarily cause odor problems around homes, transmit diseases such as rabies and distemper to humans and domestic animals, and prey on poultry.

The striped skunk is the most common member of the *Mustelidae* family. Striped skunks are also widely distributed across North America (Figure 4-2) and have increased their geographical range in North America with the clearing of forests, however no well-defined land type can be classified as skunk habitat (Rosatte 1987). The home range of striped skunks is not sharply defined over space and time, but is altered to satisfy life history requirements such as raising young, winter denning, feeding activities, and dispersal (Rosatte 1987). Home ranges reported in the literature averaged between 0.85 to 1.9/mi² for striped skunks in rural areas (Houseknecht 1971, Storm 1972, Bjorge et al. 1981, Rosaette and Gunson 1984). The range of skunk densities reported in the literature is from 0.85 to 67/mi² (Jones 1939, Ferris and Andrews 1967, Verts 1967, Lynch 1972, Bjorge et al. 1981). Many factors may contribute to the widely differing population densities. Type of habitat, food availability, disease, season of the year, and geographic area are only a few of the reasons (Storm and Tzilkowski 1982). For purposes of this analysis, we will conservatively estimate skunk densities at 1.0/mi² on 60% of Utah. This would equate to a total population in Utah of about 49,200 skunks.

Skunk populations can reportedly sustain a 60% annual harvest level indefinitely (Boddicker 1980). During FY 98, WS personnel removed 200 skunks in Utah. The combined harvest by private trappers (1,438 skunks in 1994-95, the most recent year data is available) and WS totaled about 1,638 skunks, or about 3.3% of the estimated population. Because this level of harvest is substantially less than the sustainable harvest level, cumulative impacts are likely of a low magnitude.

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4.2.2.1. Alternative 1 - Technical Assistance Only

Because this alternative would not provide for operational WS activities, few WS impacts would occur on the viability of raccoon and skunk populations, therefore concerns about WS cumulative impacts are not relevant. Some type of wildlife damage management would most likely be implemented by individuals or private pest control programs. Damage management efforts by individuals with limited training and experience could increase impacts.

4.2.2.2. Alternative 2 - Integrated Wildlife Damage Management for Multiple Resources (No Action, Proposed Alternative).

Alternative 2 would continue the current WS raccoon and skunk damage management program in Utah as requested and needed, and as coordinated with homeowners and the appropriate land and wildlife management agencies.

Raccoon Population Impact Analysis

Based on a conservative estimate of only two raccoons/mi², Utah as an estimated raccoon population of more than 164,000. Based on the above estimates, WS removed about 0.2% of the Utah raccoon population during FY98.

USDA (1994) determined that raccoon populations could withstand an annual harvest rate of 49 to 59%, based on low to high fecundity rates. Because raccoon populations can sustain harvest levels of 49 to 59%, the cumulative impacts on raccoon populations would be of low magnitude.

Striped Skunk Population Impact Analysis

Skunk populations can reportedly sustain a 60% annual harvest level indefinitely (Boddicker 1980). During FY98, WS personnel killed 200 skunks in Utah. Based on a conservative estimate of only two skunks/mi², Utah as an estimated skunk population of more than 164,000. Based on the above estimates, WS removed about 0.12% of the Utah skunk population during FY98. Because the WS harvest is very low when compared with the estimated population, the WS cumulative impacts are of the low magnitude.

The actual area where WS services would be requested are unknown and could vary from year to year, based on local needs or levels of predation. However, the actual area that would be worked in any one year would probably be small and less than a 5% to 10% increase in the areas worked.

The number of requests for WS assistance for raccoon and skunk damage management under this alternative could slightly increase and therefore potentially increase the kill of raccoons and skunks. The increase would probably be proportional to the additional land areas worked. A 5 to 10% increase, based on 1998 data, would mean the kill of an additional 35 raccoons and 20 skunks. The additional take of raccoons or skunks by WS would not have any adverse impact on the respective populations.

4.2.2.3. Alternative 3 - No WS Raccoon and Skunk Damage Management in Utah.

This alternative would terminate Utah WS raccoon or skunk damage management. The results of implementing this alternative would be no Federal funds or personnel available to assist homeowners or Federal or State agencies with raccoon or skunk damage. Therefore, the cumulative impacts to the raccoon and skunk population from the WS program would not be an applicable issue. Some type of damage management would most likely be implemented, however, these activities could involve methods that cause greater cumulative

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impacts than WS's.

4.2.3. Effectiveness of the WS Damage Management Program to Reduce Economic Losses.

NEPA does not require preparation of a specific effectiveness analysis, and consideration of this issue is not essential to making a reasoned choice among the alternatives being considered. However, effectiveness of WS's activities is a concern to WS, and therefore effectiveness of the program to reduce losses is analyzed. Effectiveness for different resources requires a different view point. The effectiveness of pheasant protection is currently the subject of research at [REDACTED], in conjunction with Utah WS and the [REDACTED]. Raccoons and skunks removed for pheasant protection during FY 96-98 were part of the research study. Preliminary results show that hunter success per hour was doubled where effective predator damage management (including red fox removals) occurred. Impacts to red fox were analyzed in the "*Wildlife Damage Management (WDM) in the Northern Utah ADC District*" EA (WS 1996a).

Non-monetary values must also be considered. Odor problems caused by skunks rarely have stated monetary value, but are a serious concern to affected homeowners. Human health and safety threats cannot be quantified in dollar amounts, but are a serious threat. Threats to pets and pet safety have a dollar value, however, unless the incident is reported or a veterinary visit occurs the monetary losses are difficult to determine.

4.2.3.1. Alternative 1 - Technical Assistance Only

This alternative would not involve the use of any damage management methods by WS, therefore concerns about the effectiveness, and selectivity, of methods used by WS are not relevant. Some type of wildlife damage management would most likely be implemented by individuals or private pest control programs, however, these activities could involve methods that were less selective than WS's methods. The costs to implement this alternative would be much lower than the current program. The number of WS personnel could be reduced to only those needed to provide technical assistance and make recommendations to landowners wishing to conduct their own control work. Risks from raccoons and skunks would probably increase, and damage management efforts by individuals with limited training and experience would be less likely to remove offending animals and more likely to remove non-target species.

4.2.3.2. Alternative 2. - Integrated Wildlife Damage Management for Multiple Resources (No Action, Proposed Alternative).

Methods used for urban/nuisance raccoon and skunk damage management include various exclusion devices, hand capture and cage traps (see Appendix C). As used by WS, these methods are very selective. Rarely a homeowner using a cage trap may catch a pet, which can be easily released unharmed.

Methods used for protection of agriculture or natural resources may use leg-hold traps and/or neck snares since red fox or coyotes may also be considered target predators. While these methods are not as selective as cage traps, as used by WS leg-hold traps and snares rarely capture non-target animals. In three years, only one dog, one magpie and one bobcat have been captured as non-target animals in raccoon or skunk damage management for natural resource protection. While WS regrets the capture of any non-target wildlife, as used, these are highly selective methods. Analysis on non-target captures was also documented in the "*Wildlife Damage Management (WDM) in the Northern Utah ADC District*" (WS 1996a) and "*Wildlife Damage Management (WDM) in the Southern Utah ADC District*" EAs (WS 1996b).

Most target animals that are captured are euthanized, and captured non-target species are released if judged capable of surviving. Target to non-target capture rates for trappers that do not use pan-tension devices contribute to the perception that leg-hold traps are not selective. Traps and snares are considered moderately

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expensive due to initial cost, maintenance, trap-check requirements, increased travel time, and the need for a larger workforce to use traps effectively.

Alternative 2 improves WS's ability to protect property, agricultural and natural resources, and public health and safety from damage caused by skunks and raccoons. Alternative 2 also improves WS's ability to respond to requests from the [redacted] to protect wildlife, including T&E species, by providing for a IWDM in Utah.

4.2.3.3. Alternative 3 - No WS Raccoon and Skunk Damage Management in Utah.

This alternative would terminate Utah WS raccoon or skunk damage management. The effectiveness of implementing this alternative would be no Federal funds or personnel would be available to assist requesters with raccoon or skunk damage. Therefore, the effectiveness of the Federal program would not be an applicable issue. Some type of damage management would most likely be implemented, however, these activities could involve methods that were less selective than WS's. Risks from predators would probably increase substantially, and damage management efforts by individuals with limited training and experience would be less likely to take offending individual animals and more likely to take non-target species. The potential for maintained or increased economic benefits from game bird hunting would decline, and health and safety threats to people and pets and property damage and related costs would increase.

4.3 SUMMARY OF WS's IMPACTS

Table 4-2 presents a relative comparison of the anticipated impacts of each of the three alternatives as they relate to each of the major issues identified in Chapter 2.

Table 4-2. Relative Comparison of Anticipated Impacts From Alternatives.

<i>Issues/ Impacts</i>	<i>Alt. 1 Technical Assistance</i>	<i>Alt. 2 No Action Proposed Action</i>	<i>Alt. 3 No Federal Program</i>
<i>Risks to public and pets</i>	low risks	low risks	greater risks than Alt. 1 and 2
<i>Cumulative Impacts</i>	increased impacts	low impacts	increased impacts

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and therefore not protected by State statute or the [REDACTED].

[REDACTED]

The [REDACTED] is authorized to enter into Cooperative Agreements with WS and local entities (UCA §4-23-5). The [REDACTED] currently has an MOU, Cooperative Agreement, and Annual Work Plan with WS. These documents establish a cooperative relationship between WS and [REDACTED], outlines responsibilities, and sets forth annual objectives and goals of each agency for resolving wildlife damage management conflicts in Utah.

U.S. Forest Service and [REDACTED]

The Forest Service and [REDACTED] have the responsibility to manage the resources of Federal lands for multiple uses, while recognizing the State's authority to manage wildlife. Both the Forest Service and [REDACTED] recognize the importance of reducing wildlife damage on lands and resources under their jurisdiction, as integrated with their management responsibilities. For these reasons, both agencies have entered into MOUs with WS to facilitate a cooperative relationship.

National Forest Land and Resource Management Plans (LRMPs). The National Forest Management Act requires that each National Forest prepare a Land and Resource Management Plan (LRMP) for guiding long range management and direction. LRMP documents and the decision made from this EA would need to be consistent.

[REDACTED]. The [REDACTED] currently uses [REDACTED] to guide management on lands they administer. [REDACTED] generally replace older land use plans known as [REDACTED]. Any decision made because of this analysis must be according to the direction in the [REDACTED] for the [REDACTED] Districts in Utah.

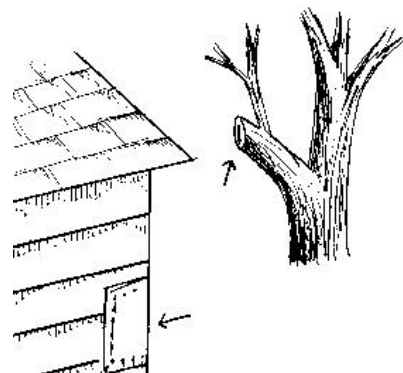
COMPLIANCE WITH FEDERAL LAWS. Several Federal laws regulate WS wildlife damage management. WS complies with these laws, and consults and cooperates with other agencies as appropriate.

National Environmental Policy Act (NEPA). This EA, with WS as the lead agency fulfills the NEPA requirements for conducting raccoon and skunk damage management in Utah. Environmental documents pursuant to NEPA (this EA) must be completed before other plans, consistent with the NEPA supported decision, can be developed. Federal agencies that request WS assistance to protect resources from the species discussed in this EA would review this document, and if necessary, the agency requesting the assistance would be responsible for NEPA compliance.

Endangered Species Act (ESA) It is WS (ADC Directive 2.310) and Federal policy, under the ESA, 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 conducts Section 7 consultations with the USFWS to utilize 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 or threatened species. . .*" (Sec.7(a)(2))

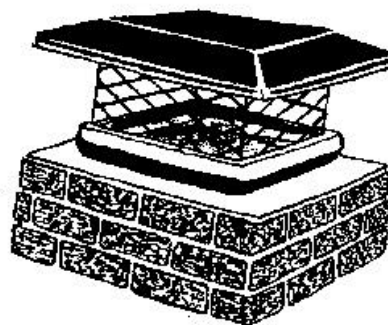
National Historical Preservation Act (NHPA) of 1966 as amended The NHPA requires: 1) Federal agencies to evaluate the effects of any Federal undertaking on cultural resources, 2) consult with the SHPO regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian tribes to determine whether they have concerns for traditional cultural resources in areas of these Federal undertakings.

Appendix C
WILDLIFE DAMAGE MANAGEMENT METHODS
AUTHORIZED for USE or RECOMMENDED in UTAH



Mechanical Management Methods:

1. **Habitat modification** alters habitats to attract or repel certain wildlife species, or to separate the resource from predators. Habitat modification practices would be encouraged when practical. For example, clearing brush, wooded areas or trimming tree branches or covering holes from areas adjacent to resources or the property could reduce damage



2. **Animal behavior modification** refers to tactics that alter the behavior of wildlife and reduce predation. Animal behavior modification could be scare tactics to deter or repel animals that cause loss or damage to resources or property. Some but not all devices used to accomplish this are²:

- Electronic guards (siren strobe-light devices)
- Propane exploders
- Pyrotechnics

3. **Physical exclusion**, for certain resources, removes the resource from raccoons or skunks and may be the best method of reducing damage. WS recommends exclusion, such as chimney caps, electric or conventional fencing, or barriers where appropriate, but does not install such devices. In urban situations, exclusion devices often simply move the problem. As such, they may serve as an individual solution but are not, by themselves, a community solution.



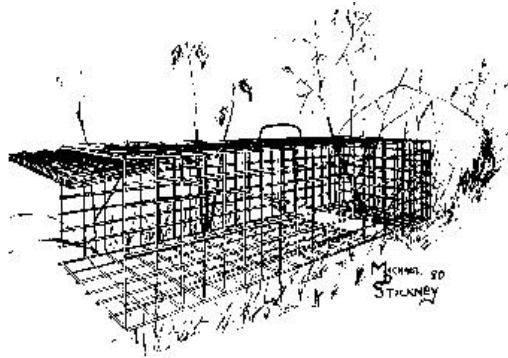
4. **Leg-hold traps** can be effectively used to capture a variety of mammals. Raccoons also can be captured in leg-hold traps; use a No. 1 or No. 1½ trap. The “D-P” trap and “Egg trap” are new foot holding devices that are

²Scare devices will often only produce the desired result for a short time period until wildlife individuals become accustomed to the disturbance (Pfeifer and Goos 1982; Conover 1982).

Appendix C
WILDLIFE DAMAGE MANAGEMENT METHODS
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highly selective, dog-proof, and show promise for reducing trap-related injury. Two primary advantages of leg-hold traps are that they can be set under a wide variety of conditions, and pan-tension devices can be used to reduce the incidence of capturing smaller non-target animals. Effective trap placement and use of appropriate lures by trained personnel also contribute greatly to the leg-hold trap's selectivity. An additional advantage is that leg-hold traps can allow for the on-site release of some non-target animals, or the relocation and release of an animal.

Disadvantages include the difficulty of keeping traps operational during rain, snow, or freezing weather. In addition, they lack selectivity where non-target species are of a similar or heavier weight than the target species. The use of leg-hold traps requires more workforce than some methods, but they are indispensable in resolving some depredation problems.



5. **Cage traps** pose minimal risk to humans, pets and other non-target wildlife and they allow for on-site release or relocation of non-target animals. Raccoons are relatively easy to catch in traps, but it takes a sturdy trap to hold one. For homeowners with pets, a live or cage-type trap is usually the preferable alternative to a leg-hold trap. Traps should be at least 10 x 12 x 32 inches and well-constructed with heavy materials. They can be baited with canned fish-flavored cat food, sardines, fish, or chicken.
6. **Hand Capture** techniques that would be used generally are catch poles. Capture poles are hand-held snaring devices used primarily to remove live animals from traps or confined areas such as buildings. They would only be used when there is no danger to or from the captured animal.
7. **Snares** may be used as either lethal or live-capture devices. Snares may be used wherever a target animal moves through a restricted area (i.e., crawl holes under fences, trails through vegetation, etc.). They are easier to keep operational during periods of inclement weather than leg-hold traps. Snares set to catch an animal by the neck can be a lethal use of the device, whereas snares positioned to capture the animal around the body or leg can be a live-capture method. Careful attention to details in placement of snares and the use of a "stop" on the cable can also allow for live capture of neck-snared animals.
7. **Ground shooting** is highly selective for target species and may involve the use of spotlights. Removal of one or two specific animals by shooting in the problem area can sometimes provide immediate relief from a problem. Shooting is often tried as one of the first lethal damage management options because it offers the potential of solving a problem more quickly and selectively than some other options, but it does not always work. Shooting may sometimes be one of the only damage management options available if other factors preclude the setting of equipment.

Chemical Management Methods:

All chemicals authorized by WS for raccoon and skunk damage management are administered under the EPA or FDA. Selected Utah WS personnel received training in the safe use of authorized chemicals and are certified by the UDAF or WS. This training involves hands-on application of state-of-the-art techniques and chemicals. No toxicants are used on public or private lands without authorization from the land management agency or property owner/manager. The chemical methods used and/or currently authorized for use in Utah are:

1. The **gas cartridge** is registered as a fumigant by the EPA (EPA Reg. No. 56228-21) and contains 35% charcoal and 65% sodium nitrate by weight. When ignited, the cartridge burns in the den of an animal and produces large

Appendix C
WILDLIFE DAMAGE MANAGEMENT METHODS
AUTHORIZED for USE or RECOMMENDED in UTAH

amounts of carbon monoxide (CO) colorless, odorless, tasteless, poisonous gas. The combination of CO exposure and oxygen depletion kills the animals in the den. This technique would be used on State, county, private, and on [REDACTED] and National Forest System lands.

2. **Chemical Immobilization/Euthanasia.** Several chemicals are authorized for immobilization and euthanasia by WS. Selected Utah WS personnel have received training in the safe use of authorized immobilization/euthanasia chemicals and are certified by WS. This training involves hands-on application of state-of-the-art techniques and chemicals.

Telazol™, Ketaset™, and Capture-All 5 are the immobilizing agents used by WS, and are approved by the FDA. Telazol, Ketaset, and Capture-All 5 are rapid acting, non-narcotic, non-barbiturate injectable anesthetic agents, having a wide margin of safety. All three drugs produce unconsciousness known as "*dissociative*" which in general terms means reflexes needed to sustain life (breathing, coughing, swallowing, etc.) are not affected by the drugs. These agents are used to immobilize live-trapped animals for relocation or administered before euthanasia. As other drugs are approved by the FDA and WS, they could be incorporated into the program.

Telazol is a combination of equal parts of tiletamine hydrochloride and zolazepam hydrochloride. The product is generally supplied sterile in vials, each containing 500 mg of active drug, and when dissolved in sterile water has a pH of 2.2 to 2.8. Telazol produces a state of unconsciousness in which protective reflexes, such as coughing and swallowing, are maintained during anesthesia. Schobert (1987) listed the dosage rates for many wild and exotic animals. Before using Telazol, the size, age, temperament, and health of the animal are considered. Following a deep intramuscular injection of Telazol, onset of anesthetic effect usually occurs within 5 to 12 minutes. Muscle relaxation is optimum for about the first 20 to 25 minutes after the administration, and then diminishes. Recovery varies with the age and physical condition of the animal and the dose of Telazol administered, but usually requires several hours.

Ketaset is supplied as a slightly acidic solution (pH 3.5 to 5.5) for intramuscular injection. Ketaset also produces a state of unconsciousness that interrupts association pathways to the brain and allows for the maintenance of the protective reflexes, such as coughing, breathing, swallowing, and eye blinking. Ketaset is detoxified by the liver and excreted by the kidney. Following administration of recommended doses, animals become immobilized in about 5 minutes with anesthesia lasting from 30 to 45 minutes. Depending on dosage, recovery may be as quick as 4 to 5 hours or may take as long as 24 hours; recovery is generally smooth and uneventful.

Xylazine is a sedative which produces a transitory hypertension followed by prolonged hypotension, and respiratory depression. Recommended dosages are administered through intramuscular injection allowing the animal to become immobilized in about 5 minutes and lasting from 30 to 45 minutes.

Capture-All 5 is a combination of **Ketaset** and **Xylazine**, and is regulated by the FDA as an investigational new animal drug. The drug is available, through licensed veterinarians, to individuals sufficiently trained in the use of immobilization agents. **Capture-All 5** is administered by intramuscular injection; it requires no mixing, and has a relatively long shelf life without refrigeration, all of which make it ideal for the sedation of various species.

Beuthanasia-D^R (sodium pentobarbital) is regulated by the Drug Enforcement Agency and the FDA for euthanization of dogs, but legally may be used on other animals if the animal is not intended for human consumption (ADC Directive 2.430). Sodium pentobarbital is approved by the AVMA as an euthanizing agent (Andrews et al. 1993).

Carbon monoxide is a colorless, odorless gas that combines with hemoglobin to form carboxyhemoglobin and blocks the uptake of oxygen leading to fatal hypoxemia. CO induces unconsciousness without pain and with minimal discernible discomfort and animals appear to be unaware. Animals, exposed to CO in chambers may

Appendix C
WILDLIFE DAMAGE MANAGEMENT METHODS
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collapse as quickly as 40 seconds and a painless death occurs in less than 6 minutes (Andrews et al. 1993). CO is approved by the AVMA as an euthanizing agent (Andrews et al. 1993).

**DECISION
AND
FINDING OF NO SIGNIFICANT IMPACT
FOR
PROTECTION OF AGRICULTURAL AND NATURAL RESOURCES,
PROPERTY AND PUBLIC HEALTH AND SAFETY
FROM RACCOON AND SKUNK DAMAGE IN UTAH**

INTRODUCTION and PROPOSED ACTION:

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program receives requests to conduct wildlife damage management to protect agricultural and natural resources, property, and public health and safety in Utah. To develop this environmental assessment (EA), WS worked cooperatively with the [REDACTED], U.S. Forest Service, [REDACTED]. This Decision and Finding of No Significant Impact (FONSI) are based on the analysis in the EA.

The purpose of the proposed action is to alleviate damage and public health and safety risks caused by raccoons and skunks in Utah. The needs for the program, as identified in the EA, are that agricultural and natural resources, property and public health or safety may be damaged by raccoon and skunk activities, and the residents of Utah desire assistance from WS to these minimize damages. In addition, the [REDACTED] times, depend on WS to help with wildlife research studies and achieve management objectives.

WS is the Federal agency directed and authorized by law and authorized by Congress to reduce the damage caused by wildlife damaging agricultural and natural resources, property and for resolving public health or safety concerns. WS cooperates with the Forest Service, [REDACTED], [REDACTED], [REDACTED] and [REDACTED] to minimize damage caused by wildlife. The [REDACTED] has the responsibility to manage all protected and classified wildlife in Utah, except Federally listed threatened and endangered (T&E) species. The [REDACTED] has the responsibility to manage species classified as predatory animals. The [REDACTED] has the responsibility to safeguard public health and safety in Utah. WS' authority is derived from the Animal Damage Control Act of March 2, 1931, as amended (46 Stat. 1486; 7 U.S.C. 426-426c), the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988 (Public Law 100-202, Dec. 22, 1987, Stat. 1329-1331 (7 U.S.C. 426c)), and in Utah by the Utah Agricultural and Wildlife Damage Prevention Act.

The area encompassed in the analysis for this EA is the State of Utah (more than 82,000 mi²). WS currently has agreements to conduct raccoon and skunk damage management on about 35,000 acres or less than 0.06% of the State. The EA also addresses the impacts of damage management on areas where additional agreements with WS may be written in the reasonably foreseeable future; the location where WS conducts activities may change depending on where damages occur, but the total area of activities is expected to remain relatively stable and not exceed 35,000 acres.

Memoranda of Understanding (MOUs) signed between APHIS-WS and the [REDACTED] clearly outline the responsibility, technical expertise and coordination between agencies. A Multi-agency Team with representatives and advisors from each of the cooperating agencies assisted in the assessment of raccoon and skunk damage management in Utah. The Forest Service and [REDACTED] cooperated with WS to determine whether the proposed action on Forest Service or [REDACTED] lands is in compliance with relevant laws, regulations, policies, orders and procedures. All wildlife damage management will be conducted consistent with the Endangered Species Act of 1973, including the Section 7 Consultation with the USFWS.

This EA analyzes the potential environmental and social effects for preventing or resolving damage to

agricultural and natural resources, property and reducing threats to public health and safety from raccoons and skunks in Utah, and an objective comparison of three alternatives addressing raccoon and skunk damage management. Comments from comments from the Pre-Decisional EA were reviewed for substantive issues and alternatives in developing this Decision. The analysis and supporting documentation are available for review at the USDA-APHIS-WS Office, P.O. Box 26976, Salt Lake City, Utah 84126-0976.

Decision and Rationale

I have carefully reviewed the EA and the input from the public involvement process. I believe that the issues identified in the EA are best addressed by selecting Alternative 2 (the Proposed Alternative in the EA) and applying the associated mitigation and monitoring measures discussed in Chapter 3 of the EA and this Decision. I have also issued a final *“Protection of Agricultural and Natural Resources, Property and Public Health and Safety from Raccoon and Skunk Damage in Utah”* EA with additional pertinent issues and editorial comments addressed in the final EA. Most changes from public comments did not change the analysis.

The analyses in the EA demonstrate that Alternative 2 provides WS the best opportunity to address the issues, had low impacts on target and non-target species, and reduced the adverse effects of predation on designated wildlife and T&E species. Alternative 2 best: 1) addresses the issues identified in the EA and provides the safeguards for public safety, and 2) allows WS to meet its obligations to the [REDACTED] and cooperating counties and residents of Utah. As a part of this Decision, the Utah WS program will continue to provide biological and non-lethal management techniques information that could reduce damage when new agreements are signed.

Consistency

Raccoon and skunk damage management will be conducted on National Forest System and [REDACTED] lands consistent with the MOUs between the APHIS-WS, the Forest Service and [REDACTED], the EA, and Forest Service and [REDACTED] policies. Any WS activities pursuant to this Decision will be consistent with the direction provided in the LRMPs for the Forest Service, and with the [REDACTED] or [REDACTED] for [REDACTED]. The Forest Service or [REDACTED] may, at times, restrict raccoon and skunk damage management that threatens other resource values; modifications may also be made in areas where raccoon and skunk damage management is permitted.

Monitoring

WS' proposed action is to reduce or minimize raccoon and skunk damage to agricultural and natural resources, property, and to safeguard public health and safety in Utah. The Utah WS program, in cooperation with the [REDACTED], will monitor the impact on raccoon and skunk populations to determine if the total take is within allowable harvest levels; Utah WS will use MIS data to track the take of raccoons and skunks. [REDACTED] expertise will be used to determine the impact of total take on raccoon and skunk populations.

Public Involvement

Public meetings were held in [REDACTED] and [REDACTED] Counties, Utah prior to drafting the EA. During the meetings, WS raccoon and skunk damage management was discussed for the protection of ring-necked pheasants when requested by the [REDACTED]. In addition, formal notices were published in six (6) statewide and regional newspapers to inform the public that WS was conducting a NEPA analysis for raccoon and skunk damage management in Utah to protect agricultural and natural resources, property and public health and safety. The initial public involvement process provided no comments, nor issues or concerns to WS to consider during the EA preparation.

Eleven Pre-Decisional EAs were mailed to organizations, individuals, public agencies and local American Indian Tribes for review and comment. Five (5) responses were received from organizations and individuals from review of the Pre-Decisional EA as a continue effort by WS to solicit public involvement. The responses

were reviewed for substantive issues and alternatives; pertinent comments and issues were incorporated into the Final EA and this Decision.

Some letters received from the public outside of the project area criticized the EA for not being site specific enough to assess impacts. This is an important point of discussion that warrants clarification and this discussion can be found below.

WS' mission is to reduce wildlife damage, not wildlife populations. WS personnel use the WS Decision Model (Slate et al. 1992) for each damage management situation. It is also the site specific tool used by WS "*on the ground*" to develop the most appropriate strategy to reduce damages and detrimental environmental effects from damage management actions. The WS Decision Model is an analytical thought process used by WS personnel for evaluating and responding to wildlife damage management requests. When a request for assistance is received and after consultation with the requester, WS personnel evaluate the appropriateness of strategies, and methods are evaluated in the context of their availability (legal and administrative) and suitability based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical are formed into a damage management strategy for the situation. For example, on most properties, wildlife damage may occur whenever food, water and habitat for the damaging species are present. WS personnel and the property owner/manager monitor and reevaluate the situation to devise the most effective solution. If one method or combination of methods fail to stop damage, a different strategy or a modified strategy may be implemented. If the strategy is effective, the need for damage management is ended but monitoring continues. In terms of the WS Decision Model, most damage management efforts consist of a continuous feedback loop between receiving the request, implementing a strategy and monitoring the results.

In addition, the purpose for preparing this EA is to determine if the proposed action could have a significant impact on the quality of the human environment, analyze the alternatives, inform the public of WS actions, and to comply with NEPA. WS analyzed the proposed action and alternatives against the issues that were raised. These issues were analyzed at levels that are "*site specifically*" appropriate for this action in Utah. Determining impacts requires that WS look at the *context* of the issue and *intensity* of the action and impacts. The extent of raccoon and skunk populations are never a few acres or household, but rather over a much larger area and WS actions generally are conducted on a much smaller portion of the habitat inhabited by the target species. While WS recognizes that the animal rights community is concerned about each individual animal, as professional wildlife biologists, WS has to analyze impacts to a population. With that, WS, as well as, other professional wildlife agencies are aware that the damage situation with each individual raccoon or skunk may change at any time in any location; wildlife populations are dynamic and mobile.

In this EA and Decision, WS recognizes that raccoons and skunks have no *intent* to do harm. They inhabit (i.e., reproduce, walk, forage, deposit waste, etc.) habitats where they can find a *niche*. If they do "*wrongs*," people characterize this as damage. *Wrongs*, unfortunately, are determined not merely in spacial terms but also with respect to time and other circumstances that define the *wrongness*. (For example: a raccoon living in the wilds of Utah may not be a problem while one living in a Salt Lake City resident's chimney could cause a human health and safety concerns, injuries, and destruction of property.) When WS is requested to determine exactly where damage will occur, WS is being held to a standard that no other damage management agency, wildlife management agency or other entity is required to meet or could do. In fact, despite similar language to NEPA in the California CEQA requirements, the California Game and Fish Department was only required to address the impacts to the analysis area "*population*" of concern (WS uses this standard for WS actions to comply with NEPA analysis). WS has prepared an EA that provides as much information as possible to address and predict the locations of potential wildlife damage management actions and the raccoon and skunk estimated population that could be involved in causing damage or threats to human interests and needs.

Like other damage management organizations (fire departments, emergency clean-up organizations, etc.), WS can sometimes predict the location and types of needs, damage and risks from historical records or past damage problems, and take action to prevent or reduce the damage. WS can not, however, always predict the exact locations or need to reduce wildlife damage at all locations. This type of prediction would be highly speculative

in nature. This phenomenon would be like a fire department determining where the next fire occurs. To reduce damages, along with corrective and preventive direct damage management, WS provides technical assistance and demonstrations to help prevent the need for direct damage management. WS can and does provide an analysis of impacts of their actions and impacts to reduce wildlife damage within the scope of the EA. The site specificity problem occurs when trying to determine the exact location and animal that is, or would be responsible for damages before the damage situation occurs. WS determined that its analysis was adequate because further site specific information would not change the results of the analysis, and to the public's understanding of the proposal, or provide additional useful or relevant information to the Decision maker (Eccleston 1995).

The full documentation of the public involvement effort are available for review at the WS State Directors Office in Salt Lake City, Utah.

Major Issues

The EA describes the alternatives considered and evaluated using the identified issues. The following issues were identified as important to the scope of the analysis (40 CFR 1508.25).

1. Risks posed by damage management to the public and domestic pets.
2. Influence of WS Raccoon and Skunk Damage Management on population viability.
3. Effectiveness of the WS damage management program to reduce economic losses.

Alternatives That Were Fully Evaluated

The following Alternatives were developed to respond to issues. Three (3) additional alternatives were considered but not analyzed in detail. A detailed discussion of the effects of the Alternatives on the issues is described in the EA; below is a summary of the Alternatives.

Alternative 1 - Technical Assistance Only. Under Alternative 1, WS would be restricted to providing technical assistance and all operational raccoon and skunk damage management in Utah would be eliminated. Alternative 1 was not selected because it was inconsistent with State policy and MOUs. The analysis of impacts of Alternative 1 are higher than Alternatives 2.

Alternative 2 - Integrated Wildlife Damage Management for Multiple Resources (No Action) Proposed Alternative). The No Action Alternative was analyzed and used as a baseline for comparing the effects of the other Alternatives as required by 40 CFR 1502.14(d). This alternative consists of using preventive and corrective non-lethal and lethal raccoon and skunk damage management for resolving damage problems. Integrate Wildlife Damage Management for Multiple Resources was selected because it best allows WS to resolve damage problems and address the issues. The analysis of the issues and impacts show that Alternative 2 has low adverse impacts on raccoon and skunk populations, non-target and T&E species, and public health and safety.

Alternative 3 - No Federal ADC Program. This Alternative would stop the Federal raccoon and skunk damage management program in Utah. Alternative 3 was not selected because WS is charged by law and reaffirmed by a recent court decision to reduce damage caused by wildlife. This alternative would not allow WS to meet its statutory responsibility for providing assistance, nor would it facilitate the responsibilities to minimize damage. The analysis of the level of anticipated impacts of Alternative 3 are higher than those of Alternative 1 or 2.

The Alternatives Considered but not Analyzed in Detail are the Following:

Compensation for Wildlife Damage Losses. The Compensation alternative would direct all Utah program efforts and resources to the verification of damage and providing monetary compensation to home/resource owners. WS would not include any direct damage management nor would technical assistance, or non-lethal methods be provided. This alternative was eliminated from detailed analysis in WS' Final Environmental Impact Statement (EIS) because of many disadvantages (USDA 1994). Some disadvantages listed in the Final EIS are:

- 1) the alternative would require large expenditures of money and work force to investigate and validate all losses, and determine and administer appropriate compensation,
- 2) compensation would most likely be below full market value, and making timely responses to all requests to assess the losses would be difficult and many losses could not be verified,
- 3) compensation would give little incentive to home/resource owners to limit damage,
- 4) not all home/resource owners would rely completely on compensation and lethal control of raccoons and skunks would most likely continue as permitted by State law, and
- 5) Congress has not appropriated funds to compensate for predation or other wildlife damage to agricultural products.

Eradication and Suppression Alternative. The eradication and suppression alternative would direct all Utah program efforts toward planned, total elimination or large scale population suppression of raccoon and skunk populations. Eradication of unprotected predators, such as raccoons, is legal in Utah but is not supported by WS, the State agencies. This alternative was not considered in detail because:

- 1) WS is opposed to the eradication of any native wildlife species,
- 2) ██████████ oppose the eradication of any native Utah wildlife species,
- 3) the eradication of a native species or local population would be extremely difficult if not impossible to accomplish,
- 4) would be cost prohibitive, and
- 5) eradication is not acceptable to most members of the public.

Suppression would direct WS program efforts toward managed reduction of raccoon and skunk populations or groups. Considering large-scale population suppression as the basis of the WS program is not realistic, practical, or allowable under present WS policy. Typically, WS activities in Utah would be conducted on only a small portion of the area inhabited by raccoons or skunks.

In localized areas where damage can be attributed to specific raccoon or skunk groups, the ██████████, as the responsible management agency, has the authority to lengthen hunting/trapping seasons; ██████████ has the authority to control unprotected predators, such as raccoons. When many requests for wildlife damage management are generated from a localized area, WS after consultation with ██████████, would consider suppression of the local population or groups of the offending species, if appropriate.

Relocation (rather than killing) of Raccoon and Skunks.

Relocation may be appropriate in some situations (i.e., if the problem species' population is at very low levels, there is a suitable relocation site and the additional funding required for relocation can be obtained.) However, the species

addressed in this EA are relatively abundant in much of the suitable habitat in Utah and relocation is not necessary for the maintenance of viable populations. In addition, it is illegal to relocate raccoons in Utah (UCA §R58-14-3). Any decisions on relocation wildlife are coordinated with [REDACTED] officials.

The AVMA, the National Association of State Public Health Veterinarians, and the Council of State and Territorial Epidemiologist all oppose the relocation of mammals because of the risk of disease transmission, particularly for small mammals such as raccoons or skunks (Center for Disease Control 1990). Although relocation is not necessarily precluded in all cases, it would in many cases be logistically impractical and biologically unwise.

Decision

I have carefully reviewed the EA and the public input resulting from public involvement and the Pre-Decisional EA review process. I believe the issues identified in the EA are best addressed by selecting Alternative 2. Alternative 2 provides the best range of damage management methods considered practical and effective, address the issues, and accomplish WS' Congressionally directed activities. In keeping with current WS policies, social considerations, including humane issues, will be considered in WS activities. While Alternative 2 does not require non-lethal methods to be used, WS will continue to provide information and encourage the use of practical and effective non-lethal methods by home/resource owners.

Finding of No Significant Impact

The EA indicates that there will not be a significant impact, individually or cumulatively, on the quality of the human environment because of this proposed action, and that these actions do not constitute a major Federal action. I agree with this conclusion and therefore determine that an EIS will not be prepared. This determination is based on the following factors:

1. Raccoon and Skunk damage management, as conducted in Utah, is not regional or national in scope.
2. Based on the analysis documented in the EA, the impacts of the raccoon and skunk damage management program will not affect the human environment.
3. The proposed action will not have an impact on unique characteristics of the areas such as historical or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecological critical areas.
4. The proposed action will not significantly affect public health and safety. No accidents associated with WS raccoon and skunk damage management are known to have occurred in Utah.
5. The effects on the quality of the human environment are not highly controversial. Although there is opposition to WS damage management, this action is not controversial in relation to size, nature or effects.
6. Mitigation measures adopted as part of the proposed action minimize risks to the public and prevent adverse effects on the human environment and reduce uncertainty and risks.
7. The proposed action does not establish a precedent for future actions with significant effects. This action would not set a precedence for additional WS damage management that may be implemented or planned in Utah.
8. The number of animals taken (both target and non-target) by WS annually is small in comparison to the total population. Adverse effects on wildlife or wildlife habitats would be minimal.
9. No significant cumulative effects were identified by this assessment or other actions implemented or planned within the area.

10. Raccoon and skunk damage management would not affect cultural or historic resources. The proposed action does not affect districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places or will cause a loss or destruction of significant scientific, cultural, or historical resources, including interference with American Indian traditional uses or Sacred sites.

11. An evaluation of the proposed action and its effects on T&E species determined that no significant adverse effects would be created for these species. The proposed action will fully comply with the Endangered Species Act of 1973, as amended. In the EA, the concern for viability of T&E species addresses not only the legal mandate to preclude jeopardy, but also recognizes the opportunity to protect T&E species from direct predation. Both concerns were analyzed in the EA. Consultation with the USFWS has taken place and their input was used as part of the mitigation development process.

12. This action would be in compliance with Federal, State and local laws or requirements for predator damage management and environmental protection.

/s/

8/30/99

Michael Worthen
Regional Director, USDA-APHIS-WS

Date

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