

Pre-Decisional

ENVIRONMENTAL ASSESSMENT

**REDUCTION OF COYOTE DAMAGE
TO LIVESTOCK AND OTHER RESOURCES
IN LOUISIANA**

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SUMMARY OF PROPOSED ACTION

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) has implemented an Integrated Wildlife Damage Management (IWDM) program in Louisiana to protect various resources from coyote damage. Coyote damage management work is currently being conducted under a Categorical Exclusion (CE). The types of coyote damage that WS is requested to alleviate or prevent includes: 1) predation on livestock, wildlife, and pets, 2) depredation on crops, and 3) threats to human health and safety. An IWDM strategy is recommended to cooperators and used by personnel employed or supervised by WS. Under the proposed action, WS could provide technical (educational/extension) and operational (direct) assistance to cooperators experiencing damage caused by coyotes and requesting assistance. The WS Decision Model would be used to develop site-specific damage-reduction strategies, which may incorporate lethal or non-lethal methods.

Technical assistance programs would be conducted by WS to provide resource owners with information on the use and effectiveness of non-lethal coyote damage management methods. Information transfer could occur in the form of brochures, other written information, personal consultations, or workshops. WS may also conduct demonstrations, lend equipment such as frightening devices (when equipment is available), provide information on obtaining livestock guarding dogs, animal husbandry or coyote resistant fencing, and teach the proper use of snares and leg-hold traps. Resource owners would be responsible for implementing non-lethal methods and, therefore, WS would have little or no control over the implementation of the recommendations.

Operational programs would be implemented and conducted by WS, normally under contract with the affected cooperator. Operational programs conducted by WS could be either corrective or preventive. Corrective actions would be implemented in response to ongoing (current) damage. Preventive actions would be initiated prior to the onset of damage anticipated by a resource owner who has repeatedly experienced problems in the past (e.g., where historic evidence suggests that predation will recur in the future); preventive damage management may be either lethal or non-lethal.

WS personnel would strive to minimize adverse effects on non-target animals and the environment by utilizing the most selective, effective, and least-intrusive methods. Preference would be given to non-lethal methods when they are deemed practical and effective. Lethal methods could be used to prevent or reduce damage after practical and appropriate non-lethal methods have been considered, and when possible used. However, non-lethal methods may not always be applied as a first response to each damage problem encountered by WS. The most appropriate initial response to a coyote damage problem could be a combination of non-lethal and lethal methods, or, the use of lethal methods only. When lethal damage management is necessary, coyotes would be removed as humanely as possible using methods and devices such as snares and leg-hold traps, calling and shooting, and Environmental Protection Agency (EPA) and Louisiana Department of Agriculture and Forestry (LDAF) approved registered toxicants (i.e., sodium cyanide in M-44 ejectors, sodium monofluoroacetate in Livestock Protection Collars (LPC), and gas cartridges). WS may also choose to use newly-developed or experimental tools provided by researchers or other interested parties.

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ACRONYMS /ABBREVIATIONS

ADC	Animal Damage Control
APHIS	Animal and Plant Health Inspection Service
AVMA	American Veterinary Medical Association
CDFG	California Department of Fish and Game
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
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
GAO	U. S. General Accounting Office
IPM	Integrated Pest Management
IWDM	Integrated Wildlife Damage Management
LDAF	Louisiana Department of Agriculture and Forestry
LCES	Louisiana Cooperative Extension Service
LDCRT	Louisiana Department of Culture, Recreation and Tourism
LDWF	Louisiana Department of Wildlife and Fisheries
LPC	Livestock Protection Collar
LRS	Louisiana Revised Statutes
MIS	Management Information System
MOU	Memorandum of Understanding
NASS	National agricultural Statistics Service
NEPA	National Environmental Policy Act
SOP	Standard Operating Procedure
T&E	Threatened and Endangered
USC	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFWS	U.S. Fish and Wildlife Services
VPPJ	Vermillion Parish Police Jury
WS	Wildlife Services

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Chapter 1 PURPOSE OF AND NEED FOR ACTION

1.0 INTRODUCTION

In the last hundred years, broad-scale changes in land use patterns have occurred as the increasing human population settled North American. Notable is the large-scale conversion of natural landscapes to agricultural and urban environments. As humans encroach on wild habitats, they compete with wildlife for space and other resources, which increases the potential for conflicts. Concurrent with this growth and change is a movement by some segments of the public to completely protect all wildlife from harm, which can create localized conflicts with resource managers and owners experiencing problems with wildlife. The *Animal Damage Control Programmatic Final Environmental Impact Statement (EIS)* (U.S. Department of Agriculture (USDA) 1997) summarizes the American perspective of the relationship between wildlife values and wildlife damage, as follows:

"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."

Biological carrying capacity is the limit of the land or habitat to support healthy populations of wildlife without long-term degradation of either the health of the species or the associated environment (Decker and Purdy 1988). The wildlife acceptance capacity (also known as cultural carrying capacity) is the limit of human tolerance for wildlife, or the maximum number of a given species that can coexist compatibly with local human populations (Decker and Purdy 1988). These terms are especially important in urban areas because they define the sensitivity of a local community to a specific wildlife species. For any given situation involving a wildlife conflict, individuals directly or indirectly affected by the damage will have varying degrees of tolerance for the damage experience and the species involved in the damage. The minimum tolerance, or threshold, determines the "wildlife acceptance capacity," which is often lower than the "biological carrying capacity." For example, the biological carrying capacity of coyotes (*Canis latrans*) in Louisiana is probably higher than their current population, however, the wildlife acceptance capacity is lower in many situations. Once the wildlife acceptance capacity of a species is reached or exceeded, humans will demand implementation of programs, both lethal and non-lethal, to reduce damage or threats of damage.

Wildlife damage management is the science of reducing damage or other problems caused by wildlife and is recognized as an integral part of wildlife management (The Wildlife Society 1990, 1992, Berryman 1991). Wildlife Services (WS)¹ is the Federal agency directed by law and authorized by Congress to protect American resources from damage by wildlife (Act of March 2, 1931, as amended (46 Stat. 1486; 7 USC. 426-426c) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988 (Public law 100-102, Dec. 27, 1987; Stat. 1329-1331 7 USC 426C). To fulfill this Congressional direction, WS conducts activities to prevent or reduce wildlife damage or threats of damage to agricultural, industrial and natural resources, property, and human health and safety. Work could be conducted on private and public lands and in cooperation with Federal, State and local agencies, private organizations, and individuals. Wildlife damage management is not conducted to punish

¹ On August 1, 1997, the Animal Damage Control program was officially renamed "Wildlife Services."

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offending animals but to prevent or reduce damage.

WS uses an Integrated Wildlife Damage Management (IWDM) approach to resolve wildlife-related conflicts. This strategy is also known as Integrated Pest Management (IPM) and is described in Chapter 1:1-7 of USDA (1997). In short, IWDM seeks to prevent, reduce, or stop wildlife damage by integrating a combination of methods sequentially or concurrently. These methods may include alteration of cultural practices, habitat manipulation, or behavioral modification of the offending species. Implementation of IWDM may also require the translocation of offending animal(s) or the reduction of the local populations by lethal means. WS uses the Decision Model (Slate et al. 1992) to determine how IWDM will be conducted. This approach allows IWDM strategies to be customized for each wildlife/human conflict that is encountered by WS personnel.

WS is a cooperatively-funded, service-oriented program that provides assistance to requesting public and private entities. WS responds to requests for assistance when valued resources are lost, damaged, or threatened by wildlife. Responses can be in the form of technical assistance or direct damage management. The degree of WS involvement varies, depending on the complexity of the wildlife problem. WS activities are conducted in accordance with applicable Federal, State, and local laws; cooperative agreements, agreements for control, memoranda of understanding (MOU), and other applicable documents. These documents establish the need for the requested work, legal authorities allowing the requested work, and the responsibilities of WS and its cooperators.

WS' mission, developed through a strategic planning process, is: 1) *“to provide leadership in wildlife damage management in the protection of Americas agricultural, industrial and natural resources, and 2) to safeguard public health and safety.”* WS' Policy Manual² reflects this mission and provides guidance for engaging in wildlife damage management through:

- Training of wildlife damage management professionals;
- Development and improvement of strategies to reduce losses and threats to humans from wildlife;
- Collection, evaluation, and dissemination of management information;
- Informing and educating the public on how to reduce wildlife damage;
- Providing data and a source for limited-use management materials and equipment, including pesticides (USDA 1989)

This environmental assessment (EA) documents the potential impacts to the human environment of the proposed Louisiana WS coyote damage management program that would be conducted to reduce damage and achieve a balance between the biological and wildlife acceptance capacities. This analysis relies mainly on existing data contained in published documents (Appendix A), including (USDA 1997), to which this EA is tiered.

Normally, individual wildlife damage management actions could be categorically excluded from further National Environmental Policy Act (NEPA) analysis, in accordance with implementing procedures for NEPA for the Animal and Plant Health Inspection Service (APHIS) (7 CFR 372.5(c), 60 Fed. Reg. 6,000, 6,003, (1995)). WS is preparing this EA to: 1) facilitate planning, interagency coordination, and the streamlining of program management; 2) clearly communicate to the public the analysis of individual and cumulative impacts of program activities; and 3) evaluate and determine if there are any potentially significant or cumulative adverse impacts from the proposed program. All wildlife damage management conducted in Louisiana would be undertaken in compliance with relevant laws, regulations, policies, orders and procedures, including the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531-1543). Activities would be conducted to avoid competition with the

² The WS Policy Manual provides WS personnel guidance in the form of program directives. Information contained in the WS Policy Manual and its associated directives has been used throughout this document, but has not been cited in the text or referenced in Appendix A.

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private sector that provides wildlife damage management services.

Newspaper notices and letters to interested parties were used to solicit public and agency input and identify major issues and concerns. Comments received by WS pertaining to the effects that social and legal, biological, economic, and physical elements may have on the proposed program or the effects this proposal may have on the quality of the human environment have been incorporated into this EA. Notice of Availability of this EA will be made, consistent with APHIS's NEPA procedures to allow interested parties the opportunity to obtain and review the document and comment on the proposed management program.

1.1 NEED FOR COYOTE DAMAGE MANAGEMENT IN LOUISIANA

1.1.1 Coyote History in Louisiana. At about the same time that the red wolf (*Canis rufus*) was extirpated from Louisiana, coyotes began to expand their range into the State (Paradiso and Nowak 1972, Riley and McBride 1972, Lowery 1974). Habitat changes are considered the biggest influence on the coyote's eastward range extension. Lowery (1974) reported coyotes first appeared in Louisiana sometime after 1942, and the first coyote was captured in Vernon Parish in 1949 (Geortz et al. 1975).

Linscombe et al. (1983) conducted scent station surveys for five years (1978-1982) to determine relative abundance indices for several furbearer species, including coyotes. They suggested that coyotes were spreading across the State from the northwest to the southeast and that the coyote population was increasing rapidly throughout the State. Today coyotes occur in all Louisiana parishes and have a high relative abundance in most parishes (Lowery 1974, Hall 1979, Linscombe et al. 1983).

There are no current studies that present data pertaining to coyote densities in Louisiana. Knowlton (1972) suggested that coyote densities may range as high as 5-6/mi² under optimal conditions, but a more realistic average is 0.5-1.0/mi² in the western United States. Determining a discrete density for coyotes in all Louisiana habitats would result in an arbitrary number that may accurately reflect coyote densities for one area and not for another. Coyote densities in Louisiana probably range from zero in areas where no habitat exists to as high as 5-6mi² with the average for all habitat types approximately 2 animals/mi² (G. Linscombe, State Furbearer Biologist, LDWF 2000, pers. comm.).

A 1993 U.S. District Court of Utah decision stated, “. . . *the agency need not show that a certain level of damage is occurring before it implements an ADC program,*” and, “. . . *supervisors need only show that damage from predators is threatened.*” The need for action in Louisiana is based on the necessity to protect agriculture, including livestock and crops, wildlife, and human health and safety.

1.1.2 Agency Efforts to Reduce Coyote Damage in Louisiana. WS' efforts to alleviate coyote problems have been and will likely continue to be based on technical assistance. However, the magnitude of coyote conflicts has increased the need to implement operational projects. These projects may involve the removal of specific problematic coyotes or groups of coyotes. WS personnel have access to a variety of damage management tools and methods, which allows flexibility to formulate an effective damage management strategy for each problem that is encountered.

From 1992 through 11/26/01 WS provided technical assistance and operational damage management assistance to 699 citizens reporting coyote problems (Figure 1-1). During this period, the number of technical assistance projects has varied throughout the analysis period, however, the number of direct control projects has increased markedly.

Several governmental agencies provide assistance to those experiencing coyote damage. Limited resources,

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however, restrict these agencies to specific types of assistance. In Louisiana, technical and/or operational assistance can be obtained from the Louisiana Department of Agriculture and Forestry (LDAF), Louisiana Cooperative Extension Service (LCES), Louisiana Department of Wildlife and Fisheries (LDWF), some Parish governments, and WS. The [redacted] contracted with WS in May 1998 to conduct coyote damage management work. About 50% of the WS Specialist's time is devoted to this endeavor. Prior to this project, WS removed about 20 coyotes from the Parish since 1991; since that time, almost 400 depredating animals have been removed. In the private sector, contract trappers also provide coyote management services.

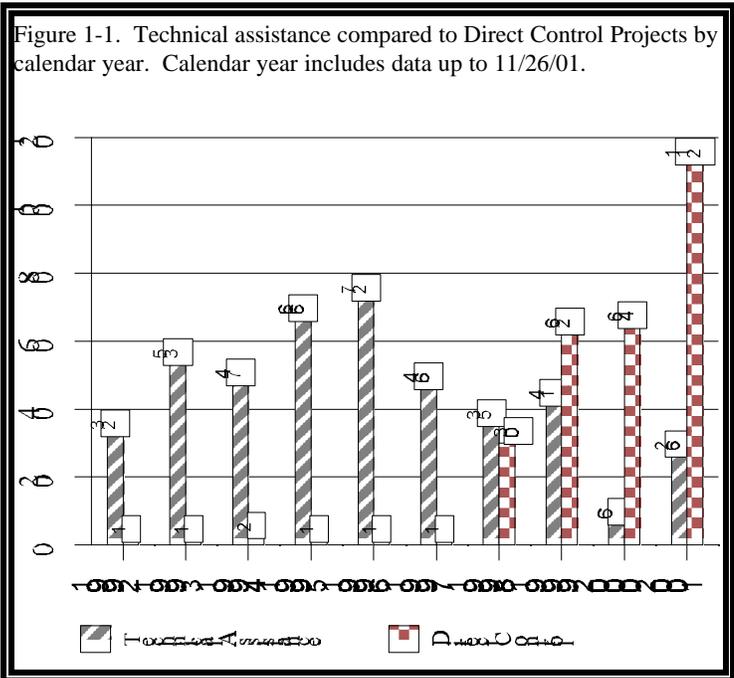
1.1.3 Livestock Predation.

Coyote predation statistics for Louisiana are almost nonexistent except for those reported by the USDA National Agriculture Statistics Service (NASS). In the 1995 Predator Loss Survey, NASS reported the loss of 200 cows and 1,100 calves to predators in Louisiana (NASS 1995a). This represented 1.3% and 5.2% of the State's annual cattle and calf mortality, respectively. For calves, coyotes were responsible for the largest proportion (81.8%, or 900 head) of predation and feral and free-ranging dogs accounted for 9.1% (100 head) of the predation losses, other species comprise the remaining percentage. Data for cattle was below minimum standard thresholds for NASS analysis. Cattle and calf losses in 1995 were valued at \$119,000 and \$286,000, respectively.

From 1995 through 2000, WS provided assistance to 205 individuals who valued their losses of cattle and calves to coyotes at \$46,117 (Table 1-1). Hall (1979) reported the results of an intensive food habit study of Louisiana coyotes and found that cattle/calf remains represented the seventh most widely-occurring food item in coyote stomachs. Michaelson and Goertz (1977) also found the remains of cattle and calves in 13% of the coyote stomachs analyzed for a food habit study of coyotes in northwest Louisiana.

Some statistics on sheep losses to predators are also available for Louisiana (NASS 1995b). In 1994, Louisiana sheep producers reported losing 225 sheep and 700 lambs to predators. Predation by coyotes accounted for 175, or 78% of sheep, and 700 or 100% of the lambs killed by predators. When compared to all known mortality factors, predation caused the death of 38% of sheep and 47% of lambs. Sheep and lamb losses from predators in 1994 were valued at \$27,300 and \$19,125, respectively (NASS 1995b).

Louisiana's sheep industry is located in two geographic regions of the State. Parishes located along [redacted] in [redacted] and [redacted] Louisiana produce 10,000 lambs annually and carryover about 12,000 ewes (LCES 1998). From 1995 through 2000, WS assisted 29 sheep producers experiencing coyote predation. At that time, these producers reported a loss of approximately \$3,000. A formal survey has not been conducted to determine the extent of sheep farming abandonment; however, Dr. Terry Dumas, Division Leader-Sheep/Animal Scientist at the LCES in Baton Rouge (pers. comm.), reported that Louisiana has lost several sheep flocks because assistance with



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predation and practical and effective damage tools were lacking. Predation has also been identified as the primary reason for some producers leaving the sheep business in other states (U. S. District Court of Utah 1993).

Since 1995, more than 60 poultry owners requested assistance from WS to reduce coyote predation on domestic ducks, chickens, geese, turkey, and guinea fowl. Losses to poultry between 1995 and 2000 totaled more than \$7,500.

Table 1-1. Coyote losses (incidents/dollars) Reported to WS, 1995-2000.

Resource	1995	1996	1997	1998	1999	2000	Total
Cattle/calves	21/5250	15/5650	10/5900	31/6450	65/9762	63/13105	205/46117
Sheep/lambs	11/1260	5/670	3/300	3/120	3/100	4/480	29/2930
Domestic Fowl ¹	10/4036	14/1140	6/1120	10/400	14/580	14/630	68/7906
Domestic Pets	7/230	11/425	14/1193	6/0	9/900	7/300	54/2841
Health & Safety ²	6	9	6	1	11	10	43
							399/59794

¹Includes domestic ducks, turkeys and geese, chickens, and guinea fowl.

²Only number of incidents were recorded, in part, because placing a value on human safety, injury or death is difficult.

1.1.4. Coyote Depredation on Other Resources and Threats to Human Health and Safety. Because of the absence of coyotes from Louisiana until the 1960's, many Louisiana citizens have not acclimated to their presence, and perceive them as threatening. Consequently, WS routinely receives requests for information or assistance with coyotes when people see or hear them near residential areas (Table 1-1). Coyotes have been known to threaten and attack humans in urbanized situations (Loven 1995, Baker and Timm 1998), however, this type of behavior has not occurred in Louisiana. Pets are sometimes killed or injured by coyotes that approach homes and residential areas. From 1995 to 2000, WS received 54 complaints from citizens who reported that their dog or cat had been threatened, injured, or killed by coyotes. Some pets were taken when they wandered away from the home; others were taken from porches or yards.

Cumulatively from 1995 through 2000, WS documented \$249,790 of reported damage to 34 different resources owned or managed by public agencies, private business, educational institutions, and private individuals. Several cases of coyote damage to watermelons have been reported to Louisiana WS over the years. In one case, coyotes destroyed more than 300 melons for a [REDACTED] Parish farmer. Coyotes have also reportedly fed on fruit such as strawberries and persimmons.

Most airports have large expanses of open grassland that provide adequate habitat for many wildlife prey species. These areas attract coyotes which use them for hunting. Most airports have security fencing around their perimeter, however, coyotes can breach this fence by going through openings in gates and culverts or under fences. Threats to human health and safety can occur when coyotes wander onto active runways and taxiways (Table 1-1).

WS has provided assistance to managers of several Louisiana airports after they reported incidences of problematic coyotes posing a hazard to incoming and departing aircraft. After numerous pilots reported coyotes on runways,

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the [REDACTED] Airport contracted WS to remove coyotes from the facility to reduce hazards to the traveling public. The [REDACTED] Airport reported a strike between a departing aircraft and a coyote in 1999, however, damage data or effects on the flight were not recorded. The [REDACTED] Airport in [REDACTED] has had an operational coyote damage management program in place for several years. This program was initiated after coyotes began frequenting runways. In addition, [REDACTED] maintenance personnel implemented a coyote damage management plan after a departing plane struck a coyote (Anon.1999).

At this time, the role of coyotes in the spread of diseases such as rabies appears to be minimal. There is concern, however, about the role of these canids in the transmission of diseases to pets and humans. If efforts at controlling the dog strain of rabies spreading from south Texas fail, then coyotes as disease vectors may become a major wildlife damage issue in Louisiana.

1.2 SCOPE AND PURPOSE OF THIS EA

Damage problems involving coyotes can occur statewide resulting in requests for assistance to WS. The scope and purpose of this EA are to evaluate the potential impacts of coyote damage management projects conducted by WS to protect agricultural and natural resources, property, and human health and safety in Louisiana.

Under the Proposed Action, coyote damage management could be conducted anywhere in Louisiana with the proper permissions and authorities. Requests for assistance, both technical and operational, are expected to increase in the future if past history holds true. In Fiscal Year (FY) 1997, Louisiana WS had two formal agreements to conduct coyote damage management on 1,000 acres (Management Information System (MIS) 1997). In FY 98, WS had 26 coyote management agreements on approximately 18,000 acres (MIS 1998). In FY 99, the number of agreements and protected acreage increased to 66 and 119,656, respectively (MIS 1999). In FY 00 the number of agreements increased to 112 covering 139,200 acres (MIS 2000). This has increased in FY 01 to 143 agreements covering 151,443 acres which is approximately 0.58% (MIS 2001) of the total land area in the State. Louisiana has an area of about 26,000,000 acres.

1.3 PROPOSED ACTION

The proposed action is to continue to implement an integrated coyote damage management program to protect agricultural and natural resources, property, and human health and safety on all lands in Louisiana where a need exists and a request is received and when all legal and financial requirements have been met. An IWDM approach considers using all legally available and socially-acceptable methods, either singly or in combination to alleviate or stop coyote-caused damage. Resource managers and owners would continue to receive technical assistance in the form of instructional sessions, demonstrations, equipment loans, and information on the availability and use of non-lethal and lethal tools. Non-lethal methods recommended by WS could include, but would not be limited to, habitat modification, cultural practices, and behavior modification of problematic coyotes, or use of leg-hold traps and snares. Non-lethal methods used by WS may include leg-hold traps, restraining snares, and behavior modifications. Lethal methods used by WS could include shooting and registered toxicants. All coyote damage management would be consistent with other uses of the area and would comply with appropriate Federal, State and local laws and in cooperation with other governmental agencies and tribal governments. (See Chapter 3 for a more detailed description of the current program and the proposed action).

1.4 OBJECTIVES FOR THE LOUISIANA WS COYOTE DAMAGE MANAGEMENT PROGRAM

- 1.4.1** Acceptance of the program by cooperators.
- 1.4.2** Response to 100% of requests for coyote damage management assistance.

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1.4.3 No adverse impact on the Statewide coyote population.

1.5 RELATIONSHIP OF THIS EA TO OTHER ENVIRONMENTAL DOCUMENTS

1.5.1 ADC Programmatic EIS. WS has issued a final EIS (USDA 1997) and Record of Decision on the National APHIS-WS program. This EA is tiered to that EIS.

1.5.2 USDA-APHIS-WS/USFWS Biological Opinion. A biological opinion was prepared on the WS program to comply with Section 7 of the ESA (USDI 1992) and to determine if the proposed action would adversely affect any listed species. WS will comply with the terms and conditions and reasonable and prudent measures that the USFWS provided to reduce any risk to T&E species.

1.5.3 USDA-APHIS-Louisiana WS/USFWS Biological Opinion. Louisiana WS entered into a formal Section 7 consultation with the USFWS on June 1, 2001 to address specific concerns that the proposed action may have on the Louisiana black bear (*Ursus americanus luteolus*). The USFWS submitted to WS their biological opinion on October 9, 2001 which states that the proposed action will not likely jeopardize the continued existence of the Louisiana black bear (USDI 2001). WS will comply with the terms and conditions and reasonable and prudent measures that the USFWS provided to mitigate the potential take of a Louisiana black bear.

1.6 DECISION TO BE MADE

Based on the scope of this EA, the decisions to be made are:

- Should WS continue to implement an IWDM strategy, including non-lethal and lethal damage management methods, to meet the objectives for coyote damage management?
- If not, should WS attempt to implement one of the other alternatives considered in this EA?
- Will the proposed action affect the viability of the State coyote population, threatened and endangered (T&E), and non-target species?
- Would the proposed action have significant impacts on the quality of the human environment requiring preparation of an EIS?

1.7 RELATIONSHIP OF AGENCIES DURING PREPARATION OF THE EA

Based on agency relationships, MOUs and legislative authorities, Louisiana WS is the lead agency for this EA, and therefore responsible for the scope, contents and decisions made. The LDWF and LCES had input during the EA preparation to ensure a multi-agency approach in compliance with NEPA and agency mandates, policies, and regulations.

1.8 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT ANALYSIS

1.8.1 Actions Analyzed. This EA evaluates planned coyote damage management to protect: 1) property, 2) agricultural and natural resources and 3) human health and safety in Louisiana. Protection of other resources or other program activities will be addressed in other NEPA analyses, as appropriate.

1.8.2 Wildlife Species Potentially Protected by Louisiana WS. Louisiana WS assistance may be requested to achieve management objectives for wildlife, including State or Federal T&E species or species of

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special concern. If other needs are identified, a determination would be made on a case-by-case basis if additional NEPA analysis is needed.

1.8.3 American Indian Lands and Tribes. Currently, Louisiana WS does not have any MOUs with any American Indian tribe. If WS enters into an agreement with a tribe for coyote damage management, this EA would be reviewed and supplemented if appropriate to insure compliance with NEPA. MOUs, agreements and NEPA compliance would be conducted as appropriate before conducting coyote damage management on tribal lands.

1.8.4 Period for which this EA is Valid. This EA would remain valid until Louisiana WS and other appropriate agencies determine that new needs for action, changed conditions or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document would be amended and supplemented pursuant to NEPA. Monitoring and review of this EA will be conducted each year to ensure that the EA is sufficient.

1.8.5 Site Specificity. This EA analyzes the potential impacts of coyote damage management and addresses the activities on all lands in Louisiana under MOU, cooperative agreement, or in cooperation with the appropriate land management agencies. It also addresses the impacts of coyote damage management on areas where additional agreements may be signed in the future. The proposed action is to reduce damage by coyotes and WS' goals and directives are to provide services when requested within the constraints of available funding and workforce. Therefore, it is conceivable that additional coyote damage management efforts could occur. This EA anticipates the potential expansion of services and analyzes the impacts of such efforts as part of the program. It also emphasizes, to the degree possible, major issues as they relate to specific work areas. The WS Decision Model is the site-specific protocol for individual actions conducted by WS in Louisiana (see Chapter 3 for a description of the Decision Model and its application).

1.8.6 Summary of Public Involvement. LDWF, LDAF, and LCES were invited to participate in the development of this EA and were asked to provide issues and concerns for consideration by WS. An invitation for public comment letter containing issues, objectives, preliminary alternatives, and a summary of the need for action, was sent to 21 individuals, agencies, or organizations identified as interested in Louisiana WS projects. Notice of the proposed action and invitation for public involvement were placed in five newspapers with circulation throughout Louisiana. WS received seven public comments concerning the preparation of the proposed action. All responses are maintained in the administrative file located at the Louisiana WS State Office, P.O. Box 589, Port Allen, Louisiana 70767-0589.

1.9 PREVIEW OF THE REMAINING CHAPTERS IN THIS EA

The remainder of this EA is composed of four (4) chapters and four (4) 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 standard operating procedures (SOP). Chapter 4 analyzes environmental consequences and the environmental impacts associated with each alternative considered in detail. Chapter 5 contains the list of preparers, reviewers and consultants of this EA. Appendix A is the literature cited used during the preparation of the EA, Appendix B is the authorities for conducting wildlife damage management in Louisiana, Appendix C is a detailed description of the methods used for coyote damage management, Appendix D illustrates the analysis procedure for the issues, alternatives, and potential environmental consequences.

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CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT

2.0 INTRODUCTION

Prior to preparation of this document, WS solicited input from citizens, organizations, and governmental agencies so that: 1) issues and concerns could be identified and considered in this EA and 2) adverse environmental impacts could be avoided, minimized, or mitigated. This chapter discusses important environmental components that could be affected by the different coyote damage management alternatives analyzed in this EA. Issues identified by the public, including those supporting or opposing the WS mission, are also outlined and discussed.

2.1 AFFECTED ENVIRONMENT

The area of the proposed action includes all private and public lands in Louisiana where coyote damage is occurring or could occur. The proposed action could be conducted on urban sites or rural sites when a request is received. Goals of the proposed action include the protection of agricultural and natural resources, property, and human health and safety where coyotes cause or could cause losses. Cultural, economic, social, legal, and other components of the affected environment are given further consideration in section 2.3 of this chapter, and in Chapters 3 and 4.

2.2 ISSUES CONSIDERED IN DETAIL IN CHAPTER 4

Several issues were identified by WS, LDWF and LCES during preparation of this EA. Some were used to prepare the detailed impact analyses of the alternatives in Chapter 4. The issues were also used to identify mitigation strategies and to develop SOP's for reducing or eliminating the likelihood of adverse environmental impacts from implementation of the proposed action. Some issues, however, did not receive detailed analyses because WS coyote damage management would not have any adverse affect on the legal, social, or economic environment from project implementation. The following issues were determined to be relevant by WS, LDWF and LCES based on public and other agency comments and analyzed in detail in Chapter 4:

- Effects on coyote populations
- Effects on non-target wildlife species, including T&E species
- Effects on health and safety of humans and companion animals
- Humaneness of methods
- Impacts to stakeholders

2.3 ADDITIONAL ISSUES CONSIDERED IN THIS EA

Issues, here in, are defined as unresolved concerns or conflicts. These unresolved concerns/conflicts often reflect opposing views and were identified through, and as a result of, discussions with potentially affected and interested parties in the proposed action. These issues have been consolidated into the following:

2.3.1. Humaneness. The issue of humaneness, as it relates to the killing or capturing of wildlife, is an important but complex concept. Kellert and Berry (1980) in a survey of American attitudes toward animals stated that 58% of their respondents, "*. . . care more about the suffering of individual animals . . . than they do about species population levels.*" Schmidt (1989) indicated that vertebrate pest control 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.*"

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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 with it the implication of a time frame, a case could be made for ". . . little or no suffering where death comes immediately . . ." (California Department of Fish and Game (CDFG) 1999), as in the case of shooting or drug-induced euthanasia.

Defining pain as a component of humaneness may, therefore, 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 none to significant (CDFG 1999). WS acknowledges that some damage management methods, such as leg-hold traps and body snares, may cause varying degrees of pain in different animal species for varying lengths of time. However, at what point pain diminishes or stops under these types of restraint has not been measured by the scientific community.

Pain and suffering as it relates to damage management tools used by WS to capture animals, is often interpreted differently by professional wildlife biologists and lay people. Wildlife managers and the public would both be better served to recognize the complexity of defining suffering, since ". . . neither medical or veterinary curricula explicitly address suffering or its relief" (CDFG 1991, 1999). Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, which, in turn, is governed by the person's past experiences. Different people may perceive the humaneness of an action in different ways. The challenge in coping with this issue is how to achieve the least amount of suffering with the constraints imposed by current technology, funding, workforce and social concerns.

Research suggests that with some methods, such as restraint in leg-hold traps, changes in the blood chemistry of trapped animals indicate "*stress*" (USDA 1997:3-81). However, such research has not yet progressed to the development of objective, quantitative measurements of pain or stress for use in evaluating humaneness.

Therefore, the decision making process involves tradeoffs between the aforementioned aspects of pain from damage management activities and the needs of humans to reduce wildlife damage. An objective analysis of this issue must consider not only the welfare of wild animals but also the welfare of humans if damage and losses are not stopped.

Louisiana WS personnel are trained professionals who strive to use the most humane methods available to them, recognizing the constraints of current technology, workforce, funding and social concerns. WS has improved the selectivity and humaneness of many management devices through research and is striving to bring new, more humane tools and methods into use. Until new methods and tools are developed, a certain amount of animal suffering could occur (e.g., when non-lethal damage management methods are neither practical, available, nor effective). Whenever possible and practical, WS also employs euthanasia methods recommended by the AVMA (1993) or the recommendations of a veterinarian, even though the AVMA euthanasia methods were developed principally for companion animals and slaughter of food animals, and not for free-ranging wildlife.

2.3.2 Aesthetics of Wildlife. The human attraction to animals has been well documented throughout history, an idea supported by prehistoric cave paintings and the domestication of wild animals. Today's American public is no exception, as evidenced by the large percentage of households that have pets or observe wildlife. Some people also may consider individual wild mammals and birds as "pets" and exhibit affection toward these animals. They may also want to have more wild animals in their immediate environment. Some humans also claim that they have a spiritual bond with wild animals. Conversely, some people have no emotional attachment to wildlife; some may even fear the presence of wild animals in their vicinity and demand their immediate removal. Consequently, public opinion about the best ways to manage conflicts between humans and wildlife is highly

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variable, making the implementation and conduct of wildlife damage management programs extremely complex. Ideas about how these programs are implemented and conducted are as unique as the almost infinite combinations of philosophies, psyches, aesthetic values, personal attitudes, and opinions found in humans. These differences of opinion result in concerns that the proposed action or the alternatives would result in the loss of aesthetic benefits to the general public and resource owners.

Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people. Aesthetics is the philosophy dealing with the nature of beauty, or the appreciation of beauty. Therefore, aesthetics is truly subjective in nature, dependent on what an observer regards as beautiful.

Wildlife populations also provide a range of direct and indirect social and economic benefits (Decker and Goff 1987). Direct benefits are derived from a user's personal relationship or direct contact with wildlife and may include both consumptive (e.g., using or intending to use the animal such as in hunting or fishing) or nonconsumptive use (e.g., observing or photographing animals) (Decker and Goff 1987). Indirect benefits, or indirect exercised values, arise without a human being in direct contact with an animal and are derived from experiences such as looking at pictures or videos of wildlife, reading about wildlife, or benefitting from activities or contributions of animals such as their use in research (Decker and Goff 1987). Two forms of indirect benefits exist according to Decker and Goff (1987): bequest and pure existence. Bequest benefits arise from the belief that wildlife should exist for future generations to enjoy; pure existence benefits accrue from the knowledge that the animals exist in the human environment (Decker and Goff 1987) or that they contribute to the stability of natural ecosystems (e.g., ecological, existence, bequest values) (Bishop 1987).

People directly affected by problems caused by coyotes often insist on their removal from where the conflict occurs. Others have the idealistic view that all wildlife involved in conflicts should be captured and relocated to another area to alleviate the problem. Individuals not directly affected by a reported conflict may be supportive of affected humans, neutral, or totally opposed to any removal of wildlife from specific locations or sites. Those who oppose removal of wildlife may do so because of emotional ties to individual animals, which are similar to the bonds that may exist between a human and a pet. Some may totally oppose coyote damage management, especially if lethal methods are used, and want WS to teach tolerance of coyotes causing conflicts.

IWDM provides relief from damage or threats of damage to people who would have no recourse if non-lethal damage management methods are ineffective or impractical. Louisiana WS only conducts coyote damage management at the request of citizens, organizations, and others who are experiencing problems or where coyote damage problems have historically occurred. When requests for coyote damage management assistance are received, WS addresses the issues/concerns, develops an appropriate plan of action, and explains the reasons for selecting the action that is implemented. Management actions are then carried out in a dedicated, humane and professional manner.

The public's ability to view coyotes in a particular area would be more limited if coyotes are removed or translocated. However, dispersal in the fall and late winter from other areas could possibly replace coyotes removed from implementation of the proposed action. In addition, coyotes are usually difficult to observe because of the secretive and nocturnal behavior. These animals can live within human environments and go undetected. The opportunity to view or hear coyotes is available where adequate habitat exists.

2.3.3 Public Concern About the Use of Chemicals. Much of the public concern over the use of toxicants for wildlife damage management is based on an erroneous perception that WS uses excessive quantities of non-selective, outdated chemicals. To the contrary, WS uses an IWDM approach to managing wildlife damage, which often does not employ chemicals as a damage management tool. Chemicals used by WS are registered with

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both EPA and LDAF and used in accordance with Federal and State law and label restrictions. WS Directives and MOU's with cooperators also regulate the use of chemical damage management tools by WS personnel. Social and legal concerns and selectivity of available methods are also considered in the WS decision-making process before chemicals are used on any damage management project. In a Risk Assessment of the WS program (USDA 1997, Appendix P), APHIS has determined that, when used according to label directions, chemical damage management tools are selective for target species and have negligible impacts on the environment.

WS could elect not to use toxicants; however, the use of toxicants are an integral component of IWDM and their selection for use would follow criteria in the WS Decision Model (Slate et al. 1992).

2.3.4. Cultural, Economic, and Social Issues. NEPA requires that all aspects of the environment be considered in terms of environmental impacts, not only those related to biological resources. While the proposed action will have little impact on these other resources, they are included as part of the WS analysis of the affected environment.

2.3.4.1 Archaeological/Historical Site Protection. Louisiana law protects prehistoric or historic artifacts and sites on lands owned by the State or any of its political subdivisions (Louisiana Revised Statutes (LRS) §§36:208). Coyote damage management has little potential to adversely affect sensitive cultural resources. Work areas are relatively small, therefore, ground disturbance would be minimal. The Louisiana Department of Culture, Recreation & Tourism (LDCRT) has reviewed the proposed action and concluded that the, "*Project as described will have no effect on significant cultural resources*" (LDCRT Concurrence, letter dated April 28, 2000). Louisiana WS would, as requested by LDCRT, halt work and contact the LDCRT if any cultural resources or human remains are discovered.

2.3.4.2 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 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 burial sites, human remains, funerary objects and sacred objects, and establishes procedures for notifying Tribes of any new discoveries.

In consideration of American Indian cultural and archeological interests, the Louisiana WS program solicited input from the following Tribes within Louisiana: Chitimacha Tribe of Louisiana, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Tunica-Biloxi Indian Tribe of Louisiana. None of the contacted tribes responded to WS concerning the proposed action.

2.3.4.3 Environmental Justice and Executive Order 12898. Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations") requires Federal agencies to make Environmental Justice (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. With respect to environmental statutes and regulations, EJ has been defined as the pursuit of equal justice protection and fair treatment without discrimination based on race, ethnicity, or socioeconomic status. Fair treatment implies that no person or group should endure a disproportionate share of the negative environmental impacts resulting from this country's domestic and foreign policies or programs.

APHIS is committed to implementing EJ, principally through the provisions of NEPA. WS activities were evaluated for their impact on the human environment and compliance with Executive Order 12898. The Program does not place an unfair environmental burden on minorities, ethnic groups, or low-income individuals or

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populations. Additionally, WS personnel are committed to Equal Opportunity mandates promulgated by the Federal government and WS attempts to include all social, cultural, and economic groups in its decision making processes. WS personnel use the most selective and least-environmentally harmful wildlife damage management methods as possible. WS does not believe that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations.

2.3.4.4 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 those related to their physical and mental development. WS makes a concerted effort to identify and assess environmental health and safety risks that may affect children for all projects, including the proposed work outlined in this EA. The work proposed in this analysis would use only legally available and approved methods that are highly unlikely to adversely affect children. Additionally, WS provides verbal and written warnings to prevent harming humans. For these reasons, WS concludes that it would not create an environmental health or safety risk to children from implementing the proposed action.

2.3.5 Impacts on Louisiana's Biodiversity. No Louisiana WS project is conducted to eradicate any wildlife population, including coyotes. In fact, some projects are conducted to provide a species protection from direct threats from other wildlife (e.g., white-tailed deer predation from coyotes). WS complies with international treaties, Federal, State, and local laws, and regulations enacted to ensure species protection and viability.

Although Louisiana does not have a formal biodiversity policy, the State Legislature has recognized the importance of a diversity of natural areas in the State (LRS §§56:1921). The State also engages in several cooperative efforts to improve land management practices and habitat conservation across ownership boundaries. For example, the Forest Stewardship Program brings State agencies and private land owners together to sustain forest lands for multiple natural resources, and other programs that focus on wildlife management and habitat conservation (Defenders of Wildlife and Center for Wildlife Law 1996). Louisiana also has instituted the Wildlife Habitat and Natural Heritage Trust Fund for land acquisitions to preserve critical habitat for wildlife and unique natural areas (LRS §§56:1923) and the Wetland Conservation and Restoration Trust Fund (LRS §§49:213.7, 30:311) to provide funds for developing and implementing programs to conserve and restore vegetated coastal wetlands. Finally, the Wildlife and Fisheries Conservation Fund was established to conserve State wildlife; it includes a provision for land acquisition. Louisiana also enforces an endangered species law (LRS §§56:1901-1907) that complements the Federal ESA. The State law protects species in danger of extinction and establishes penalties for harming those species. State endangered species listings, like those of the Federal government, are based on scientific, commercial and other data. LDWF also recognizes Species of Special Concern, which requires that WS consult with State biologists before working with the species on the list.

The impacts of the current WS program on biodiversity are minor and not significant, either Statewide or Nationwide (USDA 1997). WS operates on a relatively small percentage of the Louisiana land mass (see Section 1.2 of this EA). The take of any wildlife species analyzed in this EA is a small proportion of the total population and is insignificant to the viability and health of the population (see Section 4.2). In addition, any reduction in the local population is temporary because immigration from adjacent areas and reproduction by the remaining animals replaces the animals removed during damage management operations.

2.3.6 No wildlife damage management at taxpayer expense; wildlife damage management should be fee based. WS is directed by Congress to provide wildlife damage management to the people of the United States. Therefore, unless laws are rescinded, wildlife damage management is an appropriate role of the Federal government. In Louisiana, WS activities are allowed by LDWF under authorities granted via permits and an existing MOU. Funding for WS comes from several sources, including Federal appropriations received from USDA and funds provided by parish and local governments, other State and Federal agencies, private individuals,

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corporations, and organizations who contract with WS for professional wildlife damage management. Additionally, LDAF also conducts a wildlife damage management program that is funded with State tax dollars. Therefore, cooperators and governmental decision-makers have decided that the role of WS in addressing wildlife damage complaints is appropriate. WS will not compete with private industry by responding to public bid notices and will inform the public of wildlife damage management options provided by other agencies and private companies.

2.3.7 Coyote damage should be managed by hunters and trappers. WS provides professional wildlife damage management services at site-specific locations when requested by citizens experiencing a wildlife/human conflict. Personnel respond to requests for assistance in accordance with the Congressional direction provided to WS that authorizes the program. The response by hunters and trappers is based on a desire to sport hunt or to supplement their income by selling harvested animals. Most private trappers and hunters cannot afford to provide long-term, site-specific coyote damage management services to a complainant, who often requires that type of commitment. Additionally, the number of trappers in the State is declining (LDWF unpublished data); thus, trappers will probably not provide a reliable source of coyote damage management services.

Typically, damage management projects conducted by WS and hunters and trappers involve removing a small number of coyotes from a specific site. Neither are involved in Statewide or large scale coyote population reduction in Louisiana. Damage management actions are generally selective and target coyotes found on or near sites where damage is occurring or is likely to occur.

The jurisdiction for managing resident wildlife rests with the LDWF (Appendix B). LDWF manages coyotes as nuisance quadrupeds (LRS §§56:8(105)b) which allows hunters, trappers, and private contractors maximum opportunity to conduct coyote damage management.

2.3.8 Problematic wildlife should be translocated. Translocation, which is sometimes known as relocation, involves moving an individual animal from one site to another. Although it is often done to restock or replenish animals in suitable habitat, this technique could sometimes be used to alleviate wildlife damage problems and could be used as part of an IWDM approach. The success of a translocation effort, however, would depend on the potential for problematic individuals to be captured efficiently and the existence of an appropriate release site (Nielsen and Brown 1988). It would also depend on how well the translocated animal can adapt and survive in its new surroundings.

Translocation of resident wildlife is regulated by the LDWF. The agency does not normally allow translocating problematic wildlife because problems often arise at the release site and live-trapping and relocating coyotes is not cost-efficient nor biologically sound. Because WS embraces the IWDM approach to addressing wildlife conflicts, translocation could be used as a damage management tool; however, coyotes are abundant Statewide and relocation is not necessary to maintain a viable population. Because live-trapping and translocation is more expensive and labor intensive and not always biologically justifiable, and the LDWF has not requested WS to translocate coyotes, this method will not be considered until it is deemed appropriate by WS and the LDWF.

2.3.9 Appropriateness of Preparing an EA Instead of an EIS For Such a Large Area. Some individuals might question whether preparing an EA for an area as large as the State of Louisiana would meet the NEPA requirements for site specificity. If a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared in accordance with NEPA. In terms of considering cumulative impacts, a single EA analyzing impacts for the entire State should provide a better analysis than multiple EA's covering several smaller areas.

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CHAPTER 3: ALTERNATIVES

3.0 INTRODUCTION

This chapter consists of four parts: 1) an introduction, 2) description of alternatives considered and analyzed in detail including the Proposed Action (Alternative 4), 3) a description of alternatives considered, but eliminated from detailed analysis, and 4) a table of mitigation measures and SOP. Alternatives were developed for consideration using the WS Decision Model (Slate et al. 1992), “*Methods of Control*” (USDA 1997, Appendix J) and the “*Risk Assessment of Wildlife Damage Control Methods Used by the USDA Animal Damage Control Program*” (USDA 1997, Appendix P) of USDA (1997). Four alternatives were recognized, developed, and analyzed in detail; seven alternatives were considered but not analyzed in detail with supporting rationale. The four alternatives analyzed in detail are:

- Alternative 1. No Federal WS Coyote Damage Management in Louisiana.
- Alternative 2. Non-lethal Damage Management Only.
- Alternative 3. Non-lethal Before Lethal Control.
- Alternative 4. Integrated Wildlife Damage Management for all Land Classes (No Action, Proposed Action).

3.1 DESCRIPTION OF ALTERNATIVES

3.1.1 Alternative 1. No Federal WS Coyote Damage Management in Louisiana. This alternative would eliminate all WS or any other Federal program for coyote damage management (operational and technical assistance) on all land classes within Louisiana. However, State and county agencies and private individuals could conduct coyote damage management. WS would not be available to provide technical assistance or make recommendations to individuals or entities experiencing coyote damage. In some cases, damage management methods applied by non-agency personnel could be used contrary to their intended or legal use, or in excess of what is recommended or necessary. Illegal use of pesticides could increase (Schueler 1993).

A *No Control* alternative was analyzed by the USFWS (USDI 1979) 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 (1997).

3.1.2 Alternative 2. Non-lethal Damage Management Only. Under this alternative, WS would only provide technical assistance regarding non-lethal techniques, except when emergency damage management is necessary for public safety. WS would encourage resource owners to use livestock guarding dogs and other non-lethal methods which could include husbandry, habitat modification, fencing, and electronic guards/frightening devices.

3.1.3 Alternative 3. Non-lethal Before Lethal Control. This alternative would require the use of non-lethal damage management before the use of lethal damage management efforts by WS. Upon request by resource owners, WS would investigate complaints, make recommendations or loan non-lethal equipment if warranted. Non-lethal methods selected by livestock producers would be the same as those listed in section 3.1.2. Verification of the methods used would be the responsibility of WS. No standard exists to determine producer diligence in applying these methods, nor are there any standards to determine how many non-lethal applications are necessary before the initiation of lethal controls. Thus, only the presence or absence of non-lethal methods can

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be evaluated. If non-lethal methods are unsuccessful, lethal methods would then be used as appropriate. All legal tools necessary to successfully conduct these activities would be authorized, as described in Alternative 4, where appropriate, once the criteria for non-lethal damage management have been met.

3.1.4 Alternative 4. Integrated Wildlife Damage Management for all Land Classes (No Action, Proposed Action). The No Action alternative would continue the current IWDM program to resolve coyote related problems/damage in Louisiana. This approach to resolving coyote damage would involve non-lethal, lethal, technical assistance and direct operational damage management. The implementation of IWDM on resource owners' property would be accomplished through education/extension programs and operational programs.

The current program is a collection of cooperative programs with local agencies and private individuals to protect livestock, property, wildlife, and public health and safety (described in Chapter 1). WS personnel in Louisiana conduct technical assistance, and preventive (in response to historical loss) and corrective (in response to current loss or hazard) operational coyote damage management using a full array of legally available coyote damage management methods. The methods for WS' use include: traps, snares, calling and shooting, and may include the gas cartridge, LPC, and M-44s if registered in Louisiana. WS activities would be conducted on private lands and other land classes as requested by resource managers under MOU's, cooperative agreements or agreement for control.

Education/extension programs would be conducted by Louisiana WS to provide resource owners with assistance and information concerning the use and effectiveness of non-lethal coyote damage management methods. WS would also loan frightening devices to resource owners (when equipment is available) and assist livestock producers in obtaining livestock guarding dogs. Resource owners would be responsible for implementing non-lethal methods. Education/extension programs conducted by WS would also teach resource owners the proper use of snares, traps and other legal damage management methods.

WS personnel would minimize the effects on non-target animals, T&E species (USDI 2001) and the environment by utilizing the most selective and effective lethal methods. Lethal methods would only be used as necessary to prevent or reduce damage after non-lethal methods are considered and used as appropriate.

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 the current program and consistent with Council on Environmental Quality's (CEQ) definition (CEQ 1981). Selecting the No Action Alternative would not result in the cessation of existing practices; that result would be achieved by selection of Alternative 1.

3.2 INTEGRATED WILDLIFE DAMAGE MANAGEMENT

USDA (1997, Appendix J) describes methods currently used by the WS program. Several of these were considered in this assessment because of their potential use in reducing coyote damage to property, natural and agricultural resources, and public health and safety. A listing and more detailed description of the methods used by Louisiana WS for coyote damage management is found in Appendix C of this EA.

3.2.1 Introduction. During more than 80 years of resolving wildlife damage problems, WS has considered, developed, and used numerous methods for managing wildlife damage problems (USDA 1997). WS' efforts have involved the research and development of new methods, improvement of existing methods, and the implementation of effective strategies to resolve and prevent wildlife damage.

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Usually, the most effective approach to resolving wildlife damage is to integrate the use of several methods simultaneously or sequentially. IWDM is the implementation and application of safe and practical methods for the prevention and reduction of damage caused by wildlife based on local problem analyses and the informed judgement of trained personnel. The WS Program applies IWDM, commonly known as Integrated Pest Management, to reduce damage through the WS Decision Model (Slate et al. 1992) discussed in section 3.2.3 (Figure 3-1).

The philosophy behind IWDM is to implement effective management techniques in a cost-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 create a combination of techniques for the specific situations. IWDM may incorporate cultural practices, habitat modification, animal behavior modification, removal of individual animals, local population reduction, or any combination of these, depending on the characteristics of the specific damage problems.

3.2.2 Integrated Coyote Damage Management Strategies used by WS consist of:

3.2.2.1 Technical Assistance Recommendations (implementation is the responsibility of the requester): Louisiana WS personnel provide information, demonstrations and advice on available coyote damage management techniques. Technical assistance includes demonstrations on the proper use of some management devices (propane exploders, electronic guards, cage traps, effigies, etc.) and information on animal husbandry, wildlife habits, 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 the level of risk, need and practical application. Technical assistance may require substantial effort by WS personnel in the decision making process, but the actual management is the responsibility of the requester.

3.2.2.2 Direct Damage Management (assistance conducted or supervised by WS personnel): Direct damage management assistance is implemented when the problem cannot be resolved through technical assistance and when Cooperative Agreements enable WS to conduct direct damage management. The initial investigation defines the nature and history of the problem, extent of damage, and the species responsible for the damage. Professional skills of WS personnel are often required to resolve problems effectively, especially if restricted use pesticides are proposed or if the problem is complex, requiring the direct supervision of a wildlife professional. WS considers the biology and behavior of the damaging species and other factors using the WS 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 agency personnel, as appropriate. Two strategies are available:

3.2.2.2.1 Preventive Damage Management is applying wildlife damage management strategies before damage occurs, based on historical problems and data. All non-lethal methodologies, whether applied by WS or resource owners, are employed to prevent damage from occurring and therefore fall under this heading. When requested, WS personnel provide information and conduct demonstrations, or take action to prevent additional losses from recurring. For example, in areas where lamb or calf depredations have occurred historically, WS may provide information about livestock guarding animals, fencing or other husbandry techniques, or if requested and appropriate, conduct coyote damage management before lambing or calving begins.

The rationale for conducting preventive damage management to reduce damage differs little in principle from holding controlled hunts for deer or elk in areas where agricultural damage has been a historical problem. By reducing the number of deer near agricultural fields, or the number of coyotes near a herd of sheep, the likelihood of damage is reduced.

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Shelton and Klindt (1974) documented a strong correlation between coyote densities and levels of sheep loss in Texas, and Robel et al. (1981) found a similar correlation in Kansas. In southeastern Idaho, Stoddart and Griffiths (1986) documented an increase in lamb losses followed by a decrease in lamb losses as coyote populations rose and fell. Gantz (1990) concluded that late winter removal of territorial coyotes from mountain grazing allotments would reduce predation on sheep grazing on those allotments the following summer.

3.2.2.2 Corrective Damage Management is applying coyote 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 occurring. For example, in areas where verified and documented livestock depredations are occurring, WS may provide information about livestock guarding animals, fencing or husbandry techniques, or conduct operational damage management to stop losses. The U.S. General Accounting Office (GAO 1990) concluded that, according to available research, localized lethal damage management is effective in reducing coyote damage.

3.2.3 WS Decision Model used for Decision Making.

USDA (1997) and Slate et al. (1992) describe the decision making procedures used by WS personnel to determine management strategies or methods applied to specific damage problems (USDA 1997: pages 2-20 to 31, Appendix N).

The WS decision making process is a procedure for evaluating and responding to damage complaints (Figure 3-1). WS personnel are frequently contacted only after requesters have tried several 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 for 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. USDA (1997, Appendix N) provides detailed examples of how the WS Decision Model is implemented for coyote predation to sheep on public and private lands.

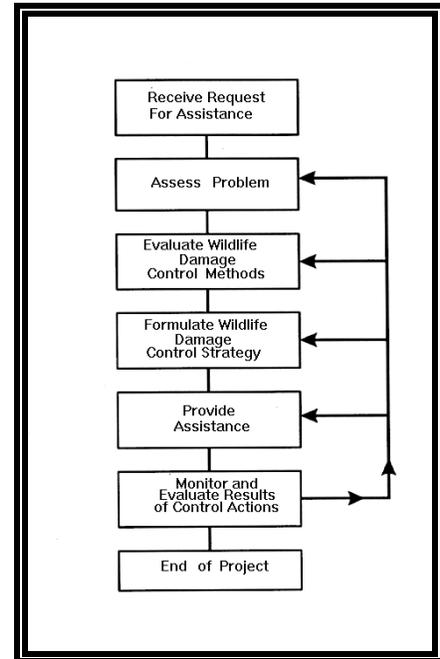


Figure 3-1. WS Decision Model

In terms of the WS Decision Model (Slate et al 1992), most damage management efforts consist of a continuous feedback loop between receiving the request and monitoring the results with the management strategy reevaluated and revised periodically.

3.3 ALTERNATIVES CONSIDERED BUT NOT IN DETAIL, WITH RATIONALE

3.3.1. No Preventive Management. Coyote management activities would be conducted only in response to actual predation or repeated harassment of livestock by coyotes or after coyotes have posed threats to human health and safety. For example under this alternative, lethal control would be focused toward offending animals after coyote predation or harassment of livestock has occurred, or after documentation of coyotes posing threats to human health and safety. Control efforts would be directed at nuisance coyotes only. Preventive direct operational damage management would not be provided.

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This alternative was eliminated from consideration because current preventive damage management has been found to have no significant effect on area or Statewide coyote populations (Connolly 1978, 1995; Knowlton and Gese 1995). Additionally, preventative damage management helps distribute work loads more evenly throughout the year. This minimizes livestock losses by providing prompt service instead of the backlogging of requests for service during busy periods.

Also, preventive damage management has been documented in reducing future livestock losses when livestock protection is the main objective of WS (Gantz 1990). Without actions to alleviate predation, losses of adult sheep to coyotes can be as high as 8.4% of the flock and lamb losses 29.3% (O'Gara et al. 1983). Conversely, sheep and lamb losses to coyotes are much lower where wildlife damage management is applied (Nass 1977, Tigner and Larson 1977, Howard and Shaw 1978, Howard and Booth 1981).

3.3.2. Lethal Methods Only. Lethal methods would be the only methods used by WS to abate coyote-related problems. This alternative is eliminated from detailed analysis because it is inconsistent with the WS Decision Model (Slate et al. 1992). This alternative would also be less effective at reducing damage than an integrated program which is more socially unacceptable.

3.3.3 Compensation for Predator Damage Losses. The Compensation alternative would direct all WS program efforts and resources toward the verification of losses from coyotes, and providing monetary compensation. WS would not provide any operational damage management or technical assistance.

This alternative is not currently available to WS because WS is directed by Congress to protect American agricultural, natural resources, and property (Act of 1931, and Rural Development, Agricultural and Related Agencies Appropriation Act of 1988). Analysis of this alternative in USDA (1997) indicates that it has many drawbacks:

- It would require larger expenditures of money and personnel to investigate and validate all losses, and determine and administer appropriate compensation.
- Compensation would most likely be below full market value.
- It is difficult to make timely responses to all requests to assess and confirm losses, and many losses could not be verified.
- Compensation would give little incentive to resource owners to limit losses.
- Congress has not appropriated funds to compensate for predation or other wildlife damage to agricultural products.

3.3.4 Bounties. Payment of funds for killing wildlife (bounties) suspected of causing economic losses is not considered effective. This alternative will not be considered by WS in detail because:

- WS does not have the authority to establish a bounty program.
- Bounties are generally not as effective in reducing damage because depredating individuals/local populations are not specifically targeted.
- Circumstances surrounding take of animals is completely unregulated.
- No effective process exists to prohibit taking of animals from outside the damage management area for compensation purposes.

3.3.5 Eradication and Suppression. An eradication alternative would direct all WS program efforts toward planned, total elimination of coyotes, and the eradication of coyotes could be interpreted as being legal in Louisiana (LRS §§ 56:8.(105)b). However, this alternative will not be considered by WS in detail because:

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- LDWF opposes eradication of any Louisiana wildlife species.
- The eradication of established coyote populations would be extremely difficult if not impossible to accomplish and cost prohibitive.
- Eradication is not acceptable to most members of the public.

It is also not realistic, practical, or allowable under present WS policy to consider large-scale population suppression as the basis of the WS program. Typically, WS activities in Louisiana are conducted on small portions of the area inhabited by depredating species or the species causing a threat to public health or safety (See Section 1.2 of this EA).

3.3.6 Damage management through birth control. Under this alternative, coyote populations would be managed through the use of contraceptives. Coyotes would be sterilized or contraceptives administered to limit their ability to produce offspring. However, at present, there are no approved chemical or biological contraceptive agents for coyotes. A coyote contraceptive, chemosterilant or immunocontraceptive, if delivered to a sufficient number of individuals, could temporarily suppress local breeding populations by inhibiting reproduction. Reduction of local populations would result from natural mortality and inhibited reproduction. No coyotes would be killed directly with this method, however treated coyotes may continue to cause damage.

Contraceptive measures for mammals can be grouped into four categories: surgical sterilization, oral contraception, hormone implantation, and immunocontraception (the use of contraceptive vaccines). These techniques would require that coyotes receive either single, multiple, or possibly daily treatment to successfully prevent conception. The use of this method would be subject to approval by Federal and State Agencies. This alternative was not considered in detail because: (1) it would take a number of years of implementation before the coyote population would decline, and, therefore, damage could continue for a number of years; (2) surgical sterilization would have to be conducted by licensed veterinarians, which would therefore be extremely expensive; (3) it is difficult to effectively live trap or chemically capture the number of coyotes that would need to be sterilized in order to effect an eventual decline in the population; (4) no chemical or biological agents for contracepting coyotes has been approved for use by State and Federal regulatory authorities.

The use of contraceptives is not realistic, at this point, since there are no effective and legal methods of delivering contraceptives to coyotes.

3.3.7 Lithium Chloride as an Aversive Agent. Lithium chloride has been tested as a taste aversion agent to condition coyotes to avoid livestock, especially sheep. Despite extensive research, the efficacy of this technique remains unproven (Conover et al. 1977; Sterner and Shumake 1978; Burns 1980, 1983; Horn 1983; Johnson 1984; Burns and Connolly 1980, 1985). In addition, lithium chloride is currently not registered for this use by the EPA or the Food and Drug Administration (FDA), and therefore cannot legally be used or recommended for this purpose.

3.4 MITIGATION AND STANDARD OPERATING PROCEDURES (SOPs) FOR WILDLIFE DAMAGE MANAGEMENT TECHNIQUES

Mitigation measures 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 Louisiana, uses many mitigation measures and these are discussed in detail in USDA (1997, Chapter 5). The following mitigation measures apply to some or all of the alternatives, as indicated in the columns.

- Alternative 1. No Federal WS Coyote Damage Management in Louisiana.
- Alternative 2. Non-lethal Damage Management Only.

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- Alternative 3. Non-lethal Before Lethal Control.
- Alternative 4. Integrated Wildlife Damage Management for all Land Classes (No Action, Proposed Action).

Mitigation Measures by Alternative	1	2	3	4
<i>Animal Welfare and Humaneness of Methods Used by WS</i>				
Research would continue to improve the selectivity and humaneness of management devices and these would be implemented into the Louisiana WS Program.		X	X	X
Pan-tension devices are used to reduce the incidence of smaller non-target animal capture in leg-hold traps.		X	X	X
Breakaway snares have been developed and implemented into the program (breakaway snares are designed to break open and release when tension is exerted by larger non-target animals such as deer and livestock).		X	X	X
Chemical immobilization and euthanasia procedures that do not cause pain are used.			X	X
<i>Safety Concerns Regarding WS' Use of Pesticides, Traps and Snares</i>				
All pesticides used by the Louisiana WS program are registered with the EPA and LDAF.			X	X
EPA-approved label directions are followed by WS employees.			X	X
The WS Decision Model (Slate et al. 1992), designed to identify the most appropriate wildlife damage management strategies and their impacts, is used when planning coyote damage management.		X	X	X
Most use of pesticides would be restricted to private lands.			X	X
WS employees that use pesticides are trained to use each specific material and are properly certified to use pesticides or work under the direct supervision of properly certified supervisors.			X	X
WS employees who are certified pesticide applicators participate in continuing education programs to keep abreast of developments and to maintain their certifications.			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	X	X
Warning signs would be posted on main roads and/or trails leading into any areas where traps, snares or M-44s were being used. These signs would be removed at the end of the damage management period.			X	X
In addition to area warning signs, individual warning signs would be placed within 25 feet of each M-44 device.			X	X
<i>WS' Impacts on T&E Species and Other Species of Special Concern</i>				
WS has consulted with the USFWS regarding the Louisiana WS program and would continue to implement all applicable measures identified by the USFWS to ensure protection of T&E species.		X	X	X

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Mitigation Measures by Alternative	1	2	3	4
No leg-hold traps or snares would be set within 30 feet of any exposed bait or animal carcass to prevent capture of raptors.		X	X	X
The use or recommendations of non-lethal methods such as guard dogs, scare devices, and other methods, would be encouraged when appropriate.		X	X	X

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Chapter 4: ENVIRONMENTAL CONSEQUENCES

4.0 INTRODUCTION

Chapter 4 provides information needed for making informed decisions on the coyote damage management objectives outlined in Chapter 1, the issues and affected environment discussed in Chapter 2, and the alternatives discussed in Chapter 3. This chapter analyzes the environmental consequences of each alternative. The analysis of environmental effects which could be expected from each action alternative takes into account WS decision making process (Slate et al. 1992) and guidance provided from WS policy directives.

4.1 ENVIRONMENTAL CONSEQUENCES

This section analyzes the environmental consequences using Alternative 4 (No Action/Proposed Action) as the baseline for comparison. Appendix D summarizes the four alternatives and the impacts each alternative could have on the issues identified in Chapter 2.

The following resources within Louisiana would not be adversely affected by any of the alternatives analyzed: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, and timber resources. These resources will not be analyzed further.

4.1.1 Social and Recreational Concerns. Social and recreational concerns identified during public involvement are discussed throughout this EA and in USDA (1997). No social or recreational resources will be adversely affected by the proposed alternative.

4.1.2 Cumulative and Unavoidable Impacts. Cumulative and unavoidable impacts from each alternative to coyotes and non-target populations are discussed and analyzed in this chapter (Section 4.2). This EA recognizes that the total annual removal³ of individual animals from wildlife populations by all causes is the cumulative mortality. Analysis of Louisiana WS' coyote "take" from 1992 through 2000, combined with other mortality, indicates that cumulative yearly impacts are not significant. The Louisiana WS program is not expected to have any adverse cumulative affects on non-target wildlife, including T&E species (USDI 2001). Furthermore, coyote damage management would not jeopardize public health and safety.

4.1.3 Irreversible and Irrecoverable Commitments of Resources. Other than minor uses of fuels for motor vehicles and electrical energy for office maintenance, there are no irreversible or irretrievable commitments of resources. Based on these estimates, the Louisiana WS program produces very negligible impacts on the supply of fossil fuels and electrical energy.

4.2 ALTERNATIVES & ISSUES ANALYZED IN DETAIL

The "*Magnitude*" analysis for alternatives and issues analyzed in this EA follows the process described in USDA (1997:Table 4-2). Magnitude is defined in USDA (1997) as ". . . a measure of the number of animals killed in relation to their abundance." Magnitude may be determined either quantitatively or qualitatively. Qualitative analysis is based on population trends and harvest data or trends and modeling. Allowable harvest levels were determined from research studies cited in USDA (1997, Table 4-2). "*Other Harvest*" includes the known fur harvest, sport harvest, and other information obtained from LDWF. "*Total Harvest*" is the sum of the Louisiana

³It is recognized that the other mortality of wildlife (i.e., road kills, disease, natural mortality, etc.) occurs throughout Louisiana but no reliable system exists for recording this information.

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WS kill combined with the "Other Harvest."

Estimating wildlife densities is not precise and often dynamic, and professional judgement is required to account for unknowns and variables, such as the ability of certain habitats to support higher densities of animals than others and habitat variability affects on population stability and recruitment. Wildlife populations can change considerably from one year to the next due to factors such as distemper, mange, or other diseases. As a result, any population estimate would be for a given point in time and population levels can change rapidly, such as if a disease outbreak occurs. Therefore, adverse affects assessments are based on conservative population estimates rather than higher population estimates to better insure that no adverse wildlife population impacts occur.

4.2.1 Alternative 1. No Federal WS Coyote Damage Management in Louisiana. A thorough review of the potential impacts of this alternative can be found in USDA (1997). USDA (1997) summarized the biological impacts of the No WS Program Alternative as follows:

"Biological impacts that would be expected under the No Action Alternative (Alternative 1 in this EA) include all impacts that occur under the Current Program Alternative (Alternative 4 in this EA) plus impacts that relate to the reasons listed previously. Taking of some species would be more variable (i.e., lower for some species in some areas and higher in other areas). However, taking of non-target species probably would be higher, and for some small populations, could become biologically significant. This would be especially important if the species was threatened or endangered. Species diversity could be significantly affected. The indirect impacts on non-target species affected through the food chain or by uncontrolled releases of toxicants into the environment also could increase. In some areas, people could use unapproved chemical methods. Misuse of chemicals could increase and thereby adversely affect certain wildlife populations and public health and safety."

4.2.1.1 Effects on coyote populations. Alternative 1 would result in no Louisiana WS operational coyote damage management program. Some type of predation management would most likely be conducted by agricultural producers, various State or local governmental agencies, or other entities. Coyote damage management would certainly be handled differently in certain areas without WS' assistance. This alternative would have minimal adverse affects to the Statewide coyote population because of the coyote's resilience and dispersal behavior. Density dependent and independent population regulatory mechanisms would continue to determine Louisiana's coyote population.

4.2.1.2 Effects on non-target wildlife species, including T&E species. No operational WS activities would be conducted pursuant to this alternative and therefore, there would be no risks to non-target or T&E species from WS program actions. Some type of damage management would most likely be implemented by agricultural producers or other private individuals. However, any such actions initiated by individuals with limited training and experience would be more likely to affect non-target species. Lacking professional assistance, some agricultural producers might use illegal pesticides (Schueler 1993, Allen et al. 1996, USDA 1997), a cheaper form of predation control that represents one of the greatest threats to the environment, T&E species, domestic animals, and public safety.

4.2.1.3 Effects on health and safety of humans and companion animals. This alternative would result in no WS operational coyote damage management program in Louisiana. This alternative would likely result in increased risks to public health and safety when compared to Alternative 4. Lacking professional assistance, some agricultural producers might use illegal pesticides (Schueler 1993, Allen et al. 1996, USDA 1997), a cheaper form of predator control that represents one of the greatest threats to the environment, T&E species, and domestic pets. In addition the majority of complaints received by Louisiana WS concerning pet safety are resolved with technical assistance, consequently, pet safety could be jeopardized with this alternative. Further,

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WS would not be able to provide assistance to airport managers concerned about the safety of passengers and operators in small aircraft striking coyotes.

4.2.1.4 Humaneness of methods. This alternative would be considered humane by many people. Resource/property owners could use lethal and non-lethal methods to reduce coyote damage. However, the proper selection and most humane use of methods may not occur as producers and resource managers may not have sufficient experience to properly implement damage management techniques. In addition, some resource/property owners may take illegal action using unregistered chemicals against localized populations of coyotes out of frustration of continued damage (Schueler 1993, Allen et al. 1996, USDA 1997). Some of these illegal actions may be less humane than methods used by experienced WS personnel. No WS involvement would likely result in producers relying heavily on the use of lethal control methods.

4.2.1.5 Impacts to stakeholders. This alternative would be acceptable to people who do not want the government managing wildlife or associated problems but would be unacceptable to those who seek solutions to coyote problems. Coyote damage management would be the responsibility of resource owners and managers, or private nuisance wildlife control operators. Assistance available from other agencies involved in coyote damage management would not likely be as effective in meeting the demands of the public.

Resource owners/managers receiving damage from coyotes would strongly oppose this alternative because they would bear the damage caused by coyotes. Animal activists and a minority of environmental activists would prefer this alternative because activists believe it is morally wrong to kill or use animals for any reason. Some people would support this alternative because they enjoy seeing or hearing coyotes, or having coyotes nearby. However, while WS would take no action under this alternative, other individuals or entities could conduct damage management activities.

WS' annual coyote harvest is relatively small and does not reduce recreational opportunities for hunting, trapping, and observing coyotes. Consequently, there would not be increased recreational opportunities associated with coyotes in Louisiana if this alternative is selected.

4.2.2 Alternative 2. Non-lethal Damage Management Only

4.2.2.1 Effects on coyote populations. Because this alternative would not allow WS to conduct any operational lethal coyote damage management, there would be no direct WS impacts to the statewide coyote population. There would be some impact to coyotes from other entities that are implementing damage control strategies to reduce coyote damage. This could take the form of increased private trapping or other control efforts by individual agricultural producers or resource managers, and/or the establishment/enlargement of organized State, parish, or private coyote control programs. Because WS' current activities result in such a low magnitude of impact on the viability of Louisiana's coyote population (see section 4.2.4.1), it is not expected that these other forms of coyote control would result in significantly different impacts.

4.2.2.2 Effects on non-target wildlife species, including T&E species. Under this alternative, there would be no WS implemented lethal damage management activities and hence no direct mortality to wildlife populations or T&E species from WS. Some type of wildlife damage management would most likely be implemented by agricultural producers or resource owners, or nuisance wildlife control operators. These activities, however, could pose greater risks to non-target wildlife than WS' activities. Without WS' operational assistance, some livestock producers may be motivated to consider use of more economical forms of control than those practiced by WS (Schueler 1993, USDA 1997). Illegal use of toxicants represents one of the cheapest forms of predator removal, but it also presents the greatest environmental risks (Allen et al. 1996). Risks to T&E species would probably be greater under Alternative 2 than Alternative 4, the proposed action of this EA.

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4.2.2.3 Effects on health and safety of humans and companion animals. This alternative would result in no Federal operational coyote damage management program in Louisiana, therefore the use of methods would be at the discretion of individuals or agencies that conduct the coyote damage control activities. The low risks associated with WS' use of coyote damage management methods would be muted under this alternative. WS could make recommendations on lethal methods if non-lethal methods failed to reduce damage, but implementation of the recommendation would be by some other entity. Increased use of the same methods by less skilled trappers or agricultural producers, and greatly reduced restrictions on how wildlife damage management would be conducted may result in an increased risk to the public and pets. In addition under this alternative, WS could only use non-lethal methods if a situation occurs where coyotes are presenting a risk to public or pet health and safety. This Alternative would likely result in increased risks to human and pet safety for some situations over those identified in Alternative 4.

4.2.2.4 Humaneness of methods. Under this alternative, only non-lethal coyote damage management methods could be implemented. WS personnel are experienced and professional in their use of management methods, and methods are applied as humanely as possible. Some animal activists may perceive this approach as more humane to coyotes because they oppose all lethal methods of coyote damage management. However, with only limited damage management methods available, resource owners may take illegal action out of frustration of continued damage (Schueler 1993, Allen et al. 1996, USDA 1997). Some of these illegal actions may be less humane than methods used by WS personnel. In addition, the humaneness of this alternative must also consider the humaneness to domestic animals or humans that may be injured or killed by coyotes.

4.2.2.5 Impacts to stakeholders. The impacts of this alternative to stakeholders would be variable depending on the damage management efforts employed by resource owners and their values toward coyotes. Resource owners who are receiving damage from coyotes would likely oppose this management alternative. Some people would support this alternative because they are opposed to killing of any wildlife. While WS could only provide non-lethal assistance under this alternative, other individuals or entities could conduct lethal damage management. However, the selection of this alternative would likely increase the workload of existing agencies involved with coyote damage management.

Many sheep and cattle producers already practice some form of non-lethal predation management (NASS 1999). Generally, the use of non-lethal methods only reduces livestock predation loss to some extent, and mitigates hazards coyotes pose to public health and safety but not significantly or to acceptable levels in all situations. Furthermore, livestock losses would increase as coyotes become accustomed to non-lethal practices (Pfiefer and Goos 1982, Conover 1982). Green et al. (1994) found that guard dogs decrease in effectiveness over time possibly due to an increase in coyotes and/or increase in predatory activities. Fencing may be cost prohibitive (Shelton and Gates 1987). Most non-lethal method recommendations would be the responsibility of resource managers for implementation.

Reliance by WS on non-lethal methods only would feasibly result in resource managers implementing their own lethal control program that may not be consistent with sound wildlife management practices. Overall, coyote damage in many situations would probably not be reduced to acceptable levels. In these cases, public sentiments toward this alternative would be similar to Alternative 1.

4.2.3 Alternative 3. Non-lethal Before Lethal Control.

Both non-lethal and lethal coyote damage management would be used under this alternative; however, non-lethal methods would have to be implemented before lethal methods could be employed. In some cases, lethal before non-lethal methods would be more efficient, and may also increase the chance of the successful implementation of non-lethal techniques. The process of using non-lethal before lethal methods tends to be counter intuitive to some

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requesters. Often the requester needs an immediate problem solved while non-lethal methods are established as part of a long-term solution.

4.2.3.1 Effects on coyote populations. As noted in 4.2.2.5, many sheep and cattle producers already practice some form of non-lethal coyote damage management. Louisiana WS coyote damage management techniques implemented under Alternative 3 would be similar to those practiced under the current program. The impacts to coyote populations would be very similar to those described in 4.2.4.1 for Alternative 4.

4.2.3.2 Effects on wildlife species, including T&E species. As noted earlier, Alternative 3 is very similar to the current program as most livestock producers currently use non-lethal methods. The impacts to non-target wildlife, including T&E species would be similar to that described under Alternative 4.

Additionally, if WS lethal damage management actions would be delayed, some resource owners may attempt to reduce coyote damage or hire others with little or no damage management experience. These resource owners would be more likely than WS personnel to capture non-target species and not report the take (Schueler 1993).

4.2.3.3 Effects on health and safety of humans and companion animals. As noted before, Alternative 3 is similar to the existing program because many livestock producers are currently using non-lethal coyote damage management methods. The impacts of Alternative 3 on public health and safety and companion animals would be the similar as those identified for Alternative 4. In addition, where coyotes are creating dangerous situations for aircraft passengers, most airports have already implemented non-lethal techniques such as fencing, propane cannons, and habitat manipulation.

4.2.3.4 Humaneness of methods. Under this alternative, non-lethal coyote damage management methods would be implemented before lethal damage management methods were used. WS personnel are experienced and professional in their use of lethal management methods, and methods are applied as humanely as possible. Some animal activists may perceive this approach as more humane because they oppose all lethal methods of damage management. However, without the prompt use of effective damage management methods, resource owners may take illegal action against some local populations of coyotes out of frustration from continued damage (Schueler 1993, Allen et al. 1996, USDA 1997). Some of these illegal actions may be less humane than methods used by WS personnel. The humaneness of Alternative 3 would probably be similar to Alternative 4.

4.2.3.5 Impacts to stakeholders. This alternative would allow WS to take a more active role in coyote damage management than would occur in Alternative 1 and 2. It would likely be supported by more animal rights organizations than Alternative 4 because it emphasizes use of non-lethal tools; however, Louisiana WS personnel give non-lethal methods first consideration when requested to resolve a coyote damage problem. This alternative would not be fully supported by resource owners who are being negatively impacted by coyotes.

Under this alternative, damage would be reduced, however, economic losses to resource managers in many cases would be higher because immediate cessation of coyote damage may not be attainable. Since damage losses and the costs of implementing the “Non-lethal Before Lethal Control Alternative” fall on livestock producers, many livestock producers would believe they cannot afford the cost of this alternative and might act on their own using lethal methods (Allen et al. 1996). This alternative could lead to an inconsistent, ineffective and more costly damage control program.

4.2.4 Alternative 4. Integrated Wildlife Damage Management for all Land Classes (No Action, Proposed Action).

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This alternative describes the current and proposed Louisiana WS coyote management program. The proposed action is for WS to continue to reduce or alleviate site specific coyote damage through the use of an IWDM strategy that combines technical assistance and direct operational damage management when requested. Alternative 4 would allow WS to provide coyote damage management assistance to reduce or eliminate the negative effects of coyote predation to livestock, crops, threats posed to pets and human health and safety, and natural resources in the most effective, humane, and comprehensive manner. All or some of the described non-lethal and lethal damage management methods would be incorporated into program activities. By integrating a variety of methods, resource protection goals are more easily and effectively attainable.

This integrated approach alternative would reduce damage more than any other alternative considered in this EA. Negative effects resulting from this alternative would be minimal with respect to humans and other environmental components. Alternative 4, the preferred action, would reduce the use of inconsistent, haphazard, and possibly harmful coyote damage management practices.

4.2.4.1 Effects on coyote populations. Determinations of absolute densities for coyote populations are frequently limited to educated guesses (Knowlton 1972). The cost of studies to accurately determine absolute coyote densities over large areas is prohibitive (Connolly 1992) and would not appear to be warranted for this EA given the coyote's high relative abundance and the low take of coyotes by the Louisiana WS program. Coyote populations for the current WS program area are computed using a minimum density estimate and with population demographic information. The Statewide coyote population is computed using a density estimate of 1 coyote/mi².

Coyotes are highly mobile animals with home ranges (territories) that vary by sex and age of the animal, food abundance, habitat, and season of the year (Pyrah 1984, Althoff 1978, Todd and Keith 1976). In reviewing a series of studies where coyote density was assessed, Knowlton (1972) concluded that coyote densities in Texas may range as high as 5-6/mi² under extremely favorable conditions, with 0.5-1.0/mi² seemingly realistic over much of their range.

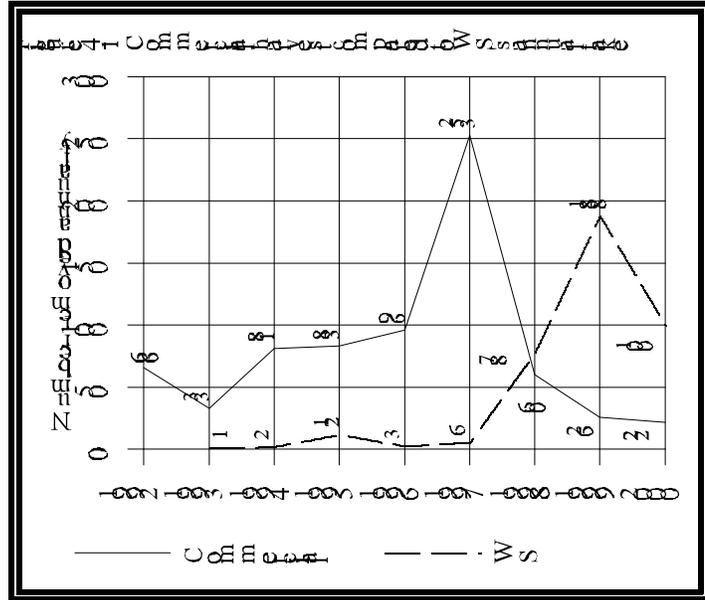
LDWF does not have a Statewide coyote population estimate; however, coyotes in Louisiana are wide spread and probably have a high relative abundance in all parishes. Louisiana has an area of about 26 million acres. Using a conservative density estimate of 1 coyote/mi², it can be estimated that more than 40,000 coyotes inhabit Louisiana. The current WS project area (WS does not conduct coyote damage management on all the land area in the project area) is about 771,200 acres and for the purposes of this analysis 10% or 77,100 acres are excluded because it does not represent coyote habitat. This results in 700,000 acres of potential coyote habitat in the current WS coyote damage management area in Louisiana. Using a conservative density estimate of 1 coyote/mi², it can be estimated that are about 1,100 coyotes inhabit this area. This estimate is considered conservative because there are large areas of ideal habitat that probably support higher coyote densities than 1 coyote/mi².

In addition, the coyote population was also estimated by using average population parameters, because coyotes are territorial and population parameters are relatively well understood. Coyote populations are comprised of territorial and non-territorial individuals. Each territory contains a dominant pair, associated subordinates, and pups. Pre-whelping pack size ranges from 2-10 individuals (Gese et al. 1996, Knowlton et al. 1999). Each dominant pair produces a single litter of 4-8 (Knowlton 1972, Hall 1979, Crabtree 1988, Gese et al. 1996). The average territory size in Louisiana is 6,600 acres (Hall 1979). The number of coyote territories in the current WS project area would be about 106. Based on an average pack of two dominant and three subordinate animals, the winter (pre-whelping) population of territorial coyotes would be 530 animals. In addition, 6 pups would be born each year and on average 3 pups survive into the summer based on 50% mortality (Knowlton 1972, Crabtree 1988, Knowlton and Gese 1995). Thus, the summer population of territorial animals would include 318 juvenile animals. In addition to territorial animals, 20-40% of coyote populations are transient or dispersing animals

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(Andelt 1985, Gese et al. 1989, 1996, Knowlton et al. 1999). The population would include approximately 159 transient animals, based on 30% of the pre-whelping estimate of territorial animals. The total population of adult animals is estimated to range from 689 animals in the early spring to 1,007 in the summer. Based upon the lowest population estimate (pre-whelping) of 689 coyotes, more than 480 coyotes/year would need to be removed from the current WS project area and no immigration of coyotes from outside the area could occur to cause the population to decline (Connolly and Longhurst 1975, Sterling et al. 1983). In addition, reproductive rates and survival may increase as a result of removing animals (Knowlton et al. 1999).

Based on a minimum density estimate, during 1998 WS removed 78 coyotes or about 7% of the areas' coyote population, and in 1999 WS removed 188 or about 17% of the minimum estimated population or 0.2% and 0.5% of the Louisiana coyote population, respectively. Using population demographics, in 1998 WS removed 11% and in 1999 removed 27% of the estimated coyote population in the WS current



project area. The average annual private trapper harvest in Louisiana from 1995-1999 has been 100 coyotes. Sport hunting undoubtedly accounts for an additional number of coyotes taken every year, but numbers on this take are not available. For purposes of this analysis, we will assume that the harvest by sport hunters equals the harvest by private trappers (i.e., 100 coyotes/year). In addition to sport hunting and trapping, LDWF promulgated a special live coyote market trapping season for coyotes that are sold to privately operated running pens. This take has averaged approximately 500 coyotes/year (M. Edmunds, LDWF, 2000, pers. comm.). These animals are not killed; however, they are removed from the wild population. During 1999, live market coyote trappers did not remove any coyotes from the current WS project area (M. Edmunds, 2000, LDWF, pers. comm.). From 1995 through 1999 LDAF specialists removed on average 170 coyotes per year. Using the best harvest data available, the combined annual coyote harvest which is the "Total Harvest" in Louisiana averages less than 2,000 coyotes Statewide.

A population model developed by Connolly and Longhurst (1975), and revisited by Connolly (1995), suggests that coyotes can withstand an annual removal of 70% of their population and still maintain a viable population. WS, LDAF, and sport trappers and hunters would have to remove after whelping in excess of 700 coyotes/year to impact the coyote population in just the current WS project area using the demographic model. Based on a minimum coyote density of 1/mi², 480 coyotes would have to be removed using the minimum density estimate model. WS, LDAF, and sport hunters and trappers would have to remove more than 28,000 coyotes annually to impact the overall coyote population in Louisiana.

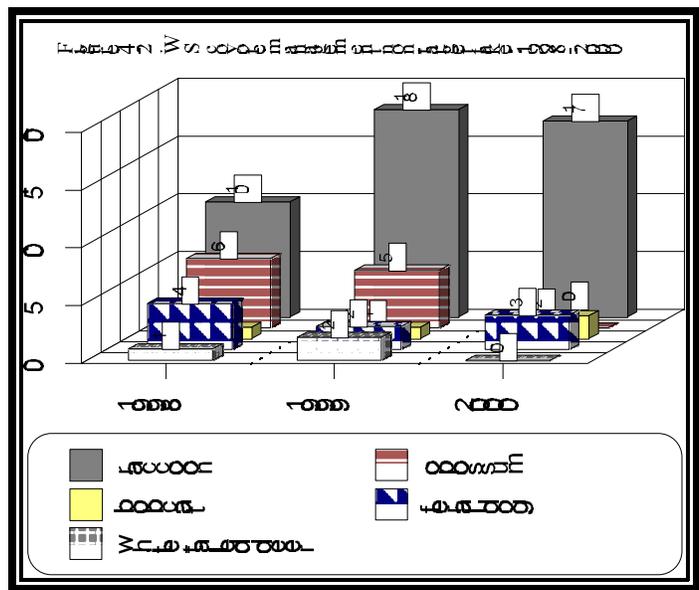
Although coyote densities in small localized areas may be temporarily reduced through trapping or hunting and damage management, immigration of coyotes from surrounding areas eventually repopulates these areas. Henke (1992) noted that in his study area, coyote density returned to pre-removal levels within 3 months following removal efforts. Evaluating the data using standards established in USDA (1997) removal of 17% of the coyote population in the current WS project area and <1% of the statewide Louisiana coyote population would result in

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cumulative impacts of a low magnitude. This conclusion is consistent with the GAO (1990) assessment regarding WS' impacts on coyote populations in the western U.S. No adverse effects on regional or Statewide coyote populations are expected from the proposed action (Connolly and Longhurst 1975; Connolly 1978, 1995; Knowlton and Gese 1995). The effects of WS coyote damage management on local coyote population demographics is minimal. No significant change would be expected from current consumptive and non-consumptive uses of wildlife as a result of this alternative.

4.2.4.2 Effects on non-target wildlife species, including T&E species. Non-target animals are individuals killed that were not involved in the depredation situation being resolved, or target species inadvertently killed while attempting to take other target species or individuals. Of the non-chemical wildlife damage management methods used by WS, leg-hold traps and neck snares potentially pose the greatest risk to non-target species. However, non-target captures would be minimized by selective trap placement, break-away snare locks (Phillips and Blom 1991), trap pan-tension devices (Phillips and Gruver, 1996), and proper site selection in accordance with WS policy. Nevertheless, some non-target animals are removed incidental to coyote damage management activities. Raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), white-tailed deer (*Odocoileus virginianus*), dog (*Canis familiaris*), and bobcat (*Lynx rufus*) are the most commonly captured non-target species. Break-away snare locks have been utilized to mitigate the potential capturing of non-target white-tailed deer.

From 1998 through December 31, 2000, Louisiana WS captured very few non-target species (Figure 4-2). Additional non-target species captured while WS was conducting coyote damage management but not included in the graph are: feral cat (*Felis catus*) (3), otter (*Lutra canadensis*) (1), feral goat (*Capra spp.*) (1), hawk (*Buteo spp.*) (1), feral hog (*Sus spp.*) (1), and rabbit (*Sylvilagus spp.*) (3) (MIS 1998, MIS 1999, and MIS 2000). WS' Policies state "Non-target animals captured would be released if it is determined that they are physically able to survive." A total of eighty-two non-target animals were taken by WS while conducting coyote damage management from 1998 December 2000.



While Statewide population estimates are not generally available for the non-target species removed by WS, the magnitude of this level of take is small and insignificant to the viability of these species (G. Linscombe, LDWF, 2001 pers. comm.). WS policy will continue to use methodologies to minimize non-target catches.

WS conducted a biological assessment and a formal Section 7 Consultation with the USFWS regarding the potential impacts to T&E species from the current and proposed Louisiana coyote damage management program (USDI 2001). The USFWS has concurred with WS' assessment that the current program is not likely to jeopardize or adversely affect any T&E species that may occur within Louisiana. Mitigation measures to address concerns about impacts to T&E species are discussed in Chapter 3 of this EA. No significant short- or long-term impacts on Statewide wildlife populations would occur from implementing Alternative 4.

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4.2.4.3 Effects on health and safety of humans and companion animals. Based on the risk assessment from USDA (1997, Appendix P), the environmental and human health and safety risks associated with WS' wildlife damage management programs are low. The greatest risks to human health and safety from WS' use of chemical methods are incurred by the WS Specialists who use these methods. Likewise, the greatest risk to human health and safety from WS' use of mechanical damage management methods are incurred by the WS Specialists who use these methods. During the FY92 through FY00 analysis period, there were no reported injuries to WS personnel or members of the public related to WS' use of any damage management method. Mitigation measures that address safety concerns about WS' use of damage management methods are listed in Chapter 3 of this EA.

Of the non-chemical wildlife damage management methods used by WS, leg-hold traps and neck snares potentially pose the greatest risk. WS methods of shooting poses minimal or no threat to public and pet health and safety. All firearm safety precautions are followed by WS when conducting damage management and WS complies with laws and regulations governing the lawful use of firearms. Shooting with shotguns or rifles is sometimes used to reduce coyote damage when lethal methods are determined to be appropriate. Shooting is selective for target species. WS uses firearms to humanely euthanize coyotes caught in traps. WS' traps are strategically placed to minimize exposure to the public and pets and appropriate signs are posted on all properties where traps are set to alert the public of their presence. Domestic pets that may be captured in traps or snares and accompanied by humans can be released unharmed.

Firearm use is very sensitive and a public concern because of misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 3 years afterwards. WS employees who use firearms as a condition of employment, are required to certify that they meet the criteria as stated in the *Lautenberg Amendment*.

If registered for use in Louisiana and utilized by WS, M-44s and the LPC are the only chemical methods that may present some degree of risk to the public or free roaming dogs. As discussed in Chapter 3, this risk is mitigated by following EPA label restrictions and by placing warning signs in the area.

In contrast to posing threats to the public or pets, this alternative would reduce threats to public health and safety by removing coyotes from sites where they pose risks to the public or pets.

4.2.4.4 Humaneness of methods. WS personnel are experienced and professional in their use of management methods, and methods are applied as humanely as possible. This alternative would allow WS to consider non-lethal methods, and WS would implement non-lethal methods for coyote damage management when appropriate. Under this alternative, coyotes are removed by experienced WS personnel using the best and most humane methods available. Coyotes captured in traps or snares would be euthanized. Shooting is selective for target species. Some animal activists may perceive these methods as inhumane because they oppose all lethal methods of damage management.

4.2.4.5 Impacts to stakeholders. The impacts of this alternative to stakeholders and the public would be variable depending on their values towards wildlife and compassion for their neighbors. This alternative would likely be favored by most resource owners who are receiving coyote damage and by WS as it allows for an IWDM approach to resolving damage problems. Some people have the opinion that coyotes should be captured and translocated to alleviate damage or threats to public and pet health or safety. Some people would strongly oppose removal of the coyotes regardless of the amount of damage. Individuals not directly affected by the threats or damage may be supportive, neutral, or totally opposed to any removal of coyotes from specific locations or sites. Some people that totally oppose lethal damage management want WS to teach tolerance for coyote damage and

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threats to public and pet health or safety, and that coyotes should never be killed.

The ability to listen to and enjoy coyotes would be temporarily limited in agricultural production areas where lethal coyote damage management is conducted. The public's ability to view coyotes will always be limited, with or without lethal damage management because of the secretive nature of coyotes. In areas where coyotes are removed, new coyotes will likely reoccupy the site in the future (Henke 1992), although the length of time until new animals arrive is variable, depending on the habitat, time of year, and population densities in the area.

Technical assistance would continue to be provided to those wishing to conduct their own damage management. WS would also work with cooperators to implement operational coyote damage management programs. In accordance with IWDM principles, non-lethal damage management methods would be evaluated before lethal measures were used. In many cases, however, the ineffectiveness and unacceptability of non-lethal techniques, either singly or in combination, would eventually lead to the use of lethal damage management methods. When conducting site-specific projects to reduce coyote damage, WS could use leg-hold traps, snares, calling, registered toxicants if available, and shooting in accordance with laws, regulations, and WS policy.

Impacts of technical assistance and non-lethal damage management methods used under this alternative would be similar to Alternatives 2 and 3. Delayed implementation of site-specific lethal damage management would lead to increases in the cumulative economic impacts of coyote damage. Ineffective applications of non-lethal methods would also waste time and money.

4.3 Summary of Louisiana WS' Impacts

Appendix D highlights the potential impacts of each alternative to the issues that were analyzed in detail. No single or cumulative adverse environmental consequences are expected to result from the proposed action. Since the methods used by WS would be selective for coyotes, impacts on non-target species would be extremely low. None of the Federally protected T&E species or sensitive species listed by LDWF in Louisiana would be jeopardized by the proposed action. Economic and social impacts would primarily be beneficial, although some segments of the human population might be opposed to the killing of coyotes. Negative impacts to the physical environment would be non-existent.

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APPENDIX A LITERATURE CITED

- Allen, G. T., J. K. Veatch, R. K. Stroud, C. G. Vendel, R. H. Poppenga, L. Thompson, J. Shafer, and W. E. Braselton. 1996. Winter poisoning of coyotes and raptors with Furadan-laced carcass baits. *J. Wildl. Dis.* 32:385-389.
- Althoff, D. P. 1978. Social and spatial relationships of coyote families and neighboring coyotes. M.S. Thesis. Univ. Nebraska. Lincoln, NE.
- Andelt, W. F. 1985. Behavioral ecology of coyotes in south Texas. *Wildl. Monogr.* 94:1-45.
- Anon. 1999. Louisiana Summary, Agriculture and Natural Resources. LSU, Agriculture Center-Louisiana Cooperative Extension Service. 312 pp.
- Atzert, S.P. 1971. A review of sodium monofluoroacetate (compound 1080) its properties, toxicology, and use in predator and rodent control. U S Fish Wildlife Services SPEC. SCI. REP--WILDL. NO 146, 34pp.
- AVMA. 1987. Panel report on the colloquim on recognition and alleviation of animal pain and distress. *J. Amer. Veter. Med. Assn.* 191:1186-1189.
- AVMA. 1993. 1993 Report of the AVMA Panel on Euthanasia. *J. Amer. Veter. Med. Assn.* 202:229-249.
- Baker, R. O. and R. M. Timm. 1998. Management of conflicts between urban coyotes and humans in southern California. *Proc. Vertebr. Pest Conf.* 18:299-312.
- Berryman J. H. 1991. Animal Damage Control: The challenge of the 90's. *Proc. Great Plains Wildl. Damage Control Workshop.* 9:2-4.
- Bishop, R. C. 1987. Economic values defined. PP. 24-33 *in* D. J. Decker and G. R. Goff, eds. *Valuing wildlife: economic and social perspectives.* Westview Press, Boulder, CO. 424 p.
- Burns, R. J. 1980. Evaluation of conditioned predation aversion for controlling coyote predation. *J. Wildl. Manage.* 44:938-942.
- Burns, R. J. 1983. Coyote predation aversion with lithium chloride: management implications and comments. *Wildl. Soc. Bull.* 11:128-133.
- Burns, R. J., and G. E. Connolly. 1980. Lithium chloride aversion did not influence prey killing in coyotes. *Proc. Vertebr. Pest Conf.* 9:200-204.
- Burns, R. J., and G. E. Connolly. 1985. A comment on "Coyote control and taste aversion". *Appetite* 6:276-281.
- Burns, R. J., G. E. Connolly, and P. J. Savarie. 1988. Large livestock protection collars effective against coyotes. *Proc. Vertebr. Pest Conf.* 13:215-219.
- CDFG. 1991. California department of fish and game. Final environmental document - bear hunting. Sections 265, 365, 366, 367, 367.5 Title 14 Calif. Code

APPENDIX A LITERATURE CITED

- of Regs. Calif. Dept. of Fish and Game, State of California , April 25, 1991. 13 pp.
- CDFG. 1999. Furbearing and non-game mammal hunting and trapping. Pp. 73-86 *in* California Dept. of Fish and Game, Draft Environmental Document. Feb 4, 1999.
- CEQ. 1981. Forty most asked questions concerning CEQ's NEPA regulations. (40 CFR 1500-1508) Fed. Reg. 46(55):18026-18038.
- Connolly, G. E. 1978. Predator control and coyote populations: A review of simulation models. pp. 327-345 *in* M. Bekoff, ed. Coyotes. Academic Press, Inc., New York, NY.
- Connolly, G. E. 1992. Declaration of Guy Connolly for United States District Court of Utah. Civil No. 92-C-0052A.
- Connolly, G. E. 1995. The effects of control on coyote populations: another look. pp 23-29 *in* D. Rollins, C. Richardson, T. Blankenship, K. Canon, and S. Henke, eds. Proc. of symposium: Coyotes in the southwest: a compendium of our knowledge. Texas Parks and Wildl. Dept., Austin, TX.
- Connolly, G. E., and W. M. Longhurst. 1975. The effects of control on coyote populations. Univ. Calif. Div. Agric. Sci. Bull. 1872. 37pp.
- Connolly, G. E., and R. J. Burns. 1990. Efficacy of Compound 1080 livestock protection collars for killing coyotes that attack sheep. Proc. Vertebr. Pest Conf. 14:269-276.
- Conover, M. R. 1982. Evaluation of behavioral techniques to reduce wildlife damage. Proc. Wildl.-Livestock Relation Sym. 10: 332-344.
- Conover, M. R., J. G. Francik, and D. E. Miller. 1977. An experimental evaluation of aversive conditioning for controlling coyote predation. J. Wildl. Manage. 41:775-779.
- Crabtree, R. L. 1988. Sociodemography of an unexploited coyote population. Ph.D. Diss. Univ. Moscow, Idaho.
- Decker, D. J., and G. R. Goff. 1987. Valuing Wildlife: Economical Social Perspectives. Westview Press, Boulder, CO. 424 pp.

APPENDIX A LITERATURE CITED

- Decker, D. J., and K. G. Purdy. 1988. Toward a concept of wildlife acceptance capacity in wildlife management. *Wildl. Soc. Bull.* 16:53-57.
- Defenders of Wildlife and the Center for Wildlife Law. 1996. Saving biodiversity: a status report on State laws, policies and programs. Defenders Wildl. and Center for Wildl. Law, Washington, D.C. 218 pp.
- GAO. 1990. Effects of Animal Damage Control program on predators. GAS/RCED-90-149 Report to the Honorable Alan Cranston, Senate.
- Gantz, G. 1990. Seasonal movement pattern of coyotes in the Bear River Mountains of Utah and Idaho. M.S. Thesis. Utah State Univ. Logan, Utah.
- Geortz, J. W., L. V. Fitzgerald, and R. M. Nowak. 1975. The status of wild canids in Louisiana. *Am. Midl. Nat.* 93:215-218.
- Gese, E. M., O. J. Rongstad, and W. R. Mytton. 1989. Population dynamics of coyotes in southeastern Colorado. *J. Wildl. Manage.* 51:640-646.
- Gese, E. M., R. L. Ruff, and R. L. Crabtree. 1996. Social and nutritional factors influencing the dispersal of resident coyotes. *Animal Behav.* 52:1025-1043.
- Green, J. S., R. A. Woodruff, and W. F. Andelt. 1994. Do livestock guarding dogs lose their effectiveness over time? *Proc. Vertebr. Pest Conf.* 16:41-44.
- Hall, D. I. 1979. An ecological study of the coyote-like canid in Louisiana. M.S. Thesis. Louisiana State University. Baton Rouge, Louisiana. 234 pp.
- Henke, S. E. 1992. Effect of coyote removal on the faunal community ecology of a short-grass prairie. Ph.D. Dissertation. Texas Tech. Univ. Lubbock, TX. 229 pp.
- Horn, S. W. 1983. An evaluation of predatory suppression in coyotes using lithium chloride-induced illness. *J. Wildl. Manage.* 47:999-1009.
- Howard, V. W. Jr., and R. E. Shaw. 1978. Preliminary assessment of predator damage to the sheep industry in southeastern New Mexico. New Mexico State Univ. Agri. Exp Sta. Res. Rept. 356. 9 pp.

APPENDIX A LITERATURE CITED

- Howard, V. W. Jr., and T. W. Booth. 1981. Domestic Sheep Mortality in southeastern New Mexico. New Mexico State Univ. Agri. Exp. Sta. Res. Rept. 683. 28 pp.
- Johnson, E. L. 1984. Applications to use sodium fluoroacetate (Compound 1080) to control predators; final decision. Fed. Reg. 49:4830-4836.
- Kellert, S. R., and J. K. Berry. 1980. Knowledge, affection and basic attitudes toward animals in American society. U.S. Fish and Wildlife Service and US Dept. of Commerce, Springfield, VA.
- Knowlton, F. F. 1972. Preliminary interpretations of coyote population mechanics with some management implications. J. Wildl. Manage. 36:369-382.
- Knowlton, F. F., and E. M. Gese. 1995. Coyote population processes revisited. pp. 1-6 *in*: D. Rollins, C. Richardson, T. Blankenship, K. Canon, and S. Henke, eds. Proc. Coyotes in the Southwest: A compendium of our knowledge. Texas Parks and Wildl. Dept. Austin, TX.
- Knowlton, F. F., E. M. Gese, and M. M. Jaeger. 1999. Coyote depredation control: an interface between biology and management. J. Range Manage. 52:398-412.
- LCES (Louisiana Cooperative Extension Service). 1998. Louisiana Summary-Agriculture and Natural Resources. Louisiana State University Agriculture Center.
- Linscombe, G., N. Kinler, and V. Wright. 1983. An analysis of scent station response in Louisiana. Proc. Annu. Conf. S.E. Assoc. Fish and Wildl. Agen. 37:190-200.
- Loven, J. E. 1995. Coyotes in urban areas: a status report. pp. 65-67 *in*: D. Rollins, C. Richardson, T. Blankenship, K. Canon, and S. Henke, eds. Proc. Coyotes in the Southwest: A compendium of our knowledge. Texas Parks and Wildl. Dept. Austin, TX.
- Lowery, G. H. 1974. The mammals of Louisiana and its adjacent waters. LSU Press. Baton Rouge, Louisiana. 565 pp.
- Michaelson, K. A., and J. W. Goertz. 1977. Food habits of coyotes in northwest Louisiana. Proc. Louisiana Acad. Sci. 40:77-81
- MIS (Management Information System). 1997. Louisiana WS Annual Report. WS State Director's Office; P.O. Box 589; Port Allen, LA 70767-0589.
- MIS. 1998. Louisiana WS Annual Report. WS State Director's Office; P.O. Box 589; Port Allen, LA 70767-0589.
- MIS. 1999. Louisiana WS Annual Report. WS State Director's Office; P.O. Box 589; Port Allen, LA 70767-0589.
- MIS. 2000. Louisiana WS Annual Report. WS State Director's Office; P.O. Box 589; Port Allen, LA 70767-0589.
- MIS. 2001. Louisiana WS Annual Report. WS State Director's Office; P.O. Box 589; Port Allen, LA 70767-

APPENDIX A LITERATURE CITED

- 0589.
- Nass, R. D. 1977. Mortality associated with sheep operations in Idaho. *J. Range Manage.* 30:253-258.
- NASS (National Agricultural Statistics Service). 1995a. Cattle predator loss. USDA, Agricultural Statistics Board, Washington, D.C. 20250. 23 pp.
- NASS. 1995b. Sheep and lamb death loss 1994. USDA, Agricultural Statistics Board, Washington, D.C. 20250. 36pp.
- NASS. 1999. 1999 Livestock wildlife Damage Survey Results. USDA, Agricultural Statistics Board, Washington, D.C. 20250.
- Nielsen, L., and R. D. Brown. 1988. Definitions, considerations, and guidelines for translocation of wild animals. PP 12-51 *in* L. Nielson and R. D. Brown, eds. *Translocation of Wild Animals*.
- O'Gara, B. W., K. C. Brawley, J. R. Munoz, and D. R. Henne. 1983. Predation on domestic sheep on a western Montana ranch. *Wildl. Soc. Bull.* 11:253-264.
- Paradiso, J. L., and R. M. Nowak. 1972. A report on the taxonomic status and distribution of the red wolf. U.S. Bur. Sport Fish. Wildl. Spec. Sci. Rep.—Wildl. No. 125 ii, 36 pp.
- Pfeifer, W. K., and M. W. Goos. 1982. Guard dogs and gas exploders as coyote depredation control tools in North Dakota. *Proc. Vertebr. Pest Conf.* 10:55-61.
- Phillips, R. L. 1996. Evaluation of 3 types of snares for capturing coyotes. *Wildl. Soc. Bull.* 24:107-110.
- Phillips, R. L., and F. S. Blom. 1991. An evaluation of breakaway snares for use in coyote control. *Proc. Midwest Furbear. Workshop* 9:22.
- Phillips, R. L., and K. S. Gruver. 1996. Performance of the Paws-I-Trip™ pan tension device on 3 types of traps. *Wildl. Soc. Bull.* 24:119-122.
- Pyrah, D. 1984. Social distribution and population estimates of coyotes in north-central Montana. *J. Wildl. Manage.* 48:679-690.
- Riley, G.A., and R. T. McBride. 1972. A survey of the red wold (*Canis rufus*). U.S. Bur. Sport Fish. Wildl. Spec. Sci. Rep.—Wildl. No. 162 iii, 15 pp.
- Robel, R. J., A. D. Dayton, F. R. Henderson, R. L. Meduna, and C. W. Spaeth. 1981. Relationships between husbandry methods and sheep losses to canine predators. *J. Wildl. Manage.* 45:894-911.
- Schmidt, R. H. 1989. Vertebrate pest control and animal welfare. Pages 63-68 *in* ASTM STP 1055. *Vertebrate Pest Control and Management Materials*. Vol. 6. K. A. Fagerstone and R. D. Curnow, eds. American Society for Materials and Testing, Philadelphia, Pennsylvania.
- Schueler, D. G. 1993. Contract killers. *Sierra Magazine*. November/December.

APPENDIX A LITERATURE CITED

- Shelton, M., and J. Klindt. 1974. Interrelationship of coyote density and certain livestock and game species in Texas. Bull. MP-1148, Agr. Exp. Sta., Texas A&M University, College Station, TX.
- Shelton, M., and N. L. Gates. 1987. Anti-predator fencing. pp 30-37 *in*: J. S. Green, ed. Protecting livestock from coyotes. A synopsis of research of the Agricultural Research Service. Natl. Tech. Inform. Serv., Springfield, VA.
- Slate, D. A., R. Owens, G. Connolly, and G. Simmons. 1992. Decision making for wildlife damage management. Trans. North Am. Wildl. Nat. Resour. Conf. 57:51-62.
- Sterling, B., W. Conley, and M. R. Conley. 1983. Simulations of demographic compensation in coyote populations. J. Wildl. Manage. 47:1177-1181.
- Sterner, R. T., and S. A. Shumake. 1978. Bait-induced prey aversion in predators: some methodological issues. Behav. Bio. 22:565-566.
- Stoddart, L. C., and R. E. Griffiths. 1986. Changes in jackrabbit and coyote abundance affect predation rates on sheep. Unpublished M.S. Thesis:23 pp.
- The Wildlife Society. 1990. "Responsible human use of wildlife." The Wildlifer, No. 243. The Wildl. Soc., Washington, D.C.
- The Wildlife Society. 1992. Conservation policies of The Wildlife Society: A stand on issues important to wildlife conservation. The Wildlife Society, 5410 Grosvenor Lane, Bethesda, MD 20814-2197. pp. 24.
- Tigner, J. R., and G. E. Larson. 1977. Sheep losses on selected ranches in southern Wyoming. J. Range Manage. 30:244-252.
- Till, J. A. 1992. Behavioral effects of removal of coyote pups from dens. Proc. Vertebr. Pest Conf. 15:396-399.
- Till, J. A., and F. F. Knowlton. 1983. Efficacy of denning in alleviating coyote depredations upon domestic sheep. J. Wildl. Manage. 47:1018-1025.
- Todd, A. W., and L. B. Keith. 1976. Responses of coyotes to winter reductions in agricultural carrion. Wildl. Tech. Bull. 5, Alberta Recreation, Parks Wildl., Edmonton, Alberta, Canada.
- U. S. District Court of Utah. 1993. Civil No. 92-C-0052A, January 1993.
- USDA. 1989. USDA, Animal and Plant Health Inspection Service, Animal Damage Control Strategic Plan. USDA, APHIS, ADC (WS), Operational Support Staff, 6505 Belcrest RD, Room 820 Federal Bldg, Hyattsville, MD 20782.
- USDA. 1997 revised. Animal Damage Control Program, Final Environmental Impact Statement. Animal and Plant Health Inspection Service, Animal Damage Control, Hyattsville, Maryland.
- USDI. 1979. Mammalian predator damage management for livestock protection in the Western United States. Final Environmental Impact Statement. U.S. Fish Wildl. Serv., Washington, DC.

**APPENDIX A
LITERATURE CITED**

USDI. 1992. Biological Opinion. Animal Damage Control Program U.S. Fish and Wildlife Service, Washington D.C.

USDI. 2001. Section 7 Consultation Biological Opinion. USDI, USFWS, 646 Cajundome Blvd., Suite 4000, LaFayette, LA 70506.

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AUTHORITY AND COMPLIANCE

Under existing authorities, WS can establish cooperative agreements with various public and private entities who request assistance with coyote problems. These entities can include individuals, municipalities, agriculture producers, other industries and Federal, State, or local government agencies. WS involvement can range from providing general technical assistance to conducting operational damage management projects, depending on funding, workforce, and other available resources. Before operational damage management projects are conducted, WS provides information on available options for problem resolution to the complainant, including those services provided by both the private sector and government agencies.

The USDA is directed by law to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for the WS program is the Act of March 2, 1931, as amended (7 U.S. C. 426-426c; 46 Stat. 1468), which provides that:

“The Secretary of Agriculture is authorized and directed to conduct such investigations, experiments, and tests as he may deem necessary in order to determine, demonstrate, and promulgate the best methods of eradication, suppression, or bringing under control on national forests and other areas of the public domain as well as on State, Territory or privately owned lands of mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jackrabbits, brown tree snakes and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, furbearing animals, and birds, and for the protection of stock and other domestic animals through the suppression of rabies and tularemia in predatory or other wild animals; and to conduct campaigns for the destruction or control of such animals. Provided that in carrying out the provisions of this Section, the Secretary of Agriculture may cooperate with States, individuals, and public and private agencies, organizations, and institutions.”

Since 1931, with the changes in societal values, WS policies and its programs place greater emphasis on the part of the Act discussing “bringing (damage) under control”, rather than “eradication” and “suppression” of wildlife populations. In 1988, Congress strengthened the legislative mandate of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act. This Act states, in part:

“That hereafter, the Secretary of Agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammals and birds species that are reservoirs for zoonotic diseases, and to deposit any money collected under any such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities.”

Louisiana Department of Wildlife and Fisheries Legislative Mandate (LRS §§ 56:1)

The Louisiana Department of Wildlife and Fisheries (LDWF), under the direction of the Louisiana Wildlife and Fisheries Commission is directed to:

To protect, conserve, and replenish the natural resources of the state, the wildlife of the state, including all aquatic life, is placed under the supervision and control of the Louisiana Wildlife and Fisheries Commission, which is hereby created and established in the executive branch of the state government.

LDWF currently has a MOU with WS. This document establishes a cooperative relationship between WS and

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LDWF, outlines responsibilities, and sets forth annual objectives and goals of each agency for resolving wildlife damage management conflicts in Louisiana.

Louisiana Department of Agriculture and Forestry Legislative Mandate

The Louisiana Department of Agriculture and Forestry was created in accordance with the provisions of Article IV, Section 10 of the Constitution of Louisiana. The commissioner of agriculture and forestry heads the department and exercises all functions of the state relating to the promotion, protection, and advancement of agriculture and forestry, except research and educational functions expressly allocated by the constitution or by law to other state agencies. LDAF offices have individual mission statements, and are responsible for carrying out the functions of the LDAF and may have a role with existing, expanding or new industry (<http://www.ldaf.state.la.us/missionstatement/index.htm>).

Louisiana Cooperative Extension Service Legislative Mandate

The Louisiana Board of Regents' Master Plan for Higher Education calls for the Louisiana State University Agricultural Center to play an integral role in supporting agricultural industries, sustaining rural areas and encouraging efficient use of resources through research and educational programs conducted by its experiment station and extension service.

Under that plan, the Louisiana Agricultural Experiment Station is responsible for research in agriculture and resource development, forestry, wildlife and fisheries, home economics, food science and related areas. It seeks to enhance the quality of life for people through basic and applied research that identifies and develops the best use of natural resources, conserves and protects the environment, permits further development of new and existing agricultural and related enterprises, and develops human and community resources in rural and urban areas.

The Extension Service is responsible for statewide off-campus, informal teaching of agricultural and natural resource technology and management techniques, as well as other off-campus programs focused on home economics, youth development, overall improvement of the state's economy and efficient use of community and personal resources. In short, the Extension Service helps the people of Louisiana - both rural and urban - improve their lives through an educational process that uses research-based knowledge focused on issues and needs. <http://www.agctr.lsu.edu/about.htm>

Compliance with Other Federal and State Statutes

Several Federal laws, State laws, and State regulations regulate WS wildlife damage management. WS complies with these laws and regulations, and consults and cooperates with other agencies as appropriate.

National Environmental Policy Act (NEPA). Environmental documents pursuant to NEPA must be completed before plans consistent with the NEPA decision can be implemented. WS also coordinates specific projects and programs with other agencies. The purpose of these contacts is to coordinate any wildlife damage management that may affect resources managed by these agencies or affect other areas of mutual concern.

Endangered Species Act (ESA). It is 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 use the expertise of the USFWS to ensure that “*any action authorized, funded or carried out by such an agency is not likely to jeopardize the continued existence of any endangered or threatened species. Each agency shall use the best scientific and commercial data available*” (Sec.

7(a)(2)).

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA requires the registration, classification, and regulation of all pesticides used in the United States. The EPA is responsible for implementing and enforcing FIFRA. All chemical methods integrated into the WS program in Louisiana are registered with and regulated by the EPA and LDAF, and used by WS in compliance with labeling procedures and requirements.

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Producer-Implemented Methods

Producer-Implemented Methods generally consist of non-lethal preventive techniques such as the use of animal husbandry and animal behavior and habitat modification. Producers are encouraged to use these methods based on the level of risk, need, and practicality.

- **Animal husbandry** practices include modifications in the level of care or attention given to livestock (depending on the age and size of the livestock). Animal husbandry practices include, but are not limited to, the use of:
 - livestock guarding animals
 - herders
 - shed lambing
 - carcass removal
 - fencing
 - pasture selection
- **Habitat modification** is used whenever practical to attract or repel certain wildlife species or to separate livestock from predators. For example, WS may recommend that a producer clear brush from lambing or calving pastures to reduce available cover for predators.
- **Animal behavior modification** refers to tactics that deter or repel predators and thus, reduce predation. Unfortunately, many of these techniques are only effective for a short time before wildlife habituate to them (Pfeifer and Goos 1982, Conover 1982). Some devices used to modify behavior include:
 - electronic guards (siren strobe-light devices)
 - motion activated frightening devices
 - propane exploders

Mechanical Damage Management Methods

Mechanical management methods consist primarily of tools or devices used to repel, capture or kill a particular animal or local population of wildlife to alleviate resource damage. Mechanical methods may be non-lethal (e.g., fencing, frightening devices, etc.) or lethal (e.g., M-44 devices, LPC, etc.). If WS personnel apply mechanical methods on private lands or public lands, an *Agreement for Control on Private Property* or an *Agreement for Control on Non-Private Property* must be signed by the landowner or administrator authorizing the use of each damage management method. Mechanical methods used by WS include:

- **Leg-hold traps** can be utilized to live-capture a variety of mammals, but are most often used within Louisiana to capture coyotes and beavers. Two advantages of the leg-hold trap are: 1) they can be set under a wide variety of conditions, and 2) pan-tension devices can be used to reduce the probability of capturing smaller non-target animals (Phillips and Gruver 1996). Effective trap placement and the use of appropriate lures by trained WS personnel also contribute to the leg-hold trap's selectivity. In addition, leg-hold traps allow for the release or relocation of animals. Proper trap swiveling and laminated trap jaws reduce the amount of physical damage incurred by the captured animal.

Leg-hold traps are difficult to keep operational during inclement weather and they lack selectivity where non-target species are of a similar or heavier weight than the target species. The use of leg-hold traps also requires more time and labor than some methods, but they are indispensable in resolving many depredation problems.

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- **Snares** may be used as lethal or live-capture devices. They are generally placed wherever an animal moves through a restricted area (e.g., crawl holes under fences, trails through vegetation, etc.) and are easier to keep operational during periods of inclement weather than leg-hold traps. Snares set to catch an animal by the neck are usually lethal, while snares positioned to capture an animal around the body or leg can be a live-capture method. Careful attention to details when placing snares and the use of a "stop" on the cable can also allow for live-capture of some neck-snared animals. Louisiana WS is incorporating some "break-away" snares that allow larger non-target animals to break the snare and escape (Phillips 1996).
- **Ground shooting** is selective for a target species and may involve the use of spotlights, decoy dogs, and predator calling. Removal of one or two specific animals by calling and shooting in the problem area can sometimes provide immediate relief from a predation problem. Calling and 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 methods. Shooting is sometimes the only predator damage management option available if other factors preclude the setting of equipment such as traps and snares.
- **Denning** is the practice of finding coyote dens and eliminating the young, adults, or both to stop an ongoing predation problem or prevent future depredation on livestock. Till and Knowlton (1983) documented denning's cost-effectiveness and high degree of efficacy in resolving predation problems due to coyotes killing lambs. Coyote and red fox depredations on livestock often increase in the spring and early summer due to the increased food requirements associated with feeding and rearing litters of pups. Removal of pups will often stop depredations even if the adults are not taken (Till 1992). Pups are typically euthanized in the den using a registered gas fumigant cartridge (see discussion of gas cartridge under *Chemical Management Methods*).

Chemical Management Methods

All chemicals used by WS are registered under the FIFRA and administered by the EPA and LDAF. All WS personnel in Louisiana that use pesticides are certified as demonstration and research pesticide applicators by the LDAF or work under the direct supervision of a WS certified pesticide applicator. The EPA and LDAF requires pesticide applicators to adhere to all certification requirements set forth in the FIFRA. No chemicals are used by WS on public or private lands without authorization from the land management agency or property owner or manager. If WS personnel apply chemical management methods on private lands or public lands, an *Agreement for Control on Private Property* or an *Agreement for Control on Non-Private Property* must be signed by the landowner or administrator authorizing the use of each damage management method. The following chemical methods have been proven to be selective and effective in reducing coyote damage; consequently, they have been considered in the analysis of this EA if they become registered for use in Louisiana. They include the following methods:

- **Sodium cyanide in the M-44 device** - The M-44 can be used effectively during winter months when leg-hold traps are difficult to keep in operation and M-44s are typically more selective for target canid species than leg-hold traps. Sodium cyanide is used in the M-44, a spring-activated ejector device developed specifically to kill coyotes and other canine predators and registered with the EPA (EPA Reg No. 56228-15) to also kill red foxes and feral dogs. The M-44 consists of a capsule holder wrapped in an absorbent material (i.e., fur, cloth, or wool), a spring-powered mechanism, a capsule containing about 0.9 grams of a powdered sodium cyanide mixture, a fluorescent marker, and a 5-7 inch hollow stake.

To set a M-44, a suitable location is found, the hollow stake is driven into the ground, and the ejector unit

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is cocked and fastened into the stake by a slip ring. The wrapped capsule holder containing the cyanide capsule is then screwed onto the ejector unit. A fetid meat or other canid lure would be placed on the capsule holder. A canine attracted to the bait will try to bite and pick up the baited capsule holder. When the M-44 capsule holder is pulled, the spring-activated plunger propels sodium cyanide into the animal's mouth, resulting in death within seconds. Sodium cyanide is a fast-acting toxicant which, upon contact with moisture, either rapidly breaks down or is quickly metabolized. When sodium cyanide contacts water or water vapor, it quickly hydrolyzes into hydrocyanic gas and sodium hydroxide. Cyanide released into the air quickly dissipates. Cyanide which is ingested, kills the animal and is protein-bound rendering it harmless to other animals that may scavenge the carcass (USDA 1997 revised, Appendix P, pp. 269-271). Bilingual (English-Spanish) warning signs are posted at major entries into the area where M-44s are placed, and two bilingual warning signs are placed within 25 feet to warn of each device's presence.

WS personnel must comply with the EPA label and 26 use restrictions (see USDA 1997 revised, Appendix Q). In addition, WS Specialists are selective in their choice of placement locations targeting areas frequented by canids. Domestic dogs are susceptible to M-44s, and this limits the areas where the devices can be safely used. In addition, 26 EPA use restrictions preclude the use of M-44s in areas where they may pose a danger to T&E species.

- The **gas cartridge** is registered as a fumigant by the EPA (Reg. No. 56228-21) and is used in conjunction with denning operations. When ignited, the cartridge burns in the den of an animal and produces large amounts of carbon monoxide, a colorless, odorless, and tasteless, poisonous gas. The combination of oxygen depletion and carbon monoxide exposure kills the animals in the den. Carbon monoxide euthanasia is recognized by the AVMA as an approved and humane method to kill animals (AVMA 1987).
- **Livestock Protection Collars (LPC)**, containing sodium fluoroacetate, are registered with the EPA (EPA Reg. No. 56228-22) for producer or WS use nationwide. Before use in individual states, the registrant must receive approval from the agency within the state that oversees pesticide usage; if the LPC is approved for use in Louisiana, it would be incorporated into an IWDM program. All use of the LPC would follow EPA and LDAF registration requirements, and would be restricted to specially trained and certified WS employees.

The LPC consists of 2 rubber reservoirs, each of which contains about 15 ml. of a 1% solution of sodium fluoroacetate (Compound 1080). The collar has velcro straps for attachment around the neck of the sheep, with the reservoirs fitting on the throat just behind the jaw. Coyotes typically attack sheep by biting them on the throat and holding on until the animal suffocates or stops struggling. Coyotes that attack collared sheep generally puncture the collar with their teeth (about 75% of the time) and receive a lethal oral dose of the toxicant. In this usage, there are no significant secondary hazards (USDA 1997, Appendix P, pp. 273-277).

Label restrictions limit use of the LPC to fenced pastures; it cannot be used on open rangelands. Use of the LPC typically involves establishment of a "target flock" of 50-100 animals, 20-30 of which would be collared lambs. These animals would be exposed in a high risk pasture where coyote attacks have occurred. Other (uncollared) sheep would be moved to a safe area or penned until a coyote attacks a collared animal and punctures a collar, and predation stops.

The advantage of the LPC is its selectivity in eliminating only those individual coyotes that are responsible for killing sheep. Disadvantages include the limited applicability of this technique, death of

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collared livestock that are attacked, the logistics of having to collar and monitor the collared sheep, and the management efforts required to protect livestock other than the target flock (Connolly et al. 1978, Burns et al. 1988). From an efficacy standpoint, use of the LPC is best justified in areas with a high frequency of predation (at least one kill per week).

Sodium fluoroacetate has been a subject of wide research in the United States and elsewhere and has been widely used as a toxicant for pest management programs in many countries. Fluoroacetic acid and related chemicals occur naturally in plants in many parts of the world and are not readily absorbed through intact skin (Atzert 1971). Sodium fluoroacetate is discriminatingly toxic to predators, being many times more lethal to them than to most nontarget species (Atzert 1971, Connolly and Burns 1990). A detailed risk assessment for use of sodium fluoroacetate in the LPC is provided in of USDA (1997, Appendix P).

Sodium monofluoroacetate, has been widely used as a rodenticide since the mid-1940's. Prior to 1972, sodium monofluoroacetate was also used in predacide in both drop baits and bait stations. Currently, the only registered, non-experimental use of this chemical in reducing predator damage is as the active ingredient in the LPC. This chemical has also been used as a predacide under Experimental Use Permits to reduce some local predator populations (i.e., Arctic fox control in the Aleutian Islands to protect the endangered Aleutian Canada goose).

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Pre-Decisional
APPENDIX D

Summary of Affects of Alternatives and Issues Related to Coyote Damage Management.

Alternative	Description of Alternative	Issues	Potential Affects
Alternative 1. No Program.	Resource owners would not be provided any technical assistance or direct operational assistance to reduce coyote damage.	Coyote Impacts	Coyote populations would continue to increase to carrying capacity. Potential use of non-selective unregistered pesticides may occur (Schueler 1993, Allen et al. 1996, USDA 1997). However, there should be no adverse impact to coyote populations.
		Nontarget Impacts	Potential impacts to nontarget species and species of special concern from WS' activities would not occur. However, potential use of non-selective unregistered pesticides from others may occur (Schueler 1993, Allen et al. 1996, USDA 1997).
		Health and Safety of Humans and Companion Animals	There would likely be increased risks to public health and safety when compared to Alternative 4. Lacking professional assistance, potential use of non-selective of illegal pesticides could increase (Schueler 1993, Allen et al. 1996, USDA 1997). WS would not be able to provide assistance to airport managers or others with safety concerns, and greater pet safety risks would be present.
		Humaneness	This alternative would be considered more humane by some people, however, the proper selection and most humane use of methods may not occur. Potential use of non-selective unregistered pesticides may occur (Schueler 1993, Allen et al. 1996, USDA 1997). Some of these illegal actions may be less humane than methods used
		Impact on Stakeholders	This alternative would be more acceptable to some animal activists or those that believe the government should not be involved in wildlife management. However, this alternative would be unacceptable to resource owners that experience coyote damage. No direct competition between WS and private nuisance wildlife control operators.

<p>Alternative 2. Non-lethal only.</p>	<p>WS would provide literature and recommendations, loan or distribute some damage abatement equipment, conduct demonstrations and training, and assist researchers with developing new damage abatement methods. Resource owners would be responsible for implementing recommendations and for impacts associated with implementing recommendations.</p>	<p>Coyote Impacts</p>	<p>Similar to alternative 1. Because this alternative would not allow WS to conduct any operational lethal coyote damage management, there would be no direct WS impacts. There would be some impact to coyotes from other entities that are implementing damage control strategies to reduce coyote damage. Producers would be responsible for implementing damage management methods. Inadequate training and frustration from limited success with legal methods may attribute to producers using illegal methods. However, there should be no adverse impacts to coyote populations</p>
		<p>Nontarget Impacts</p>	<p>No WS implemented lethal damage management and hence no direct mortality to wildlife populations or T&E species from WS. Some type of wildlife damage management would most likely be implemented. These activities could pose greater risks to non-target and T&E wildlife. Potential use of non-selective unregistered pesticides may occur (Schueler 1993, Allen et al. 1996, USDA 1997).</p>
		<p>Health and Safety of Humans and Companion Animals</p>	<p>The low risks associated with WS' use of coyote damage management methods would be muted under this alternative. Increased use of methods by less skilled entities, and greatly reduced restrictions on how wildlife damage management would be conducted, may result in an increased risk to the public and pets. In addition under this alternative, WS could only use non-lethal methods if a situation occurs where coyotes are presenting a risk to public or pet health and safety, therefore increased probable risks to human and pet safety.</p>
		<p>Humaneness</p>	<p>Some persons may perceive this alternative as more humane because they oppose all lethal methods of coyote damage management. However, potential use of non-selective unregistered pesticides may occur (Schueler 1993, Allen et al. 1996, USDA 1997). In addition, human and domestic animals may suffer injury or death if nonlethal methods are not effective.</p>
		<p>Impact on Stakeholders</p>	<p>The impacts to stakeholders would be variable depending on resources damaged and their values toward coyotes. Resource owners receiving damage would likely oppose this alternative. Some people would support this alternative because they are opposed to killing of any wildlife. Some entities would conduct lethal damage management. This alternative would increase the workload of existing agencies involved with coyote damage management.</p>

Alternative 3. Non-lethal before lethal.	WS would develop non-lethal coyote management plans, provide literature, recommendations, distribute damage abatement equipment, and provide training. In addition, when WS determines it is necessary, the implementation of lethal damage management methods for coyote damage abatement would be allowed after non-lethal methods have failed to adequately resolve complaint.	Coyote Impacts	As noted in the EA, many sheep and cattle producers already practice some form of non-lethal coyote damage management. The impacts to coyote populations would be very similar to the current program.
		Nontarget Impacts	As noted earlier, Alternative 3 is very similar to the current program. The impacts to non-target wildlife, including T&E species, would be similar to that described under Alternative 4. In addition, implementation of non-lethal methods may prolong the damage causing additional losses or risks.
		Health and Safety of Humans and Companion Animals	As noted before, the impacts of Alternative 3 on public health and safety and companion animals would be the similar as those identified for Alternative 4. In addition, where coyotes are creating human and health and safety concerns on airports, most airports have already implemented non-lethal techniques.
		Humaneness	Some may perceive this alternative as humane because they oppose all lethal methods of damage management. However, without the prompt use of effective damage management methods, others may take illegal action against coyotes (Schueler 1993, Allen et al. 1996, USDA 1997). Some of these illegal actions may be less humane than methods used by WS personnel. However, the humaneness of Alternative 3 would probably be similar to Alternative 4.
		Impact on Stakeholders	This alternative would likely be supported by more animal rights organizations than Alternative 4 because it emphasizes use of non-lethal tools; however, Louisiana WS personnel give non-lethal methods first consideration when requested to resolve a coyote damage problem. However, losses to resource managers would be higher because immediate cessation of coyote damage may not be attainable. This alternative could lead to an inconsistent, ineffective and more costly damage management program.

Alternative 4. IWDM (Existing program, No/Proposed Action.)	WS could provide the services as described in Alternative 3. In addition, WS could integrate lethal damage management to augment non-lethal methods. Implementation of IWDM would be determined by WS Specialists.	Coyote Impacts	Site specific coyote damage management would reduce coyotes damage but would have no adverse long-term effects on Louisiana's coyote population.
		Nontarget Impacts	No adverse affects would occur to non-target species. No jeopardy to T&E species would occur (USDI 2001). Additional benefits to colonial nesting seabirds.
		Health and Safety of Humans and Companion Animals	Based on the risk assessment from USDA (1997, Appendix P), the environmental and human health and safety risks associated with WS' wildlife damage management programs are low. During the FY92 through FY00 analysis period, there were no reported injuries to WS personnel or members of the public related to WS' use of any damage management method.
		Humaneness	WS personnel are experienced and professional and methods are applied as humanely as possible. This alternative would allow WS the best opportunity to increase the humaneness of methods implementation for wildlife, humans and domestic animals.
		Impact on Stakeholders	Some animal activists may disagree with implementing this alternative because they oppose all lethal methods of damage management. However, this alternative has the best opportunity to reduce economic losses from coyotes and decrease health and safety risks.

Based on the diversity and distribution of the affected environment, the above analysis failed to identify any cumulative impacts nor are any impacts expected because of coyote damage management conducted by the Louisiana WS program. Any localized reduction of coyote populations would soon be replaced and habitats reoccupied as WS personnel could only conduct coyote damage management on areas with Agreements for Control, Cooperative Agreements or other comparable documents are in place. Currently this represents only 0.5% of Louisiana. The effects ("Other take + WS take") to coyote populations that WS targets during damage management activities are low to low/moderate and is not having long-term adverse impact on any species in Louisiana.