ENVIRONMENTAL ASSESSMENT (EA)

WILDLIFE DAMAGE MANAGEMENT IN THE JOHN DAY ADC DISTRICT IN EASTERN OREGON

including the counties of
Gilliam, Grant, Harney, Malheur, Morrow, Umatilla,
Wallowa, Baker, Crook, Union, Wheeler

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In Cooperation With:

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE:
WALLOWA-WHITMAN NATIONAL FOREST
UMATILLA NATIONAL FOREST
OCHOCO NATIONAL FOREST
MALHEUR NATIONAL FORES

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT (BLM):
VALE, BURNS, PRINEVILLE DISTRICTS

OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW)
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INTRODUCTION

Across the United States, wildlife habitat has been substantially changed as human populations expand and land is used for human needs. At the same time, wildlife populations have been managed for abundance, and many species have expanded their range and colonized more traditional human habitats. These human uses and needs often compete with wildlife which increases the potential for conflicting human-wildlife interactions. In addition, segments of the public strive for protection for all wildlife; this protection can create localized conflicts between human and wildlife activities. The ADC Final Environmental Impact Statement (FEIS) summarizes the relationship in American culture of wildlife values and wildlife damage in this way (USDA 1994):

> *"Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife generally is 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 values 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."*

USDA/APHIS/Animal Damage Control (ADC) is charged by law with managing a program to reduce human/wildlife conflicts, and this Environmental Assessment (EA) evaluates ways by which this mandate can be carried out within the John Day ADC District (District) located in eastern Oregon.

ADC is a cooperatively funded and service oriented program. Before any wildlife damage management is conducted, *Agreements for Control* or *ADC Annual Work Plans* must be signed by ADC and the land owner/administrator. ADC cooperates with land and wildlife management agencies, as requested, to effectively and efficiently resolve wildlife damage problems in compliance with all applicable federal, state and local laws.

ADC Program

ADC's mission, developed through its strategic planning process, is twofold. Its mission is to: 1) provide leadership in wildlife damage management in the protection of America's agricultural, industrial and natural resources, and 2) safeguard public health and safety. This is accomplished through:

A) training of wildlife damage management professionals;
B) development and improvement of strategies to reduce economic losses and threats to humans from wildlife;
C) collection, evaluation, and dissemination of management information;
D) cooperative wildlife damage management programs;
E) informing and educating the public on how to reduce wildlife damage and;
F) providing data and a source for limited-use management materials and equipment, including pesticides.

Purpose

Normally, according to APHIS procedures implementing the National Environmental Policy Act (NEPA), individual predator control actions are categorically excluded (7 CFR 372.5(c), 60 Fed. Reg. 6,000, 6003 (1995). In order to evaluate and determine if there may be any potentially significant or cumulative impacts

on planned activities, we have decided to prepare this environmental assessment (EA). This EA analyzes wildlife damage management related to the protection of livestock, poultry and big game from predation, protection of human safety as it pertains to dangerous bear and cougar, and the protection of livestock and poultry feeding operations from wildlife on specified private and public lands in the District. The area encompassed by the District is over 28 million acres (Keisling 1994); ADC has agreements to conduct wildlife damage management on about 9 million acres within the District, or 32% of the area (MIS 1995). The District includes federal lands under the jurisdiction of the U.S. Forest Service (FS), Bureau of Land Management (BLM), National Park Service (NPS) and U.S. Fish and Wildlife Service (USFWS), plus state, county and private lands.

Within the District, cattle and sheep are permitted to graze on federal lands under the jurisdiction of the Forest Service and BLM (primarily in Harney, Grant, Crook, Baker, Union, Malheur, Umatilla, and Wallowa counties) in spring, late summer and fall and some winter grazing is permitted on BLM lands. In addition, 478 private livestock owners in Gilliam, Grant, Harney, Malheur, Morrow, Umatilla, and Wallowa counties participate in the cooperative ADC program.

Serious agricultural problems caused by starlings and blackbirds in the United States have developed at livestock feedlots. Damage has been severe in regions of the semi-arid West where it is common practice to keep rations in open troughs continuously available to beef animals. Here, preferred starling and blackbird food, such as insects and soft fruits, are largely unavailable for several months during winter, forcing birds to subsist primarily upon livestock rations. In the John Day ADC District there are 55 cattle, sheep and poultry feeding operations. The ADC program in FY 1994 and 1995 assisted 12 feeding operations in reducing damage caused by these birds.

Currently, ADC does not conduct wildlife damage management on Forest Service lands except the Wallowa-Whitman National Forest for protection of wildlife and livestock and human health and safety. None of the remaining National Forests (NF) in the District have an EA for wildlife damage management. Technical assistance is provided to permittees on the forests by ADC as requested. In the past, operational ADC control has been provided to permittees on the Ochoco and Umatilla National Forests. This EA constitutes the required National Environmental Policy Act (NEPA) document for Forest Service and Bureau of Land Management lands in the District, or replaces existing USFS or BLM EAs in place.

The Oregon Department of Fish and Wildlife (ODFW) has requested ADC to conduct wildlife damage management for the protection of wildlife resources and human safety. ADC does conduct wildlife damage management on two BLM Districts (Burns and Vale); these activities are evaluated in an existing BLM EA (BLM 1993 - 1993a). The District also encompasses four non-cooperating counties (Baker, Crook, Union, and Wheeler) in which wildlife damage problems are managed through county-administered and funded programs and/or private self-help programs or by individual cooperative agreements with ADC.

1.1 NEED FOR ACTION

1.1.1 Summary of Proposed Action

The proposed action is to implement livestock and wildlife protection in the District that would expand beyond that presently conducted. Currently, wildlife damage management occurs on federal lands administered by the BLM and Forest Service. ADC proposes to conduct activities, as requested, on Forest Service and BLM lands in the District where livestock permittees have documented wildlife damage. An Integrated Wildlife Damage Management (IWDM) approach would be implemented which would allow use of all legal techniques and methods, used singly or in combination, to meet requestor needs. Livestock producers would be provided with information and training regarding the use of effective animal husbandry methods, nonlethal and lethal techniques. Lethal methods used by ADC would include calling and shooting, aerial hunting, trapping and snaring, M-44s, denning, dogs, DRC-1339, chemical repellents (Avitrol), and the Livestock Protection Collar (LPC) if approved for use in Oregon. Wildlife damage management would be

allowed in the District, when requested, on Forest Service lands, BLM lands, state and county lands where there are Annual Work Plans, and private lands where there are signed *Agreements for Control*. No wildlife damage management would be conducted in areas receiving heavy human use, or those with legal or policy restrictions. All management would comply with appropriate federal, state and local laws. An ADC Annual Work Plan would be developed cooperatively with ODA, ODFW, each National Forest within the District as appropriate, and BLM Districts. Interested American Indian Tribes will be included in the annual work plan process. These work plans would be reviewed annually. See Chapter 3 for a more detailed description of the current program and the proposed action.

1.1.2 Need for Wildlife Damage Management for Protection of Livestock and Poultry

Contribution of Livestock to the Economy

Agriculture makes up more than 28% of Oregon's economy, generating $3.4 billion in farm, ranch and fishery production and sales annually. Livestock production, primarily cattle, sheep, poultry and hogs is one of the primary agricultural industries and accounts for about 22% or about $748 million of the total farm and ranch economy (OAFS 1994-95).

Livestock production in the District contributes significantly to the economy and historically has been an important segment of local economies. About 21% of all sheep and lambs and 51% of all cattle and calves produced in Oregon are raised in the eleven cooperating counties in the District (OAFS 1994-1995). Livestock inventories from the eleven counties included about 690,200 head of cattle and calves and 89,000 sheep and lambs, valued at over $482 million dollars (OAFS, 1994-1995). In 1994, OSU reported an increase in the value of all livestock and poultry sold at market, with livestock production representing over 31% of the gross farm product sales in the District. Table 1 displays livestock and gross farm sales for each cooperating county (OSU 1993).

Economically, feedlot operations are a vital link between the producer and consumer. Feedlots provide the industry necessary facilities to get livestock to marketable weights and qualities. Cow/calf producers depend heavily on feedlots to take their animals and continue the necessary growth that can't be achieved economically on the open range.

Table 1-1
Livestock Product Sales
and
Total Gross Farm Sales (Numbers in Millions)
John Day ADC District 1994
(Source: Oregon County & State Agriculture Estimates)

County	Livestock Products ($)	Total Gross Farm Sales ($)	% Of Total Sales
Gilliam	$4,228	$20,071	21%
Grant	$13,886	$26,130	53%
Harney	$23,904	$30,711	78%
Malheur	$64,947	$188,590	34%
Morrow	$18,408	106,908	17%
Umatilla	$36,825	$212,116	17%

Wallowa	$15,782	$33,241	47%
Baker	$28,967	$45,959	63%
Crook	$16,774	$30,932	54%
Union	$9,596	$50,786	19%
Wheeler	$5,046	$12,044	4%
TOTAL	$238,363	$757,488	31%

Scope of Livestock Losses

Cattle and calves are most vulnerable to predation (killing, harassment, or injury resulting in monetary losses to the owner) at calving and less vulnerable at other times of year. However, sheep and especially lambs, can sustain high predation rates throughout the year (Henne 1977, Nass 1977, 1980, Tigner and Larson 1977, O'Gara et al. 1983, ODFW 1993a, 1993b). This killing of livestock causes economic hardships to livestock owners. In addition, cattle, sheep and poultry feeding operations are extremely vulnerable to attracting large concentrations of starlings and blackbirds. Feedlot operators sustain considerable losses from direct feed consumption and contamination of feed and water. (Besser, 1967, West, 1968, Ford, 1967).

Without effective wildlife damage management to protect livestock, predation would be higher (Nass 1977, 1980, Howard and Shaw 1978, Howard and Booth 1981, O'Gara et al. 1983).

Many studies have shown that coyotes (*Canis latrans*) inflict high predation rates on livestock. Coyotes accounted for 93% of all predator-killed lambs and ewes on nine sheep bands in shed lambing operations in southern Idaho and did not feed on 25% of the kills (Nass 1977). Coyotes were also the predominant predator on sheep throughout a Wyoming study and essentially the only predator in winter (Tigner and Larson 1977). Other predators that cause measurable predation on cattle, calves, sheep and lambs in the District are black bear (*Euarctos americanus*), cougar (*Felis concolor*), Red fox (*Vulpes vulpes*) and feral or free-roaming dogs (*Canis familiaris*). Black bear and cougar predation on livestock can be severe (NASS 1991, 1992; ODFW 1993a, 1993b, MIS 1994-95). The ODFW (1993a, 1993b) reported that most bear and cougar damage management efforts are concentrated in the northeastern and southwestern part of the State, although the problem seems to be increasing statewide. Oregon livestock producers reported losses of 13,425 sheep and lambs to coyotes, and 2,900 head to cougars and black bear in 1994 (NASS 1994). Dogs are responsible for considerable predation on livestock and wildlife. The National Agricultural Statistical Service (NASS) (1994) reported that 750 adult sheep and 1,250 lambs were killed by dogs in Oregon.

Connolly (1992) determined that only a fraction of the total predation attributable to coyotes is reported to or confirmed by ADC. He also stated that based on scientific studies and recent livestock loss surveys from the NASS, ADC only confirms about 19% of the total adult sheep and 23% of the lambs actually killed by predators. In the District, 17% of the sheep and lambs and 6% of the calves reported killed were confirmed by ADC Specialists (MIS 1994-95). ADC Specialists do not attempt to locate every head of livestock reported by ranchers to be killed by predators, but rather to verify sufficient losses to determine that a problem exists that requires management action.

Although it is impossible to accurately determine the amount of livestock saved from predation by ADC, it can be estimated. Scientific studies reveal that in areas without some level of wildlife damage management, losses of adult sheep and lambs to predators can be as high as 8.4% and 29.3%, respectively (Henne 1977, Munoz 1977, O'Gara et al. 1983). Conversely, other studies indicate that sheep and lamb losses are much

lower where wildlife damage management is applied (Nass 1977, Tigner and Larson 1977, Howard and Shaw 1978; Howard and Booth 1981). An Oregon State University study suggests that about 2% of adult sheep, 4.7% of the lambs and 0.9% of the calves produced in Oregon are typically lost to coyote predation each year with standard wildlife damage management being conducted (DeCalesta, 1987). These losses are not evenly distributed among producers but are concentrated on ranges where individual predators or local populations learn to deviate from their natural prey base and learn to recognize domestic livestock as an alternative food source.

Prior to 1960, starling and blackbird populations remained relatively constant. However, the expanding livestock feeding industry began experiencing great economic losses to these birds eating livestock feed and fouling additional feed and water (Ford, 1967). Currently, population estimates for starlings and blackbirds in the John Day District are unknown. However, a majority of feedlots in the District contain large concentrations of birds during the winter months (ADC, 1996).

There are three major livestock feeding areas within the District; 1) the Hermiston-Pendleton area, 2) the Vale-Ontario area and 3) the Burns - South Malheur area from Nyssa to Jordan Valley. These areas represent a feeding capacity of about 200,000 head of livestock and contribute the majority of cattle feedlot operations in Oregon (OSU Cooperative Extension Service, 1996).

Loss of Livestock and Poultry

NASS (1992) reported that predators killed 4,275 adult sheep valued at $290,700, 15,500 lambs valued at $1,054,000 and 4,500 calves valued at $1,350,000 in Oregon. Substantial livestock losses from predators have also been documented in the District since 1919 (USDA 1919 to 1993). A typical statement from early reports reads:

> " Coyotes continue, as in the past by virtue of their numbers, to be the most serious menace to livestock, poultry and game of all the predatory animals in the District" (USDA, 1925 Annual Report).

In the District, verified losses to all classes of livestock from coyote predation are higher than the losses caused by cougar and black bear and other predators combined. Coyote predation accounted for about 83% of the verified total value of all livestock and poultry lost to predators in the District in fiscal year 1994, with Malheur County sustaining the highest economic livestock loss, followed by Wallowa and Umatilla counties. Cougar accounted for 5.2%, bobcat (*Lynx rufus*) 1.4%, raccoon (*Procyon lotor*) 1.4%, black bear 2.6%, dogs 1.1%, red fox (*Vulpes vulpes*) 1.4%, skunks (*Mephitis mephitis* and *Spilogale putorius*) 1.1%, raven (*Corvus corax*) 0.2%, and other 2.6% (MIS 1994). Table 1-2 is a summary of reported livestock killed by predators in 1993 for the District. These losses represent 4.3% of the adult sheep, 7.5% of the lambs, 5.2% of the calves, and 1.9% of adult cattle protected by ADC in the District in 1994.

In FY 1993 and 94, ADC personnel verified that predators killed 40 adult cattle, 409 calves, 411 adult sheep, 2,542 lambs, and many other types of livestock and poultry in the 7 cooperating counties in the District. The value of these losses were $ 307,000 (MIS 1994). In FY 1995, ADC verified predators killed 69 adult sheep, 7 adult cattle, 112 calves, 470 lambs and other livestock and poultry valued at $ over 99,000. Table 1-3 shows the number of ADC verified livestock killed by predators in FY 1995, by County (MIS, 1995).

Table 1-2 shows that livestock producers reported predators killed 480 adult sheep, 1,382 lambs, 1,217 calves, 53 adult cattle, and several hundred head of poultry and other livestock in the District valued at more than $683,000. These losses occurred in spite of current control efforts by ADC program personnel and producers, who often entail substantial indirect costs (Jahnke et al. 1987). Table 1-4 shows the types and numbers of livestock protected in the District during 1993 (MIS 1993).

Table 1-2
Number of Reported Livestock & Poultry Killed by Predators
John Day ADC District
1993

County	Lambs	Sheep	Cattle	Calves	Value ($)
Gilliam	22	9	0	54	$12,900
Grant	21	27	5	382	$157,440
Harney	107	23	10	115	$64,620
Malheur	495	30	27	452	$261,170
Morrow	183	61	0	1	$16,295
Umatilla	215	158	3	26	$34,510
Wallowa	339	172	8	187	$136,080
TOTAL	1,382	480	53	1,217	$683,015

Table 1-3
Number of Verified Livestock & Poultry Losses to Predation
John Day ADC District
1995

County	Lambs	Sheep	Cattle	Calves	Poultry & Others	Value ($)
Gilliam	4	15	0.00	18	3.00	$10,980
Grant	19	30	0.00	10	134	$7,500
Harney	31	2	0	17	18	$7,852
Malheur	357	15	2	31	84	$37,489
Morrow	11	1	0	0	0	$820
Umatilla	79	10	0	11	15	$8,515
Wallowa	45	18	0	9	0	$9,095
TOTAL	537	69	2	81	185	$82,251

Table 1-4
Number of Livestock Protected & Value
John Day ADC District
1993

County	Lambs	Sheep	Cattle	Calves	Value ($)
Gilliam	6,755	4,155	10,189	7,104	$7,217,595
Grant	2,170	1,450	11,620	11,488	$9,431,250
Harney	4,271	4,449	9,821	8,639	$7,740,060
Malheur	12,441	7,527	72,897	44,975	$45,471,883
Morrow	12,771	9,513	13,565	12,946	$11,774,897
Umatilla	86,699	23,696	9,950	8,832	$13,764,044
Wallowa	10,680	8,967	32,657	25,790	$23,772,283
TOTAL	135,787	59,757	160,699	119,774	
Total Value	$8,147,220	$2,928,093	$48,209,700	$59,887,000	$119,172,010

Livestock Losses on BLM Lands

The primary need to conduct wildlife damage management is in Malheur, Harney and Crook counties where the majority of BLM grazing occurs. Emphasis is for livestock protection on private lands and on grazing allotments administered by the BLM. Because of the mobility of and large home ranges of coyotes, it is often necessary to conduct WDM on private lands, adjacent public lands and BLM grazing allotments in order to provide adequate livestock protection. The habitat type predominant throughout much of the BLM-managed lands in southeastern Oregon supports the highest population densities of coyotes found in Oregon. The primary livestock grazing use of these lands is for cow-calf production and production of range bands of sheep. Most of the livestock grazing occurs in spring and early summer.

Most calving and all lambing is done on adjoining private property and the livestock are turned out to utilize public grazing allotments. Livestock are most vulnerable to predation during and immediately after calving and lambing. Problems with predation can occur first in areas where sheep and lambs are grazed and secondly in pastures where calving takes place. These areas comprise most of the planned control areas which are identified during the annual work planning process. In Harney County, the majority of livestock loss occur on private lands adjacent to BLM lands. With the exception of a few bottom-land farms, most ranches are bordered by BLM lands. ADC is currently authorized to conduct activities on 343,000 acres in the Burns BLM District. Livestock losses in Harney County in FY 95 reported by producers who adjoin BLM lands totaled 2 adult sheep, 79 lambs, and 18 calves. Table 1-4 shows the types, numbers and value of livestock protected in Harney County.

In Malhuer County, the BLM administers about 6,551 square miles. ADC is currently authorized to conduct activities on 24 allotments to protect permitted livestock. In FY 1995 on BLM lands, ADC Specialists confirmed that coyotes killed 1 adult sheep, 1 calf and, 235 lambs valued at $ 21,500. During FY 95, 10 permittees reported an additional 28 calves and 7 lambs killed by coyotes. Approximately 25% of these lamb

losses occurred on allotments in the Cottonwood Creek/Tims Peak Wilderness Study Area (WSA). One permittee lost 60 lambs during a 30 day period in the North Harper allotment. This loss occurred despite the use of livestock guarding dogs, herders and pyrotechnics to discourage predation.

In Crook County, there are fewer sheep operations and calving is predominantly on private lands. In addition, there is currently no ADC program available so accurate documentation of losses is not available. In past years producers have used a private helicopter company to conduct coyote control in areas of livestock predation.

Livestock Losses on Forest Service Lands

In 1993, producers reported 59 calves, 128 adult sheep and 249 lambs valued at $ 53,210 were killed by predators on 7 livestock grazing allotments on the Wallowa-Whitman NF (MIS 1993). In 1994 and 1995, ADC personnel did not collect reported loss information from permittees, but verified that predation did occur. In FY 1995, ADC personnel verified that predators killed 10 lambs and one adult sheep. .

The Umatilla National Forest has documented the highest level of livestock losses due to predation of any National Forest in the District since 1985. This level of predation is mostly the result of the Umatilla having large numbers of range bands of sheep and the steep rugged terrain that provides excellent habitat for large predators. Coyote population densities on most National Forests are below most high desert sagebrush densities. Cougar and bear populations are stable to increasing in these same areas, causing additional predation potential. Wildlife damage management for livestock protection has not been authorized on the Umatilla NF since 1992. Prior to 1992, ADC protected sheep and cattle on the Forest and on private lands adjacent to Forest Service lands. In 1991, the last year ADC worked on the Umatilla NF, 3 permittees reported 64 adult sheep and lambs killed by coyotes. In addition, cougar killed 44 sheep and bears killed 16. In 1992, the first grazing season with no ADC activities, permittees reported 89 sheep killed by coyotes, 75 to cougar and 23 by bear. No livestock loss data for 1993 -95 are available for these allotments.

Potential exists for wildlife damage to occur on permitted livestock on all forests within the District. ADC activities on National Forests are commensurate with the type of livestock grazed, time of year and location. For example, on the Malheur NF, most livestock grazing is permitted by cattle that are not vulnerable to predation. On the Umatilla, Ochoco and Wallowa-Whitman NF, considerable grazing by sheep range bands is permitted on some allotments during early summer through fall. Sheep are vulnerable to predation and producers frequently report damage and request assistance from ADC.

Losses at Livestock Feeding Operations

The pest-bird species which are most frequently involved with depredations at livestock feedlots in the District are the starling (*Sturnus vulgaris),* Brewer's blackbird (*Euphagus cyanocephalus),* red-wing blackbird (*Agelaius phoeniceus)*, brown-headed cowbird (*Molothrus ater),* house sparrow (*Passer domesticus),* and the domestic pigeon (*Columbia liva).* At various times of the year other bird species, such as gulls, crows, ravens and some waterfowl find their way into feedlots depending upon where the lot is located in the District.

Assessing the true economic loss that occurs from bird depredations and contamination at feedlots is a difficult task. In the District, the size of feedlots vary considerably, with some encompassing less that one acre to others covering several hundred acres. Bird populations and species composition can also vary from year to year. Other factors such as feed ration variability, natural food availability and weather play an important part in damage appraisal. Feedlots are prime locations for the concentration of birds species, especially in the fall and winter months from October to the middle of March. Severe cold and snow can contribute to large concentrations of starlings and blackbirds at feedlots. Besser, et al. (1968) estimated that starlings at cattle feedlots take about half their diets from feed troughs. Under severe winter conditions, starlings will obtain food from feedlot troughs exclusively.

Magnitude of loss is directly proportional to the number of birds and length of time spent at the lot. Starlings

are capable of consuming up to one-third of their body weight or about 1 ounce of livestock ration (Besser, et al. 1968). Some authors have attempted to estimate feedlot losses caused by birds, (Besser, DeGrazio and Guarino, 1968). Besser's method of measuring direct economic losses at feedlots incorporated the current cost of livestock feed or ration with an estimated daily number of birds feeding at the lot. The direct loss attributed to bird depredation at a typical 2000 animal feedlot in Malheur County with a 6-month wintering population of 100,000 starling could be calculated as follows using Besser's formula:

Feedlot: - Average 2,000 cattle per day.
Bird population: - Pre-control estimates October to March 31, mid-day average of 25,000 starlings.
Cost of feeding birds: - $ 80.00 (Based on current (1996) costs of livestock feed)

Daily consumption rate of feed: -Starling= 28.3 g or 1 ounce
-16 Starlings= 1 lb consumption/day
-25,000 = 1,563lbs/day (25,000/16)

Cost: -$ 80/ton x .78(1,563 lbs/2,000) = $ 62.40
-per 1000 Starlings = $62.40/day
-per 25,000 Starlings = $ 1,560.00/day

Projected loss for the 6-month
Fall-Winter period -$ 1,560 x 180 days = $ 280,800

The above calculations use conservative feed costs and do not consider labor expenses involved with removing contaminated feed from the troughs.

1.1.3 Need for Wildlife Damage Management to Protect Designated Wildlife Species

Revenue derived from recreation, especially recreation related to wildlife and the outdoors, is increasingly important to the economy of eastern Oregon. Southwick (1993) estimated the total economic impact from deer hunting in the United States in 1991 to be $16.6 billion. In Oregon, local economies also benefit from these recreational activities. As a result, the maintenance of big game populations is important to the ODFW which has the responsibility for managing wildlife for the benefit of the State of Oregon. Wildlife damage management has been requested by the ODFW to reduce predation to mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*) and bighorn sheep (*Ovis canadensis*) populations, especially on winter ranges for deer and spring ranges for antelope.

Under certain conditions, predators, primarily coyotes, have been documented as having a significant adverse impact on deer and pronghorn antelope populations and this predation is not necessarily limited to sick or inferior animals (Pimlott 1970, Bartush 1978, USDI 1978, Hamlin et al. 1984, Neff et al. 1985). Connolly (1978) reviewed 68 studies of predation on wild ungulate populations and concluded that, in 31 cases, predation was a limiting factor. These cases showed that coyote predation had a significant influence on some populations of white-tailed deer (*Odocoileus virginianus*), black-tailed deer (*Odocoileus hemionus columbianus*), pronghorn antelope and bighorn sheep (*Ovis canadensis*). Mackie et al. (1976) documented high winter losses of mule deer due to coyote predation in north-central Montana and stated that coyotes were the cause of most overwinter deer mortalities. Teer et al. (1991) documented that coyote diets contain nearly 90% deer during May and June. They concluded from work conducted at the Welder Wildlife Refuge, Texas that coyotes take a large portion of the fawns each year during the first few weeks of life. Fawn remains were also common in coyote scats (feces) during the first 4 to 8 weeks of life in studies from Steele (1969), Cook et al. (1971), Holle (1977), Litvaitis (1978), Litvaitis and Shaw (1980). Mule deer fawn survival was significantly increased and more consistent inside a predator-free enclosure in Arizona (LeCount 1977, Smith and LeCount 1976). Hamlin et al. (1984) observed that a minimum of 90% summer mortality of fawns was a result of coyote predation. Trainer et al. (1981) reported that heavy mortality of mule deer fawns during early summer and late fall and winter was limiting the ability of the population to

maintain or increase itself (recruitment). Their study concluded that predation, primarily by coyotes, was the major cause for low fawn crops on Steens Mountain in Oregon. Other authors observed that coyotes were responsible for the majority of fawn mortality during the first few weeks of life (Knowlton 1964, White 1967).

Guthery and Beasom (1977) demonstrated that after coyote control, deer fawn production was 70% greater after the first year, and 43% greater after the second year on their southern Texas study area. Another Texas study (Beasom 1974a) found that predators were responsible for 74% and 61% of the fawn mortality for two consecutive years. Stout (1982) increased deer production on three areas in Oklahoma by 262%, 92% and 167% the first summer following coyote damage management, an average increase of 154% for the three areas. Garner (1976), Garner et al. (1976), and Bartush (1978) found annual losses of deer fawns in Oklahoma to be about 88%, with coyotes responsible for about 88% to 97% of the mortality. Knowlton and Stoddart (1992) reviewed deer productivity data from the Welder Wildlife Refuge following coyote reduction. Deer densities tripled compared to those outside the enclosure, but without harvest management, ultimately returned to original densities due primarily to malnutrition and parasitism. Clearly, predator damage management can be an important tool in maintaining big game productive and management objectives.

Neff et al. (1985) concluded from radio tracking studies that the majority of coyotes who hunted pronghorn antelope fawns on Anderson Mesa, Arizona were resident. This means that most of the depredating coyotes were present on the fawning grounds during fawning times. Jones (1949) believed that coyote predation was the main limiting factor of pronghorn antelope in Texas. A six-year radio telemetry study of pronghorn antelope in western Utah showed that 83% of all fawn mortality was attributed to predators (Beale and Smith 1973). In Arizona, Arrington and Edwards (1951) showed that intensive coyote damage management was followed by an increase in pronghorn antelope to the point where antelope were once again huntable, whereas on areas without coyote damage management this increase was not noted. Similar observations of improved pronghorn antelope fawn survival and population increase following damage management have been reported by Riter (1941) and Udy (1953). Major losses of pronghorn antelope fawns to predators have been reported from more recent radiotelemetry studies (Beale 1978, Beale and Smith 1973, Barrett 1978, Bodie 1978, Von Gunten 1978, Hailey 1979, and Tucker and Garner 1980). Coyote damage management on Anderson Mesa, Arizona increased the herd from 115 animals to 350 in three years, and peaking at 481 animals in 1971. After coyote damage management was discontinued, the pronghorn fawn survival dropped to only 14 and 7 fawns per 100 does in 1973 and 1979, respectively. Initiation of another coyote damage management program began with the reduction of an estimate 22% of the coyote population in 1981, 28% in 1982, and 29% in 1983. Pronghorn antelope populations on Anderson Mesa, during 1983, indicated a population of 1,008 antelope, exceeding 1,000 animals for the first time since 1960. Fawn production increased from a low of 7 fawns per 100 does in 1979 to 69 and 67 fawns per 100 does in 1982 and 1983, respectively (Neff et al. 1985). After a 5-year study, Neff and Woolsey (1979, 1980) determined that coyote predation on pronghorn antelope fawns was the primary factor causing fawn mortality and low pronghorn densities on Anderson Mesa, Arizona. Coyote reduction was found to be necessary and cost effective in pronghorn antelope management, as shown by Smith et al. (1986).

Predation was the leading cause of pronghorn antelope fawn loss, accounting for 91% of the mortalities that occurred during a 1981-82 study in southeastern Oregon (Trainer et al. 1983). Trainer et al. (1983) also noted that most pronghorn antelope fawns were killed by coyotes and that known probable coyote kills comprised 60% of fawn mortality. In addition, a coyote reduction study in southeastern Oregon documented that in 1985, 1986 and 1987 an estimated reduction of 24%, 48%, and 58% of the spring coyote population in the study area resulted in an increase in antelope fawns from 4 fawns/100 does in 1984 to 34, 71, and 84 fawns/100 does in 1985, 1986, and 1987, respectively (Willis et al. 1993).

All mule deer winter ranges within the District shall be considered as potential for WDM activities, specifically for coyotes. All concentrated pronghorn antelope fawning areas are also to be considered as potential predator control areas. ADC will incorporate these requests from ODFW on an annual basis during the Annual Work Plan process with the BLM and Forest Service.

Factors such as predator densities, alternate prey densities, weather conditions, deer and antelope numbers

densities and vulnerability can influence survival and maintenance of young into a population. Based on research and experience, ODFW has found that coyote damage management can increase deer and pronghorn antelope fawn survival where predation is affecting the ability of these populations to maintain or increase their densities (recruitment). If ODFW's management objectives for these species are to be met, monitoring and periodic coyote damage management may be needed. Under an existing Cooperative Agreement with ADC, ODFW could request predator damage management for the protection of mule deer and pronghorn antelope. Predator damage management would be requested when ODFW determines predation is detrimental to management objectives. Only after ODFW has made such a determination will ADC respond. Should ODFW decide to go forward with a proposal that involve any BLM Special Management Area , it will be conducted in accordance with BLM Handbook H-8550-1 or BLM Wilderness Management Policy, whichever applies. The factors used by ODFW to determine when to request predator damage management to protect mule deer, pronghorn antelope and bighorn sheep are outlined below:

Mule Deer

- Spring recruitment of less than 30 fawns per 100 adults.
- Populations below ODFW population management objectives.

Pronghorn Antelope

- Antelope populations fall below the ODFW benchmark levels with a declining trend.
- Less than 30 fawns per 100 does, dependent on benchmark levels.

Bighorn Sheep

In some cases, individual cougar have been shown to have significant impact on specific bighorn sheep herds. Control measures may be implemented when ODFW determines significant cougar depredation on bighorn sheep is occurring. Hornocker (1970) reported mountain lion predation to bighorn sheep in Idaho, and Bear and Jones (1973) found several examples of lion predation on bighorn sheep in several areas of Colorado.

California bighorn sheep herd ranges have increased dramatically since their reintroduction to Oregon in 1954. A costly transplant effort has re-established bighorns in many areas of their native ranges. All current herd ranges plus those established in the future will be considered for conducting predator control when determined by ODFW. These areas will be described during the Annual Work Plan process with the BLM and Forest Service.

1.1.4 Need for Wildlife Damage Management for Black Bears and Cougar Determined to be Dangerous (For Public Safety)

ODFW is responsible for responding to dangerous black bear and cougar complaints relating to human safety and has entered into and MOU and *Cooperative Agreement* with ADC to assist them wherever and whenever necessary. Within the District, human interactions with bears and cougars could occur wherever habitat or food sources overlap with human activities. For black bear, a species that is difficult to census, ODFW estimates that current harvest rates, whether by hunting, damage management, or unknown causes, are not causing a decline in the bear population statewide. Black bear damage complaints, primarily regarding damage to conifers and livestock, continue to increase at a steady rate, which may partly indicate an increasing black bear population. Human encroachment into black bear habitat also increases the possibility of human-bear interactions (ODFW 1993a). Cougar populations are estimated to be growing by 20% per year (ODFW, 1996 Pers. Comm. Craig Ely). Increasing cougar observations, road kills and damage

complaints over the last 10 years indicate the statewide cougar population has increased substantially since 1980.

When bears or cougars damage property or threaten human health and safety, immediate action is taken. Normally, ODFW responds to nuisance bear and cougar complaints by providing technical assistance and advice to individuals or property owners. When technical assistance does not resolve the bear problem, ODFW attempts to live-trap and relocate the offending animal or requests ADC to do so. Other ODFW management alternatives may also be implemented, such as the lengthening of the hunting season and increasing the number of hunting permits in areas experiencing bear and cougar problems.

Relocation of problem animals is the preferred management strategy, however, success is often dependent on the age and sex of the offending animal. Relocated bears may return to their original location (Rogers 1986) or create similar problems in their new location. ODFW policies addressing the relocation of black bear and cougar are:

If a bear or cougar is a confirmed livestock killer it is not to be relocated. If the animal is determined to be a threat to human safety it is not to be relocated. Any nuisance bear or cougar that is to be relocated is to be at the very least ear tagged. It is recommended that the animal be radio collared and monitored regularly to determine the fate of the relocation attempt. If a marked animal causes damage a second time, it is to be destroyed (ODFW 1993a, 1993b).

Nuisance or dangerous bear interactions with humans do occur in the District. Bears may become dangerous when they habituate to urban or residential locations, recreation areas such as campgrounds and picnic areas, or garbage dumps or refuse sites where food is easily obtained. These bears may become an attraction for local residents and tourists, posing potential threats to human safety. In 1995, ADC responded to 8 requests for assistance from ODFW and OSP regarding human safety threat by bear. Although rare, cougar attacks on humans in the western United States and Canada have increased markedly in the last two decades, primarily due to increased cougar populations and human use of cougar habitats (Beier, 1992). Cougar are also now colonizing marginal habitats currently utilized by humans. Recently, numerous incidents have been reported to ODFW and ADC. Recently, increasing incidents or cougar/human interactions have been reported to ODFW, OSP and ADC. In 1995 25 cougar were taken associated with human interactions. Of those, 7 involved a direct threat to human safety . No cougar-caused human fatalities have been documented in Oregon, but the 2 recent fatal attacks which occurred in California in 1994 and one fatality in 1991 in Colorado emphasize the need for awareness (ODFW, 1996, Craig Ely, personal communication.)

1.1.5 ADC OBJECTIVES

The need for wildlife damage management in the District helped ADC and ODFW define the management objectives for the District. The following objectives were developed by ADC, ODFW and the Inter-Agency (IA) Team, during the preparation of this EA.

A. Livestock Protection: For active Cooperative Agreements and Agreements for Control, ADC's objectives are to:

A-1 Respond to 100% of the requests for livestock protection with the appropriate action, using the ADC Decision Model (

A-2 Hold lamb losses due to predation to less than 5%/year in areas with cooperative agreements.

A-3 Hold adult sheep losses due to predation to less than 3%/year in areas with cooperative agreements.

A-4 Hold calf loss due to predation to less than 1%/year in areas with cooperative agreements.

A-5 Provide 100% of cooperators and cooperating Federal, state and local agencies with information on nonlethal manag

- Within 3 weeks of signing new cooperative agreements.
- Within 90 days of new information becoming available.

A-6 Maintain the lethal take of nontarget animals by ADC personnel during damage management to less than 5% of the total animals taken.

A-7 Monitor the implementation of producer implemented (nonlethal) techniques.

B. Protection of Mule Deer, Pronghorn Antelope and Bighorn Sheep:

B-1 Respond to 100% of ODFW requests to manage wildlife damage from predators for selected species.

C. Human Protection From Dangerous Bears and Cougars:

C-1 Respond to 100% of black bear and cougar human safety requests.

1.2 Relationship Of This Environmental Assessment To Other Environmental Documents

1.2.1 ADC Programmatic EIS. ADC has issued a Final EIS on the national APHIS/ADC program (USDA, 1994). Pertinent and current information available in the FEIS has been incorporated by reference into this EA. When the Record of Decision (ROD) for the FEIS is published, this EA will be evaluated for consistency with the ROD. If inconsistencies are found, the EA will be supplemented pursuant to NEPA.

1.2.2 National Forest Land and Resource Management Plans (LAMPS). The National Forest Management Act(A) requires that each National Forest prepare a Land and Resource Management Plan (LRMP) for guiding long-range management and direction. A careful review of the LAMPS for the National Forests in the District found that wildlife damage management was discussed only in the LRMP for the Wallowa-Whitman NF.

1.2.3 National Forest EAs for Wildlife Damage Management. The Wallowa-Whitman National Forest has a current EA for wildlife damage management related to the protection of livestock or wildlife. The District is not conducting any activities on the Malheur, Umatilla or Ochoco National Forests, although needs may exist. This EA will replace any existing EAs completed on National Forest System lands, but may cite portions of these EAs as references. Any future wildlife damage management efforts would be conducted according to the decisions made from this EA.

1.2.4 BLM Resource Management Plans/Environmental Impact Statements (RMP/EISs). The BLM currently uses RMP/EISs to guide management on lands they administer. RMP/EISs generally replace older land use plans known as management framework plans. Three eastern Oregon BLM Districts (Burns, Prineville and Vale lie within the John Day ADC District and either have or are currently in the process of preparing final RMP/EISs.

1.2.5 BLM EAs for Wildlife Damage Management. The Vale and Burns BLM District have EAs for wildlife damage management (BLM 1993). These EAs address agency responsibilities, guidance and restrictions for various management objectives and land classes. Wildlife damage management will continue on these Districts in accordance with the 1993 EAs and the ADC Annual Work Plan until officially superseded by the final decision from this EA. Additional NEPA documentation would be required to conduct wildlife damage management that is outside the scope of this EA within the Prineville BLM District, should the need arise in the future.

1.3 DECISION TO BE MADE

Based on agency relationships and legislative mandates, ADC is the lead agency for this EA, and therefore responsible for the scope, content and decisions made. As cooperating agencies the Forest Service and BLM will provide input and make recommendations to ADC on when and where wildlife damage management will be conducted on National Forest System and BLM lands and ensure proposed activities are consistent with Forest Plans (LRMP), BLM Resource Management Plans (RMP) and Forest Service and BLM policy. Annual operating plans will be reviewed by the Forest Supervisor and District Manager to ensure activities are in compliance with LAMPS and RMPs and terms of the MOUs. Forest Supervisors and District Managers will provide input and cooperation with ADC in conducting wildlife damage management activities.

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

- Should an integrated wildlife damage management program be implemented as proposed ? (the "no action" alternative)?
- If not, how should ADC fulfill their legislative mandate and responsibilities in the District.
- Might the proposal have significant impacts needing an EIS.

1.4 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT ANALYSIS

1.4.1 Actions Analyzed. This EA evaluates wildlife damage management to protect livestock and poultry, mule deer, pronghorn antelope and bighorn sheep predation caused by coyotes, black bears, cougars, bobcat, red fox, raccoon, striped skunk, and common ravens within the District. This EA will also analyze dangerous human encounters with black bears and cougars. Protection of other agricultural resources and commodities and other program activities will be addressed in other NEPA documents. Cultural and archeological concerns will be considered and addressed in this document as they relate to the proposed action.

1.4.2 Counties Not Part of the Operational ADC Wildlife Damage Management Program. Baker, Crook, Union and Wheeler Counties do not have Cooperative Agreements with ADC. Wildlife damage management does occur through private self-help programs or by individual cooperative agreements with ADC. The proposed action analysis accounts for the possibility of new agreements with cooperators. Should new agreements be made that could have a potential for significant impact on the environment, or include circumstances not covered in the EA, ADC would reevaluate the EA. This EA would be supplemented if necessary.

1.4.3 American Indian Lands and Tribes. Presently, only the Umatilla Indian Tribe has a Cooperative Agreement with ADC for wildlife damage management. If other tribes enter into a Cooperative Agreement, this EA will be supplemented by ADC pursuant to NEPA.

1.4.4 Period for Which this EA is Valid. This EA will remain valid until ADC and other appropriate agencies determine that new needs for action or new alternatives having different environmental affects must be analyzed. At that time, this analysis and document will be supplemented pursuant to NEPA. Review of the EA will be conducted each year at the time of the annual planning process by ADC and each cooperating agency to ensure that the EA is complete and appropriate.

1.4.5 Site Specificity. This EA addresses all lands under Cooperative Agreement, Agreement For Control or ADC Annual Work Plans in the District. These lands are under the jurisdiction of the Forest Service, BLM, state, county, and private ownership. The EA emphasizes significant issues as they relate to specific areas whenever possible; however, many issues apply wherever wildlife

damage and resulting management occur, and are treated as such. The standard ADC Decision Model (Slate et al. 1992) and ADC Directive 2.105 will be the site-specific procedure for NEPA compliance for individual actions conducted by ADC in the District (See Chapter 3 p 3-5 for the ADC Decision Model and its application).

1.4.6 Summary of Public Involvement Efforts

Issues related to the proposed action were identified during the public involvement process conducted with members of the livestock industry, environmental interest groups, the general public, American Indians, BLM and Forest Service resource specialists, and state and county agencies, and other federal agencies. The public was notified about the proposed action through a public involvement letter and invited to comment on the District program. This letter was mailed on October 20, 1995 to 178 individuals, organizations and agencies, and legal notices were published in 9 daily newspapers throughout the District.

Public responses were documented from 20 letters and telephone calls. The responses represented a wide range of opinions, both supporting and opposing the proposal. Key interest groups were the Oregon Natural Resource Council, Predator Project, Wildlife Damage Review, The Humane Society of the US, and the Oregon Sheep Growers Association. All comments are maintained in the administrative file.

A team of resource specialists with expertise in range management, wildlife biology, wildlife damage management, cultural resources and environmental coordination evaluated the issues identified in the public involvement process. Issues determined to be significant and relative to the analysis are discussed in Chapter 2 and evaluated in Chapter 4. Concerns that were not significant were not analyzed in detail.

Other Agency Involvement

To assure that the concerns of other federal and state agencies have been addressed, the Forest Service, BLM, ODFW and ODA were asked to participate on the IA team, and are cooperating agencies in the development of the EA. In addition, the Draft EA was circulated to each National Forest in the District, the Forest Service Regional Office, BLM's State and District Offices and other federal agencies within the area of coverage. American Indian Tribes were provided a copy of the Draft EA and asked to review and comment.

1.5 AUTHORITY AND COMPLIANCE

1.5.1 Authority of Federal and State Agencies in Wildlife Damage Management in Oregon

ADC Legislative Mandate

The primary statutory authority for the ADC program is the Animal Damage Control Act of 1931, 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, ADC 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 ADC 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 mammal and bird 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."

Under the revised MOUs with the Forest Service and BLM, APHIS-ADC has the lead-agency responsibilities for preparation of the wildlife damage management plans and any associated NEPA documents and decision records. ADC is responsible for determining the appropriate methods and techniques, including toxicants, for population management on all lands in accordance with applicable State and Federal laws and regulations.

Oregon Department of Fish and Wildlife (ODFW)

The ODFW has the responsibility to manage all protected and classified wildlife in Oregon, except federally listed threatened and endangered (T&E) species, regardless of the land class on which the animals are found (Oregon Revised Statues (ORS) 496.012, 496.118). ODFW is also authorized to cooperate with ADC and the ODA for controlling predatory animals (ORS 610.020). Oregon State law allows a landowner or lawful occupant to take any black bear, cougar, red fox or bobcat that is causing damage without first obtaining a permit from ODFW (ORS 610.105). The law, however, does require the landowner to notify ODFW of the methods used, and species and number of animals taken.

In Oregon, black bear and cougar management is the responsibility of the ODFW. However, the current Memorandum Of Understanding (MOU) and Cooperative Agreement between the ODFW and ADC authorizes ADC to independently respond to livestock damage caused by black bear and cougar. The ODFW is then notified within 24 hours of any action taken to resolve the problem. Generally, either the ODFW or ADC receives requests to handle wildlife damage to livestock. The ODFW may choose to ask ADC to respond to the request or may respond itself. Under existing agreements, ADC is authorized to respond independently to livestock damage caused by black bears and cougar.

Oregon Department of Agriculture (ODA)

Coyotes are not protected in Oregon and are classified as predatory animals under ORS 610, administered by the ODA. The ODA is also authorized to enter into Cooperative Agreements with ADC and local entities for controlling coyote damage (ORS 610.010, .015, .020, .025, .030, .032). The ODA is responsible for the issuance of permits for aerial hunting per the Fish and Wildlife Act of 1956, as amended, and for administering a program to reduce damage caused by predatory animals (ORS 610.002, .003, .005, .035). The ODA currently has a MOU, Cooperative Agreement, and Annual Work Plan with ADC. These documents establish a cooperative relationship between ADC and ODA, outlines responsibilities, and sets forth annual objectives and goals of each agency for resolving wildlife damage management conflicts in Oregon.

Oregon Statutes - Animal Control Laws

Under Oregon state law (ORS 609.150 (*Animal Control Laws*)), any dog found in the act of killing or injuring livestock may be killed immediately by any person. In Oregon, dog control is generally the responsibility of local governmental agencies. Local animal control officials or County Sheriffs are responsible for dealing with dogs that threaten, damage, or kill livestock. ADC policy provides for ADC to assist at the request of local authorities upon approval of the ADC State Director.

U.S. Forest Service and Bureau of Land Management

The Forest Service and BLM have the responsibility to manage federal lands for multiple uses including livestock grazing, timber production, recreation and wildlife habitat, while recognizing the state's and APHIS-ADC's authority to manage wildlife populations. Both the Forest Service and BLM recognize the importance of managing wildlife damage on lands and resources under their jurisdiction, as integrated with their multiple use responsibilities. For these reasons, both agencies have entered into MOUs with ADC to facilitate a cooperative relationship. Copies of these MOUs are available by contacting the ADC State Director's Office in Portland, Oregon.

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

2.0 CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT

INTRODUCTION

Chapter 2 contains a discussion of the issues, including issues that will receive detailed environmental impacts analysis in Chapter 4 (Environmental Consequences), issues that were used to develop mitigation measures and standard operating procedures, and issues that will not be considered in detail, with rationale. Pertinent portions of the affected environment will be included in this chapter in the discussion of issues used to develop mitigation measures. Additional affected environments will be incorporated into the discussion of the environmental impacts in Chapter 4 and the description of the current program (the "no action" alternative) in Chapter 3.

The John Day ADC District in eastern Oregon is primarily a rural based agricultural economy located in a sparsely populated portion of the state. Eleven counties in the district encompass 44,169 square miles (45% of the state land mass) with 6% of the state's population at 176,150. By comparison, urban Multnomah County where Portland is located has 605,000, or 20% of the statewide population. For the most part, the district comprises small communities, and a mixture of both small and large ranches. Major industries in the district include tourism, forest products, and agriculture (Keisling, 1994).

2.1 ISSUES ANALYZED IN DETAIL IN CHAPTER 4

The Interagency Team, consisting of representatives from the lead and cooperating agencies, and the public determined the issues to be:

- The potential for the ADC take of target animals to cause their populations to decline, when added to other mortality.
- Potential for the incidental take of T&E species, especially the northern bald eagle (*Haliaeetus leucocephalus*).
- Level of kill of nontarget species incidental to ADC wildlife damage management.
- Economic impacts of ADC activities on livestock production and wildlife related activities.

2.2 ISSUES USED TO DEVELOP MITIGATION

2.2.1 Wildlife Damage Management in Special Management Areas on Federal Lands

A number of different types of areas exist on federal lands within the District which currently have a special designation and/or require special management consideration. These include wilderness (WAs) or primitive areas (PAs), Wilderness Study Areas (WSA's), research natural areas (RNA's), areas of critical environmental concern (ACEC's), and wild and scenic rivers. Table 2-1 lists those areas currently designated within the District. The special management required for these different areas varies considerably by designation, land administrator, and are governed by different legal mandates.

ADC has conducted some wildlife damage management in special management areas in the past. Recreationalists and others interested in special management areas (particularly wilderness) may consider these activities to be an invasion of solitude and that it may adversely affect the aesthetic quality of the wilderness experiences.

ADC wildlife damage management is conducted (and is proposed to continue in the future) only in very limited instances, when and where a specific need is identified, only when allowed under the provisions of the specific wilderness designation, and within those restrictions as identified by the land managing agency . ADC activities in special management areas have historically been, and

are expected to continue to be a minor part of the overall ADC program in the District. As outlined in Table 2-1, WDM is proposed in 16 of 214 Special Management Areas. Restrictions on WDM activities in wilderness and wilderness study areas are listed in Chapter 3 under Mitigation.

Special Management Areas (Table 2-1)

There are dozens of types of special management designations assigned by the various federal land management agencies to areas identified as special use. For the purpose of wildlife damage management only the following types of special management areas have designations that need to be identified separately from multiple use lands. These areas are identified in Table 2-1 by National Forest or BLM District.

WAs - Wilderness or primitive areas are areas that have been designated by Congress to be managed for the preservation of wilderness values. These areas are currently located on lands managed by the U.S. Forest Service, and National Park Service.

WSAs - Wilderness Study Areas are areas that are currently under consideration as candidate for designation into the wilderness system. These areas must be approved and designated by Congress to be included in the National Wilderness Preservation System. Until such time that Congress may act upon any particular WSA, the area is to be managed so as not to degredate any component that would contribute to the areas wilderness designation. These are primarily BLM lands and managed in accordance with the BLM's WSA Handbook H-8550-1 in a manner that does not diminish their wilderness values (BLM, 1987). However, this interim management does allow for continuation of most prior (non-land disturbing) activities and does not preclude wildlife damage management.

RNAs - Research Natural Areas are areas that have been identified as containing important or unique ecosystems, habitats and organisms. RNA's are tracts of land managed to allow natural processes to dominate and where natural features are preserved for research and education. RNA's are a national system and may be associated with any federal land management agency. BLM policy does not automatically exclude wildlife damage management within these areas.

ACEC - Areas of Critical Environmental Concern are areas that have been identified as containing some unique geological formation, ecosystem or habitat component or species that is considered critical to that particular area. ACEC's are most generally associated with lands managed by the Bureau of Land Management. However, it should be noted that the legal mandate for designation and management for ACEC's comes from the FLPMA and is considerably different than either RNA or wilderness designations. FLPMA defines an ACEC as an area "within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." ACEC's can be and are designated for a wide variety of special management situations ranging from maintaining near pristine scenic quality to the management of a hazardous waste dump. ACEC's can be and are often designated for multiple uses.

ACEC designation does not, by itself, preclude wildlife damage management, instead, the individual management prescriptions developed and presented within a given ACEC management plan determine what is allowable.

Wild and Scenic Rivers

None of the areas designated as wild and scenic rivers have a history of requests for assistance

involving wildlife damage. However, with the recent increase in cougar encounters it is highly possible that a human health and safety problem could develop in one of these areas in the near future. These rocky river corridors are prime cougar habitat and it is only reasonable to expect a conflict in these areas as the cougar population continues to increase.

OTHER - In addition to these basic categories there are a few special management areas that are classified other than by these designations but which are significant to include as other special management areas. These areas include the Congressionally designated " Hells Canyon National Recreational Area" and highly sensitive watershed areas that are managed specifically to protect municipal water supplies such as the " Mill Creek Watershed". Most of these areas are associated with the U.S. Forest Service managed lands.

Several areas or parts of areas identified may have multiple designations under different categories. For example: an RNA may be located within a WSA or an ACEC may be located within an RNA. This duplication of acreage should be noted when trying to identify total averages managed as special management areas for any particular area or agency. Livestock grazing is permitted in all WSAs that had permitted grazing at the time the Wilderness Act was passed. Other SMAs may or may not have permitted grazing, dependent upon the specific management plan for each particular area.

Control methods necessary for resolving a particular wildlife damage conflict may vary greatly depending upon the species involved, the terrain and the time of the year. Techniques required to resolve a cougar complaint in a high mountain sheep pasture may involve the use of dogs where the most appropriate technique to resolve a coyote depredation complaint on young calves in the high desert may involve aerial hunting.

Impacts of conducting wildlife damage activities on any particular special management area vary greatly between the various agencies involved. The designation and management criteria of the area in question must be considered. Mitigations are necessary to insure that any actions taken have no degrading effect upon the components that compromise the uniqueness of any particular special management area. Finally, a system is necessary to monitor the impacts of any particular action to insure minimum interference.

Special Management Areas where ADC would be Authorized

Wildlife damage management is proposed only in limited instances, when and where a specific need is identified, only when allowed under the provisions of the specific wilderness or other special management designation, and with the concurrence of the land managing agency. ADC activities in proposed special management areas will follow all restrictions identified in each Interim Management Policy (IMP) for that management area. Copies of these IMPs are available at each BLM District Office. The standard ADC Decision Model, ADC Directive 2.105 and this EA will be the site-specific procedure for NEPA compliance for individual actions conducted under this analysis. ADC activities have historically been, and should continue to be seldom required and limited to the minimum evasive actions necessary.

There are currently 214 SMAs comprising 3,580,039 acres in the District (Table 2-1 and Appendix B). Calving takes place on 21 SMAs and sheep are grazed on 12 SMAs. Of these 33 SMAs , livestock damage has been confirmed and/or reported on 16 SMAs and requests for assistance received from those permittees. Appendix D identifies those WSAs on all public lands in the District where ADC proposes to conduct restricted livestock protection activities. All WDM would be completed in most cases within a 30 day period and only in those specific areas within the SMA where livestock damage has occurred.

BLM Special Management Areas

Several WSAs are managed by the Vale BLM District as parts of traditional sheep grazing allotments. Many of these areas annually experience severe depredation by coyotes. The permittees utilizing these area incorporate herders, livestock guarding dogs, propane cannons, electronic strobe-siren devices and shooting to discourage predators with varying success. These permittees have consistently documented the most severe depredation levels in the district regardless of actions taken by them or their herders to discourage predators. Some WSAs, such as the Saddle Butte WSA managed by the Vale BLM District have traditionally been areas where depredation by coyotes to newborn and young calves have been documented. Calves are born on adjoining private lands and are turned out on public grazing allotments where they can experience damage by resident coyotes. These same coyotes frequently travel from nearby public land and kill calves on private lands where calving takes place.

The Aldrich Mountain WSA is managed by the Prineville BLM District and is adjoining the Murders Creek Wildlife Management Area, operated by Oregon Department of Fish and Wildlife as critical big game winter range. In the past O.D.F.& W. has requested wildlife damage assistance to control coyote depredation for the protection of wintering mule deer populations utilizing the area. This area has been identified by O.D.F.& W. as critical deer winter range and has been occasionally worked in the past to reduce predation by coyotes during severe winter months.

Appendix B presents the total number of special management areas administered by the Vale, Burns and Prineville BLM Districts. In these WSAs, wildlife damage management is never needed on the entire area but only in the immediate area of documented damage and for a specific period of time. Detailed maps will be developed during the Annual Work Planning process that identifies these control areas outlining those restrictions under the agency's Interim Management Policy. In many cases corrective control actions are needed for only thirty days or less. Other than emergency wildlife damage management for the protection of human health and safety in response to a highly unusual wildlife/human incident, these are the only special management areas where a wildlife damage request for assistance has been recently documented.

No Wildlife Damage requests have been received recently from any of the RNA's, ACEC's or Wild and Scenic Areas on any BLM District or National Forest with the exception of overlapping boundaries of some deer winter range or antelope fawning grounds as identified by O.D.F.& W. Wildlife damage management in these areas would be carried out in accordance with the guidelines and restrictions imposed by BLM Handbook H-855-1 (BLM 1987).

The Burns, Vale and Prineville BLM Districts currently have 21 designated and proposed RNA's under interim management (Table 2-1). BLM policy does not automatically exclude wildlife damage management within these areas, though none has routinely occurred in any of these areas in the recent past.

The Vale, Burns and Prineville BLM Districts currently have designated 44 ACEC's (Table 2-1). Historically, wildlife damage management has not been allowed within these areas because they are being managed to allow natural processes to occur.

No ADC activities have been conducted in these areas because of their special management designation. Limited access, use restrictions and the inability to conduct WDM in these areas since their special use designation has seriously impacted ADC's ability to document recent livestock losses from these areas.

US Forest Service Lands

The North Fork Umatilla Wilderness managed by the Umatilla National Forest, Walla Walla Ranger District has traditionally been utilized as a sheep grazing allotment. Predation in this area is an annually recurring, well documented problem. In 1995, one sheep permittee grazed approximately two bands of sheep for 30 days or less on the North Fork Umatilla Wilderness area. Because ADC activities have not been conducted in the past, no verified losses are available. However, the permittee has reported livestock killed by predators. The producer utilizes herders, dogs and shooting to discourage persistent depredating coyotes, cougar and bear with varied success however, the terrain is extremely rough with heavy vegetation along the northern slopes.

The Wenaha Tucannon Wilderness area managed by the Umatilla National Forest, Payette Ranger District adjoins a traditional sheep allotment which occasionally can have predator problems which originate in the wilderness and have on occasion caused damage to livestock in the adjoining allotment. Wilderness areas occasionally serve to harbor highly mobile predators such as cougar and bear who return to the sanctuary of the wilderness until they choose to kill again.

USFS Special Management Areas

The John Day District includes four different national forests; the Umatilla, Wallowa-Whitman, Malheur and Ochoco. Wildlife damage management has been conducted to some extent on each of these forests within the past few years, with the exception of the Malheur NF. Within each of these Forests are several types of special management areas that do not come under the designation of Wilderness Area/Primitive Area, Resource Natural Area (RNA) or Wild and Scenic River. These are identified in Table 2-1 as Other. Table 2-1 describes those areas where ADC activities are planned. WDM will be conducted in these areas in accordance with Forest Service Manuals 2600 and 2300 and Animal Damage Management Handbook GTR-332.

Table 2-1. Special Management Areas within the John Day District (Appendix B Summary)

Agency	Designated Wilderness/Primitive Areas	Wilderness Study Areas	Research Natural Areas	Areas of Critical Environ. Concern	Wild and Scenic Rivers	Other Areas	WDM Proposed	Total Acreage
BLM Vale District	0	33	4	8	1	0	10	1,202,723
BLM Burns District	0	22	12	20	0	0	3	1,235,641
BLM Prineville District	0	17	5	14	0	0	0	219,415
Wallowa/Whitman NF	4	0	21	0	10	2	0	657,059
Malheur NF	2	0	5	0	2	2	0	96,936
Ochoco NF	3	0	5	0	2	0	0	46,999
Umatilla NF	3	0	6	0	3	3	3	243,377
Totals	12	72	58	42	18	7	16	3,558,215

2.2.2 Humaneness of methods used by ADC

Animal welfare organizations are concerned that some methods used to manage wildlife damage expose animals to unnecessary pain and suffering. Kellert (1980) in a survey of American attitudes towards animals related that 58% of his respondents, "care more about the suffering of individual animals... "than they do about species population levels". Research suggests that with some methods, such as restraint in leghold traps, changes in the blood chemistry of trapped animals indicate "stress". Blood measurements indicated similar changes in foxes that had been chased by dogs for about 5 minutes as those restrained in traps (USDA, 1994). However, such research has not yet progressed to the development of objective, quantitative measurements of pain or stress for use in evaluating humaneness.

Schmidt (1989) indicated that vertebrate pest control activities in the name of 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".

Pain and suffering as it relates to a review of currently used ADC control methods to capture wildlife, is both a professional and lay point of arbitration. Wildlife managers and the general 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).

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" (AMVA, 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" (CDFG, 1991), such as ADC lethal control techniques of shooting, M-44 sodium cyanide devices, Conibear traps, snares or live traps.

Defining pain as a component in humaneness of ADC methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiological and behavioral observations can be an indicator of pain, and identifying the causes that elicit pain responses in humans would "probably be causes for pain in other animals (AMVA, 1987). However, the degree of pain experienced by individual animals probably ranges from little or no pain to significant pain (CDFG, 1991). Some ADC control methods such as leghold traps and body snares, may thus cause varying degrees of pain in different animal species for varying time frames. At what point pain diminishes or stops under these types of restraint has not been measured by the scientific community. Wounding of animals can cause pain under various legal methods of take.

Humaneness, as perceived by the livestock industry and pet owners, requires that domestic animals be protected from predators because humans have bred the natural defense capabilities out of domestic animals. It has been argued that people have a moral obligation to protect these animals from predators (USDA, 1994).

The issue of humaneness is largely a matter of perception. Many wildlife populations that ADC deals with have remained stable with or without ADC's influence. Millions of animals die each year regardless of wildlife damage control activities. Suffering of wildlife and the humaneness issue cannot be eliminated or limited by stopping wildlife damage control activities (USDA, 1994).

ADC has improved the selectivity of management devices through research and development of pan tension devices, break-away snares, and the Livestock Protection Collar. Research is continuing to bring new findings and products into practical use. ADC personnel in the District

are experienced and professional in their use of management methods so that they are as humane as possible. Mitigation measures/standard operating procedures used to maximizing humaneness are listed in Chapter 3.

2.2.3 The public's concern about use of chemicals

Much of the public concern over the use of WDM chemicals is based on erroneous perceptions that ADC uses nonselective, outdated chemical methodologies. Currently, the use of toxicants by ADC in all instances is regulated by the EPA through the FIFRA, by MOUs with other agencies, and by ADC Directives. Based on a thorough Risk Assessment, APHIS concluded that, when ADC program chemicals are used in accordance with label directions, they are selective to target individuals or populations, and such use has negligible impacts on the environment (USDA 1994).

2.2.4 State Historic Preservation/American Indian Concerns

2.2.4.1 Cultural Resources

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 burials and establishes procedures for notifying Tribes of any new discoveries. Senate Bill 61, signed in 1992, sets similar requirements for burial protection and Tribal notification with respect to American Indian burials discovered on state and private lands.

Animals are considered powerful and can thus help or hinder a person's ability to progress through life. Thus animals constitute a major class of spirits for American Indians (Fowler, 1986.) Native wildlife, plants and a concern for the environment were identified as important American Indian issues for this EA . In consideration of these American Indian interests, the ADC program solicited input from the following Tribes within the District:

The Burns Paiute Reservation
The Confederated Tribes of the Warms Springs Reservation of Oregon
The Confederated Tribes of the Umatilla Reservation of Oregon

Each Tribe was requested to identify special interest areas, cultural sites, and important resource uses that they are of concern relating to the proposed ADC program. Only the Burns Paiute Tribe responded to the initial scoping letter. The Tribe is concerned with protecting wildlife, plants and cultural materials and sites. Potential ground disturbance activities were not specifically identified. Subsequent letters requesting tribal contacts were sent to each tribe immediately prior to receiving the draft.

Concurrence relative to the propose action has been requested from the Oregon State Historic Preservation Advisory Committee on compliance with the National Historical Preservation Act. In most cases, wildlife damage management has little potential to cause adverse effects to sensitive cultural resources. The areas where wildlife damage management would be conducted are small and pose minimal ground disturbance. There were no areas identified by the tribes which contained highly sensitive cultural resource areas. Mitigation measures developed to avoid impacts to these sites are listed in Chapter 3.

2.3 ISSUES NOT CONSIDERED IN DETAIL WITH RATIONALE

2.3.1 ADC's impact on Biodiversity

No ADC wildlife damage management is conducted to eradicate a wildlife population. ADC operates in accordance with international, federal and state laws and regulations enacted to ensure species viability. Any reduction of a local population or group would be temporary because migration from adjacent areas or reproduction would soon replace the animals removed. The impacts of the current ADC program on Biodiversity are not significant nationwide, statewide, or in the District (USDA 1994). The ADC take is a small proportion of the total population as analyzed in Chapter 4.

2.3.2 Threshold of Loss and Livestock losses are a cost of doing business

Concern was raised during public involvement that ADC should not conduct wildlife damage management until economic losses became unacceptable. Although some losses of livestock and poultry can be expected and tolerated by livestock producers, ADC has the legal mandate to respond to requests for wildlife damage management, and it is program policy to aid each requester to minimize losses. ADC uses the Decision Model discussed in Chapter 3 to determine an appropriate strategy.

In the Southern Utah Wilderness Alliance, et al. vs. Hugh Thompson, Forest Supervisor for the Dixie NF, et al., the United States District Court of Utah denied plaintiffs' motion for preliminary injunction. In part the court found that a forest supervisor need only show that damage from predators is threatened, to establish a need for wildlife damage management (Civil No. 92-C-0052A January 20, 1993).

2.3.3 Public Land Management Issues

During public involvement, several people responded that they were opposed to predator control on public lands and public land grazing. The Animal Damage Control Act of 1931 authorizes ADC to conduct predator control and other wildlife damage management activities on public land. This issue is discussed in detail in this EA. The issue of public lands grazing is outside the scope of this EA as it falls under the jurisdiction of other Federal agencies. This EA is directed at requested wildlife damage management as implemented by ADC in the District to protect livestock, wildlife, and human safety.

2.3.4 Objectives are not reasonable

During public involvement, an individual questioned the reasonableness of the objectives established for the District. ADC has the authority and responsibility to set program objectives for meeting its mandate and to monitor the effectiveness in achieving those objectives. Setting objectives is part of a good planning process and sets goals for the organization. ADC believes that the objectives established are pertinent to their responsibility and mandate. Each objective will be evaluated on an annual basis during the Annual Work Planning process.

2.3.5 Problem wildlife should be relocated

During public involvement, an individual stated that all problem animals captured should be relocated and not killed. In some situations, it is beneficial to translocate wildlife. Translocation of wild animals is not a biologically sound practice in most situations. ADC believes that any decision to relocate wild animals should be based on biological, ecological, economic and social considerations. Any decision to relocate a problem animal(s) will be conducted in consultation with the ODFW, and if necessary, the USFWS. ADC believes that translocation may initiate problems with liability to ADC if the translocated animal causes future damage or transmits a

zoonotic disease. In addition, The American veterinary Medical Association, the National Association of State Public Health Veterinarians, and the Council of State and Territorial Epidemiologist oppose relocation of mammals because of the risk of disease transmission among wild mammals (especially raccoons, skunks and foxes).

3.0 CHAPTER 3: ALTERNATIVES

3.1 INTRODUCTION

This chapter consists of four parts: 1) an introduction, 2) description of alternatives considered and analyzed in detail including the Proposed Action (Alternative 2), with an option for alternative one or two, 3) a description of alternatives considered, but eliminated from detailed study, and 4) a discussion of mitigating measures and Standard Operating Procedures. Five alternatives and one option were recognized, developed, and analyzed in detail by the IA Team (ADC, BLM, Forest Service, ODFW, ODA); five alternatives were considered but not analyzed in detail with supporting rationale. The five alternatives and option analyzed in detail are:

1) Alternative 1 - Continue the Current John Day ADC District Program: (No Action). This alternative consists of the current program of technical assistance and operational Integrated Wildlife Damage Management (IWDM) (ADC Directive 2.105) by ADC on Forest Service, BLM, state, county and private lands under Cooperative Agreement, Agreement for Control, and Annual Work Plans with ADC. The current program direction is primarily for the protection of livestock from predation with minimal efforts expended to protect wildlife resources. Protection of human health and safety from black bears and cougars is at the request of ODFW.

2) Alternative 2 - Integrated Wildlife Damage Management on All Land Classes as requested: (Proposed Action).

3) Alternative 3 - Nonlethal Before Lethal Control Program. This alternative would require that livestock owners conduct non-lethal control before the initiation of lethal control.

4) Alternative 4 - Technical Assistance Only. Under this alternative, ADC would not conduct operational WDM in the District. The entire program would consist of only technical assistance.

5) Alternative 5 - No Federal ADC Program in the District. This alternative would terminate the federal ADC program for wildlife damage management on the John Day ADC District.

6) Livestock Protection Collar (LPC) Option to Alternatives 1 and 2 The LPC is registered by EPA for producer or ADC use nationwide. Before the LPC can be used in Oregon, ADC must receive approval from the ODA. ADC has applied to the ODA for approval to use the LPC. If the LPC is approved for use, it could be incorporated into the IWDM program for either Alternative 1 or 2, if selected. Use of the LPC is evaluated separately in this EA.

3.2 DESCRIPTION OF THE ALTERNATIVES

3.2.1 ALTERNATIVE 1 - Current John Day ADC District Program: (No Action)

The No Action alternative is a procedural NEPA requirement (40 CFR 1502.14(d) and is a viable and reasonable alternative that could be selected. It will serve as a baseline for comparison with the other alternatives. The No Action Alternative, as defined here, is consistent with CEQ's definition (CEQ 1981).

Overview

The No Action alternative would continue the current ADC IWDM program in the District. The current program is a collection of cooperative programs with other federal, state and local agencies, and private individuals and associations to protect livestock, poultry and human safety (described in Chapter 1). The District conducts technical assistance, and preventive (in response to

historical loss) and corrective (in response to current loss or hazard) operational wildlife damage management on Forest Service, BLM, state, county and private lands under MOU, Cooperative Agreements or Agreement for Control (Maps of private and BLM lands worked are available for public review at the John Day ADC District office and all District BLM offices). All wildlife damage management is based on interagency relationships, which require close coordination and cooperation because of overlapping authorities and legal mandates.

On federal lands, ADC Annual Work Plans describe the wildlife damage management that would occur. During the ADC annual planning process with Forest Service, BLM, ODFW, and ODA, plans and maps are prepared which describe and delineate where wildlife damage management will be conducted and which methods will be used. Before management is conducted on private lands, *Agreements For Control on Private Property* are signed with the landowner or administrator that describe the methods to be used and the species to be managed. Management is directed toward localized problem predator populations or groups and/or individual offending animals, depending on the circumstances.

In Crook, Union and Wheeler, counties, which do not have Cooperative Agreements with ADC, ADC personnel provide technical assistance and limited direct control activities to livestock producers when requested. Limited technical assistance is provided in Baker County because the county conducts its own wildlife damage management program.

Integrated Wildlife Damage Management (IWDM)

During more than 70 years of resolving wildlife damage problems, ADC has considered, developed, and used numerous methods of managing damage problems (USDA 1994, P. 2-15). The efforts have involved the research and development of new methods, and the implementation of effective strategies to resolve wildlife damage.

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 control of damage caused by wildlife based on local problem analyses and the informed judgement of trained personnel. The ADC Program applies IWDM, commonly known as Integrated Pest Management (IPM) (ADC Directive 2.105), to reduce damage through the ADC Decision Model discussed on page 3-4.

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 nontarget species, and the environment. IWDM draws from the largest possible array of options to create a combination of techniques appropriate for the specific circumstances. IWDM may incorporate cultural practices (i.e., animal husbandry), habitat modification, animal behavior (i.e., scaring), local population reduction, or any combination of these, depending on the characteristics of the specific damage problems. In selecting management techniques for specific damage situations consideration is given to:

- Species responsible
- Magnitude of the damage
- Geographic extent of damage
- Duration and frequency of the damage
- Prevention of future damage (lethal and nonlethal techniques)
- Terrain and Weather conditions

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

The IWDM Strategies that the District is using consist of:

- Technical Assistance Recommendations (implementation is the responsibility of the requestor): District personnel provide information, demonstrations and advice on available wildlife damage management techniques. Technical assistance includes demonstrations on the proper use of management devices (propane exploders, cage traps, etc.) and information on animal husbandry, habits and habitat management and animal behavior modification. Technical assistance is generally provided following an on-site visit or verbal consultation with the requestor. Generally, several management strategies are described to the requestor 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 District personnel in the decision making process, but the actual management is generally the responsibility of the requester.

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

    1. Preventive Damage Management. Preventive damage management is applying wildlife damage management strategies before damage occurs, based on historical damage problems. As requested and appropriate, ADC personnel provide information and conduct demonstrations, or takes action to prevent these historical problems from recurring. For example, in areas where substantial lamb depredation has occurred on lambing grounds, ADC may provide information about guarding dogs, fencing or other husbandry techniques, or be requested to conduct predator damage management prior to lambing. Preventive damage management can take place on private, county and state lands without special authorization. For activities on federal lands, historical loss areas are delineated on maps by representatives of the federal agencies and identify areas where preventive wildlife damage management may occur. Maps are available for public review at the appropriate federal office. In addition, when conducting wildlife damage management on federal lands, ADC must receive a request from the livestock owner or individual that is experiencing the damage. Management areas and techniques are colored coded and reviewed during the annual meeting between the appropriate agencies.

    2. CORRECTIVE DAMAGE MANAGEMENT Corrective Damage Management is simply a wildlife damage emergency where resource losses are actively occurring as a direct result of wildlife activity or depredations. IWDM tools and methods are applied to resolve the ongoing, wildlife damage problem. The various tools and techniques are directly applied by ADC personnel, in combination with resource managers efforts, in an attempt to prevent further losses from recurring.

For example, in an area where confirmed and documented lamb depredations are occurring by coyotes, ADC may provide siren\strobe predator frightening devices to the livestock operator and advise that the livestock be tightly herded or even temporarily moved from the damage site. Then, the ADC specialist may utilize other appropriate techniques and personal experience in an effort to remove the depredating individual from the area. The ADC specialist may typically utilize traps, calling and shooting, and aerial hunting until depredations cease to occur. Coyotes are highly adaptive, and the sooner an individual that has learned to prey on livestock can be removed from the population, the less likely other coyotes in the area are to recognize livestock as a food source.

- Monitoring ADC Objectives Chapter 1, section 1.1.5 describes those objectives or goals that the John Day ADC District has developed with the cooperating agencies. The primary emphasis for establishing objectives is the development of program standards so results, customer satisfaction and effective and sound resource management can be measured. Monitoring of these objectives will be accomplished using the following strategies:

    - Routine analysis of State, county and district-wide field data reported through the ADC MIS as they relate to each objective.
    - Analysis of specie population data provided by ODFW as compared to levels of ADC take.
    - Analyze annually the effectiveness of all mitigations specific to each objective.
    - Maintain routine field distribution of information and " state-of-the-art" nonlethal and lethal technical information.
    - Increase "Field level" contacts with ADC clients and cooperating agencies.
    - Implementation of Periodic Customer Satisfaction Surveys.
    - Routine analysis of livestock loss data as reported by NASS and other agricultural statistic resources.
    - Maintain close coordination with ODFW Regional and District Wildlife Biologists.

ADC Decision Making

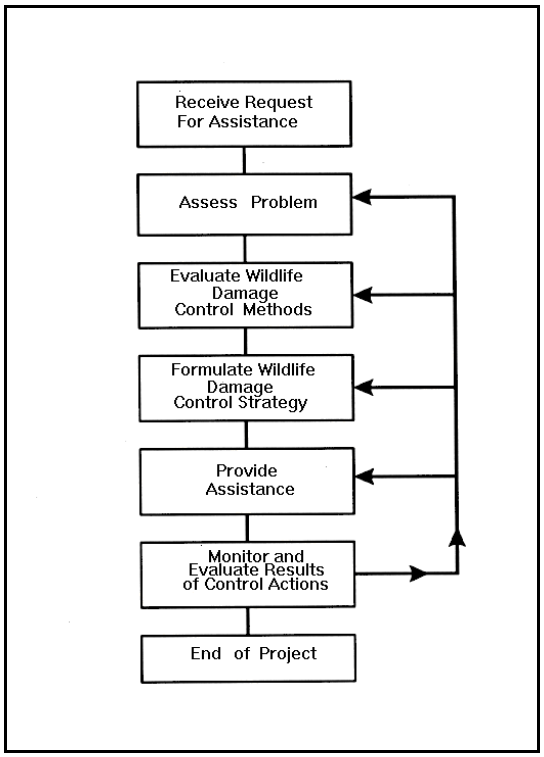
The ADC FEIS describes the procedures used by ADC personnel to determine management strategies or methods applied to specific damage problems (USDA 1994 pp. 2-13, 2-20 to 31 and Appendix N).

As depicted in the Decision Model (Figure 1), consideration is given to the following factors before selecting or recommending control methods and techniques:

- Species responsible for damage
- Magnitude, geographic extent, frequency, and duration of the problem.
- Status of target and nontarget species, including T&E species
- Local environmental conditions
- Potential biological, physical, economic, and social impacts
- Potential legal restrictions
- Costs of control options (the cost of control may sometimes be a secondary concern because of overriding environmental and legal considerations)

The ADC decision making process is a standardized procedure for evaluating and responding to damage complaints. ADC personnel frequently are contacted only after requesters have tried nonlethal techniques and found them to be inadequate for reducing damage to an acceptable level. ADC personnel evaluate the appropriateness of strategies, and methods are evaluated in the context of their availability (legal and administrative) and suitability based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situation are formed into a management strategy. After the management strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for management is ended. The FEIS provides detailed examples of how the ADC Decision Model is implemented for coyote predation to sheep on public and private lands (USDA 1994).

On most ranches, predator damage may occur whenever vulnerable livestock are present, because no cost-effective method or combination of methods that permanently stops or prevents coyote predation are available. When damage continues intermittently over time, the ADC Specialist and rancher monitor and reevaluate the situation frequently. If one method or combination of methods fails to stop damage, a different strategy is implemented.



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

Wildlife Damage Management Methods used in the John Day ADC District

Producer-Implemented Methods:

Livestock producer practices consist primarily of nonlethal preventive methods such as animal husbandry, habitat modification, and animal behavior modification. Livestock husbandry and other management techniques are implemented by the livestock producer. Producers are encouraged to use these methods, based on the level of risk, need, and practicality (USDA 1992). ADC cooperates with the Oregon State University Sheep Station and the Oregon State University Cooperative Extension Service to offer technical assistance to producers, and provide sources for guard dog procurement. Livestock producer practices recommended by ADC include:

- Animal husbandry, which generally includes modifications in the level of care or attention given to livestock which may vary depending on the age and size of the livestock. Animal husbandry practices include but are not limited to techniques such as guard dogs, herders, shed lambing, and carcasses removal.

- Habitat modification alters habitat to attract, or repel certain wildlife species, or to separate livestock from predators. Habitat modification practices would be encouraged when practical, based on the type and extent of the livestock operation. For example, clearing brushy or wooded areas in or adjacent to lambing or calving pastures may be appropriate to reduce available cover for predators.

- Animal behavior modification refers to tactics that alter the behavior of wildlife and reduce predation. Animal behavior modification may use scare tactics or fencing to deter or repel animals that cause loss or damage to livestock or property. Some but not all devices used to accomplish this are [1]:

    - Predator-proof fences
    - Electronic guards
    - Propane exploders
    - Pyrotechnics

Mechanical Management Methods:

Mechanical management methods consist primarily of any tool or device used to repel, capture or kill a particular animal or local population of wildlife to prevent continued resource damage. Mechanical methods may be nonlethal such as barrier fencing or frightening devices such as the siren\strobe device or the propane cannon or lethal such as the M-44 device, shooting or snares. If ADC personnel apply mechanical control methods directly on private lands, a control agreement must be signed by the landowner or administrator, authorizing the use of each control method. On federal lands an annual work plan will be submitted to each land management agency which identifies areas and times where ADM requests may reasonably be expected to occur, based on livestock use and historic documentation of losses. Federal lands managers are responsible to identify areas where other multiple use priorities may conflict with these ADM areas at the same time that resources have experienced wildlife damage in the past.

1. Leg-hold and cage traps, and neck and foot snares are used in the District for preventive and corrective damage management only where signed *Agreements For Control On Private Property* are in place, or on federal lands, in accordance with ADC Annual Work Plans. For technical assistance requests, traps may be recommended or distributed to the requestor for use in resolving problems caused by small mammals.

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

When resolving black bear and cougar problems, ADC personnel typically use spring-activated foot snares, trail hounds and culvert or enclosure type cage traps. These techniques allow for chemical immobilization, marking and relocation of the problem animals, or if necessary, euthanasia of animals when the ODFW determines that relocation is not a viable option. All of these methods allow for the release on non-target individuals in the rare instance of a capture of a non-offending animal.

2. Ground shooting is selective for target species and may involve the use of spotlights, decoy dogs and predator calling. Shooting with rifles or shotguns is used to manage livestock depredation problems and human health hazards when lethal methods are determined appropriate.

3. Hunting dogs are essential to the successful tracking and capture of problem black bears and cougars. Dogs are also trained and used for coyote damage management to alleviate livestock depredation (Rowley and Rowley 1987, Coolahan 1990). Trained dogs are used primarily to locate coyotes and dens, and to pursue or decoy problem animals.

4. Denning is the practice of locating coyote or red fox dens and euthanizing the animals inhabiting the den using a fumigant cartridge registered with EPA (EPA Reg. No. 56228-21) See gas cartridge under chemical methods.

5. Aerial hunting, the shooting of coyotes and fox from fixed-winged aircraft or helicopters, is used on all lands where authorized and determined appropriate. Aerial hunting consists of visually sighting target animals and shooting them from the aircraft. Aerial hunting is a method used to protect livestock and to protect pronghorn antelope and mule deer because of the technique's cost effectiveness and efficacy (Smith et al. 1986).

Chemical Management Methods:

All chemicals used by ADC are registered under FIFRA and administered by the EPA and the ODA, Plant Division. All District personnel are re

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ol of predators are among the most selective and humane methods of control currently available.

T

hechemicalmethodsusedandavailableforuseintheDistrictare:

1. Sodium cyanide, the active ingredient in M-44s, is used for many purposes in the United States, including agricultural, pharmaceutical, mining, and for industrial dyes. Sodium cyanide is odorless when completely dry, emits an odor when dampened, is strongly alkaline, and rapidly decomposes in the environment. In 1989, about 215 million pounds of sodium cyanide were used in North America, of which the ADC Program nationwide used about 0.0001% (Knudson 1990). In FY 1994, 1.4 pounds of sodium cyanide was expended during field activities. In 1995, about 1.75 pounds of sodium cyanide were used in the District (MIS 1994-95). Sodium cyanide is freely soluble in water and a fast acting nonspecific toxicant inhibiting cellular respiration. Low concentrations of cyanide have been detected and are frequently found in normal human blood (Feldstein and Klendshof 1954).

   The M-44 cyanide ejector is a selective device for use reducing coyote, red fox, gray fox and feral dog predation (EPA Reg. No. 56228-15), and also for protecting endangered species and for certain public health uses (Thomas 1986, Connolly 1988). M-44s may be used for preventive and corrective management on state, county and private lands, and on federal lands where their use does not interfere with BLM or Forest Service multiple use objectives. ADC personnel comply with the EPA label and 26 use restrictions (see USDA 1994,

Appendix Q). In 1994, 312 problem coyotes were killed with the M-44, accounting for about 9 % of the coyote take by ADC in the District. In 1995, a total of 390 coyotes were killed with the M-44, accounting for about 10 % of the District coyote take (MIS 1994-95).

2. The gas cartridge is registered as a fumigant by the EPA (EPA Reg. No. 56228-2) and is comprised of 35% charcoal and 65% sodium nitrate. When ignited, the cartridge burns in the den of an animal and produces large amounts of carbon monoxide, a colorless, tasteless gas, which kills animals in the den. This technique is used on lands in the management areas where livestock killing can be attributed to food procurement for young (Till and Knowlton 1983, Till 1992). In 1994, 63 coyote dens were fumigated using 96 cartridges and in 1995, 70 coyote dens were fumigated using 105 cartridges.

3. DRC-1339 (3-chloro-4-methylbenenamine hydrochloride) is a slow acting avian toxicant that is rapidly metabolized and/or excreted. Because of the rapid metabolism of DRC-1339 in the body, it poses little risk of secondary poisoning to nontarget animals (Cunningham et al. 1979, Schafer 1981, Knittle et al. 1990). This compound is also unique because of its relatively high toxicity to most pest birds, but low-to-moderate toxicity to most predatory birds and almost no toxicity to mammals (DeCino et al. 1966, Palmore 1978, Schafer 1981).

   DRC-1339 Concentrate, EPA registration number 56228-29, allows the control crows, ravens and magpies preying on newborn livestock or on the eggs/young of Federally-designated threatened or endangered species or on the eggs/young of other species designated to be in need of special. DRC-1339 is incorporated into meat baits where ravens are killing or injuring livestock (Larsen and Dietrich 1970). The feeding habits of the birds are observed before placing any treated baits in an area to reduce the risks to nontarget animals. Ravens are opportunistic feeders and by determining when and where the birds are feeding, the baits will be found more quickly and easily, thereby reducing the risks to nontarget animals. Selective management can be applied because ravens learn to exploit a readily available food source, and will continue to focus on that source until the availability declines. An estimated 620 ravens were killed with DRC-1339 treated meat baits in the District in 1995 (MIS 1995) to protect newborn livestock.

   DRC-1339 Concentrate is also registered by EPA (EPA Reg. No. 56228-10) for the control of several pest species of birds including blackbirds, starlings and Brown-headed cowbirds. This registration is used only by ADC personnel trained and certified in bird control. DRC-1339 Concentrate for feedlots is the bait of choice when the commercially available Starlicide Pellets are not available or are ineffective. Formulations for feedlot use include cull french fries for bait, or other natural food products such as raisins, rolled oats and corn, feed pellets or whole or cracked corn. Prebaiting is always recommended before treating with DRC-1339 to help establish and maintain a bait site while nontarget observations are being conducted. Besser et al. 1967, and Royal et al., 1967 cited several situations where DRC 1339 Concentrate was administered with excellent results with no nontarget mortalities or secondary hazards.

4. Chemical Immobilization/Euthanasia. Several chemicals are authorized for immobilization and euthanasia by ADC. Most District personnel have received training in the safe use of all authorized immobilization/euthanasia chemicals, and are certified by ADC. This training involves hands-on application of state-of-the-art techniques and chemicals.

   Telazol™ and Ketaset™ are the immobilizing agents used by ADC, and are approved by the Food and Drug Administration (FDA) (NADA 106-111 and NADA 45-290, respectively). Telazol and Ketaset are rapid acting, non-narcotic, non-barbiturate injectable anesthetic agent, having a wide margin of safety. Both Telazol and Ketaset produce unconsciousness know as "dissociative" which in general terms means reflexes needed to sustain life (breathing, coughing, swallowing, etc.) are not affected by the drugs. These agents are used to immobilize live-trapped animals for relocation or administered before euthanasia. As other drugs are approved by the FDA and ADC, they may be incorporated into the District program.

Telazol is a combination of equal parts of tiletamine hydrochloride, a nonphenothiazine diazepinone having minor tranquilizing properties. The product is generally supplied sterile in vials, each containing 500 mg of active drug, and when dissolved in sterile water has a pH of 2.2 to 2.8. Telazol produces a state of unconsciousness in which protective reflexes, such as coughing and swallowing, are maintained during anesthesia. Schobert (1987) listed the dosage rates for many wild and exotic animals. Before using Telazol, the size, age, temperament, and health of the animal is considered. Following a deep intramuscular injection of Telazol, onset of anesthetic effect usually occurs within 5 to 12 minutes. Muscle relaxation is optimum for about the first 20 to 25 minutes after the administration, and then diminishes. Recovery varies with the age and physical condition of the animal and the dose of Telazol administered, but usually requires several hours.
Ketaset is supplied as a slightly acidic solution (pH 3.5 to 5.5) for intramuscular injection. Ketaset also produces a state of unconsciousness which interrupts association pathways to the brain and allows for the maintenance of the protective reflexes, such as coughing, swallowing, pedal and corneal. Ketaset is detoxified by the liver and excreted by the kidney.

Following administration of recommended doses, animals become immobilized in about 5 minutes with anesthesia lasting from 30 to 45 minutes; depending on dosage, recovery may be as quick as 4 to 5 hours or may take as long as 24 hours; recovery is generally smooth and uneventful.

Potassium chloride, a common laboratory chemical, is injected by ADC personnel as a euthanizing agent after an animal has been anesthetized (ADC Directive 2.430).

3.2.2 Alternative 2 - Integrated Wildlife Damage Management on All Land Classes As Requested - (Proposed Action)

This alternative is the current program as described in Alternative 1 with the ability for ADC to respond to requests for assistance on all land classes. All wildlife damage management would be outlined in ADC Annual Work Plans based on close cooperation and coordination with the National Forests and BLM Districts. Program activities would be conducted utilizing the IWDM approach as described in Alternative 1.

Integrated Wildlife Damage Management: Same as Alternative 1 with the addition of activities on all lands. IWDM would also be available to respond to requests from ODFW on specific areas identified for the protection of wildlife resources and human safety.

Mechanical and Chemical Management Methods and Restrictions: Those mechanical and chemical tools described in Alternative 1 would apply, where appropriate, under this alternative. WDM could be conducted on designated Forest Service and BLM lands under the provision of the legislation designating the area, Resource Management Plans and mitigations outlined in this EA and Annual Work Plan. WDM in these designated areas would be expected to be only a very small portion of the program under alternative 2.

3.2.3 Alternative 3 - Nonlethal Before Lethal Control

This alternative is a modification of the current ADC program. This alternative would require that livestock producers practice nonlethal control before the use of lethal control methods by ADC. Nonlethal methods selected by producers are described on pages 3-5 and 3-6 under producer implemented methods. Verification of the methods used would be the responsibility of ADC. No standards exist to determine producer diligence in applying these methods, nor are there any standards to determine how many nonlethal applications are necessary before the initiation of lethal controls. Thus, only the presence or absence of nonlethal methods can be evaluated. The mechanical and chemical control methods described in Alternative 1 would apply, where appropriate, once the criteria for nonlethal control have been met. Consideration of wildlife needs would not be included with the producer implemented nonlethal methods, nor would ADC base control strategies on the needs of designated wildlife for predator protection.

Implementation of this alternative would require ADC to identify the applicable nonlethal methods for each request for assistance, ascertain which methods have been used, and determine if others

should be recommended or used prior to recommending or using lethal methods. In damage situations where acceptable resolution of wildlife damage is not achieved using nonlethal methods, a "good faith" decision to consider lethal control would be made.

The present ADC program recognizes nonlethal methods as an important dimension of IWDM, gives them first consideration in the formulation of each control strategy, and recommends or uses them when practical before recommending or using lethal methods. The important distinction between the Nonlethal Before Lethal Alternative and the Current Program Alternative is that the former alternative would require that all practical nonlethal methods be recommended or used before any lethal methods. Practical nonlethal methods include those which are available and have the potential to successfully prevent of reduce wildlife damage within reasonable economic limits for specific target species and resource combinations (USDA, 1994).

3.2.4 Alternative 4 - Technical Assistance Only

This alternative would eliminate ADC operational wildlife damage management in the District. ADC would only provide technical assistance and make recommendations when requested. However, private landowners, contractors, or others could conduct their own wildlife damage management on federal, state, county and private lands under the provisions of Oregon Revised Statutes (ORS 498.012, 610.003, 610.105).

This "technical assistance only" alternative would place the immediate burden of operational control work on state agencies, individuals and livestock producers. Individuals experiencing wildlife damage would, independently or with ADC recommendations, carry out and fund control activities. Individual producers could implement wildlife damage management as part of the cost of doing business, or a state agency could assume a more active role in providing operational wildlife damage management.

If Alternative 4 was selected, ADC could not direct how a state agency or individuals would implement wildlife damage management. Some agencies or individuals may choose not to take action to resolve wildlife damage. Other situations may warrant the use of legally available management methods because of public demands, mandates, or individual preference. Methods and control devices could be applied by people with little or no training and experience, and with no professional oversight or monitoring for effectiveness. This in turn could require more effort and cost to achieve the same level of problem resolution, and could cause harm to the environment, including a higher take of nontarget animals. Illegal use of pesticides could be greater than present (McMullen, pers. comm. 1993).

3.2.5 Alternative 5 - No Federal ADC Program

This alternative would eliminate all Federal ADC wildlife damage management (operational and technical assistance) on all land classes. However, state and county agencies and private individuals could conduct wildlife damage management. ADC would not be available to provide technical assistance or make recommendations to livestock producers. In some cases, control 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 (McMullen, Pers. Comm., 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 evaluated in the FEIS (USDA 1994).

3.3 Livestock Protection Collar (LPC), Option to Alternatives 1 and 2

Livestock Protection Collars (LPCs), containing sodium fluoroacetate, are registered with the EPA (EPA Reg. No. 56228-22) for producer or ADC use nationwide (see Appendix F, FIFRA). Prior to use in individual states, the registrant must receive approval from the agency within the state that oversees pesticide usage; ADC has applied to use the LPC through the ODA. If the LPC is approved for use, it would be incorporated into the IWDM program for Alternative 1 or 2, if selected. If approved, use of the LPC will adhere to EPA registration and ODA requirements, and would be restricted to specially

trained and certified ADC employees. The LPC would not be used on BLM and Forest Service lands in the District because of use restrictions. Use of the LPC is evaluated separately in this EA since it is not currently approved for use in Oregon.

Sodium fluoroacetate (Compound 1080), the toxicant in the LPC, has been used since World War II. 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 discriminatively toxic to predators, being many times more lethal to them than to most nontarget species (Atzert 1971, Connolly and Burns 1990). Sodium fluoroacetates is a white powder soluble in water and is very stable in solution; it would only be used in the LPC. Sodium fluoroacetate kills by disrupting the Kreb's Cycle, which is the energy producing process for cells. Many EPA imposed restrictions apply to the use of LPCs.

The individual small and large collars contain 1.1 oz. (30.4 grams) of a 1% solution of sodium fluoroacetate and 99% inert ingredients. The LPC is worn around the neck of lambs, and kills only the animals attacking collard lambs (Connolly et al. 1978, Johnson 1984, Burns et al. 1988). When LPCs are used, lambs are made susceptible to attack so as to prompt target predators to attack collared lambs (Blakesley and McGrew 1984, Scrivner and Wade 1986, Connolly and Burns 1990). LPCs consist of 2 pouches that are punctured when a collared lamb is attacked and bitten on the throat by a predator. Upon puncturing the collar, the offending animal ingests a small volume of the solution and dies a short time later. In this usage, sodium fluoroacetate has virtually no risk of secondary poisoning (USDA 1994, Appendix P).

3.4 Alternatives Considered But Not Analyzed In Detail With Rationale

3.4.1 Compensation for Wildlife Damage Losses

The Compensation alternative would direct all ADC program efforts and resources toward the verification of livestock and poultry losses from predators, and providing monetary compensation to the producers. ADC services would not include any direct control nor would technical assistance or nonlethal methods be available.

This option is not currently available to ADC because ADC is mandated to protect American agricultural and natural resources (Animal Damage Control Act 1931, and Rural Development, Agricultural and Related Agencies Appropriation Act 1988). Analysis of this alternative in the FEIS indicate that it has many drawbacks (USDA 1994):

- It would require larger expenditures of money and manpower 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 livestock owners to limit predation through improved animal husbandry practices and other management strategies.
- Not all ranchers would rely completely on a compensation program and unregulated lethal control of predators would most likely continue as permitted by state law.
- Congress has not appropriated funds to compensate for predation or other wildlife damage to agricultural products.

3.4.2 Bounties

Payment of funds for killing predators (bounties) suspected of causing economic losses is not supported by Oregon State agencies such as ODFW and ODA. ADC concurs with these agencies because:

- ADC does not have the authority to establish a bounty program
- Bounties are generally not as effective in controlling damage
- Circumstances surrounding take of animals is completely unregulated
- No process exists to prohibit taking of animals from outside the damage management area for compensation purposes

3.4.3 Eradication and Suppression

An eradication and suppression alternative would direct all ADC program efforts toward planned, total elimination of native predator species.

Eradication of unprotected predators, such as coyotes, is legal in Oregon (ORS 610.005) but not supported by ODFW or ODA. This alternative will not be considered by ADC in detail because:

- ADC opposes eradication of any native wildlife species.
- ODFW opposes eradication of any native Oregon wildlife species.
- ODA opposes eradication of any native Oregon wildlife species.
- The eradication of a native species or local population would be extremely difficult if not impossible to accomplish and cost prohibitive.
- Eradication is not acceptable to most members of the public.

Suppression would direct ADC program efforts toward managed reduction of certain problem populations or groups.

In localized areas where damage can be attributed to predation by specific groups, ODFW has the authority to increase hunting seasons and hunter tag quotas; ODA has the authority to control unprotected predators, such as coyotes. When a large number of requests for wildlife damage management are generated from a localized area, ADC would consider suppression of the local population or groups of the offending species, if appropriate.

It is not realistic, practical, or allowable under present ADC policy to consider large-scale population suppression as the basis of the ADC program. Typically, ADC activities in the District would be conducted on a very small portion of the area inhabited by problem species.

3.4.4 The Humane Society of the United States (HSUS) Alternative

The HSUS proposed an alternative that requires: 1) " permittees evidence sustained and ongoing use of nonlethal/husbandry techniques aimed at preventing or reducing predation prior to receiving the services of the ADC Program" ; 2) " employees of the ADC Program use or recommend as a priority the use of appropriate nonlethal techniques in response to a confirmed damage situation" ; 3) " lethal techniques are limited to calling and shooting and ground shooting, and used as a last resort when use of husbandry and/or nonlethal controls have failed to keep livestock losses below an acceptable level" ; and 4) " establish higher levels of acceptable loss levels on public lands than for private lands" .

The components of this proposed alternative by the HSUS have been analyzed in detail in the alternatives contained in this EA and through court rulings. The HSUS alternative would not allow for a full range of IWDM techniques to resolve wildlife damage management problems. In addition, ADC is mandated to protect American agriculture, despite the cost of control. Further, the Southern Utah Wilderness Society, The Wilderness Society et al. v. Hugh Thompson et al. U.S. Forest Service (Civil No. 92-C-0052A 1993) the court clearly states that, " The agency need not show that a certain level of damage is occurring before it implements an ADC program. . . .Hence, to establish need for an ADC, the forest supervisors need only show that damage from predators is threatened." In other words, it is not necessary to establish a criterion, such as percentage of loss of a herd to justify the need for an ADC. The alternatives and option selected for detailed analysis in this EA include many of the suggestions in the HSUS proposal, and it is

believed that inclusion of this alternative would not contribute new information or options for consideration and analysis that are not already being considered and available in IWDM as used by ADC.

3.4.5 Management Techniques Not Considered for Use in the Integrated Wildlife Damage Management Strategy

Guarding Animals Other Than Livestock Guarding Dogs

Besides livestock guarding dogs, that are widely used to protect livestock from predators, several other species of animals have been proposed as livestock guardians. Burros, llamas and emus have been advocated for this purpose, but their efficacy and practicality have not been established (Green 1989). Research is continuing in this area, however, at this time ADC does not believe the use of guarding burros, llamas and emus can be recommended for general use. As research provides proven preventive methodologies, they will be incorporated into the list of recommended guarding animals.

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 unregistered as a predacide by the EPA or ODA, and therefore cannot be used or recommended for this purpose.

3.5 Mitigation and Standard Operating Procedures For Wildlife Damage Management Techniques

3.5.1 Mitigation in Standard Operating Procedures (SOPs)

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 ADC program, nationwide and in Oregon, uses many such mitigation measures and these are discussed in detail in Chapter 5 of the FEIS (USDA 1994). Some key mitigating measures incorporated into ADC's Standard Operating Procedures include:

- The ADC Decision Model which is designed to identify effective wildlife damage management strategies and their impacts.

- Traps and snares are not set within 30 feet of exposed carcasses to prevent the capture of scavenging birds. The exception to this is for the capture of cougar and black bear because the weight of these target animals allows trap tension adjustments to exclude the capture of smaller nontarget animals.

- Leghold trap underpan tension devices are used throughout the program to reduce capture of nontarget wildlife that weighs less than the target species.

- Nontarget animals captured in leghold traps or foot snares are released unless it is determined by the ADC Specialists that they will not survive.

- Conspicuous, bilingual warning signs alerting people to the presence of traps, snares and M-44s are placed at major access points when they are set in the field.

- Reasonable and prudent alternatives and reasonable and prudent measures are identified by the USFWS and implemented to avoid impacts to T&E species.

- EPA-approved label directions are followed for all pesticide use.

- DRC-1339 is not applied if nontarget species are present that could be attracted to the bait materials.

- All District ADC Specialists who use restricted chemicals and immobilization /euthanasia drugs are trained and certified by program personnel or others who are experts in the safe and effective use of these materials.

- The M-44 sodium cyanide devices are used following EPA label requirements (see FEIS Appendix Q for label and use restrictions).

Some additional mitigating measures specific to the District include:

- ADC Annual Work Plans and maps are developed with input from FS, BLM and ODFW which delineate the areas where wildlife damage management would occur and the methods that will be used for federal lands.
- Management actions would be directed toward localized populations or groups and/or individual offending animals, dependent on the species and magnitude of the problem.
- The use of traps and snares conform to current rules and regulations administered by ODFW.
- Decisions to relocate or kill problem bear and cougar are made by the ODFW District Biologist. If the decision is to relocate and ADC is requested to assist, District ADC personnel relocate the animal into areas designated by ODFW.
- At least two days before the opening of the bird hunting season, all management equipment is removed from federal lands.
- No wildlife damage management would be conducted within public safety zones (one-quarter mile or appropriate buffer zone around any residence, community, state or federal highway, or developed recreation site), except to protect human health and safety.

- Monitoring of objectives will be performed on a routine basis with adjustments to program actions when a need is identified.

3.5.2 Additional Mitigation specific to the issues

The following is a summary of additional mitigation that are specific to the issues found in Chapter 2 of this document.

3.5.2.1 Cumulative Effect of ADC Predator Take with Sport and other Forms of Take on Predator Populations

- District activities are directed to resolving problems by taking action against individual problem animals, or local populations or groups.
- ADC kill is monitored by considering "Total Harvest" and estimated population numbers of key species. These data are used to assess cumulative affects so as to maintain the magnitude of harvest below the level that would impact the viability of a population (See Chapter 4).

3.5.2.2 Nontarget species

- ADC personnel are highly trained and experienced to select the most appropriate method for taking problem animals and excluding nontarget animals.
- Leghold trap underpan tension devices are used to reduce hazards to nontarget wildlife that weigh less than the target species.

- Nontarget animals captured in leghold traps or foot snares are released unless it is determined by the ADC Specialist that they will not survive.

- ODFW has identified the Kit fox as a State sensitive specie and special consideration will be provided to avoid take. Areas that will be avoided will be identified on maps by ODFW.

3.5.2.3 Activities in Wilderness and Special Management Areas (BLM and National Forests)

- Wildlife damage management will be conducted only when and where a need exists.

- WDM will stop after 30 days of control activity, when losses cease or when livestock are no longer present.
- Vehicle access will be limited to existing roads and tools and methods will be utilized which minimize ADC presence.
- Wildlife damage management will adhere to guidelines as specified and agreed upon in the ADC Annual Work Plan.

- WDM actions will tier to those restrictions in the Interim Management Policies for each BLM District.

3.5.2.5 Humaneness of methods used by ADC

- Research continues to improve the selectivity and humaneness of management devices.
- Underpan tension devices are in use which are designed to exclude nontarget animals.
- Breakaway snares have been developed and implemented into the program. Breakaway snares are snares designed to brake open and release with tension exerted by larger nontarget animals such as deer, antelope and livestock.
- Chemical immobilization/euthanasia procedures that do not cause pain are used.

3.5.2.6 The public's concern for use of chemicals

- All pesticides are registered with the EPA
- EPA-approved label directions are followed by ADC employees.
- The ADC Decision Model is designed to identify effective wildlife damage management strategies and their impacts.
- ADC employees that use pesticides are trained to use each specific material and are certified for the use of pesticides under EPA and ODA approved programs.
- ADC employees who use pesticides participate in continuing education programs to keep abreast of developments and to maintain their certifications.

3.5.2.7 ADC's impact on Threatened and Endangered (T&E) Species and species of special concern to other federal and state agencies

- ADC consulted with the USFWS regarding the nationwide program and has implemented all reasonable and prudent alternatives to protect T&E species.
- ADC consulted with the USFWS on the impacts of the program in the District and adopted reasonable and prudent alternatives related to the Northern Bald Eagle in the District. The reasonable and prudent alternatives are;
  - ADC personnel will contact either the local ODFW office or the appropriate regional or field office of the USFWS to determine nest and roost locations for Northern Bald Eagles;
  - The appropriate USFWS office shall be notified within five days of the finding of any dead or injured bald eagle. Cause of death, injury, or illness, if known, would be provided to those offices;
  - Leghold traps (except those used to trap mountain lions) shall be placed a minimum of 30 feet from above ground bait sets;
  - When bald eagles are in the immediate vicinity of a proposed wildlife damage management program, ADC personnel will conduct daily checks for carcasses or trapped individuals (for the full context of the Biological Opinion see USDA (1994)).
- ADC has agreed to procedural conditions that will insure ongoing consideration of T&E species in relationship to program activities in the District.

3.5.2.8 Cultural Resources - American Indian Concerns

- ADC solicited input from American Indian tribes in the District concerning any potential impact on cultural resources.
- ADC has reviewed its activities in relationship to any cultural resource or special interest areas.
- This EA will be provided to the American Indian tribes in Draft form to determine if all cultural issues have been addressed.
- Impacts to historic and cultural resources will be evaluated on an annual basis during the Annual Work Planning Process.

3.5.2.9 Consultation with other agencies

The ADC program in the District consults with the USFWS, federal land management agencies, and other appropriate agencies regarding program impacts. Frequent contact is made with the BLM and the Forest Service when ADC is conducting wildlife damage management on public lands administered by these agencies. The BLM and Forest Service are interested in the levels of livestock killed, injured and harassed by predators and the wildlife damage management methods used to stop or limit losses and how their multiple use objectives might be affected by ADC actions. The ADC program maintains close coordination with the ODFW and ODA which have authority to manage wildlife species causing damage.

The ADC program in the District is conducted under Cooperative Agreements and MOUs with federal and state agencies. National MOUs with the BLM and Forest Service delineate expectations for wildlife damage management on public lands administered by these agencies. ADC Annual Work Plans are developed with BLM Districts and National Forests to detail the activity, target species, and mitigation measures to be implemented on allotments where wildlife damage management is needed.

4.0 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides information needed for making informed decisions on the wildlife damage management objectives outlined in Chapter 1 and the issues and affected environment addressed in Chapter 2. The chapter consists of three main sections: 1) analyzes of how each alternative meets the objectives and assesses the consistency of alternatives with existing management plans, 2) analyzes of the environmental consequences of each alternative, and 3) the Economic Analysis of wildlife damage management in the District.

4.1 OBJECTIVE ANALYSIS AND CONSISTENCY DETERMINATION

4.1.1 Objective A-1 - Respond to 100% of the requests with the appropriate action.

4.1.1.1 Alternative 1. - Continue the Current District Program (No Action):

The current District wildlife damage management program responds to requests for assistance on state, county, private, and restricted Forest Service and BLM lands where there are signed *Cooperative Agreements*; *Agreements for Control* or Annual Work Plans. Wildlife damage management assistance is conducted to protect livestock, wildlife and human safety on these lands and lands that are adjacent to Forest Service and BLM lands in the District. ADC cannot, however, respond to all requests for assistance on lands administered by the Forest Service and BLM.

It is therefore impossible for ADC to fully meet Objective A-1 since permittees on Forest Service and BLM lands and adjacent landowners cannot be provided operational wildlife damage management when it is needed.

4.1.1.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested (Proposed Action):

Alternative 2 is the current program plus the authorization to conduct operational wildlife damage management on Forest Service and BLM lands within the District in accordance with each Forest's LRMP, BLM's RMPs and ADC Annual Work Plans. ADC would conduct operational wildlife damage management on authorized areas on the Umatilla, Wallowa-Whitman, and Ochoco NFs, and the Burns and Vale BLM Districts.

Alternative 2 would allow ADC to fully meet Objective A-1 since livestock permittees on National Forests and BLM lands and producers adjacent to these lands would be provided wildlife damage management assistance when and where needed.

4.1.1.3 Alternative 3 - Nonlethal Required Before Lethal Control Program

Alternative 3 would limit lethal control to situations where non-lethal predator damage management has been practiced. Most livestock producers practice some measure of non-lethal damage management. As an example, 111 livestock producers in Malheur County were surveyed regarding producer-implemented methods. Sheep are much more vulnerable to predation and require more extensive husbandry practices to maintain losses within acceptable levels. Three of the 4 major sheep producers surveyed in Malheur County grazing public land allotments indicated they use three or more nonlethal measures to protect their flocks. These methods include livestock guarding dogs, herders, sheep dogs, and strobe-siren devices.

Non-lethal options for cattle producers are more limited, yet many producers practice improved husbandry techniques, such as calving on private land where newborn calves can be better monitored and removing livestock carcasses from pastures to prevent concentrating predators being drawn to the area to scavenge. This alternative would result in ADC limiting operational lethal control activities to only those producers who are currently using nonlethal techniques which have proven ineffective in controlling depredation. Based on these restrictions, Alternative 3 would not allow ADC to respond with a full array of wildlife damage management strategies and methods and Objective A-1 could only partially be met.

4.1.1.4 Alternative 4. - Technical Assistance.

Alternative 4 would limit ADC to providing technical assistance to livestock producers about the use of available and legal methods, make recommendations, and provide instructional literature on wildlife damage management. ADC would not provide any operational wildlife damage management on federal, state, or private lands within the District. State agencies, individuals, livestock producers or other entities would be responsible for conducting all wildlife damage management.

Based on these restrictions, Alternative 4 would not allow ADC to respond with a full array of wildlife damage management strategies and methods and Objective A-1 could only partially be met.

4.1.1.5 Alternative 5. - No Federal ADC Program.

Under Alternative 5 no operational or technical assistance would be provided by ADC in the District. State agencies, individuals and livestock producers or other entities would be responsible for conducting all wildlife damage management without support or advice from ADC.

Based on these restrictions, Alternative 5 will not allow ADC to meet Objective A-1.

4.1.1.6 Use of the Livestock Protection Collar (LPC) Option for Alternatives 1 and 2.

If authorized in Oregon and the District, the LPC would be added as a method for ADC to use to resolve wildlife depredation on sheep and lambs. The LPC would be a tool to help ADC to meet Objective A-1.

4.1.2 Objective A-2. - Hold lamb losses due to predation to less than 5%/year in areas with Cooperative Agreements. [1]

4.1.2.1 Alternative 1. - Continue the Current District Program (No Action):

Appendix C presents 1993 reported loss data collected by ADC. These tables show the significance of predator losses as compared to all causes of lamb deaths. The District ADC program has been able to limit annual lamb losses to below 5% of the total protected, however. The 1993 loss data (MIS 1993) showed that of the 135,787 lambs protected, 1,382 (1.0%) were reported killed by predators. Losses to individual producers or average county losses may, at times, exceed the 5% but overall District levels are below the 5% criteria established in Objective A-2. Losses to lambs in some areas may vary for several reasons including: 1) terrain, weather, and vegetative cover that restricts access, limits visibility of dead livestock and reduces the array of available methods, 2) too few ADC Specialists for the work load, 3) restrictions on, or effectiveness of methods on public lands, or 4) lack of ADC access to Special Management Areas where losses occur or on public lands adjacent to private lands where losses are occurring. We believe that Alternative 1 partially meets the criteria established for Objective A-2.

[1] District personnel will use MIS reported losses, which involves annual standardized interviews with livestock owners and operators, to determine levels of predation. These losses will be calculated as a proportion of total inventory of livestock grazed by cooperators on the District. These objective levels were selected based on statewide loss proportions, as historical data do not exist for the District itself.

4.1.2.2 Alternative 2. - Integrated Wildlife Damage Management Available On All Land Classes As Requested (Proposed Action):

Alternative 2 allows ADC to protect lambs on all land classes. Lamb losses have been documented and reported on several Special Management Areas (Table 2-1). Permitted livestock producers using these lands have historically documented lamb losses to predation. The need to conduct WDM in these areas is discussed in Chapter 2 under Special Management Areas. Alternative 2 allows ADC to better meet the criteria for Objective A-2. Existing levels of predation on lambs would probably be reduced for permittees using these areas and for producers whose lands adjoin public lands. Alternative 2 allows ADC to better meet the criterion for Objective A-2.

4.1.2.3 Alternative 3. - Nonlethal Required Before Lethal Control.

As stated in 4.1.1.3, most sheep producers in the District are already practicing nonlethal measures to reduce predator damage. Therefore, the impacts of this Alternative would be the same as Alternative 1. We believe that Alternative 3 would partially meet the criteria of Objective A-2 for average District lamb losses and would not be met for each producer in the District.

4.1.2.4 Alternative 4 - Technical Assistance Only

Alternative 4, a technical assistance only program, would not allow ADC to meet the criterion for Objective A-2. In the absence of an effective WDM program, lamb losses could be three to six times higher than those currently being experienced (Gee, 1977, O'Gara et al.1983). Under Alternative 4, no *Agreements for Control* would be kept. These documents and their unique numbers are the mechanism for collecting and managing most information gathered by ADC, and without them no producer or District information could be maintained.

4.1.2.5 Alternative 5. - No Federal ADC Program.

The impacts would be the same as for Alternative 4.

4.1.2.6 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

If authorized in Oregon and the District, the LPC would be added as a method for ADC to use to resolve wildlife depredation on sheep and lambs. The LPC would be a tool to help ADC to meet Objective A-1.

Use of the LPC would help ADC meet the criteria of Objective A-2 and would help reduce the level of predation on lambs below that currently being experienced.

4.1.3 Objective A-3. - Hold adult sheep losses due to predation to less than 3%/year in areas with cooperative agreements. [1]

4.1.3.1 Alternative 1. - Continue the Current District Program: (No Action).

Appendix C shows the relationship of predator losses to all losses for adult sheep and demonstrates that predation is a significant cause of adult sheep deaths. The current District ADC program has kept adult sheep predation losses below 3% of the total protected. Losses to sheep in some counties may vary for several reasons including: 1)terrain, weather, and vegetative cover that restricts access and limits the array of available methods; 2) too few ADC personnel for the work load; 3) restrictions on methods and effectiveness on public lands; or 4) lack of ADC access to SMAs where losses occur or public lands adjacent to private lands where losses are occurring.

Alternative 1 meets the criterion for Objective A-3, however, the level of loss is not consistent between counties and the 3% goal is not being met for each producer's flock, in each county in the District.

4.1.3.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

Alternative 2 is similar to Alternative 1 in meeting this objective, since it allows ADC to protect adult sheep on all land classes. Sheep losses have been documented and reported on several SMAs (Table 2-1). Permitted livestock producers using these lands have historically documented sheep losses to predation. The need to conduct WDM in these areas is discussed in Chapter 2 under SMAs. Therefore, the impacts of Objective A-3 in relation to Alternative 3 would be the same as Alternative 1.

Alternative 2 allows ADC to better meet the criterion for Objective A-3. Existing levels of predation on adult sheep would probably be reduced for permittees and producers on private lands adjacent to public lands.

4.1.3.3 Alternative 3. - Nonlethal Before Lethal Control Program. As noted in 4.1.1.3, most sheep operators practice some type(s) of nonlethal predator damage management. Therefore, the impacts of Objective A-3 in relation to Alternative 3 would be the same as Alternative 1. Alternative 3 meets the criteria for Objective A-3, however, the loss is not consistent between producers and the 3% goal is not being met for each producer in the District.

4.1.3.4 Alternative 4. - Technical Assistance.

Under Alternative 4, a technical assistance only program, ADC would only be able to provide information and training to requesters. Implementation of wildlife damage management would be the responsibility of the requester. Alternative 4 would not allow ADC to meet the criterion for Objective A-3. Without an effective wildlife damage management program, existing predation losses to adult sheep could increase up to about three times above current predation losses (Gee 1977, O'Gara et al. 1983). Under Alternative 4, no *Agreements for Control* would be kept. These documents and their unique numbers are the mechanism for collecting and managing most information gathered by ADC, and without them no producer or District information could be maintained.

4.1.3.5 Alternative 5. - No Federal ADC Program.

The impacts would be the same as for Alternative 4.

4.1.3.5 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

A LPC configuration recently developed for use on adult sheep has been authorized by the EPA and would assist ADC in efficiently meeting the criterion of Objective A-3 if approved by ODA.

4.1.4 Objective A-4. - Hold calf loss due to predation to less than 1%/year in areas with Cooperative Agreements.

4.1.4.1 Alternative 1. - Continue the Current District Program: (No Action).

Calf predation occurs primarily during calving times and generally occurs during winter and early spring months on private lands. Due to multitude of public lands that encompass these private lands, predators, primarily coyotes, travel freely to and from these multiple land classes. Losses to young calves are common on private lands adjoining public lands in Malheur, Harney, Grant and Wallowa counties. Appendix C shows the relationship of predator losses to all causes of death for calves. Predation can be a significant cause of death for some cattle producers.

Under the current program, ADC can only provide preventive predation management on public lands where damage has been confirmed in the past. By ODFW policy, black bear and cougar damage management authorizes corrective action after actual damage is observed or there is a threat to human safety. ODFW will take action on either private or public land. Calf predation in the District in 1993 was 1.0%. Reported livestock losses were not collected by ADC in FY 1994 and 1995, however, District ADC personnel verified 81 calves were killed by predators in the District in FY 94 and 127 calves lost to predation in FY 95 (ADC MIS, 1994-95). As with

lambs and sheep, the level of loss is not consistent among counties or on each producer's herd. The causes of variations in levels of predation are unknown but may be attributed to one or more of the following: 1) too few ADC personnel for the work load; 2) restrictions on control methods permitted on the lands caused by weather, terrain, etc; or 3) lack of ADC access to Special Management Areas where calving is taking place or public lands adjacent to private land calving pastures.. For these reasons, we do not believe that Alternative 1 can meet the criterion for Objective A-4.

4.1.4.2 Alternative 2. - Integrated Wildlife Damage Management Available On All Land Classes as requested: (Proposed Action).

Alternative 2 allows ADC to use a full range of tools and methods to protect calves from predation on all land classes where predation is occurring and a request for assistance has been received. The ability of ADC to meet the criterion for Objective A-4 would be improved since ADC would be authorized access to special management areas on Forest Service and BLM lands when needs arise for wildlife damage management and to utilize the appropriate means of control to alleviate damage in the most efficient manner.

The ability of ADC to meet the criterion for Objective A-4 would be improved because ADC could conduct WDM on all lands with cooperative agreements or Annual Work Plans when needs arise. We believe that Alternative 2 would better allow ADC to meet the standards set in Objective A-4.

4.1.4.3 Alternative 3.- Nonlethal Before Lethal Control Program.

Alternative 3 would require nonlethal methods to be in place before implementation of lethal control activities. Effective, cost-efficient, nonlethal methods cannot universally be applied to cattle production. While confined calving may reduce predation or increase the likelihood of detecting predation when it does occur, the cost of private pastures and other feed are cost prohibitive for most producers. Documenting nonlethal practices would likely take a workforce away from conducting damage management. No known nonlethal methods effectively prevent bear or cougar predation.

Because ADC would not be more restricted in responding to livestock predation under this alternative, it is likely that calf losses would remain static or slightly increase from the current level. Since the current level of predation is not being met on each ranch or in each cooperative county in the District, we do not believe that Alternative 3 would meet Objective A-4.

4.1.4.4 Alternative 4. - Technical Assistance.

Under Alternative 4, ADC would only provide information, demonstrations, and training to requesters. Implementation of wildlife damage management would be the responsibility of the requester. Under Alternative 4, no *Agreements for Control* would be kept. These documents and their unique numbers are the mechanism for collecting and managing most information gathered by ADC, and without them no producer or District information could be maintained. Losses could be expected to rise, possibly to the 8% level reported by NASS (1992) as the average predation level on calves in Oregon.

4.1.4.5 Alternative 5. - No Federal ADC Program.

The impacts would be the same as for Alternative 4.

4.1.4.5 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The LPC is not designed or registered for use on calves.

4.1.5 Objective A-5. - Provide 100% of cooperators and cooperating federal, state and local agencies with information on nonlethal management techniques proven to be effective for reducing predation.

4.1.5.1 Alternative 1. - Continue the current District program: (No Action).

ADC is providing information, demonstrations and training on nonlethal management techniques to livestock producers and others. Currently, the program must modify the MIS to meet all the goals of Objective A-5. When all the components of the MIS are fully modified and operational, ADC will be able to determine who has been provided information on nonlethal and other producer implemented methods, and provide this information to those who have not received it.

Alternative 1 would allow ADC to meet the criterion of Objective A-5, after a modification period.

4.1.5.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

The analysis is the same as in Alternative 1. Alternative 2 would allow ADC to meet the criterion of Objective A-5.

4.1.5.3 Alternative 3. - Nonlethal Before Lethal Control Program

Nothing in Alternative 3 precludes the distribution of information regarding nonlethal methods. The analysis is the same as Alternative 1, therefore, Alternative 3 would allow ADC to meet the criterion for Objective A-5

4.1.5.4 Alternative 4. - Technical Assistance

Under Alternative 4, technical assistance only, ADC would still provide information, demonstrations and training to livestock producers on lethal and nonlethal methods of resolving wildlife damage problems. However, under a technical assistance program tracking would be limited to information, number of demonstrations, number of training sessions, etc., provided within a county because of software design and staffing limitations.

Alternative 4 would only allow ADC to partially meet the criterion of Objective A-5.

4.1.5.5 Alternative 5. - No Control.

Alternative 5, no ADC program, would not allow ADC to meet the criterion for Objective A-5.

4.1.5.6 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The use or non-use of this method would not affect ADC's ability to meet the criterion of Objective A-5.

4.1.6 Objective A-6. - Maintain the lethal take of nontarget animals by ADC personnel during damage management to less than 2% of the total animals taken.

4.1.6.1 Alternative 1. - Continue the Current District Program: (No Action).

The ADC program in the District captured 55 nontarget animals and killed 25 in 1993, representing 0.56 % of the total animals killed in the District. ADC captured 58 nontarget animals and killed 37 in 1994, representing 0. 9% of the total animals killed in the District. The percent nontarget take for FY 1995 was 0.5 % (MIS, 1995).

Alternative 1, the current program, is currently meeting the criterion for Objective A-6.

4.1.6.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

Alternative 2 would increase ADC activities in the District, allowing for wildlife damage management on additional lands. The increased activities could increase the take of nontarget animals. However, we do not believe that the increase would be different from the current ratio of nontarget to target animals killed.

Alternative 2, would meet the criterion for Objective A-6.

4.1.6.3 Alternative 3.- Nonlethal Before Lethal Control Program

As noted in 4.1.1.3, most livestock producers currently use some kind of nonlethal WDM and the current level and kind of WDM would not change substantially. Therefore, the analysis is the same as alternative 1. Alternative 3 allows ADC to meet the criterion for Objective A-6.

4.1.6.4 Alternative 4. - Technical Assistance.

Under Alternative 4 there would be no operational ADC program and therefore no target or nontarget take by ADC. Alternative 4 would allow ADC to meet the criterion for Objective A-6.

4.1.6.5 Alternative 5. - No Federal ADC Program.

Under Alternative 5 there would be no ADC program and therefore no target or nontarget animal kills by ADC. Alternative 5 would allow ADC to meet the criterion for Objective A-6.

4.1.6.6 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The LPC is a very selective and target animal specific method. Since only predators that attack lambs and goats by biting them in the throat are exposed to the toxicant and killed, no nontarget animals would be taken. A risk assessment conducted by ADC in the FEIS concluded that there were no probable risks of primary or secondary toxicity to animals, or to aquatic systems associated with the use of the LPC (USDA 1994).

Use of the LPC would meet the criterion established for Objective A-6.

4.1.7 Objective A-7. - Monitor the application of producer implemented (nonlethal) techniques.

4.1.7.1 Alternative 1. - Continue the current District program: (No Action).

The ADC program collects data on nonlethal and producer implemented methods recommended by ADC personnel, and those implemented or in use by producers. The ADC MIS can store the data needed to satisfy this objective, however, output report programming has not been completed. This is an ADC priority that will be met in the future.

Alternative 1 only marginally allows ADC to meet the criterion for Objective A-7. Program objectives are to expand this ability as authority, funding and systems are available in the near future.

4.1.7.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

The analysis for Alternative 2 is the same as Alternative 1. Alternative 2 will allow ADC to marginally meet the criterion for Objective A-7 in the near future.

4.1.7.3 Alternative 3. - Nonlethal Before Lethal Control Program.

Alternative 3 would require the monitoring and documented use of nonlethal methods before the implementation of lethal control. Modification to the MIS would be necessary before this system could generate a nonlethal use report. Until that is accomplished summarization of the information would be accomplished manually and authority would need to be determined.

Alternative 3, by using either manual compilation or MIS reporting, would allow ADC to marginally meet the criterion for Objective A-7.

4.1.7.4 Alternative 4 - Technical Assistance only.

ADC would continue to provide information, demonstrations and training to livestock producers on lethal and nonlethal methods of resolving wildlife damage. However, under a Technical Assistance program monitoring would be limited to the information, number of demonstrations, number of training sessions, etc., provided within a county and not the methods implemented by producers. If field observations were severely limited documentation would become less available and much less accurate.

Alternative 4 would not allow ADC to meet the criterion of Objective A-7.

4.1.7.5 Alternative 5. - No Federal ADC Program.

Alternative 5 would not allow ADC to meet the criterion for Objective A-7 since there would be no program or personnel to distribute information, or accumulate and evaluate data.

4.1.7.6 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The LPC is a lethal technique and not a part of nonlethal monitoring. The use or non-use of this method would not affect ADC's ability to meet the criterion of Objective A-7.

4.1.8 Objective B-1. - Respond to 100% of ODFW requests for wildlife damage management for the protection of wildlife resources.

4.1.8.1 Alternative 1. - Continue the current District program: (No Action).

The ADC program in the District attempts to respond to all requests from the ODFW to protect wildlife resources from excessive predation. This alternative allows ADC to respond to a limited number of ODFW requests as cooperative funding for these projects are available. No recent (FY 1994 and 95) ODFW requests have been received to conduct WDM on federal public lands. Had that occurred, ADC would not have been able to respond to ODFW's request due to restricted access to SMAs on public lands. ADC may be further restricted by the inability to use the proper tools or techniques to respond to these requests effectively.

Therefore, Alternative 1 would only allow ADC to partially meet the criterion of Objective B-1.

4.1.8.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

Alternative 2 would allow for ADC activities on federal public lands within the District, including ODFW requests to protect wildlife resources.

Alternative 2 would allow ADC to fully meet the criterion for Objective B-1.

4.1.8.3 Alternative 3. - Nonlethal Before Lethal Control Program.

Alternative 3 directs WDM to protect only livestock, and would not address the protection of wildlife resources.

Alternative 3 would not apply to ODFW's management decision as to whether or not to apply nonlethal WDM to protect wildlife resources since they are charged with management authority and retain the right to make all decisions on how, where and when control measures are necessary. Therefore, Alternative 3 would not affect ADC's ability to meet the criterion for Objective B-1.

4.1.8.4 Alternative 4. - Technical Assistance.

Under Alternative 4 there would be no operational ADC program, therefore Alternative 4 would not allow ADC to meet the criterion for Objective B-1 since the ODFW primarily requests operational wildlife damage management for the protection of wildlife resources.

4.1.8.5 Alternative 5. - No Federal ADC Program.

Under Alternative 5 there would be no ADC program, therefore Alternative 5 would not allow ADC to meet the criterion for Objective B-1.

4.1.8.6 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The LPC is not registered for protecting wildlife. The use or non-use of this method would not affect ADC ability to meet the criteria of Objective B-1.

4.1.9 Objective C-1. - Respond to 100% of ODFW black bear and cougar requests. (See Chapter 1 for the criteria used to handle problem black bear and cougar)

4.1.9.1 Alternative 1. - Continue the current District program: (No Action).

The ADC program in the District responded to 8 requests from the ODFW or Oregon State Police to capture black bear that threatened human safety in 1995. Four black bear were captured and either relocated or euthanized in response to these requests. Cougar populations are increasing (ODFW 1993b) and additional needs could arise. Because of the human safety element, ADC has responded to all the ODFW requests without regard to the land classification. In FY 1995, the ADC program responded to 28 requests for assistance from the ODFW or OSP to capture cougar that threatened human safety. Seven cougar were captured and either relocated or euthanized in response to these requests.

Bear and cougar populations have been increasing since the passage of Ballot Measure 18. The decrease in sport harvest caused by Measure 18 restrictions as to the methods of harvest will multiply the recruitment and dispersal, and subsequently will increase human conflicts (ODFW, 1996). Because of the human safety element, ADC has responded to all ODFW and OSP requests without regard of land classification. In addition, Measure 18 exempts the restrictions for the taking of individual animals involved in damage determined to be a threat to human health and safety or research.

Alternative 1, the current ADC program has allowed ADC to meet the criterion for Objective C-1.

4.1.9.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested (Proposed Action).

Alternative 2 would allow for ADC activities on all land classes within the District, including the ODFW requests to protect human safety. Alternative 2 would allow ADC to meet the criterion for Objective C-1.

4.1.9.3 Alternative 3.- Nonlethal Before Lethal Control Program.

ODFW is charged with management authority of the State's wildlife resources and retains the right to make all decisions concerning the disposition of problem bear and cougar. Current ODFW policy directs the lethal removal of any bear or cougar determined to be a threat to human health and safety.

Alternative 3 directs ADC actions to the protection of livestock and would not affect ADC's ability to meet the criteria for Objective C-1.

4.1.9.4 Alternative 4. - Technical Assistance.

Under Alternative 4 there would be no operational ADC program. Alternative 4 would not allow ADC to meet the criterion for Objective C-1.

4.1.9.5 Alternative 5. - No Federal ADC Program.

Under Alternative 5 there would be no ADC program. Alternative 5 would not allow ADC to meet the criterion for Objective C-1.

4.1.9.6 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The use or non-use of this method would not affect ADC's ability to meet the criterion of Objective C-1.

4.1.10 Summary

Table 4-1 summarizes how each alternative would meet each objective; partially meets the objective; does not meet the objective; or has no affect on the objective.

Table 4-1
Alternative/Objective Comparison

Objective	Alternative 1	Alternative 2	Alternative 3 *	Alternative 4	Alternative 5	LPC
A-1 (Requests)	Partially Meets	Meets	Partially Meets	Partially Meets	Does Not Meet	Partially Meets
A-2 (Lambs)	Meets	Meets	Meets	Does Not Meet	Does Not Meet	Meets
A-3(Sheep)	Meets	Meets	Meets	Does Not Meet	Does Not Meet	Meets
A-4(Calves)	Meets	Meets	Meets	Does Not Meet	Does Not Meet	No Effect
A-5(Nonlethal)	Meets	Meets	Meets	Meets	Does Not Meet	No Effect
A-6(Nontarget)	Meets	Meets	Meets	Meets	Meets	Meets
A-7(Monitor)**	Partially meets	Partially Meets	Partially Meets	Partially Meets	Does Not Meet	No Effect
B-1(Wildlife)	Partially meets	Meets	N/A	Does Not Meet	Does Not Meet	No Effect
C-1(Safety)	Meets	Meets	N/A	Does Not Meet	Does Not Meet	No Effect

* Because most livestock producers currently implement nonlethal methods, the impacts are the same as for Alternative 1.

** ADC does not have the authority and resources to completely monitor the implementation of producer implemented (nonlethal) techniques.

4.1.11 Alternative Consistency with Forest Service Land and Resource Management Plans (LRMP) and Bureau of Land Management Resource Management Plans (RMP)

Before an Alternative can be considered for implementation on Forest Service or BLM lands, it must be consistent with the land management and/or resource management plans. These are termed Land and Resource Management Plans (LRMP) or more commonly "Forest Plans". On BLM lands, the equivalent documents are called Resource Management Plans (RMP) or in some cases, older Management Framework Plans (MFP). If the Alternative is consistent with the LRMP or RMP, no additional action will be necessary by the Forest Service or BLM should that alternative be selected.

If an alternative that is inconsistent with the LRMP or RMP is selected in the decision process, the Forest or BLM District could amend the LRMP or RMP to be consistent with the EA. The decision would not be implemented on the Forest or BLM District until the inconsistency is resolved either through amendment of the LRMP or RMP or modification of the alternative (s).

The following is a review of the consistency of each LRMPs, RMP MFP in the District:

4.1.11.1 Umatilla National Forest LRMP

The Umatilla National Forest LRMP does not address WDM. The fact that the LRMP does not cover WDM does not necessarily indicate inconsistency. The Umatilla NF has been asked to make a consistency determination based on this EA and follow appropriate NEPA procedures in making amendments that may be needed. Any inconsistencies not resolved through amendment of the plans would be identified in the Annual Work Plan.

4.1.11.2 Wallowa-Whitman Forest LRMP.

The Wallowa-Whitman NF LRMP provides for the conduct of wildlife damage management by APHIS-ADC. The Forest Plan's Standards and Guidelines permit predator management as needed to achieve management objectives in coordination and cooperation with APHIS-ADC and ODFW.

4.1.11.3 Ochoco National Forest LRMP

The Ochoco NF LRMP does not address WDM. The fact that the LRMP does not cover WDM does not necessarily indicate inconsistency. The Ochoco NF has been requested to make a consistency determination based on this EA and follow appropriate NEPA procedures in making amendments that may be needed. Any inconsistencies not resolved in the LRMPs would be identified in the Annual Work Plan.

4.1.11.4 Malheur National Forest LRMP

The Malheur NF LRMP does not address WDM. The fact that the LRMP does not cover WDM does not necessarily indicate inconsistency. The Malheur NF has been requested to make a consistency determination based on this EA and follow appropriate NEPA procedures in making amendments that may be needed. Any inconsistencies not resolved in the LRMPs would be identified in the Annual Work Plan.

4.1.11.5 The Burns, Vale and Prineville BLM Districts' RMPs/MFPs:

The Burns and Vale BLM Districts authorize WDM at the request of permittees and have an ADC Annual Work Plan. The Prineville District has no current Annual Work Plan for livestock protection. In 1993, the Burns BLM District determined that WDM as proposed by APHIS-ADC was in conformance with the Andrews Management Framework Plan and the Three Rivers Resource Management Plan. The Vale BLM District determined in 1995 that the proposed Integrated WDM program on public land for the purpose of protecting livestock and enhancing winter survival of big game is consistent with Land Use Plan in Malheur and Jordan Resource Areas of the District.

Alternative 2 (Proposed Action) of this EA is similar to the selected alternative (Proposed Action) in the Vale and Burns BLM Plan/ EA (BLM 1993, 1993a). WDM is not specifically identified and discussed in

current land use plans for the Districts, although its practice is incorporated by default since it is permissible by state and federal law. This alternative was determined to be consistent within the broad scope of BLM multiple use planning for the District. The Burns, Vale and Prineville BLM Districts have been requested to make a consistency determination based on this EA and follow appropriate NEPA procedures in making amendments that may be needed.

4.2 ENVIRONMENTAL CONSEQUENCES

This section analyzes the environmental consequences using Alternative 1 (the current program) as the baseline for comparison with the other alternatives and the option, to determine if the real or potential impacts are greater, lesser or the same.

The following resource values within the District are not expected to be significantly impacted 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, timber and range. These resources will not be analyzed further.

Social and Recreational Concerns: Discussed throughout the document as they relate to issues raised during public involvement and they are discussed in the FEIS (USDA 1994)

Cumulative and Unavoidable Impacts: Discussed in relationship to each of the key species analyzed in this chapter.

Irreversible and Irretrievable Commitments of Resources: Other than minor uses of fuels for motor vehicles and other materials, there are no irreversible or irretrievable commitments of resources.

Issues Analyzed in Detail

4.2.1 Potentials for ADC take of predators to cause declines in predator populations, when added to the sport harvest and other forms of take.

The species evaluated in this chapter were selected for analysis because they are taken by ADC in response to livestock and poultry predation, protection of livestock feeding operations and human safety problems. The "Magnitude" analyses for this EA follow the process described in the ADC FEIS in Chapter 4 as outlined in Table 4-2 (USDA 1994). Magnitude is defined in the FEIS as ". . a measure of the number of animals killed in relation to their abundance." Magnitude may be determined either quantitatively or qualitatively. Quantitative analysis is used wherever possible as it is more rigorous and is based on allowable harvest levels, population estimates and harvest data. Qualitative analysis is based on population trends and harvest data or trends and modeling. Allowable harvest levels were determined from research studies which are cited in the FEIS (USDA 1994, Table 4-2). "Other Harvest" includes the known fur harvest, sport harvest, and other information obtained from the ODFW. "Total Harvest" is the sum of the ADC kill and 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 habitat to support populations. Therefore, assessments are based on conservative population estimates rather than higher population estimates to better insure that no adverse wildlife population impacts occur.

ISSUE FOR EACH TARGET SPECIES: Would the ADC kill, when added to "Other Harvest", exceed the allowable harvest of the population, resulting in a population decline?

4.2.1.1 Alternative 1. - Continue the current District Program: (No Action).

In FY 1995, coyotes were responsible for about 84% of the verified losses to all protected livestock in the District. From reported losses collected in FY 1993, coyotes were responsible for 89 % of the reported District-wide dollar losses to livestock. ADC County Summary Reports (MIS 1993) indicate that the coyote is reported to be the primary predator on sheep (66%), lambs (87%), cattle (72%), calves (89%), and poultry (25%). The total reported loss to coyotes in the District was valued at $595,215 (MIS 1993).

Coyote Population Information

To discuss the impacts of various environmental constraints and external factors on coyote populations and density, it is essential to understand the basic mechanisms that play a role in the coyotes' response to constraints and actions. The species unique resilience, its ability to adapt, and its perseverance under adverse conditions is commonly recognized among biologists and rangeland managers.

Determinations of absolute densities for coyote populations are frequently limited to educated guesses (Knowlton 1972). Coyotes are highly mobile animals with home ranges (territory) that vary by sex and age of the animal and season of the year (Pyrah 1984, Althoff 1978, Todd and Keith 1976). The literature on coyote spatial organization is confusing (Windberg and Knowlton 1988, Messier and Barrette 1982). Coyote population densities will vary depending on the time of year, food abundance, and habitat. Coyote densities have ranged from a low of 0.39/mi^2 during the time when populations are low (prewhelping) to a high of 3.55/mi^2 when populations are high (postwhelping) (Pyrah 1984, Knowlton 1972).

Coyote home ranges may vary from 2.0 mi^2 to 21.3 mi^2 (Andelt and Gipson 1979, Gese et al.1988[2]). Ozoga and Harger (1966), Edwards (1975), and Danner (1976) however, observed a wide overlap between coyote home range and did not consider coyotes territorial. The presence of unusual food concentrations and nonbreeding helpers at the den can influence coyote densities, and complicate any effort to estimate abundance (Danner and Smith 1980). A positive relationship was established between coyotes densities in mid-late winter and the availability of dead livestock (Roy and Dorrance 1985).

Each occupied coyote territory may have several nonbreeding helpers at the den during whelping (Allen, et al. 1987, Bekoff and Wells 1982). Therefore, each defended coyote territory may have more than just a pair of coyotes. Messier and Barrette (1982) reported that during November through April, 35% of the coyotes were in groups of three to five animals and Gese et al. (1988) reported that coyote groups of 2, 3, 4, and 5 comprised 40%, 37%, 10% and 6% of the resident population, respectively.

[2] All literature citations reported in km^2 have been converted to mi^2 for reader convenience and to maintain consistency.

Many authors have estimated coyote populations throughout the west and elsewhere (Pyrah 1984, Camenzind 1978, Knowlton 1972, Clark 1972, USDI 1979, ODFW 1980, Keister ODFW pers. comm. 1994). The total coyote population in Oregon and in the District can be estimated by using scientific modeling. ODFW (1980) estimated the statewide coyote population at 147,000 and in 1994 at 160,000. These estimates are not precise enough for year to year comparisons, but do indicate that the coyote populations in Oregon are stable.

	John Day	Oregon
Est. Population	87,500	160,000
ADC Kill	3,386	6,842
Other Take	2,737	5,144
Total Take	6,123	11,986
ADC Kill - % of Population	3.8%	4.3%
Other Take - % of Population	3.1%	3.2%
Total Take - % of Population	7.0%	7.5%

In 1994, ODFW estimated that there is approximately 43,750 mi^2 of coyote habitat in the District.. Recent work by Keister (1994) and others suggest that an average density of 2.0 coyotes/mi^2 is an accurate estimate for the Districts ideal coyote habitat, yielding an estimated population of 87,500 coyotes.

Coyote Population Impact Analysis

Data on ADC coyote kill is available for 1995, however, comparative sport harvest and other take data in Oregon are not available. Therefore, 1994 data will be used to examine state and District wide potential impacts on coyote populations. The 1994 statewide coyote population estimate, made by ODFW, and the 1994 District estimate will be used as a baseline. It should also be noted that the level of "Other Take" reported to ODFW may be low because the reporting of coyotes killed is not required. Table 4-2 displays the known information about coyote abundance and harvest in 1994.

Connolly and Longhurst (1975) determined that, "If 75% of the coyotes are killed each year, the population would be exterminated in slightly over 50 years." The authors further say that their "Model suggests that coyotes through compensatory reproduction can withstand an annual control level of 70%. To further demonstrate the coyote's recruitment (reproduction and immigration) ability, if 75% control occurred for 20 years, coyote populations would regain precontrol densities by the end of the fifth year after control was terminated. Furthermore, immigration, not considered in the Connolly/Longhurst model can result in rapid occupancy of vacant territories (Windberg and Knowlton 1988). While removing animals from small areas at the appropriate time can protect vulnerable livestock, immigration of coyotes from the surrounding area could quickly replace the animals removed (Stoddart, et al. 1984). Connolly (1978) noted, the coyote has survived and even thrived in spite of early century efforts to exterminate it. Based on this information, ADC's impact on the coyote population, even with possible "Other Harvest" under reporting, will not affect the coyote population in Oregon or the District because the "Total Take" of coyotes in the District is about 7% (statewide is 7.5%). Evaluating the data using standards established in USDA (1994) to determine the magnitude to which total harvest impacts the species, less than 70% of the population of coyotes results in a determination of "low magnitude." District ADC Specialists killed 4,003 problem coyotes in FY 1995 which is a higher take than 1994. This will not change the determination of "low magnitude."

Table 4-2a
John Day ADC District
Coyote Reproduction Model

Resident Population	Yearlings	Adults	Total
Population Age Structure	35,000	52,500	87,500
No. Females	17,500	26,250	43,750
% Breeding Females	10	70	
No. Breeding Females	1,750	18,375	20,125
Ave. Pups/Litter	4	6	
Pups Born	7,000	110,250	117,250
Maximum Annual Population	8,750	128,625	137,375

Computation of population figures for Table 4-2a is based on The Effects of Control on Coyote Populations, 1975, University of California, Modeling the Utah Coyote Population--Notes, 1988.

These figures indicate that only 25% of the annual recruitment is need for mortality replacement and dispersal. Considering the combined annual take of coyotes by ADC (3,386) and other take (2,737), impacts to the District-wide coyote population are minimal.

Black Bear Population Information

Black bears occur throughout most of Oregon except in the southeastern portion of the state. Bears can present problems concerning livestock predation, property damage, and threats to human safety and nuisance situations in the District.

A survey of District-wide cooperators in 1993 indicated a reported loss to black bear predation included 14 adult sheep, 20 lambs, 3 adult cattle and 18 calves valued at $ 13,525 (MIS 1995). ADC personnel verified in 1993 that black bear predation to livestock exceeded $8,000 (MIS 1993). FY 1994 and 1995 verified losses were valued at $ 8,270 and $ 2,300.

The age structure of bear populations is one indicator of population health. Because bears are relatively long-lived animals, bears in the older age classes should be found in a healthy population. If a population is over exploited, the older aged bears will not be present or will be in low proportions (ODFW 1993a). Black bears can live up to 25 years (USDA 1994) and in Oregon, bears 20 years old or older are not uncommon in the sport harvest (ODFW 1993a).

In Oregon, female black bears generally reach reproductive maturity at 3.5 years of age. Following a 7-8 month gestation period (about 220 days), they produce from one to 6 cubs, with 2 young per litter being most common. Juvenile black bear annual mortality ranges from 20% to 70%.

Black bear density varies between 0.3 and 3.4 bear/mi^2, depending on habitat. Densities range from 0.9 bears/mi^2 in western Oregon to 0.3 bears/mi^2 in the eastern portion of the state. Black bear densities of at least 1.0/mi^2 have been documented in the adjacent states of Washington, California and Idaho (ODFW 1993a). The current Oregon statewide population is estimated to be 25,000 animals occupying about 40,000 mi^2 of habitat (ODFW 1993a). The northeastern section of the District contains some high concentrations of black bear, however, most of the District is considered as medium density black bear habitat. The high desert sagebrush habitat of southern Malheur and Harney Counties is not suitable to support a viable black bear population. ODFW estimates that a minimum of 18,000 mi^2 of black bear habitat is found in the District, and

in 1994 this habitat supported a population of 8,100 bear (ODFW 1996) or approximately 32% of the black bear population in Oregon.

Black Bear Population Impact Analysis

Data on ADC black bear kill is available for 1995, however, comparative sport harvest and other take data in Oregon are not available. Therefore, 1994 data will be used to examine state and District wide potential impacts on black bear populations. Statewide, the estimated black bear population has remained at about the same level reported by USDA (1994) and ODFW.

The allowable harvest (kill) level for black bear described in USDA (1994, Table 4-2) is 20% of the population. ODFW (1993a) uses sex ratios and age structure to evaluate harvest impacts to black bear populations. For this analysis we will consider both approaches to analyze impacts.

	ADC FEIS 1987 (Oregon)	John Day 1994	Oregon 1994
Est. Population	20,000	5,000	25,000
ADC Kill	129	4	56
Other Take	954	448	1,545
Total Take	1,083	452	1,601
ADC % of Population	0.6%	0.08%	0.2%
Other % of Population	4.8%	9%	6.1%
Total % of Population	5.4%	9%	6.4%

ODFW (1993a) analyzed black bear sex ratios and age structures, concluding that the current harvest, whether by hunting, ODFW or ADC, or unknown, is not causing a decline in bear populations. The data indicate (Table 4-3) that, statewide, the total known kill is about 6.4% of the estimated population. This level is well below the parameters of "low magnitude" of impact established in the USDA (1994).

In 1994, the District "Total Harvest" was 4 bear or 0.08 % of the estimated population. This level of harvest is well below the allowable harvest level of 20% (USDA 1994) and is judged that this is a "low magnitude" of harvest. It should be noted that although ADC took a very small proportion of the black bear in relationship to the total population the effort is considered quite important by ADC and ODFW in resolving black bear damage and protecting human safety and to meeting ODFW black bear damage goals. In FY 1993, the ADC District take was 8 bear of which 2 were relocated. In 1994, District ADC Specialists killed 4 black bear and released another 3. In FY 1995, 9 black bear were killed and 2 released. All were taken to protect livestock. ADC killed 56 black bear statewide in 1994 and 98 in FY 1995. No nontarget bear were captured in 1994 or 1995. State-wide, the total ADC kill decreased by 34 bear in 1994 over 1993 but increased by 42 from 94 to 95.. The stable population trend appears unchanged and the 1994 and 1995 ADC kill and "Other Take" would be a low magnitude of impact.

Cougar Population Information

ADC cooperators reported that 129 adult sheep, 74 lambs, 6 adult cattle, 2 adult horses and 90 calves were killed by cougars in 1993. This reported losses was valued at $ 64,435 (MIS, 1993). ODFW reports that complaints of cougar predation on livestock increased 580% between 1986 and 1991 (ODFW 1993b).

Cougars have an extensive distribution across North America including Oregon. It is the largest member of the cat family in Oregon, and is known by several names, including

panther, puma, catamount, and most commonly, mountain lion (ODFW 1993b). Cougars inhabit many habitat types from desert to alpine environments, indicating a wide range of adaptability. They are very closely associated with deer and elk because of their dependence upon these species for food. The best eastern Oregon habitat is thought to be the open mixed-conifer type of the Blue Mountains, including the pine-bunch grass type and the canyon country of northeastern Oregon. Both types of habitat also are productive habitats for deer and elk (ODFW 1993b). Much of the District lies within the mixed-conifer and open canyon type habitat.

Female cougars typically breed for the first time between 22 and 29 months of age (Ashman et al. 1983) but initial breeding may be delayed until a territory has been established (Hornocker 1970). Cougars breed and give birth year-round but most births occur during late spring and summer following about a 90-day gestation period (Ashman et al. 1983, Seidernsticker et al. 1973, Robinette et al. 1961). One to six offspring per litter is possible, with an average of two to three young per litter; average litter sizes in Oregon are 2.6 kittens (ODFW 1993b).

Cougar density primarily results from prey availability and the social tolerance for other cougars. Prey availability is directly related to prey habitat quality that directly influence's cougar nutritional health, and reproductive and mortality rates. Studies indicate that as available prey increases, so do cougar populations, and since cougars are territorial animals, the rate of population increase tends to decrease as cougar density increases. As cougar population density increases, mortality rates from intra specific fighting and cannibalism also increase, and/or cougars disperse into unoccupied or less densely occupied habitat. The relationship of the cougar to its prey and to other cougars is why their densities do not reach levels observed in a number of other wildlife species (ODFW 1993b).

Cougar densities in other states, based on a variety of population estimating techniques, range from a low of about 1/100mi^2 to a high of 24/100mi^2 (Johnson and Strickland 1992). An average density estimate for the western states were 7.5/100mi^2 (Johnson and Strickland 1992). ODFW (1993b) modeled cougar populations in Oregon and based on that model and other information, estimated that cougar populations are increasing at 4-5% per year, with a current statewide population of 3,100 cougars (Personal communication, Keister 1996) . However, since cougars are highly territorial, and chase or kill other cougar in their territory, populations tend to stabilize (ODFW 1993b).

Cougar populations can sustain relatively moderate to heavy losses of adults and still maintain viable populations. Robinette et al. (1977) reported an annual mortality of 32% in Utah, while Ashman et al. (1983) noted a sustained annual mortality of at least 30% in Nevada. Ashman et al. (1983) believed that under "Moderate to heavy exploitation (30%-50% removal)," cougar populations on their study area had the recruitment (reproduction and immigration) capability to rapidly replace annual losses.

Cougar Population Impact Analysis

The allowable annual harvest level for cougar, projected by the USDA (1994, Table 4-2) is 30% of the population, however, the Oregon cougar population model indicates that cougar populations will remain stable with human caused mortality of 13%. Ten percent of the allowable harvest is from sport hunting and 3% from illegal and other take. (Personal communication, Keister 1996). Because it is more conservative and reflects Oregon studies, the 13% harvest level will be used for our analysis. Comparable data for Oregon are not yet available for 1995 or for years before 1992, therefore 1994 data will be used to determine potential state and District wide impacts on cougar populations. Table 4-7 displays the information about cougar numbers and harvest during 1994.

The ODFW (1993b) used population age structure and sex ratio to evaluate impacts on cougar populations. Both approaches are used to examine potential impacts. The available data indicate that the total harvest statewide for 1994 for Oregon was 254 animals. ADC killed 15 problem cougars statewide during 1994, down from 19 killed in 1992. No nontarget cougars were killed and one target cougar was captured and released. These figures are well within the parameters for a determination of "low magnitude" of impact (USDA 1994).

	John Day	Oregon
Est. Population	1,735	3,100
ADC Kill	9	15
Other Take	21	239
Total Take	30	254
ADC Kill - % of Population	0.5%	0.5%
Other Take - % of Population	1.2%	7.7%
Total Take - % of Population	1.7%	8.1%

Cougar habitat in the District can be identified by three habitat classifications: high, medium and low. Approximately 16,500 square miles in the District are considered low quality cougar habitat. About 12,700 square miles is considered to be medium and about 15,000 is estimated to be high quality cougar habitat. Based on 1 cougar per 100 square miles, an estimate of 165 cougars for low quality habitat is achieved. For medium quality habitat using approximately 3.5 cougar per 100 square miles, 445 cougar are estimated. For high quality habitat (7.5 cougar/100 square miles) the population is estimated to be 1,125. The cougar population in the District is estimated to be 1,735 animals, or 56% of the state-wide population.

In 1994, ADC killed 9 problem cougars in the District or 0.5% of the estimated population. The "Total Take" was 30 animals, or 1.7% of the total estimated population. This is within the parameters of "low magnitude" of impact. ODFW (1993b) analyzed cougar age and sex ratios and concluded that the increasing proportion of males in the harvest, coupled with the age distribution of the harvest supported the population projections of their model and of an increasing cougar population. This impact analysis indicates that the wildlife damage management program conducted state and District wide is not having an adverse impact on cougar populations. Keister (1994) also concluded that at the current level of human caused mortality the cougar population in Oregon could continue to grow.

Bobcat Population Information

Bobcat predation on livestock in the District is primarily on poultry, sheep and occasionally newborn calves. In 1993, reported bobcat predation accounted for 16 head of various livestock valued at $1,150. ADC verified losses in 1994 and 1995 were $ 350 and $ 60 respectively.

Bobcats reach reproductive maturity at approximately 9 to 12 months of age and may have one to six kittens following a two-month gestation period (Crows 1975; Koehler 1987). Bobcat density ranges between 0.1 and 7/mi^2. They may live up to 14 years, but annual mortality is as high as 47% (Rolley 1985). In 1980, ODFW estimated that there was 24,579 mi^2 of bobcat habitat in Oregon supporting a population of about 45,000 animals, an average density of about 1.8 bobcats/mi^2. Population estimates for 1994 showed 76,000 animals state-wide. A current estimate of occupied bobcat habitat in the District is not available. Therefore, no current population estimate can be calculated for the District.

Bobcat Population Impact Analysis

Population data are not yet available for 1995, therefore no attempt will be made to estimate the District wide bobcat population. The 1994 statewide estimated population is 76,000. The "Total Take" of bobcats in the state was 2,108 animals. The "Other Take" was 2,066 animals statewide and 575 in the District. The ADC harvest of bobcats was 42 animals statewide and 17 in the District.

	John Day	Oregon
Est. Population	Unknown	76,000
ADC Kill	17	42
Other Take	575	2,066
Total Take	592	2,108
ADC Kill - % of Other Take	3.0%	2.0%
ADC Kill - % of Total Take	2.8%	1.9%
ADC Kill - % of Population	0.02%	.05%

The allowable harvest for bobcats in the USDA (1994) was established at 20% of the total population. The information available for 1994 shows the ADC kill of problem bobcats to be less than 0.1% of the total estimated population, both state and District wide. As these are substantially less than 20% of the allowable harvest, this magnitude of impact is low. Neither the ADC kill nor "Other Take" is having a significant impact on bobcat populations state or District wide. In 1994, ADC Specialists released an additional 23 target and nontarget bobcats. In FY 1995, District personnel captured 9 target bobcats of which 8 were released and 1 was killed. Eight nontarget bobcats were captured and 2 killed in the District during 1995 (MIS 1994 and 1995)). Thus, the 1995 magnitude of impact is unchanged from 1994.

Red Fox Population Information

Red fox predation in the District is confined to poultry and occasionally new-born livestock . Verified and reported damage in 1994 and 1995 amounted to about $ 1,500.

Red foxes are the most common and well-known species in the genus *Vulpes* and are the most widely distributed nonspecific predator in the world (Voigt 1987). ADC has note a steady increase in red fox populations into new and previously uninhabited areas of the District within the last ten years. Foxes are regarded as nuisance predators in many regions, preying on wildlife and livestock, and have become notorious in many areas of the world as carriers of diseases (Ables 1969, Andrews et al. 1973, Richards 1974, Tabel et al. 1974, Tullar et al. 1976, Pils and Martin 1978, Sargeant 1978, Voigt 1987, Allen and Sargeant 1993). Red fox are exotic to the State of Oregon having been introduced for fur farm operations and for coursing with hounds for sport. Because of its importance to humans, it has been the subject of much study during the last 20 years. Investigations have revealed that red foxes are extremely adaptive with much diversity in their behavior and habitats. Voigt and Earle (1983) showed that red foxes avoided coyotes but coexisted in the same area and habitats where sufficient escape cover and prey species are available to support both. The major controlling factor of red fox expansion in eastern Oregon is the competition with coyotes.

The density of red fox populations is difficult to determine because of the species secretive and elusive nature. However, the red fox has a high reproductive rate and dispersal capacity similar to coyotes, and is capable of withstanding high mortality within the population (Allen and Sargeant 1993, Voigt 1987, Voigt and MacDonald 1984, Harris 1979, Pils and Martin 1978, Storm et al. 1976, Andrews et al. 1973, and Phillips and Mech 1970). Storm et al. (1976) stated that 95% of the females (43.6% were less than 1 year old) bred successfully in a population in Illinois and Iowa. Rowlands and Parkes (1935) and Creed (1960) reported that male red fox breed in their first year. Litter sizes averaged about 4.7 for 13 research studies and litters with as many as 14 and 17 offspring have been

reported (Storm et al. 1976, Voigt 1987). Ables (1969) and Sheldon (1950) reported that more than one female was observed at the den and suggest that red fox have " helpers" at the den, a phenomena observed in coyotes and other canids. Reported red fox population densities have been as high as over 50/mi^2. (Harris 1977, MacDonald and Newdick 1982, Harris and Rayner 1986) where food was abundant; Ontario population densities are estimated at 2.6 animals/mi^2. (Voigt 1987), and Sargeant (1972) reported 1 fox den/3 mi^2.

Red fox dispersal serves to replace and equalize fox densities over large areas and over a wide range of population densities. Annual harvests in localized areas in one or more years will likely have little impact on the overall population in subsequent years, but may reduce localized predation (Allen and Sargeant 1993). Phillips (1970) says that fox populations are resilient and in order for fox control operations by trapping to be successful, pressure on the population must be almost continuous. Phillips (1970) and Voigt (1987) further states that habitat destruction that reduces prey numbers, water and cover will impact fox populations to a greater extent than a short-term over harvest.

Current population estimates for Red Fox in Oregon and the district are not available. In 1980 however, ODFW estimated that there was 10,716 mi^2 of red fox habitat statewide with a population of about 20,300 animals, and an average density of 1.9 red fox/mi^2 of habitat. For purposes of this analysis, we estimated red fox density at 1.0 per square mile on 5% of the District. This estimate of 2,208 fox will be used to determine ADC's impact as there is no comparable data for Oregon and the District, unlike the estimate conducted in 1980.

Red Fox Population Impact Analysis

During 1995, 32 target red fox were captured and nontarget released. In FY 1994, 82 target red fox were killed. The " Total Take" of red fox in 1994 statewide and in the District is shown in Table 4-9. The " Other Take" of red fox was 336 animals statewide and 64 in the District.

	John Day	Oregon
Est. Population	2,208	20,275
ADC Kill	82	154
Other Take	64	336
Total Take	146	490
ADC Kill - % of Population	3.7%	.75%
Other Take - % of Population	2.9%	1.7%
Total Take - % of Population	6.6%	2.4%

USDA (1994) determined the allowable harvest level for red fox to be 70% of the total population. The data for 1994 showed the ADC state-wide kill to be less than 0.75% of the total estimated population and for the district 3.7% of the total population . As these harvest levels are less than 70% of the allowable harvest, the magnitude of impact is determined to be low.

Raccoon Population Impact Analysis

The 1994 data for the District shows that 23 raccoons were killed and 1 released. FY 1995 raccoon take in the District was 38 killed and 2 released. Because current population levels have not been determined in the District, it is impossible to accurately assess the magnitude of ADC take. However, based on the low number killed each year, we believe the magnitude of impact to be low. Even though a District-wide population estimate is available it is clear from the information that the total take is low compared to other previous estimates in the state.

Striped and Spotted Skunk Population Impact Analysis

There are no ODFW population estimates for striped or spotted skunks, therefore, the lowest reported density estimates from the literature will be used to estimate skunk populations. Using this information, the estimated population in the District is about 45,000 striped and spotted skunks. During 1994, District personnel killed 110 skunks and in 1995, 79 were killed. This represents less than 0.2% of the population. It is recognized that "Other Take" of skunks occurs but no system exists for recording this information. It is believed by professional wildlife biologists that "Total Take," although unknown, is not impacting the population compared to the total population and the magnitude of impact is low.

Raven Population Information

The common raven, common crow (*C brachyrhynchos*), and black billed magpie (*Pica pica*) are the most well know species in the family *Corvidae*. The common raven is widely distributed throughout the Holarctic Regions of the world including Europe, Asia, North America and extends well into Central America (Goodwin 1986). Ravens generally are a resident species but some wandering and local migration occurs with immature and non-breeding birds (Goodwin 1986). Immature birds, which have left their parents, form flocks with non-breeding adults; these flocks tend to roam and are loose-knit and straggling (Goodwin 1986). The raven is an omnivorous species known to feed on carrion, crops, eggs and birds, small mammals, amphibians, reptiles, fish, and insects (Nelson 1934). Larsen and Dietrich (1970) noted that it is generally acknowledged that ravens are responsible for lamb mortality on spring lambing ranges. Oregon ADC Annual Reports have verified raven predation on lambs, sheep and calves in 26 of the last 27 years. Livestock producers in the District reported that ravens were a major concern during the spring migration when lambing and calving was occurring. In FY 1995, ADC personnel verified 1 adult sheep, 6 calves and 10 lamb killed by ravens. Occasionally, ravens are present in sufficient numbers to cause concern to livestock feeding operations.

Between 1961 and 1989 (most recent years that data is available) Christmas Bird Counts (CBC) have been conducted by Audubon Society members and others. The University of Maine, Augusta, has maintained a CBC data base, and sightings of ravens were recorded (Jones Univ. Maine, pers. comm. 1994) A 29-year summary of this data for Oregon showed that the number of sightings of raven per census line increased from 5 to 39.6 (692.3%), and the number seen per hour increased from 0.15 to 0.66 (377.9%). Although this data does not provide densities it does show that the population trend for ravens is increasing. Data from the Breeding Bird Survey also showed an increasing population trend in breeding numbers between 1968 and 1991 (34.2%).

The number of ravens in Oregon and the District can only be estimated from other research and census studies. Stiehl (1978) reported raven nesting densities in the Harney Basin of Oregon at one pair/16.2 mi^2. Stiehl marked 266 ravens during this study and reported individuals as far away as 173 miles from the study area, indicating considerable mobility in the population. Stiehl also reported that raven numbers vary seasonally, peaking in the winter. Knight and Call (1981) summarized a number of studies on common raven territories and home ranges in the west. Nesting territories ranged in size from 3.62 mi^2 to 15.7 mi^2 in Wyoming and Oregon and home ranges varied from 2.53 mi^2 to 3 - 6 mi^2 in Utah and Oregon. Linz et al. (1990) found nest densities of one/1.7 mi^2 in their Camp Pendleton, California study. Raven home ranges overlap considerably and it is believed that a reasonable density estimate of breeding birds in the District is one raven/3 mi^2, resulting in a population estimate of 14,723 birds.

Raven Population Impact Analysis

During FY 1994 and 1995, ADC personnel killed 790 and 630 ravens, respectively, using DRC-1339. This represents less than 5% of the estimated population. Ravens are a protected species under the Migratory Bird Treaty Act and can only be taken by permit from the USFWS. ADC is not aware of any "Other Take" of ravens.

The data used for this analysis indicate that the ADC wildlife damage management program conducted in the District would not have an adverse impact on raven populations.

Blackbirds/European Starlings Population Information

The predominant members of the blackbird group (Subfamily Icterinae) present in the District include red-winged, yellow-headed, and Brewer's blackbirds; common grackles, and brown-headed cowbirds are also common during certain times of the year.

The European starling (Family Sturnidae) is common in the District during the entire year. Large concentrations of starlings and blackbirds occur from October through March near cattle feeding operations, food processing facilities, harvested crop and other agricultural areas. Current blackbird and starling population information is not available for the District or the State. Analyses by regions, rather than States, are the most meaningful way to examine population trends of birds because the boundaries of these geographical units are based on ecological differences (USDA, 1994).

According to the US Fish and Wildlife Service Breeding Bird Survey (BBS) (USDI undated), population levels are relatively stable or have slightly increased over time. In FY 1994, District personnel killed 25,215 starlings and blackbirds, while in FY 1995, the take decreased to 4,560. Due to the low number of birds killed and because the majority of birds killed are starlings, it is determined that the District's impact on starling and blackbird populations is low.

4.2.1.2 Alternative 2. - Integrated Wildlife Damage Program Available on All Lands as requested: (Proposed Action).

Alternative 2 would authorize ADC wildlife damage management on all land classes. The actual area where ADC services would be requested is unknown and could vary from year to year, based on needs and levels of predation. However, the actual area that will be worked in any one year will be small, probably less than 10% of the total District.

ADC estimates that wildlife damage management conducted under this alternative could increase the kill of coyotes, black bear and cougar, but probably would not exceed 10% of the current program. A 10% increase, based on 1994 data, would mean the kill of an additional 340 coyotes, 1 black bear and 1 cougar. At the 10% increase kill level, the "Total Take" of coyotes in the District would be 4.2% of estimated population and remain below the 70% harvest level for a determination of "low magnitude" of harvest.

A 10% increase in black bear killed in the District would not increase the total District-wide harvest above the current level. The magnitude of impact would remain below the 20% level for a low magnitude of impact.

A 10% increase in cougar kill would result in 1 additional animal being killed by ADC and therefore no change from the existing determination of low magnitude of impact.

Even if the ADC kill of coyotes, black bear and cougar increased 10% or 20%, the impact to their populations would remain at a low magnitude. The ADC kill of these species is small in comparison to the hunting and trapping take and therefore sizeable increases in the ADC kill would generally not result in meaningful increases in "Total Take" of the local or statewide populations. No additional take of the other predator species is expected.

Therefore, Alternative 2 will have a low magnitude of impact on targeted wildlife populations.

4.2.1.3 Alternative 3 - Nonlethal Required Before Lethal Control Program

As noted throughout this document, most sheep and many cattle producers already practice some form of nonlethal control. ADC WDM under Alternative 3 would be similar to those practiced under the current program. The impacts to target population of coyotes, black bear, cougar and red fox would be identical to those described in 4.2.1.1 for Alternative 1.

4.2.1.4 Alternative 4. - Technical Assistance and Alternative 5. - No ADC Program.

Both Alternative 4 and 5 would result in no ADC operational programs and the potential effects will be similar, therefore, they will be analyzed together. Some type of wildlife damage management would most likely be conducted by livestock and poultry producers, by various state agencies, or combinations thereof. The impacts on wildlife populations may vary considerably from those described in Alternative 1, because of the potential for improper or inappropriate selection and use of control methods, emphasis on lethal methods, duplication of effort, and possible misuse of pesticides (McMullen, USFWS pers. comm. 1993).

A thorough review of the potential impacts of these alternatives can be found in the USDA (1994) as it relates to the No Action Alternative. The USDA (1994) summarized the biological impacts of the no ADC alternative as follows:

> " Biological impacts that would be expected under the No Action Alternative (No ADC Program Alternative in this EA) include all impacts that occur under the Current Program Alternative (No Action Alternative in this EA) plus impacts that relate to the reasons listed previously. The level of taking of target species would be more variable (i.e., lower for some species in some areas and higher in other areas). However, the amount of taking of nontarget 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 nontarget species affected through the food chain or by uncontrolled releases of toxicants into the environment also could increase. In some areas, many people could be using chemical methods. Misuse of chemicals could increase and thereby adversely impact certain wildlife populations and public health and safety."

How wildlife damage management would be handled in the absence of ADC can only be speculated, although several obvious effects can be identified. State agencies and private individuals would not be subject to the same restrictions placed on ADC such as the requirements of NEPA, and coordination and planning with BLM and Forest Service. We assume that a state agency such as ODFW or ODA would administer a program, but there would be an interim period while funds were secured and an organization was established where livestock producers would have limited or no assistance and would have to conduct needed control by whatever means was available to them. It is also probable that any state assumption of wildlife damage management would dilute resources needed for other wildlife management and state functions.

Alternative 4 and 5 would likely have greater adverse impact on wildlife populations than the current program although professional wildlife biologists do not believe that the level of harvest for most predatory species would be above allowable harvest levels.

4.2.1.5 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

Use of the LPC would be expected to reduce the potential for taking nontarget species, if use of the LPC results in reduced reliance on traps and snares. The LPC is expected to have low risks to nontarget terrestrial and aquatic wildlife. A thorough review of the risk assessment for the LPC found in Appendix P of USDA (1994) which concluded:

" Primary Toxicity. No probable risk is expected from acute oral primary exposures to scavengers. Possible acute and chronic effects for the red fox if it ingests the entire contents of the collar, however, that is unlikely to occur. Potential effects are possible for

chronic oral exposures to sensitive species, represented by the golden eagle, and listed species, including the bald eagle, ocelot, and jaguarundi. The likelihood of chronic exposure is very low, based on the remote possibility of repeated ingestion of the collar toxicant."

" Secondary Toxicity. No probable risk is expected, based on the low HQ (Hazard Quotient) values for the red fox."

" Aquatic. No probable risk is expected because of minimal off-site transport based on label directions."

In addition, the Risk Assessment compared findings from the USFWS and the EPA and concluded:

> That use of the 1080 livestock protection collar could possibly result in the mortality of bald eagles (USFWS 1985). This conclusion is consistent with the risk assessment conclusion. The USFWS further concluded that use of the collar is not likely to jeopardize the existence of the bald eagle, based on the low risk, the number of bald eagles found throughout the United States, eagle feeding patterns, and the low number of coyote carcasses and/or dead collared livestock to which the eagles are exposed (USFWS 1985). The EPA concluded that the bald eagle would not be affected, because feeding habits reduce the possibilities of ingesting the toxicants and because the chances are remote that a listed species would contact a collard sheep or goat (EPA 1991).

Based on USDA (1994), USFWS (1985) and EPA (1991), if authorized for use in Oregon, the use of the LPC would have a low magnitude of impact on wildlife populations.

4.2.2 Potentials for incidental take of threatened or endangered (T&E) species, especially the Northern Bald Eagle

4.2.2.1 Alternative 1. - Continue the Current District Program: (No Action).

The Endangered Species Act (ESA) (Section 7) requires that federal agencies consult with the USFWS and the National Marine Fisheries Service (NMFS) as appropriate. This is to ensure that any action the agency authorizes, funds, or carries out are not likely to jeopardize the continued survival of federally listed species, or result in the adverse modification or destruction of its critical habitat. The ESA also requires, when a species proposed for listing could be jeopardized by proposed federal actions, that a consultation be held with the USFWS.

ADC has reviewed its activities nationwide and in the District and consulted with the USFWS and NMFS as they relate to all listed T&E species under the provisions of ESA. The USFWS, in cooperation with ADC, has developed reasonable and prudent alternatives where a determination of jeopardy has been made (USDI 1994). Because of this review and consultation, ADC adopted the reasonable and prudent alternatives for the Northern Bald Eagle and agreed to other procedural conditions that will insure ongoing consideration of T&E species in relationship to program activities. The reasonable and prudent alternatives for the Northern Bald Eagle are:

1) ADC personnel will contact either the local ODFW office or the appropriate regional or field office of the USFWS to determine nest and roost locations for Northern Bald Eagles.

2) The appropriate USFWS office shall be notified within five days of the finding of any dead or injured bald eagle. Cause of death, injury, or illness, if known, should be provided to those offices.

3) Leghold traps (except those used to trap mountain lions) shall be placed a minimum of 30 feet from above ground bait sets.

In addition, ADC will work with the ODFW, Forest Service and BLM during the ADC Annual Work Planning process to address concerns or potential affects related to sensitive species lists. The National ADC "May Affect" determinations for federally listed T&E species, USFWS Biological Opinion can be found in Appendix F of USDA (1994) or is available for review at ADC's Portland State Office or at the John Day ADC District Office.

After reviewing the methods used in the District in relationship to the T&E species, ADC determined that no species other than the Northern Bald Eagle would potentially be affected. With the inclusion of the reasonable and prudent measures and procedural changes found in the Biological Opinion and Section 7 consultation, it has been determined that ADC wildlife damage management will have no effect on Northern Bald Eagles.

4.2.2.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

Alternative 2 expands the program to include wildlife damage management on all land classes within the District. Section 7 Consultation with the USFWS considered species that could be found within the District. Other than the Northern Bald Eagle, no additional species were found on public or private lands that could be affected by the ADC program. ADC will work with the ODFW, Forest Service and BLM personnel during annual work planning to avoid T&E and "Sensitive" species.

It is judged that Alternative 2 would not affect T&E species in the District.

4.2.2.3 Alternative 3 - Nonlethal Required Before Lethal Control Program

As previously noted, Alternative 3 is nearly identical to the current program, as most producers currently employ nonlethal methods. The impacts to T/E species would be identical to that described in Alternative 1.

4.2.2.4 Alternative 4. - Technical Assistance and Alternative 5. - No ADC Program.

Since Alternatives 4 and 5 results in no ADC operational programs, the potential effects will be similar and analyzed together. Some type of wildlife damage management would most likely be conducted by livestock and poultry producers, by various state agencies, or combinations thereof. The impacts on T&E species may vary considerably from that of those described in Alternative 1 because of the potential for improper or inappropriate selection and use of control methods, emphasis on lethal methods, duplication of effort, and possible misuse of pesticides.

The analysis covering Environmental Consequences in the USDA (1994) concluded that under the no program alternative there was a potential for cumulative adverse impacts on T&E species. It also concluded that T&E species populations could experience losses if inappropriate control measures and techniques are applied at the local level, and that losses could result in locally significant, cumulative impacts to T&E species. In the District there would be a potential impact on the Northern Bald Eagle and possibly other T&E or candidate species.

It is judged that Alternative 4 and 5 could result in impacts on T&E species within the District.

4.2.2.5 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The LPC was specifically designed to protect sheep and goats from predators that attack the throat. The LPC would not affect any T&E species currently found in the District. If

the Gray Wolf (*Canis lupus*) is reintroduced in the District or Oregon, or if wolves naturally reestablish populations, ADC will initiate a wolf consultation with the USFWS.

It is judged that use of the LPC under existing conditions will not affect T&E species in the District.

4.2.3 Level of take of nontarget species incidental to ADC's Wildlife Damage Management

4.2.3.1 Alternative 1. - Continue the current District Program: (No Action).

Nontarget species are animals that are inadvertently captured, killed or injured during wildlife damage management. Some target species already discussed may also be taken as nontarget species in various situations. This inadvertent taking of nontarget species generally occurs because the animals are similar in size, inhabit the same area, or have similar behavior making them susceptible to the same capture methods, or nontarget species may be attracted to lures placed for other species. For example, red fox may be attracted to the lure placed for coyotes or other canids.

The take of nontarget animals (including captured/released and captured/killed) in the District was 39 animals in 1994 out of 4,523 target animals taken (0.9% of the total number of animals taken were nontarget animals). Of the 39 nontarget animals captured, 12 were released and 27 killed.

It is judged that Alternative 1 would have a low impact on nontarget species populations in the District.

4.2.3.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

Alternative 2 would allow for WDM on all land classes. Expanded wildlife damage management could slightly increase the take, but probably not the proportion, of animals taken. The current ADC kill of nontarget species is well below the 5% level set as a District objective. The increase in nontarget take proportionate to increased target animal take would not be so large as to cause adverse impacts on nontarget species populations.

It is judged that Alternative 2 would have a low impact on nontarget species in the District.

4.2.3.3 Nonlethal Required Before Lethal Control Program.

As noted throughout this document, Alternative 3 is nearly identical to the current program as most producers currently employ nonlethal methods. The impacts to nontarget wildlife, including T/E species would be identical to that described under Alternative 1.

4.2.3.4 Alternative 4. - Technical Assistance and Alternative 5. - No ADC Program.

Since both Alternatives 4 and 5 would result in no ADC operational programs, the potential effects would be similar and will be analyzed together. Some type of wildlife damage management would most likely be conducted by livestock and poultry producers, by various state agencies, or combinations thereof. The impacts on wildlife populations may vary considerably from that of those described in Alternative 1 because of the potential for improper or inappropriate selection and use of control methods, emphasis on lethal methods, duplication of effort, and possible misuse of pesticides.

The levels of nontarget take under Alternative 4 and 5 is unknown but may exceed the 5% level because of lower skill levels, emphasis on lethal methods, improper use of equipment and the potential misuse of chemicals. It is judged that Alternative 4 and 5 would have greater impacts on nontarget species populations than the current program.

4.2.3.5 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

The use of the LPC would be expected to reduce the potential for taking nontarget species because of its high selectivity for only individual predators responsible for attacking/killing sheep and lambs.

The LPC would not be available for use under Alternatives 4 and 5 since it will be a restricted use pesticide for use only by ADC personnel. The lack of availability of the LPC potentially could increase nontarget take.

4.2.7 Summary of ADC's Impacts

Table 4-7 below is a comparison of the alternatives and environmental consequences (impacts). The levels of impacts are based on the above analysis and are rated Low, Low/Moderate, Moderate, Moderate/High, and High.

Table 4-7
Alternative/Issues/Impacts Comparison

Issues/ADC Impacts	Alternative 1	Alternative 2	Alternative 3	Alterative 4	Alternative 5	LPC
Coyotes	Low	Low	Low	Low	Low	Low
Black Bear	Low	Low	Low	Moderate	Moderate	Low
Cougar	Low	Low	Low	Low/Moderate	Moderate	Low
Bobcat	Low	Low	Low	Low/Moderate	Low/Moderate	Low
Red Fox	Low	Low	Low	Low	Low	Low
Raccoon	Low	Low	Low	Low/Moderate	Low/Moderate	Low
Skunks	Low	Low	Low	Low	Low	Low
Raven	Low	Low	Low	Low/Moderate	Low/Moderate	Low
T/E Species	Low	Low	Low	Moderate	Moderate	Low
Nontarget Species	Low	Low	Low	Moderate	Moderate	Low
WSAs/WAs	Low	Low	Low/Moderate	Low/Moderate	Moderate	Low
Humaneness	Low	Low	Low	Moderate	Moderate	Low
Chemicals	Low	Low	Low	Low	Low	Low
Cult. Res..	Low	Low	Low	Low	Low	Low

4.3 ECONOMIC ANALYSIS

4.3.1 Economic Impacts of wildlife damage management on Livestock and Poultry

The economic impacts of the alternatives are discussed in relation to resolving wildlife damage problems by the District ADC program. Economic impacts are monetary benefits or liabilities that the alternatives would have on livestock, poultry and wildlife losses, and on dangerous human encounters. As in the Objective and Environmental Consequences analysis, Economic Impacts of the Alternatives will be compared against Alternative 1. Costs and benefits associated with implementing IWDM will be considered but may be a secondary concern of overriding legal and environmental considerations. A complete review of the ADC Program's Economic Impact Assessment may be found in the USDA (1994, Chapter 4).

4.3.1.1 Alternative 1. - Continue the Current John Day ADC District Program: (No Action).

Costs of the current program in the District for 1995 include salary and benefits for field, supervisory and administrative staff, supplies, equipment, vehicles and transportation, aerial hunting, and all other related program expenditures. During 1995, about $ 534,000 was expended for total District operations. Of this total, $ 321,000 was expended for the protection of livestock and poultry, and about $3,200 for responding to requests for management of dangerous bears and cougars. The remaining $ 209,800 was expend on property protection, urban and crop related programs which will be analyzed in other NEPA documents.

Benefits to sheep and cattle producers from ADC can be measured by comparing the number of livestock protected, the number of livestock killed by predators, and livestock projected to have been saved, to the amount of funds expended for this protection (MIS 1995). The District protected approximately 315,318 head of adult sheep, lambs and calves 1993. During that same time, livestock producers reported that 3,079 head were killed by predators. These losses occurred despite current wildlife damage management efforts.

Examples of benefits of the current program can be demonstrated by examining predation rates to lambs, sheep, and calves. Tables in Appendix C show reported predator losses for lambs, sheep and calves. Reported lamb, sheep, and calf losses from predators in the District in 1993 averaged 1.0%, 0.8%, and 1.0%, respectively. These predation rates are lower than the predation rates of 4% and 8% for lambs and 1% and 2.5% for adult sheep as reported in the literature (USDI, 1978). Predation losses of calves are well below the Oregon level of 8.2% as determined by NASS (1992).

No data exist for the District that demonstrate the level of predation to livestock or wildlife without wildlife damage management. However, hypothetical losses to sheep and lambs can be estimated by comparing the current predation rates from studies of sheep without predator control from other areas. Table 4-8 summarizes sheep loss studies in areas without wildlife damage management.

Using the average rate of loss to predators from these studies, a hypothetical loss with no wildlife damage management can be estimated when applied to the total number of sheep and lambs protected. These estimates serve as a basis for determining benefits from the current program.

TABLE 4-8
SUMMARY OF FIELD STUDIES OF SHEEP LOSSES WITHOUT COYOTE CONTROL
ANNUAL LOSSES (%)

Source	Location	Year	Sheep	Lambs
Henne (1977)	Montana	1974	7.5%	28.8%
Munoz (1977)	Montana	1975	8.1%	24.2%
McAdoo and Klebenow (1978)	California	1976	1.4%	6.2%
Delorenzo and Howard (1976)	New Mexico	1974	Were 0% lost or not reported	12.1%
Delorenzo and Howard (1976)	New Mexico	1975	Were 0% lost or not reported	12.1%

Because no published data exist to show predator losses to calves in areas without wildlife damage management, it is impossible to estimate the number of calves that would be lost to predation. The NASS (1992) survey reported average Oregon calf loss levels of 8.2%; this will be used as a possible calf loss rate for the District. Appendix C summarizes lamb, sheep and calf predation with and without control. The difference between the predation rate with wildlife damage management and the predation rate without wildlife damage management results in projected livestock saved by the District ADC program. The resultant hypothetical livestock saved amounts to 21,701 lambs, 2,209 sheep, and 8,604 calves. When comparing the value of losses without wildlife damage management to that reported for areas with wildlife damage management, the annual savings could be $1,302,060 lambs, $108,241 for sheep, and $4,302,000 for calves totaling $5,712,30.

Table 4-9
Livestock Hypothetically Saved Annually
By The ADC Program in the District

County	Lambs (No.)	Sheep (No.)	Calves (No.)	Lambs ($) @$60 ea.[3]	Sheep ($) @ $49 ea.	Calves ($) @ $500 ea.
Gilliam	1,126	178	529	$67,560	$8,722	$264,500
Grant	348	38	560	$20,880	$1,862	$280,000
Harney	619	177	593	$37,140	$8,673	$296,500
Malheur	1,620	309	3,235	$97,200	$15,141	$1,617,500
Morrow	1,988	367	1,061	$119,280	$17,983	$530,500
Umatilla	14,524	908	698	$871,440	$44,492	$349,000
Wallowa	1,476	232	1,928	$88,560	$11,368	$964,000
Total	21,701	2,209	8,604	$1,302,060	$108,241	$4,302,000
Grand Total						$5,712,301

Using current program cost data of $ 321,000 for livestock protection and the hypothetical prevented loss estimate of $5,712,301, a cost:benefit ratio of 1: 17 is obtained. It is judged that the District program provides benefits to the livestock industry by protecting livestock.

[3] [illegible], 1994 [illegible].

4.3.1.2 Alternative 2. - Integrated Wildlife Damage Management Available on All Land Classes as requested: (Proposed Action).

This alternative is the current program, as described in Alterative 1, and authorization to conduct wildlife damage management on all lands as requested. Program expenditures would increase to protect livestock and wildlife on these lands. Responding to additional requests for assistance from private land owners, ODFW and public grazing permittees would require additional labor and other resources during the months when livestock are grazed on Forest Service and BLM allotments and may be more vulnerable to predation.

Predation would decrease on these public lands and private lands in the District with the implementation of Alternative 2. Howard and Shaw (1978) found that ranchers who had at least one boundary fence that faced land not used for livestock production reported a significantly higher rate of predation than did ranchers surrounded by other producers implementing wildlife damage management.

The amounts of program cost increases and economic benefits to livestock producers, and those costs and benefits associated with the "wildlife experience" are undetermined. However, the literature supports a conclusion that a favorable cost:benefit could be expected.

4.3.1.3 Alternative 3. - Nonlethal Before Lethal Control Program.

Program costs to implement this alternative would be more than alternatives 1 and 2. ADC personnel would be required to recommend or use nonlethal prior to lethal control. Wildlife damage could continue while nonlethal methods were being attempted. Recommending nonlethal methods requires a large Technical Assistance effort. These activities would increase those costs associated with personnel and IWDM. Additional ADC Specialists positions in the District would be needed in order to expend sufficient time and effort to demonstrate and/or use nonlethal techniques. ADC personnel would be required to monitor the effectiveness of each nonlethal method and determine when lethal methods could be applied. Livestock producers would absorb the cost of implementing most nonlethal methods. ADC assistance provided to ODFW for the protection of wildlife or human safety would be more costly because most effective nonlethal methods are applicable for livestock protection only. The ODFW would have to absorb the cost of fencing, barriers, or other nonlethal devices that they deemed practical for each damage situation.. We project that program costs would increase approximately 25%.

4.3.1.4 Alternative 4. - Technical Assistance

Program costs to implement this alternative would be considerable less than Alternatives 1, 2 and 3. Technical assistance activities would reduce costs associated with personnel and IWDM. ADC Specialist positions in the District would decrease to only those needed to provide technical assistance and make recommendations to producers and permittees wishing to conduct their own control programs. Livestock producers would absorb the cost of hiring private control agents or doing the work themselves. No ADC assistance would be provided to ODFW for the protection of wildlife resources or human safety. The ODFW would have to contract control activities to private individuals or conduct control activities itself. It is believed that livestock and poultry predation could, at a minimum, double or increase to levels found in the studies where no control was conducted unless a non-federal wildlife damage management program was initiated. We project that program costs would decrease by two-thirds.

4.3.1.4 Alternative 4. - No ADC Program.

Based on the above discussion, monies spent to maintain the current program would be saved, but direct and indirect costs to the producer would increase. Compared to current program economic benefits, the No Control alternative offers requesters the least amount of protection. Impacts to ODFW would be the same as described in the Technical

Assistance alternative. It is believed that livestock and poultry losses would, at a minimum, double or increase to maximum levels found in the studies where no control was conducted unless a non-federal wildlife damage management program was initiated.

4.3.1.5 Use of the Livestock Protection Collar (LPC), Option for Alternatives 1 and 2.

Initial costs associated with the implementation of LPC's are expected to be higher for producers and ADC than for traditional methods. However, once LPC's are included in the IWDM process, costs are expected to equal those of the other labor-intensive methods. The proposal for ADC to use the LPC would require each participating livestock producer to pay for each collar punctured and to provide the necessary labor and other resources to successfully use LPC's. Several cases have been documented where LPCs were successful when other conventional methods failed to resolve predation problems (Texas ADC 1992).

4.3.2 Economic Impacts of Wildlife Damage Management on Hunting and Wildlife Related Recreation

Neff et al. (1985) and Smith et al. (1986) conducted a cost:benefit analysis and concluded, that the favorable benefit:cost ratios at the end of the 10-year control cycle appears to reflect the fact that as the pronghorn antelope population increases, because of coyote control, the total number of antelope fawns produced increases and we get an increasing payoff for the fixed annual cost of the control operation. In conclusion, they said that coyote population control is a practical and economically sound management tool for certain wildlife management objectives.

A hypothetical cost:benefit analysis by Beasom (1974b) showed that coyote predation management would be economically feasible to bolster deer populations if the animals were harvested by hunters. He further said that each year that management occurs, cost would decline as equipment expenses would be spread out over a number of years and personnel would become more experienced with the area. His analysis was based on the additional recruitment (reproduction and immigration) of deer with an estimated value of $150/male deer and $50/female deer. Costs to hunters during his study were actually 100% more than what was calculated for his analysis.

Guthery and Beasom's (1977) data suggest that increased herd size because of wildlife damage management results in little or no adverse impact on range forage. They cautioned however, that the increased productivity and populations of deer should be managed accordingly to avoid the overuse of range forage. Neff et al. (1985) state that the decrease in coyote population on Anderson Mesa did not exhibit an increase in the rodent or rabbit population.

Based on the above research of coyote predation on deer and antelope, it seems feasible to provide economic benefit to rural locales by managing coyote predation to increase wildlife populations to huntable levels (Smith et al. 1986). By increasing the populations of wildlife, more opportunities exist for Recreationalists that want a "wildlife experience." This increased level of recreational activity could generate additional sources of income to rural economies. Recreationalists purchase food, fuels, lodging, and other items and services in pursuit of their diversions.

In the long term, predator management would not impact coyote populations because of recruitment (immigration) from adjacent areas and increased survival of coyote pups (Windberg and Knowlton 1988, Stoddart 1984). If objectives for fawn:doe ratios are to be maintained, research indicates that monitoring and periodic wildlife damage management may be needed to achieve objectives. Alternatives 1 and 2 would generate favorable cost:benefits. Alternative 3 would be less favorable since agency implementation of nonlethal methods would increase costs Alternatives 4 and 5 could promote unfavorable cost:benefits because ADC would not be available to provide operational support to ODFW.

Table 4-10
Economic Impacts
Cost:Benefit Comparison

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	LPC
Livestock	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable
Wildlife	Favorable	Favorable	Favorable	Unfavorable	Unfavorable	No Effect

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APPENDIX A

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APPENDIX B

SPECIAL MANAGEMENT AREAS
JOHN DAY ADC DISTRICT

Table 1
Special Management Areas within the John Day District

Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
BLM Vale District	Castle Rock		X					No	6,200
	Beaver Dam Creek		X					No	19,580
	Camp Creek		X					Yes	19,200
	Cottonwood Creek		X					Yes	8,700
	Gold Creek		X					No	13,600
	Sperry Creek		X					No	5,360
	Cedar Mountains		X					Yes	33,600
	Dry Creek		X					Yes	23,500
	Dry Creek Buttes		X					Yes	51,800
	Owyhee Breaks		X					No	13,380
	Blue Canyon		X					No	12,700
	Slocum Creek		X					No	7,600
	Honeycombs		X					No	39,000
	Honeycombs			X	X			No	11,930
	Wild Horse Basin		X					No	12,680
	Lower Owyhee Canyon		X					Yes	75,635
	Saddle Butte		X					Yes	86,300
	Saddle Butte Lava Tubes				X			No	7,040
	Palomino Hills		X					No	54,600
	Bowden Hills		X					No	59,900
	Clarks Butte		X					Yes	31,490
	Jordan Craters		X					No	27,900
	Jordan Craters			X	X			Yes	30,945
	Willow Creek		X					No	30,565
	Disaster Peak		X					Yes	18,840
	Fifteen Mile Creek		X					No	51,290

	Oregon Canyon		X					No	42,900

Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
	Twelve Mile Creek		X					No	28,600
	Owyhee		X					No	62,500
	Lookout Butte		X					No	65,200
	Owyhee River				X	X		No	30,400
	Owyhee River Canyon		X					No	190,700
	Leslie Gulch		X		X			No	9,300
	Upper Leslie Gulch		X					No	3,000
	Homestead		X					No	7,001
	Sheep Mountain		X					No	7,040
	Stockade Mountain			X	X			No	640
	Whitehorse Basin				X			No	1,290
	Mahogany Ridge			X	X			No	320
	McGraw Creek		X					No	497
Totals		0	33	4	8	1	0	10	1,202,723

BLM Burns District	Malheur River/Bluebucket Creek		X						5,560
	Stonehouse		X					Yes	21,325
	Lower Stonehouse		X					Yes	8,090
	Sheepshead Mountain		X					No	54,390
	Wildcat Canyon		X					No	34,830
	Heath Lake		X					Yes	20,520
	Table Mountain		X					No	40,592
	East Alvord		X					No	22,240
	Winter Range		X					No	15,440
	Alvord Desert		X					No	251,060
	Alvord Desert				X			No	16,700
	Mahogany Ridge		X					No	27,940
	Red Mountain		X					No	16,215
	Pueblo Mountains		X					No	72,090

	Pueblo Foothills			X	X			No	1,925
	Rincon		X					No	103,965

Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
	Alvord Peak		X					No	16,825
	Alvord Peak				X			No	14,700
	Basque Hills		X					No	141,410
	High Steens		X					No	69,740
	Steens				X			No	14,000
	Donner Und Blitzen R.		X					No	37,555
	Little Blitzen			X	X			No	2,200
	Blitzen River		X					No	55,880
	Little Blitzen Gorge							No	9,400
	Home Creek		X					No	26,590
	Bridge Creek		X					No	14,545
	Aldrich Mountain		X					No	9,395
	Borax Lake				X			No	520
	Pickett Rim				X			No	4,000
	Little Wildhorse			X	X			No	45
	South Fork Willow Creek			X	X			No	200
	Rooster Comb			X	X			No	490
	Mickey Basin			X	X			No	300
	Tum Tum Lake			X	X			No	1,170
	Long Draw			X	X			No	210
	Silver Creek			X	X			No	640
	South Narrows				X			No	160
	Silver Creek			X	X			No	1,280
	Foster Flat			X	X			No	2,690
	Dry Mountain			X	X			No	2,084
	Kiger Mustang				X			No	64,639
	Biscuitroot Cultural				X			No	6,500
Totals		0	22	12	20	0	0	3	1,235,641

Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
BLM Prineville District	Thirtymile		X					No	7,538
	Lower John Day		X					No	19,587
	North Pole Ridge		X					No	6,369
	Spring Basin		X					No	5,982
	Badlands		X					No	32,221
	North Fork		X					No	11,225
	South Fork		X					No	19,361
	Sand Hollow		X					No	8,791
	Gerry Mountain		X					No	20,700
	Hampton Butte		X					No	10,600
	Cougar Well		X					No	18,435
	Strawberry Mountain		X					No	1,149
	Aldrich Mountain		X					No	9,395
	Pine Creek		X					No	200
	Sheep Gulch		X					No	741
	Indian Creek		X					No	208
	Deschutes Canyon		X					No	
	Steelhead Falls		X					No	3,240
	Benjamin			X	X			No	640
	Forest Creeks			X	X			No	405
	Horn Butte Curleu				X			No	6,000
	North Fork Crooked River				X			No	6,737
	South Fork Crooked River				X			No	3,140
	Spanish Gulch				X			No	335
	Winter Roost				X			No	320
	Badlands				X			No	16,860

	Horse Ridge			X	X			No	600
	Lower Crooked River				X			No	2,830
	Peck's Milkvetch				X			No	3,902
	Powell Butte			X	X			No	520
Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
	Crooked River					X		No	960
	Deschutes River					X		No	7,616
	John Day River					X		No	9,408
	North Fork Crooked River					X		No	832
	South Fork Crooked River					X		No	3,008
	The Island			X	X			No	152
	Wagon Road				X			No	160
Total		0	17	5	14	5	0	0	241,239

Malheur National Forest	Strawberry Mountain	X						No	68,700
	Monument Rock	X						No	12,620
	Canyon Creek			X				No	700
	Dixie Butte			X				No	105
	Baldy Mt.			X				No	2,850
	Dugout Creek			X				No	270
	Shake Table			X				No	375
	Malheur River					X		No	3,758
	Byram Gulch Watershed						X	No	300
	Long Creek Watershed						X	No	224
	North Fork Malheur					X		No	7,034
Totals		2	0	5	0	2	2	0	96,936

Wallowa/Whitman National Forest	Indian Creek			X				No	990
	Lightning Creek			X				No	2,100

	Pleasant Valley			X				No	1,400
	Bill's Creek			X				No	40
	Alum Beds			X				No	600
	Little Granite			X				No	6,000
	Boner Flat			X				No	1,700
	Craig Mountain Lake			X				No	170

Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
	West Razz Pond & West Half of Razz Lake			X				No	50
	Mount Joseph			X				No	700
	Duck Lake			X				No	500
	Vance Knoll			X				No	500
	Government Draw			X				No	200
	Glacier Lake			X				No	100
	Lake Fork			X				No	500
	Horse Pasture Ridge			X				No	250
	Haystack Rock			X				No	400
	Point Prominence			X				No	700
	Cougar Meadow			X				No	50
	Bob Creek			X				No	100
	Basin Creek			X				No	400
	Baker City Watershed						X	No	8,740
	La Grande Watershed						X	No	15,631
	Eagle Cap Wilderness	X						No	346,000
	Hells Canyon Wilderness	X						No	214,000
	North Fork John Day Wilderness	X						No	30,722
	Monument Rock Wilderness	X						No	7,300
	Eagle Creek					X		No	1,728
	Grande Ronde					X		No	1,050
	Imnaha					X		No	4,352
	South Fork Imnaha					X		No	576

	Joseph Creek					X		No	550
	Lostine					X		No	1,024
	Minam					X		No	2,496
	North Fork John Day					X		No	736
	North Powder					X		No	384
	Snake					X		No	4,320
Totals		4	0	21	0	10	2	0	657,059

Agency	Management Area Name	Designated Wilderness/ Primitive Area	Wilderness Study Area	Research Natural Area	Area of Critical Environ Concern	Wild and Scenic River	Other	WDM Proposed	Total Acreage
Umatilla National Forest	Grande Ronde River					X		No	5,710
	North Fork John Day River					X		No	11,303
	Wenaha River					X		No	5,642
	Wenaha Tucannon	X						Yes	57,000
	North Fork Umatilla	X						Yes	20,144
	North Fork John Day	X						Yes	91,278
	Birch Creek Cove			X				No	410
	Elk Flats Meadow			X				No	75
	Elk Flats-Wenaha Breaks			X				No	1,665
	Mill Creek Watershed			X				No	6,800
	Kelly Creek Butte			X				No	80
	Vinegar Hill			X				No	410
	Mill Creek Watershed						X	No	7,800
	High Ridge Evaluation Area						X	No	560
	Walla Walla River Watershed						X	No	34,500
Totals		3	0	6	0	3	3	3	243,377

Ochoco National Forest	Black Canyon	X						No	13,400
	Mill Creek	X						No	17,400
	Bridge Creek	X						No	5,400

	N. Fork Crooked River					X		No	4,888
	Mid Deschutes					X		No	2,535
	Ochoco Divide			X				No	1,000
	Haystack Butte			X				No	146
	The Island			X				No	199
	Silver Creek			X				No	844
	Dry Mountain			X				No	1,187
Total		3	0	5	0	2	0	0	46,999

APPENDIX C

1993 Reported Sheep and Lambs Lost
To All Causes and to Predators

	Lambs			Sheep		
County	Number of Lambs Lost to All Causes	Number of Lambs Lost to Predators	% Lost to Predators	Number of Sheep Lost to All Causes	Number of Sheep Lost to Predators	% Lost to Predators
Gilliam	387	22	5.7%	96	9	9.3%
Grant	232	21	9.0%	166	27	16.3%
Harney	495	107	21.6%	152	23	15.1%
Malheur	918	495	54%	323	30	9.3%
Morrow	1,014	183	18%	493	61	12.4%
Umatilla	6,290	215	3.4%	766	158	21%
Wallowa	622	339	55%	410	172	42%
Total	9,958	1,382	13.9%	2,406	480	20%

1993 Reported Calf and Adult Cattle Lost
To All Causes and to Predators

	Calves			Adult Cattle		
County	Number of Calves Lost to All Causes	Number of Calves Lost to Predators	% Lost to Predators	Number of Adult Cattle Lost to All Causes	Number of Adult Cattle Lost to Predators	% Lost to Predators
Gilliam	379	54	14.2%	182	0	0
Grant	1,010	382	38%	980	5	0.5%
Harney	896	115	13%	133	10	7.5%
Malheur	2,598	452	17%	1,041	27	2.6%
Morrow	284	1	0%	306	0	0%
Umatilla	180	26	14%	155	3	2%
Wallowa	772	187	24%	258	8	3.1%
Total	6,283	1,217	19.3%	3,085	53	1.7%

APPENDIX C

1993 Reported Lamb and Sheep Losses and Comparison of Losses With and Without Predator Control, John Day ADC District

County	Number Lambs Protected	Number Lost to Predator	% Lost to Predators	Losses with Control[1]	Losses without Control[2]	Differences Between Losses with and without Control
Gilliam	6,755	22	0.3%	22	1,148	1,126
Grant	2,170	21	1.0%	21	369	348
Harney	4,271	107	2.5%	107	726	619
Malheur	12,441	495	4.0%	495	2,115	1,620
Morrow	12,771	183	1.4%	183	2,171	1,988
Umatilla	86,699	215	2.5%	215	14,739	14,524
Wallowa	10,680	339	3.1%	339	1,815	1,476
Totals	135,787	1,382	1.0%	1,382	23,083	21,701
Market Value	$8,147,220	$82,920		$82,920	$1,384,980	$1,302,060
County	Number Sheep Protected	Number Lost to Predator	% Lost to Predators	Losses with Control	Losses without Control	Differences Between Losses with and without Control
Gilliam	4,155	9	0.2%	9	187	178
Grant	1,450	27	1.9%	27	65	38
Harney	4,449	23	0.5%	23	200	177
Malheur	7,527	30	0.4%	30	339	309
Morrow	9,513	61	0.6%	61	428	367
Umatilla	23,696	158	0.7%	158	1,066	908
Wallowa	8,967	172	2.0%	172	404	232
Totals	59,757	480	0.8%	480	2,689	2,209
Market Value	$2,928,093	$23,520		$23,520	$131,761	$108,241

[1] Losses with control from ADC MIS, 1993

[2] [illegible] 4.5% [illegible] 17% [illegible].

APPENDIX C

1993 Reported Calf Losses and Comparison of Losses
With and Without Predator Control, John Day ADC District

County	Number Calves Protected	Number Lost to Predators	% Lost to Predators	Losses with Control[3]	Losses without Control[4]	Difference Between Losses with and without Control
Gilliam	7,104	54	0.8%	54	583	529
Grant	11,488	382	3.3%	382	942	560
Harney	8,639	115	1.3%	115	708	593
Malheur	44,975	452	1.0%	452	3,687	3,235
Morrow	12,946	1	0	1	1,062	1,061
Umatilla	8,832	26	0.3%	26	724	698
Wallowa	25,790	187	0.7%	187	2,115	1,928
Totals	119,774	1,217	1.0%	1,217	9,821	8,604
Market Value	$59,887,000	$608,500		$608,500	$4,910,500	$4,302,000

Livestock Hypothetically Saved Annually
By The ADC Program in the District

County	Lambs (No.)	Sheep (No.)	Calves (No.)	Lambs ($) @$60 ea.	Sheep ($) @ $49 ea.	Calves ($) @ $500 ea.
Gilliam	1,126	178	529	$67,560	$8,722	$264,500
Grant	348	38	560	$20,880	$1,862	$280,000
Harney	619	177	593	$37,140	$8,673	$296,500
Malheur	1,620	309	3,235	$97,200	$15,141	$1,617,500
Morrow	1,988	367	1,061	$119,280	$17,983	$530,500
Umatilla	14,524	908	698	$871,440	$44,492	$349,000
Wallowa	1,476	232	1,928	$88,560	$11,368	$964,000
Total	21,701	2,209	8,604	$1,302,060	$108,241	$4,302,000
Grand Total						$5,712,301

[3] Losses with control from ADC MIS, 1993

[4] [illegible] 1992 [illegible] 8.2% [illegible].

UNITED STATES DEPT. OF AGRICULTURE
ANIMAL DAMAGE CONTROL