ENVIRONMENTAL ASSESSMENT (EA)

WILDLIFE DAMAGE MANAGEMENT IN THE NORTHWEST, OREGON ADC DISTRICT

including the counties of [redacted]

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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. 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. This Environmental Assessment (EA) evaluates ways by which this mandate can be carried out within the Northwest (NW) ADC District (District) located in northwestern 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 or prepared in conjunction with the 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. (USDA 1989)

Purpose

Normally, according to APHIS procedures implementing the National Environmental Policy Act (NEPA), individual wildlife damage management actions are categorically excluded (7 CFR 372.5(c), 60 Fed. Reg. 6000, 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 certain wildlife species, and to protect human safety on specified private and public lands in the District. The area encompassed by the District is over 10 million acres (Keisling 1993); ADC has agreements to conduct wildlife damage management on about 1.7 million acres within the District, or 17% of the area (MIS 1995). The District includes Federal lands under the jurisdiction of the Forest Service, [redacted], [redacted], plus Tribal lands, and state, county and private lands. During 1995, approximately 99% of actual direct control operations was conducted on private lands. The remaining 1% was conducted on county, State and Federal lands.

In the District, cattle and sheep are permitted to graze on Federal lands under the jurisdiction of the Forest Service and [redacted] (primarily in [redacted] County) in spring, late summer and fall and some winter grazing is permitted on [redacted] lands. In addition, 1329 private property owners in [redacted] Counties requested assistance from the ADC program in FY 1995.

1.1 Need for Action

Summary of Proposed Action

The proposed action is to implement livestock and wildlife protection in the District using an Integrated Wildlife Damage Management (IWDM) approach that would allow use of all authorized techniques and methods, used singly or in combination, to meet requestor needs. This proposal would include ADC activities on grazing allotments within the [redacted] managed by the [redacted]. Requests for assistance may also be received by grazing permittees on the Deshcutes NF and on limited areas in the [redacted] District. A very small area on the [redacted] NF is included to provide protection to livestock producers adjacent to NF lands.

Currently, ADC does not conduct wildlife damage management on Forest Service lands. However, the Ochoco and Deshcutes National Forests and the [redacted] District allow sheep and cattle grazing by permit. This EA constitutes the required National Environmental Policy Act (NEPA) document for proposed ADC operations on Forest Service and [redacted] lands in the District. No wildlife damage management has been requested on NPS or USFWS to protect livestock, wildlife, or for human safety. ADC may conduct wildlife damage management on one [redacted] District ([redacted]). During 1995 , the ADC program conducted one wildlife damage management project on tribal lands at the request of the [redacted] in response to coyotes (*Canis latrans*) and domestic feral dogs (*Canis domesticatus*) killing livestock.

The District also encompasses 6 non-cooperating counties ([redacted]) in which wildlife damage problems are managed through county-administered and funded programs and/or private self-help programs without Federal funding. In these counties ADC is available to provide technical assistance or direct control assistance under individual cooperative agreement.

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 and [redacted] lands, other federal 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 [redacted], each National Forest within the District as appropriate, [redacted] and American Indian Tribes (if there is a request). These work plans would be reviewed annually. See

Chapter 3 for a more detailed description of the current program and the proposed action.

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 over $3 billion in farm and ranch sales in 1994. Livestock production, primarily beef and dairy cattle, sheep and poultry, are major agricultural industries and accounts for about 22% of the farm product sales producing about $748 million (OAFS 1994-95).

Livestock production in the District contributes significantly to the economy and is becoming increasingly important as local economies become stressed due to reduced timber harvests on public lands. Nearly 56% of all agricultural commodities produced in Oregon are produced in the NW District and 45% of all animal products produced in the State come from this analysis area. About 35% of all sheep and lambs and 23 % of all cattle and calves produced in Oregon are raised in the District (OAFS 1994-1995). Livestock inventories in the District included about 318,300 head of cattle and calves and 147,300 sheep and lambs, valued at over 254 million dollars (OAFS, 1994-1995). Table 1-1 displays livestock[1] and gross farm sales for each cooperating county (OSU 1994).

Table 1-1
Livestock Product Sales & Total Gross Farm Sales
Northwest ADC District
1994
(Source: Oregon County & State Agriculture Estimates)

County	Livestock Products ($)	Total Gross Farm Sales ($)	% Of Total Sales in County
[redacted]	9,238,000	79,912,000	11.56
[redacted]	43,409,000	221,984,000	19.55
[redacted]	6,702,000	20,103,000	33.3
[redacted]	6,127,000	40,720,000	15.05
[redacted]	1,962,000	51,840,000	3.78
[redacted]	10,682,000	45,645,000	23.40
[redacted]	2,163,000	19,042,000	11.36
[redacted]	38,702,000	189,211,000	20.45
[redacted]	74,030,000	386,949,000	19.13
[redacted]	1,928,000	56,822,000	3.39
[redacted]	18,729,000	86,673,000	21.61

[1]Livestock includes cattle, calves, sheep, lambs, poultry, and dairy products.
*Counties with cooperative programs.

County	Livestock Products ($)	Total Gross Farm Sales ($)	% Of Total Sales in County
[redacted]	5,346,000	30,872,000	17.32
[redacted]	68,016,000	74,927,000	90.78
[redacted]	8,025,000	53,622,000	14.96
[redacted]	20,136,000	177,546,000	11.34
[redacted]	25,450,000	147,563,000	17.25
TOTAL	340,645,000	1,683,431,000	20.2

The dairy industry in Oregon is the fifth leading agricultural producer in the State, generating annual sales of $214 million in 1995 and $218 in 1994. In 1994 dairy products represented 29% of gross farm sales of all livestock and poultry and 7% of the total sales of all farm and ranch commodities (OSU 1996). Top sales of milk products come from counties in the District; [redacted] counties. These counties alone generated $137 million in milk sales in 1993 (OSU 1993).

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, [redacted] 1993a, 1993b). Livestock causes economic hardships to livestock owners. In addition, dairy farm operations are extremely vulnerable to attract large concentrations of starlings (*Sturnus vulgaris)* and various blackbird species . Dairy operators sustain considerable losses from direct feed consumption, contamination of feed and water and disease transmission.

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 predation on cattle, calves, sheep and lambs in the District are black bear (*Euarctos americanus*), cougar (*Felis concolor*), and feral or free-roaming dogs (*Canis familiaris*). Black bear and cougar predation on livestock can be severe (NASS 1991, 1992; [redacted], MIS 1993). The [redacted] ([redacted]) reported that most bear and cougar damage management efforts are concentrated in the northeastern and southwestern part of the State, including the District, although the problem seems to be increasing statewide. Cougar predation has shown a significant increase in the NW district during the past two years. Dogs are responsible for considerable predation on livestock and wildlife. The National Agricultural Statistical Service (NASS) (1991) reported that 1,200 adult sheep and 7,100 lambs were killed by dogs in Oregon during 1990.

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, 35% of the sheep and lambs and 17% of the calves reported killed were confirmed by ADC Specialists (MIS 1993). 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 1975, 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 areas where individual predators or local populations learn to deviate from their natural prey base and learn to recognize domestic animals as an alternative food source.

Prior to 1960, starling and blackbird populations remained relatively constant. However, the expansion of dairy farms in the Willamette Valley and the Oregon Coast has increased breeding and feeding substantially. Operators are experiencing economic losses to these birds eating livestock feed, fouling additional feed and water, and contributing to sanitation and health problems (MIS, 1995-1996).

Currently, population estimates for the NW District are unknown. However, a majority of dairy operations in the District contain large concentrations of birds during the winter months.

Loss of Livestock and Poultry

NASS (1995) reported that predators killed 4,275 adult sheep valued at $282,150, and 13,100 lambs valued at $471,600 in 1994. In 1991 predators killed 4,500 calves valued at $1,440,000 (NASS 1992) in Oregon. NASS (1992) reported that 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 the majority of the verified total value of all livestock and poultry lost to predators in the District in 1995, with [redacted] County sustaining the highest economic livestock loss, followed by [redacted] counties (Table 1-2). Coyotes were responsible for about 79% of all livestock and poultry losses verified by ADC personnel, followed by raccoon (*Procyon lotor*) 5%, raptors (birds of prey) 4%, cougar 3%, red fox (*Vulpes vulpes*) 2%, bobcat 1% and black bear 1% (MIS 1993). Table 2 is a summary of reported livestock killed by predators in 1993 for the District. Table 1-3 presents a summary of livestock killed by predators as verified by ADC field personnel.

Table 1-2
Number of Reported Livestock & Poultry Killed by Predators
Northwest District
1993

County	Lambs	Sheep	Cattle	Calves	Poultry and Other	Value ($)
[redacted]	298	81	0	0.00	109	26,810
[redacted]	156	120	7	13	277	25,800
[redacted]	30	2	0	10	81	11,720
[redacted]	57	18	0	37	0	21,870
[redacted]	189	26	1	9	14	13,607
[redacted]	536	181	0	4	27	44,292
[redacted]	208	114	0	6	19	26,785
[redacted]	28	6	2	198	20	93,059
[redacted]	50	12	0	7	35	5,020
[redacted]	166	19	0	5	122	42,907
Total	1,718	579	7	289	704	311,870

NW ADC District personnel verified in 1995 that predators killed 31 calves, 81 adult sheep, 736 lambs, and 536 other livestock and poultry valued at $80,535 in cooperating counties (MIS 1995). In 1993, livestock producers reported that predators killed 615 adult sheep, 1,794 lambs, 291 calves and 10 adult cattle valued at more than $320,000. In addition, poultry producers reported over 6,200 head of poultry killed by predators in the District. These losses occurred in spite of current control efforts by producers who often incur substantial indirect costs (Jahnke et al. 1987), and ADC program personnel. Table 1- 4 shows the most recent data that demonstrates the types and numbers of livestock protected in the District (MIS 1993).

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Table 1-3
Number of Verified Livestock & Poultry Losses to Predation
Northwest ADC District Cooperating Counties
1995

County	Lambs	Sheep	Cattle	Calves	Poultry & Other	Value ($)
[redacted]	154	26	0	2	213	19,742
[redacted]	144	14	0	7	133	13,896
[redacted]	11	0	0	2	4	3,853
[redacted]	5	4	0	4	0	1,170
[redacted]	28	1	0	4	53	3,825
[redacted]	202	11	0	2	7	18,570
[redacted]	150	19	0	0.	37	12,501
[redacted]	5	0	0	7	0	1861
[redacted]	0	3	0	0	58	600
[redacted]	37	3	0	3	31	4,517
Total	736	81	0	31	536	80,535

Table 1-4
Number of Livestock & Poultry Protected
Northwest ADC District
1993

County	Lambs	Sheep	Cattle	Calves	Poultry & Other	Totals
[redacted]	8159	3362	60	55	750	12,386
[redacted]	1208	2223	987	356	684	5,458
[redacted]	910	673	662	565	751	3,561
[redacted]	10,516	7,925	4,837	4,176	0.00	27,454
[redacted]	2733	1712	588	439	160	5,632
[redacted]	28,983	10,299	437	448	108	40,275
[redacted]	5530	4013	245	194	144	10,126
[redacted]	331	248	10,476	8960	775	20,790
[redacted]	420	475	295	265	48	1,503
[redacted]	3411	2979	1011	1153	250,302	258,856
Total	62,201	33,909	19,598	16,611	253,722	386,041

Livestock Losses on Forest Service and [redacted] Lands

The primary need to conduct wildlife damage management on public lands in the NW District is on the [redacted] District and the [redacted]. Emphasis is for livestock protection on private lands, with limited activities on specific grazing allotments administered by the Forest Service and the [redacted]. Because of the mobility and large home ranges of coyotes, it is sometimes necessary to conduct WDM on private lands, adjacent public lands and grazing allotments on public lands.

In the NW District, livestock protection activities on [redacted] lands would be limited to an extremely small area on the [redacted] District. The [redacted] managed by the [redacted] uses sheep to graze vegetation on the plantation as an alternative to chemical and mechanical vegetation control. Sheep and cattle have been used as a vegetation management tool on the plantation since 1994. The livestock operator and the [redacted] have requested ADC assistance to alleviate predation by predatory animals, primarily coyotes. Additionally ADC would need , on occasion, to conduct wildlife damage management on isolated blocks of [redacted] land where adjoining private property owners are suffering livestock losses.

On the [redacted], Ochoco National Forest, wildlife damage management has not been authorized, although past losses have been documented and confirmed.[2] No current data are available since livestock have not been grazed recently in the [redacted]. Newly permitted livestock operators have requested ADC assistance since historically, losses have been high. Producer implemented methods will include herders, hazing, and guard dogs.

Losses at Dairy and Cattle Feeding Operations

The pest-bird species which are most frequently involved with depredations at livestock feedlots and dairy operations are the starling (*Sturnus vulgaris)*, Brewer's blackbird (*Euphagus* cyanocephalus*)*, red-wing blackbirds (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 onto feedlots and dairies depending upon where the operation is located in the District.

Assessing the true economic loss that occurs from bird depredation, contamination and disease transmission at feedlots is a difficult task. In the District, the size of dairies varies considerably, with some containing less than 100 dairy cows to others feeding more that 1,000 milk cows. Bird populations and species composition can also vary from site to site and from year to year. Other factors such as feed ration variability, natural food availability and weather play an important part in damage appraisal. Feedlots and dairies are prime locations for the concentrations of bird species, especially in the fall and winter months from October through March. Severe cold and snow can contribute to large concentrations of starlings and blackbirds at these sites. 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 exclusively from livestock feed troughs (Besser, et al 1968).

Because of the similarities with feeding operations and bird activities at livestock feedlots and dairies, the methods used to assess economic losses at cattle feedlots by Besser, et al. 1968 will be used to assess bird depredations at dairies in the District. Magnitude of loss is directly proportional to the number of birds and length of time spent at the feedlot. Starlings are capable of consuming up to one-third of their body weight or about 1 ounce of livestock ration per day.

[2]Since 1991, 30 sheep & lambs have been reported killed by coyotes. In 1990, 13 sheep & lambs were confirmed killed by coyotes.

This method incorporates the current cost of livestock feed or ration with an estimated daily number of birds feeding at the lot. The direct loss attributed to birds at a typical 500 cow dairy in the Willamette Valley with a 6-month wintering population of 100,000 starlings could be calculated as follows using Besser's formula:

Dairy	-500 milk cows
Bird Population	-Pre-control estimates Oct.-March, mid-day average of 25,000 starlings.
Cost of Feed	-$ 80.00/ton or $.08/lb. (1996 average cost of livestock feed)[3]
Daily consumption rate by starlings	-1 starling consumes 1 ounce of feed -16 starlings = 1 lb feed consumption/day -25,000 starlings = 1,563 lbs/day (25,000/16) -25,000 starlings = $125.04/day (1,563 lbs x .$08 = $125.04)
Projected Loss for the 6-month Fall/Winter period	-$125.04 x 180 days = $ 22,507.20

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 benefit from these recreational activities. As a result, the maintenance of big game populations is important to the [redacted] which has the responsibility for managing wildlife for the benefit of the State of Oregon. Wildlife damage management has been requested by the [redacted] 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 [redacted], 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

[3]Feed price derived from average prices of alfalfa and dairy feed. From Oregon State University Extension Service.

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 [redacted] 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 [redacted], 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 [redacted], 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 [redacted], 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 [redacted], 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 [redacted] on an annual basis during the Annual Work Plan process

with the [redacted] 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, [redacted] 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 [redacted] 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, [redacted] could request predator damage management for the protection of mule deer and pronghorn antelope. Predator damage management would be requested when [redacted] determines predation is detrimental to management objectives. Only after [redacted] has made such a determination will ADC respond. Should [redacted] decide to go forward with a proposal that involve any [redacted], it would be conducted in accordance with [redacted], whichever applies. The factors used by [redacted] 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 [redacted] population management objectives.

Pronghorn Antelope

- Antelope populations fall below the [redacted] 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 [redacted] 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 [redacted]. These areas will be described during the Annual Work Plan process with the [redacted] and Forest Service.

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

[redacted] is responsible for responding to dangerous black bear and cougar complaints relating to human safety and has entered into a Memorandum of Understanding (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, [redacted] 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 ([redacted] 1993a). Cougar populations are estimated to be growing by 4 to 5% per year. 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, [redacted] 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 problem, [redacted] attempts to live-trap and relocate the offending animal or requests ADC to do so. Other [redacted] management alternatives may also be implemented, such as lengthening the hunting season and/or increasing the number of hunting permits in areas experiencing 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. [redacted] policies addressing the relocation of black bear and cougar and state:

> *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 ([redacted] 1993a, 1993b).*

Historically, nuisance or dangerous bear interactions with humans occur every year 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 11 requests for assistance from [redacted] regarding nuisance or dangerous 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). Recently, numerous incidents have been reported to [redacted] and ADC. Between January 1, 1993 and May 1, 1994, ADC personnel in the District responded to 57 requests for assistance involving cougar damage. Five requests involved the protection of pets, 20 responded to human safety concerns and 32 involved livestock damage. No cougar-caused human fatalities have been documented in Oregon, but the recent fatal attacks in California and Colorado emphasize the need for awareness.

1.2. ADC Objectives

The need for wildlife damage management in the District helped ADC define the management objectives for the District.

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

A-1 Respond to 100% of the requests with the appropriate action, using the ADC Decision Model (see Chapter 3) as determined by the Specialist.

A-2 Hold lamb losses due to predation to less than 5%/year in areas with cooperative agreements. [4]

A-3 Hold adult sheep losses due to predation to less than 3%/year in areas with cooperative agreements. [4]

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

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 within:

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

A-6 Reduce 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. Provide Assistance to [redacted] when Requested to Meet Wildlife Management Goals.

B-1 Respond to 100% of [redacted] requests for wildlife damage management (such as sensitive deer, big horn sheep and antelope areas, and turkey release sites).

C. Human Protection From Dangerous Bears and Cougars:

C-1 Respond to 100% of [redacted] black bear and cougar requests.

1.3 Relationship of this Environmental Assessment to Other Environmental Documents

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. The Record of Decision (ROD) for the FEIS was signed on March 7,1995. This EA is consistent with the ROD.

National Forest Land and Resource Management Plans (LRMPs).

The National Forest Management Act (NFMA) 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 LRMPs for the National Forests in the District found that wildlife damage management was not specifically mentioned in the LRMP's. However, this silence does not necessarily denote inconsistency with the "Forest Plans" and these forests will make a consistency determination.

National Forest EAs for Wildlife Damage Management.

None of the National Forests within the District have EAs for wildlife damage management relating to the protection of livestock or wildlife. Therefore, the District has not been conducting any activities on Forest Service lands, although needs may exist. Any future wildlife damage management efforts would be conducted according to the decisions made from this EA.

[4] This objective may be met overall but may not be met on each ranch or in each county.

The [redacted] currently uses [redacted] to guide management on lands they administer. [redacted] generally replace older land use plans known as management framework plans. Two [redacted] lie within the Northwest ADC District. These Districts have current [redacted] or are in the process of being updated and revised. Because no ADC activities have been requested or conducted on [redacted] lands within the NW ADC District, these [redacted] Districts do not have ADC Annual Work Plans.

[redacted] for Wildlife Damage Management.

The [redacted] District does not have an EA for wildlife damage management for the protection of livestock or wildlife. Therefore, this EA addresses agency responsibilities, guidance and restrictions for various management objectives and land classes and provides environmental analysis for these lands. Wildlife damage management will be authorized on the [redacted] District in accordance with this EA and the ADC Annual Work Plan. Additional NEPA documentation may be required to conduct wildlife damage management that is outside the scope of this EA within the [redacted] District, should the need arise in the future.

[redacted] Wildlife Management Plans.

ODFW has prepared wildlife management plans for mule deer ([redacted] 1990), bighorn sheep ([redacted] 1992), black bear ([redacted] 1993a), and cougar ([redacted] 1993b). These plans outline the management goals, objectives, strategies and methodologies for these species. These criteria will be incorporated by reference into this EA and used for the analysis.

Alternative 9 and FEIS on Amendments of Forest Service and [redacted] Management Planning Documents with in the Range of the Northern Spotted Owl.

In April 1994 the Secretaries of Agriculture and Interior selected Alternative 9 in the ROD based on the FEIS on "Amendments of Forest Service and [redacted] Planning Documents Within the Range of the Northern Spotted Owl" (Forest Service/[redacted] 1994a, 1994b). Attachment A of the ROD provides all the standards and guidelines for management within the range of the owl; those standards and guidelines apply unless standards and guidelines in Forest Service Forest Plans or [redacted] are more restrictive. A careful review of the ROD and Attachment A found no references to wildlife damage management or how they may effect the Northern Spotted Owl (*Strix occidentalis*). Therefore, there would be no need for this EA to evaluate consistency with Alternative 9.

1.4 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 , [redacted] will provide input and make recommendations to ADC on when and where wildlife damage management will be conducted and to make consistency determinations with Forest Plans (LRMP), [redacted] and Forest Service and [redacted] policy.

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

- Should wildlife damage management as currently implemented be continued in the District (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.

1.5 Scope Of This Environmental Assessment Analysis

Actions Analyzed.

This EA evaluates wildlife damage management to protect livestock and poultry predation caused by coyotes, black bears, cougars, bobcat, red fox, raccoon and striped skunks within the District. This EA will also analyze dangerous human encounters with black bears and cougars, reducing bird damage to dairy and livestock feeding operations and the protection of mule deer and pronghorn antelope. 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.

Wildlife Species Potentially Protected by ADC

[redacted] may request ADC assistance to achieve management objectives for certain wildlife species. Currently, ADC is not conducting predator management to protect wildlife, however, it is possible that ADC would be requested to provide assistance for protecting mule deer, pronghorn antelope, bighorn sheep, and wild turkey. Therefore, these species are included in this analysis. If [redacted] identifies other species needing protection, a determination will be made on a case-by-case basis if additional NEPA analysis is needed. NEPA analysis of wildlife damage management for species under the jurisdiction of another federal agency (for example migratory birds, and endangered or threatened species) will be conducted by the authorized federal agency.

Counties Not Part of the Operational ADC Wildlife Damage Management Program.

[redacted] Counties do not have Cooperative Agreements with ADC. However, ADC periodically responds to requests for assistance in these non-cooperating counties when overtime funding is provided by these counties or individual requestor. ADC does provide technical assistance and information on a request basis. All counties in the District will be included in this EA due to the potential for new cooperative agreements to be signed. Data from control work in these counties is included in the impacts analyses in Chapter 4. Should new counties decide to enter into Cooperative Agreements, this EA will be supplemented by ADC pursuant to NEPA.

American Indian Lands and Tribes.

Presently, no tribes have Cooperative Agreements with ADC for wildlife damage management. If a tribe enters into a Cooperative Agreement, this EA may be reevaluated for compliance with NEPA.

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. Changes in environmental regulations, program scope and methods, or other variables could also trigger additional NEPA compliance requirements.

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, [redacted], state, county, and private ownership. The EA emphasizes major 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. 3-4 for the ADC Decision Model and its application).

Summary of Public Involvement Efforts

Issues related to the proposed action were identified during an initial information gathering process conducted with members of the livestock industry, environmental interest groups, the general public, American Indians, Forest Service resource specialists, county, State, and other federal agencies. The public was notified about the proposed action through a letter inviting comment on the preparation of the EA for the District program. This letter was mailed on February 21, 1996 to over 200 individuals, organizations and agencies who have expressed an interest or who were thought to have an interest in the program. Legal notices were published in four daily newspapers throughout the District (some newspapers in which the notice was published have statewide distribution).

Scoping responses were documented from 24 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, The Oregon Wildlife Federation, and the [redacted]. All comments are maintained in the administrative file.

Resource specialists with expertise in range management, wildlife biology, wildlife damage management, animal science, agriculture, cultural resources and environmental compliance evaluated the issues identified in the public involvement process. Issues determined to be important 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, [redacted] and ODA were asked to participate 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, [redacted] 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.

Results of Review of Draft Environmental Assessment

More than 60 copies of the predecisional EA were mailed to organizations and individuals as well as public agencies and local American Indian Tribes for review and comments. In addition, a news release and formal public notice was published in four regional newspapers prior to analysis that announced the availability of the Draft EA.

The documentation on the public involvement effort, including the written responses, is available for public review. They are located in the administrative file in the ADC State Directors Office in Portland, Oregon.

1.6 Authority and Compliance

Authority of Federal and State Agencies in Wildlife Damage Management in Oregon[5]

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 for ADC with the Animal Damage Control Act Amendment, stating, 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.*

[redacted]

The [redacted] 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). [redacted] is also authorized to cooperate with ADC and the [redacted] 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

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[5] *Detailed discussions of the legal mandates, state statutes and relationships of all pertinent federal, state and local wildlife and land management entities, and key legislation pertinent to wildlife damage management are found in Appendix F. Also see Chapter 1 of USDA 1994.*

permit from [redacted] (ORS 498.012). The law, however, does require the landowner to notify [redacted] immediately of the methods used, and species and number of animals taken.

In Oregon, black bear and cougar management is the responsibility of the [redacted]. However, the current MOU and Cooperative Agreement between the [redacted] and ADC authorizes ADC to independently respond to livestock damage caused by black bear and cougar. The [redacted] is then notified within 24 hours of any action taken to resolve the problem. Generally, either the [redacted] or ADC receives requests to handle wildlife damage to livestock. The [redacted] 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.

[redacted]

Coyotes are not protected in Oregon and are classified as predatory animals under ORS 610, administered by the ODA. The [redacted] 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 [redacted] 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 [redacted] currently has a MOU, Cooperative Agreement, and Annual Work Plan with ADC. These documents establish a cooperative relationship between ADC and [redacted], 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 [redacted]

The Forest Service and [redacted] have the responsibility to manage federal lands for multiple uses including livestock grazing, timber production, recreation and wildlife habitat, while recognizing the state's authority to manage wildlife populations. Both the Forest Service and [redacted] 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 Directors Office in Portland, Oregon.

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.

National Environmental Policy Act.

Environmental documents pursuant to NEPA must be completed before work plans consistent with the NEPA decision can be developed and implemented. Before 1993, each National Forest (and occasionally individual

Ranger Districts) and each [redacted] District would prepare its own NEPA document. This resulted in different requirements and procedures for different agencies, and omitted analysis of ADC activities on private lands. This EA, with ADC as the lead agency, is the first time that all land classes under Cooperative Agreements, Agreements for Control and ADC Annual Work Plans will be analyzed in a comprehensive manner.

ADC also coordinates specific projects and programs with other agencies. The purpose of these contacts is to coordinate any wildlife damage management that may affect resources managed by these agencies or affect other areas of mutual concern. Federal agencies that request ADC assistance to protect resources under their jurisdiction are responsible for NEPA compliance. For example, the USFWS would be responsible for NEPA compliance regarding protection of endangered species.

Endangered Species Act (ESA)

It is federal policy, under the ESA, that all federal agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). ADC conducts Section 7 consultations with the USFWS to use the expertise of the USFWS to ensure that "any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species. . .Each agency shall use the best scientific and commercial data available" (Sec.7(a)(2))

Migratory Bird Treaty Act

The Migratory Bird Treaty Act provides the USFWS regulatory authority to protect species of birds that migrate outside the United States. ADC cooperates with the USFWS to avoid significant impacts on migratory birds.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

FIFRA requires the registration, classification, and regulation of all pesticides used in the United States. The Environmental Protection Agency (EPA) is responsible for implementing and enforcing FIFRA. All chemical methods integrated into the ADC program in the District are registered with and regulated by the EPA and/or the ODA, and used by ADC in compliance with labeling procedures and requirements.

National Historic Preservation Act (NHPA) of 1966 as amended

The NHPA requires: 1) Federal agencies to evaluate the effects of any federal undertaking on cultural resources, 2) consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings.

1.7 Preview of the Remaining Chapters in this EA.

The remainder of this EA is composed of 4 chapters and appendices. Chapter 2 discusses and analyzes the issues and affected environment. Chapter 3 contains a description of each alternative, alternatives not considered in detail, mitigation and standard operating procedures. Chapter 4 analyzes the environmental impacts associated with each alternative considered in detail, and reviews and determines consistency with Forest Service Land and Resource Management Plans (LRMPs).

DRAFT

2.0 CHAPTER 2: NORTHWEST ADC DISTRICT ISSUES

INTRODUCTION

Chapter 2 contains a discussion of the issues, including those that will receive detailed environmental impacts analysis in Chapter 4 (Environmental Consequences), those that were used to develop mitigation measures and standard operating procedures, and those that will not be considered in detail, with rationale.

The Northwest ADC District in Oregon has a diverse economic base and is located in a densely populated portion of the state. Sixteen counties in the district encompass 17,932 square miles (18.4% of the state land mass) with 66% of the state's population at 1,961,700. For the most part, the district comprises both large and small ranches and a mixture of metropolitan and small communities along with diverse agricultural holdings. Major industries in the district include tourism, forest products, fishing, technology transfer, food processing, recreation, transportation, heavy manufacturing and agriculture (Keisling, 1993).

2.1 Issues Used in the Development and Analysis of the Alternatives

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

Issue 1. The potential for the ADC take of target animals to cause their populations to decline, when added to other mortality.

Issue 2. Effectiveness of the ADC Program

Issue 3. Selectivity of ADC control methods.

Issue 4. Potential for the incidental take of T&E and other nontarget species.

Issue 5. Economic impacts of ADC activities on livestock production and wildlife related activities.

2.2 Issues Used To Develop Mitigation for all the Alternatives

Issue 1. Wildlife Damage Management in Public Lands.

Issue 2. Humaneness of Methods used by ADC.

Issue 3. Public safety concern for ADC use of chemicals and other methods.

Issue 4. Historic Preservation/American Indian Concerns - Cultural Resources

Issue 1 Wildlife Damage Management on Public Lands

A number of different types of areas exist on Federal public lands within the District which currently have a special designation and/or require special management consideration. These include wilderness areas (WAs) or primitive areas (PAs), Wilderness Study Areas (WSA's), research natural areas (RNA's), and wild and scenic rivers. The special management required for these different areas varies considerably by designation, land administrator, and are governed by different legal mandates. Currently, no work is proposed in special management areas.

Wildlife damage management on public lands in the District is proposed to be conducted only in very limited instances, when and where a specific need is identified, only when allowed under the provisions of the specific management area designation, and within those restrictions as identified by the land managing agency. District ADC activities on public lands historically have been a very minor part of the overall ADC program. Restrictions on WDM activities (that could be proposed in the future) in special management areas are listed in Chapter 3 under Mitigation. ADC activities on specific grazing areas will follow 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.

Currently, multiple use lands under the jurisdiction of Forest Service and [redacted] are the only Federal lands that could be affected by the proposed action.

WDM is proposed to be conducted on Federal lands in the following areas within the District:

- [redacted] County.
- [redacted] (specific allotments)
- Limited areas on the [redacted] located in [redacted] County adjacent to private lands.
- Limited areas in the [redacted] District in [redacted] adjacent to private livestock production areas.

Any unforseen proposals on Federal lands that fall outside of the evaluation criteria of this EA may require additional consideration and coordination for compliance with NEPA and other regulations and policies.

The District consists of a mix of Federal, State, private, county and municipal lands along with American Indian Trust lands. Exact acreage of all land classes is difficult to obtain, however, we estimate that there are more than 10 million acres total in the District with several million acres under the jurisdiction of the Forest Service and [redacted]. Additionally, American Indian Tribes are entrusted with managing Indian Trust lands in the District. Chapter 1 discusses acreage within the District where ADC currently has Agreements for Control. Currently, there are several special management areas in the District which include designated wilderness and primitive areas, wilderness study areas (WSA), and wild and scenic rivers. Of these, ADC has not received requests from permitted livestock producers to conduct WDM. The Ochoco, Deschutes, Mt. Hood, Siuslaw, and Willamette National Forests in the District have permitted grazing allotments. The District ADC program has not received requests from permittees to protect livestock on these public lands except on specific sheep allotments on the [redacted] NF and the [redacted].

Issue 2 Animal welfare and humaneness of methods used by ADC.

The issue of humaneness, as it relates to the killing or capturing of wildlife is an important and complex issue that can be interpreted in a variety of ways. Humaneness is a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The issue of humaneness has two aspects in relation to ADC's proposed action.

First, animal welfare organizations are concerned that some methods used to manage wildlife damage expose animals to unnecessary pain and suffering. Kellert, S. R. and J. K. Berry (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.

Second, 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 (Glosser J. W. 1993). Predators frequently do not kill larger prey animals quickly, and will often begin feeding on them while they are alive and still conscious (Wade and Bowns 1982).

Thus, the decision-making process involves tradeoffs between the above two aspects of humaneness. An objective analysis of this issue must consider not only the welfare of a wild animal caught in a leghold trap, but also the welfare of the domestic animals that may continue to be injured or killed if the leghold trap were not being used. The challenge in coping with this issue is how to achieve the least amount of animals suffering with the constraints imposed by current technology and funding.

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 ... (AVMA, 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.

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.

Issue 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. However, chemical methods currently being used by ADC have high degree of selectivity and posed little hazards to the public and pets when used in a professional and safe manner. Currently, the use of toxicants 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, Appendix P).

Issue 4 Historic Preservation/American Indian Concerns - 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. The Oregon Legislature approved Senate Bill 61, signed in 1992, which sets similar requirements for burial protection and Tribal notification with respect to American Indian burials discovered on state and private lands in Oregon.

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 , C. S. and Sven Liljeblad. 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:

Confederated Tribes of the Warms Springs Reservation of Oregon
Confederated Tribes of Siletz
Confederated Tribes of Grand Ronde

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. Because no response was received from any tribe during the initial scoping, subsequent letters requesting tribal contacts were sent to each tribe immediately prior to receiving the draft.

Concurrence relative to the proposed action has been received from the Oregon State Historic Preservation Office (SHPO) on compliance with the National Historical Preservation Act. In most cases, wildlife damage management has little potential to cause adverse effects on sensitive cultural resources. The areas where wildlife damage management would be conducted are small and pose minimal ground disturbance. There were no areas of special concern identified by the tribes or SHPO. However, standard mitigation measures developed to avoid significant impacts on cultural resources are listed in Chapter 3.

2.3 Issues Not Considered In Detail With Rationale

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. 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).

3. Livestock losses are a tax "write-off"

There is a belief that livestock producers receive double benefits by having a partially publicly funded program to resolve predation problems and also to receive deductions as a business expense on tax returns. The Internal Revenue Service tax code (IRS Revenue Code, Section 1245, 1281) does not allow for livestock losses to be "written off" if the killed livestock was produced on the ranch. Many ewes and cows are added to herds as young livestock are replaced for breeding stock, and if lost to predation they can not be "written off" since they were not purchased. These factors limit the ability of livestock producers to recover against economic losses. Producers do not receive double benefits by having a Federal program to manage wildlife damage and Federal tax deductions for predation losses.

4. 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.

5. 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.

6. 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 [redacted], 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).

7. Chemical control should be banned

During public involvement, comments were made that toxicants should not be used to conduct WDM. ADC only uses toxicants that have been registered by the EPA under provisions of the FIFRA. A decision to ban chemicals for WDM is outside the scope and authority of ADC. ADC may elect not to use chemicals, but those

that are registered for use in Oregon are an integral part of IWDM and their selection for use follows criteria in the ADC Decision Model.

2.4 Additional Issues not Considered Because They are outside the Scope of this Analysis

1. ADC should monitor and evaluate nonlethal practices implemented by livestock producers.

The Oregon ADC program does monitor nonlethal practices implemented by livestock producers. The ADC Specialists use the MIS to document those methods used by producers.

2. ADC should commit maximum funds for nonlethal research.

The ADC National Wildlife Research Center (NWRC) conducts nonlethal research on an ongoing basis. Funding increases have been allocated to the NWRC in an effort to develop new methods and improve existing nonlethal techniques.

3. Livestock should be removed from the public lands.

ADC has no management authority for grazing on public lands.

4. What was the distribution of predators prior to predator control activities and how has control and livestock production changed it ?

Historical impacts from land and resource management practices are outside of the scope of this evaluation.

5. What is ADC's impact on hunting and poaching ?

Chapter 4 discusses ADC impacts on wildlife populations. Because ADC does not significantly impact any game species, it would not impact hunting opportunities. ADC is not a game management agency, but does work closely with the [redacted], who is the responsible agent for these issues.

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. Six alternatives and one option were recognized, developed, and analyzed in detail. Five additional alternatives were considered but not analyzed in detail with supporting rationale. The six alternatives and option analyzed in detail are:

1) Alternative 1 - Continue the Current Northwest 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 state, county and private lands under Cooperative Agreement, Agreement for Control, and Annual Work Plans with ADC.

2) Alternative 2 - Current program (as described in Alternative 1) plus similar operational activities on Forest Service and [redacted] lands as requested: (Proposed Action). This alternative is the current program with flexibility to respond to livestock and wildlife predation on specified areas of public lands.

3) Alternative 3 - No Lethal Predator Management Program (Technical Assistance Only). Under this alternative, ADC would not conduct lethal predator management in the District except where emergency control is necessary for public safety.

4) Alternative 4 - No Wildlife Damage Management in the District. This alternative would terminate the Federal program for wildlife damage management in the Northwest ADC District.

5) Alternative 5 - A Wildlife Damage Management Program Using Mechanical Methods Only. (No Use of Chemicals). Under this alternative, predator management would be conducted with mechanical methods only.

6) Alternative 6 - Nonlethal Before Lethal Control Program. This alternative would require that livestock owners conduct nonlethal control before the initiation of lethal control.

7) Livestock Protection Collar (LPC) Option to Alternatives 1 and 2. The LPC is registered for producer or ADC use nationwide (see Appendix F FIFRA). 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

ALTERNATIVE 1 - Current Northwest ADC District Program: (No Action)

The No Action alternative is a procedural NEPA requirement (40 CFR 1502.14(d)), is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action Alternative, as defined here, is consistent with 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 state, county and private lands under MOU, Cooperative Agreements or Agreement for Control. 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 Work Plans describe the wildlife damage management that would occur. During the ADC annual planning process with [redacted] and [redacted], plans and maps are prepared which describe and delineate where wildlife damage management would be conducted and which methods would 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 [redacted] Counties, which do not have Cooperative Agreements with ADC, personnel provide only technical assistance to livestock producers when requested. ADC may also provide limited direct control work when funds are available to cover costs of the projects.

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.

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)

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

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.

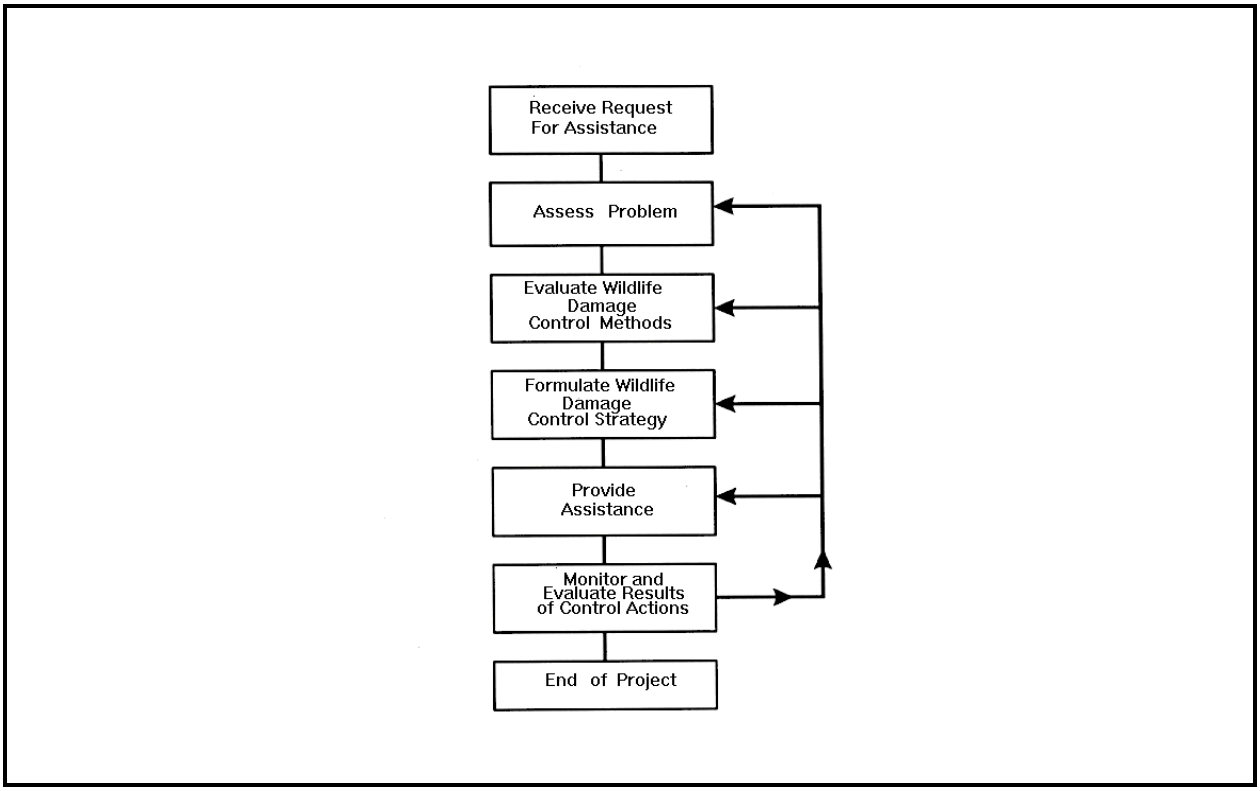

Figure 1
APHIS ADC Decision Model

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 Northwest ADC District

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 cannons, 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 may be delineated on maps by representatives of the federal agencies to identify areas where preventive wildlife damage management may occur. 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.

  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 describes those objectives or goals that the Northwest 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 species population data provided by [redacted] as compared to levels of ADC take.
  - Analyze the effectiveness of mitigation measures 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 [redacted] Regional and District Wildlife Biologists.

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 [redacted] 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 [6]:

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

[6] 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).

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 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 animal damage management 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.

   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 [redacted] 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 and safety problems 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, Callahan 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 (page 3-8).

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 certified as public pesticide applicators by the ODA, Pesticide Division; the ODA requires pesticide applicators to adhere to all certification requirements set forth in FIFRA. The EPA provides specific restrictions for each WDM chemical registered for use in the United States. Chemicals registered for control of predators are among the most selective and humane methods of control currently available. The chemical methods used and available for use in the District are:

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 FY1994, the District used 2.70 pounds of sodium cyanide, of which 0.75 pounds were field tested. (M-44 capsules "tested" are not used in lethal control, but are fired to test equipment.) In FY 1995, the District used 2.99 pounds of sodium cyanide, of which 1.44 pounds were tested. In FY 1996 the amount expended was 3.31 pounds, with 1.07 pounds being tested. (MIS 1994, 1995 and 1996.)

   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). When in contact with moisture, sodium cyanide releases hydrogen cyanide, the actual toxicant.

   The M-44 cyanide ejector is a selective device used for 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). The specific end-use formulation of the toxicant is in the M-44 ejector device. When pulled, the spring-activated mechanism ejects dry NACN mixture into the mouth of the target species, causing death through the inhalation of the toxic fumes. Primary nontarget hazards exist with animals other than targets occuring in the areas where they can be attracted to the scent used to lure target animals. Common nontarget animals are dogs and fox. No secondary poisoning results from use of sodium cyanide capsules (see USDA, 1994, Appendix P).

   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 [redacted] or Forest Service multiple use objectives. ADC personnel comply with the EPA label and 26 use restrictions (see USDA 1994, Appendix Q). In 1994, 353 problem coyotes were killed in the District with the M-44, accounting for about 33% of the coyotes taken by all methods(MIS 1994). In 1995, 407 coyotes were killed with the M-44, accounting for about 31% of the total coyotes taken by ADC methods (MIS 1995).

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). No secondary hazards exist with the denning gas cartridge. In 1994, 1 coyote den was fumigated and in 1995 no dens were fumigated in the District..

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 of 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 protection or management. 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. No Ravens were killed in the District in 1995 (MIS 1995).

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. All 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™ is primary immobilizing agent used by ADC, and is approved by the Food and Drug Administration (FDA) (NADA 106-111). Telazol is a rapid acting, non-narcotic, non-barbiturate injectable anesthetic agent having a wide margin of safety. Telazol produces unconsciousness known as "dissociative" which in general terms means reflexes needed to sustain life (breathing, coughing, swallowing, etc.) are not affected by the drugs. This agent is 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, temperment, 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.

   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).

ALTERNATIVE 2 - Current Program Plus Similar Operational Activities On U.S. Forest Service and [redacted] Lands As Requested (Proposed Action)

This alternative is the current program as described in Alternative 1, with additional approval for ADC to operate on specific Forest Service and [redacted] lands within the District at the request of the livestock permittee or [redacted] (Refer to Chapter 2, 2.2.1). All wildlife damage management would be outlined in ADC Work Plans based on close cooperation and coordination with the Forest Service and [redacted]. Program activities would be conducted after concurrence with the appropriate agencies described in Alternative 1. Maps of the [redacted], Siuslaw National Forest and the [redacted] showing the areas where wildlife damage management will be conducted may be viewed at the NW ADC District Office or respective land management agency office.

Integrated Wildlife Damage Management: Same as Alternative 1 with the addition of activities on Forest Service and [redacted] lands under the provisions of the MOUs between APHIS-ADC and the Forest Service.

Management Methods and Restrictions: Same as Alternative 1 with the addition of activities on Forest Service and [redacted] lands under the provisions of the MOUs between APHIS-ADC and the Forest Service.

Use of Chemical Toxicants: Same as Alternative 1 with the addition of activities on Forest Service and [redacted] lands under the provisions of the MOUs between APHIS-ADC and the Forest Service.

ALTERNATIVE 3 - No Lethal Wildlife Damage Managaement (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 3 were 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).

ALTERNATIVE 4 - No ADC Program

This alternative would eliminate all 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).

ALTERNATIVE 5 - A WILDLIFE DAMAGE MANGEMENT PROGRAM USING MECHANICAL METHODS ONLY (NO CHEMICAL CONTROL)

This alternative would only provide for wildlife damage management with mechanical methods only as described in Alternative 1. These include producer employed methods, such as animal husbandry, habitat modification, and animal behavior modification. Producers would be encouraged to use these methods, based on the level of risk, need and practicality. ADC would conduct wildlife damage management through the use of leghold traps and cage traps, neck and foot snares, ground shooting, aerial hunting, denning (without the use of gas cartridges), and by using hunting dogs where signed *Agreements for Control on Private Property* are in place, or on Federal lands according to the provisions of the ADC Work Plans. For technical assistance requests, cage traps could be

recommended or distributed to the requester for use in resolving problems caused by small mammals.

ADC would not use sodium cyanide (M-44), the gas cartridge for denning, the LPC, DRC-1339 or any immobilizing or euthanizing agents under this alternative.

ALTERNATIVE 6 - NONLETHAL BEFORE LETHAL CONTROL PROGRAM

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 3-6 under producer implemented methods. Verification of the methods used would be the responsibility of ADC. ADC personnel do collect information concerning producer-employed methods. However, 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 initiation of lethal controls. Thus, only the presence or absence of nonlethal methods can be evaluated. The mechanical and chemical methods would apply as described in Alternative1, where appropriate, once the criteria for nonlethal control have been met. Consideration of wildlife needs would not be included with the producer implemented methods, nor would ADC base control strategies on the needs of designated wildlife for protection from predation.
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 when practical recommends or uses them before recommending or using lethal control methods. The important distinction between the Nonlethal Before Lethal Control 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 or reduce wildlife damage within reasonable economic limits for specific target species and resource combinations (USDA, 1994).

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 [redacted] 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 discriminatingly 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 LPCs (for more detail see Appendix B).

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 collared 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).

3.3 Alternatives Considered But Not Analyzed In Detail With Rationale

Five alternatives were considered but not analyzed in detail. These were:

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.

Bounties

Payment of funds for killing predators (bounties) suspected of causing economic losses is not supported by Oregon State agencies such as [redacted] and [redacted]. 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.
- There are no appropriated funds to support a bounty system.

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 [redacted] or [redacted]. This alternative will not be considered by ADC in detail because:

- ADC opposes eradication of any native wildlife species.
- [redacted] opposes eradication of any native Oregon wildlife species.
- [redacted] 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, [redacted] has the authority to increase hunting seasons and hunter tag quotas; [redacted] 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.

The Humane Society of the Unites 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 ADC activities.

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.

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.

3.4 Mitigation and Standard Operating Procedures For Wildlife Damage Management Techniques

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 pan 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 measures are identified by the USFWS and implemented to avoid impacts on 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 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 [redacted].
- Decisions to relocate or kill problem bear and cougar are made by the [redacted] District Biologist. If the decision is to relocate and ADC is requested to assist, District ADC personnel relocate the animal into areas designated by [redacted].
- At least two days prior to the opening of the bird hunting season, M-44 devices will be removed from Federal lands during the established bird hunting seasons . Popular bird hunting areas will be identified by [redacted] during the annual work planning session.
- 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.

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.

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

- District activities are directed towards 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).

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 pan 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.

Activities in Public Lands ([redacted] and National Forests)

- Wildlife damage management will be conducted only when and where a need exists.
- Wildlife damage management follows guidelines as specified in the ADC Annual Work Plan, developed in coordination with cooperating agencies.
- Wildlife damage management activities may be restricted in big game wintering areas due to special closures.
- Wildlife damage management is conducted according to national level MOUs signed with [redacted] ([redacted]) and FS (1993).

Humaneness of methods used by ADC

- Research continues to improve the selectivity and humaneness of management devices.
- Pan tension modifications are in use which are designed to exclude nontarget animals.
- Breakaway snares are being 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 mitigate pain are used.

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.

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 measures to protect Federally listed T&E species.
- ADC consulted with the USFWS on the impacts of the program in the District and adopted reasonable and prudent measures related to the Northern Bald Eagle in the District. The terms and conditions implementing the reasonable and prudent measures 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; and
  - 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)

- In areas where the FWS has indicated that the Columbia white-tailed deer occur, ADC would use breakaway and modified snares and limit use of snares to avoid incidental capture.
- ADC has agreed to procedural conditions that will insure ongoing consideration of T&E species in relationship to program activities in the District.
- ADC consulted with the [redacted] regarding state-listed and sensitive species and will integrate those

mitigation measures proposed during the appropriate annual work planning session.

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 archeological interests.
- This EA will be provided to the American Indian tribes in Draft form to determine if all cultural issues have been addressed.
- Impacts on cultural and historic resources will be evaluated on an annual basis during the Work Planning process.

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 [redacted] and the Forest Service when ADC is conducting wildlife damage management on public lands administered by these agencies. The [redacted] 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. The ADC program maintains close coordination with the [redacted] and [redacted] 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 [redacted] and Forest Service delineate expectations for wildlife damage management on public lands administered by these agencies. ADC Annual Work Plans are developed in coordination with [redacted] Districts and National Forests to detail the activity, target species, and mitigation measures to be implemented on public lands where wildlife damage management is needed.

4.0 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter consists of the analysis of the environmental consequences of each alternative and an assessment of the consistency of alternatives with existing management plans.

4.1 Environmental Consequences and Issues Analyzed in Detail

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.

Issue 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 [redacted]. "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?

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

In FY 1995, coyotes were responsible for about 81% of the request for assistance in damage to all protected livestock in the District. From reported losses collected in FY 1993, coyotes were responsible for 82 % 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 (80%), lambs (91%), cattle (80%), calves (99%), and poultry (71%). The total reported loss to coyotes in the District was valued at $261,146 (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.

Localized coyote populations could be affected by the current wildlife damage management program. However, the ADC program currently operates on only 17 % of the District (ADC MIS 1995) , thus the impact of coyote removals on the District wide population would at most apply to this percentage of the land. Coyote densities, however, have probably increased because of expanding land modifications and uses ideally suited for coyote population expansion. Urban populations of coyotes have expanded in most portions of the Willamette Valley and probably are increasing . According to Young (1951) coyotes did not exist in Western Oregon until after 1900, gradually expanding into the Willamette Valley.

Estimating the District wide coyote population requires extrapolation of data from many sources. Coyote population studies in Oregon and other western states suggest densities between 0.2 and 1.5 coyotes per square mile (USDI 1979). No recent published data exists that estimates population densities of coyotes for western Oregon's Willamette Valley or surrounding Douglas Fir forests and logged "edge" habitat.

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[7]). Ozaga and Harger (1966), Edwards (1975), and Danner (1976) however, observed a

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

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. Many authors have estimated coyote populations throughout the west and elsewhere (Pyrah 1984, Camenzind 1978, Knowlton 1972, Clark 1972, USDI 1979, [redacted] 1980). The total coyote population in Oregon and in the District can be estimated by using scientific modeling. [redacted] 1980 estimated the statewide coyote population at 147,000 and in 1995 at 160,000. These estimates are precise enough for year to year comparisons, but do indicate that the coyote populations in Oregon are stable. In 1995, [redacted] estimated that there is approximately 16,836 mi^2 of coyote habitat in the District. Recent work by Keister (1994) and Knowlton (1972) and others suggest that an average density of 2.0 -4.0 coyotes/mi^2 is an accurate estimate for the District's ideal coyote habitat, yielding an estimated population of 43,000 coyotes.

Table 4-1
1995 Coyote Harvest Data
Allowable Harvest = 70%

	Northwest District	Oregon
Est. Population	43,000	160,000
ADC Take	1,285	6,842
Other Take	310	5,144
Total Take	1,595	11,986
ADC Take-% of Population	3.0%	4.3%
Other Take-% of Population	0.7%	3.2%
Total Take-% of Population	3.7%	7.5%

Coyote Population Impact Analysis

Data on ADC coyote kill is available for 1996, however, comparative sport harvest and other take data in Oregon are not available. Therefore, 1995 data will be used to examine state and District wide potential impacts on coyote populations. The 1995 statewide coyote population estimate, made by [redacted], and the 1995 District estimate will be used as a baseline. It should also be noted

that the level of "Other Take" reported to [redacted] may be low because reporting coyotes killed is not required. Table 4-1 displays the known information about coyote abundance and harvest in 1995.

Connolly and Longhurst (1975) determined, "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 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 significantly affect the coyote population in Oregon or the District because the "Total Take" of coyotes in the District is about 3.7% (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 1,285 coyotes in FY 1995 which is a higher take than 1994. This will not change the determination of "low magnitude."

Table 4-1a
Northwest ADC District
Coyote Reproduction Model

Resident Population	Yearlings	Adults	Total
Population Age Structure	17,200	25,800	43,000
No. Females	8,600	12,900	21,500
% Breeding Females	10	70	
No. Breeding Females	860	9,030	9,890
Ave. Pups/Litter	4	6	
Pups Born	3,440	54,180	57,620
Maximum Annual Population	4,300	63,210	67,510

Computation of population figures for Table 4-1a is based on The Effects of Control on Coyote Populations, 1975, University of California, and Modeling the Utah Coyote Population--Notes, 1988. These figures indicate that only 25% of the annual recruitment is needed for mortality replacement and dispersal. Considering the combined annual take of coyotes by ADC (1,285) and other take (310), 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 prey on livestock, damage property, threaten human safety and create nuisance situations. Livestock losses to bear have been infrequent in the District.

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 (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 (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 1 to 4 cubs, with 2 young per litter being most common. Survival rates of cubs, 1 year-old, and 2 year-old bears in a hunted population in Oregon were 86.2 percent, 78.7 percent, and 76.8 percent, respectively (1993a).

Table 4-2
1995 Black Bear Harvest Data
Allowable Harvest = 20%

	ADC FEIS 1987 (Oregon)	Northwest 1995	Oregon 1995
Est. Population	20,000	8,000	25,000
ADC Take	129	22	98
Other Take	954	85	686
Total Take	1,083	107	784
ADC take % of Population	0.6%	0.3%	0.4%
Other Take % of Population	4.8%	1.0%	2.7%
Total Take % of Population	5.4%	1.3%	3.1%

The density of black bears is difficult to determine because of the species secretive and elusive nature. Black bear density varies between 0.3 and 3.4 bear/^{mi}, depending on habitat. Densities range from 0.9 bears/^{mi} in western Oregon to 0.3 bears/^{mi} 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 (1993a). The current Oregon statewide population is estimated to be 25,000 animals occupying about 40,000 mi^2 of habitat (1993a). Most of the Northwest District is considered to be high density black bear habitat. The only exception west of the Cascades is the floor of the Willamette Valley (low density). East of the Cascades, the high desert sagebrush habitat of Counties is considered low density habitat. estimates that 10,380m^2 of black bear habitat is found in the District, and in 1994 this habitat supported an estimated population of 8,000 (1996) or approximately 32% of the black bear population in Oregon. This estimate is based on literature review and extrapolation of bear densities based on the Western Oregon Bear Study and habitat types. Statewide, the estimated black bear population has remained at about the same level reported by USDA (1994) and .

Black Bear Population Impact Analysis

The most recent data on ADC black bear kill, and the comparative sport harvest and other take data from [redacted] is for 1995. Table 4-2 presents District and Statewide black bear harvest data.

The allowable harvest (kill) level for black bear described in USDA (1994, Table 4-2) is 20% of the population. [redacted] (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.

[redacted] (1993a) analyzed black bear sex ratios and age structures, concluding that the current harvest, whether by hunting, [redacted] or ADC, or unknown, is not causing a decline in bear populations. The data indicate (Table 4-2) 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 1995, the District "Total Harvest" was 22 bear or 0.3 % 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 [redacted] in resolving black bear damage, protecting human safety and in meeting [redacted] black bear program goals. ADC killed 56 black bear statewide in 1994 and 98 in FY 1995. Of the total killed in FY 1995, only one was taken to protect livestock; the remainder were taken to protect timber resources (Note: protection of timber resources are outside the scope of this EA; black bears taken are reported only to show total take). 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 1994 to 1995. 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 in the District reported that 10 adult sheep, 6 lambs, 1 cow, 1 adult horse and 1 calf were killed by cougars in 1993. These reported losses were valued at $ 2,333 (MIS, 1993). [redacted] reports that complaints of cougar predation on livestock increased 580% between 1986 and 1991 ([redacted] 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, and most commonly, mountain lion ([redacted] 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. Most biologists feel that western Oregon's most productive cougar habitat is the Douglas fir-trailing blackberry type with old growth being a desirable component of the 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 ([redacted] 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. Since cougars are territorial animals, the rate of population growth 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. However, since cougars are highly territorial, and chase or kill other cougar in their territory, populations tend to stabilize. 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 (1993b).

The density of cougar populations is difficult to determine because of the species secretive and elusive nature. 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). (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 estimate of 3,440 cougars (Personal communication, Whittaker 1996) . These cougar population estimates have been based on literature review and extrapolations of cougar densities based on Oregon habitat types and two cougar studies conducted in NE and SW Oregon.

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.

Table 4-3
1995 Cougar Harvest Data
Allowable Human Harvest = 13%

	Northwest Dist.	Oregon
Est. Population	250	3,440
ADC Take	5	22
Other Take	1	31
Total Take	6	53
ADC Take - % of Population	2%	0.6%
Other Take - % of Population	0.4%	0.9%
Total Take - % of Population	2.4%	1.5%

Cougar Population Impact Analysis

The allowable annual harvest level for cougar, projected by the USDA (1994, Table 4-3) is 30% of the population, however, the Oregon cougar population model indicates that cougar populations will remain stable with human caused mortality of 13% (Personal communication, Keister 1996). Because it is more conservative and reflects Oregon studies, the 13% harvest level will be used for our analysis. Table 4-3 displays information about cougar numbers and harvest during 1995.

The available data indicate that the total harvest statewide for 1995 for Oregon was 31 animals. In 1995, ADC killed 22 problem cougars statewide. No nontarget cougars were killed and 3 non-target cougar were captured and released. These figures are well within the parameters for a

determination of "low magnitude" of impact (USDA 1994).

Approximately 12,973 square miles in the District are considered to be cougar habitat. Based on 1 cougar per 100 square miles for low quality habitat in Northwestern Oregon and 3.5 cougar per 100 square miles for medium quality habitat in North Central Oregon it is estimated that approximately 250 cougar inhabit the District ([redacted], 1996). There is no indication that the cougar population in the District has declined.

In 1995, ADC killed 5 problem cougars in the District. The "Total Take" statewide was 53 animals, or 1.5% of the total estimated population. This is within the parameters of "low magnitude" of impact. [redacted] (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 40 head of various livestock valued at $ 1,710. ADC verified losses in 1994 and 1995 were $ 3,114 and $ 785 respectively. All reported losses for FY94 and 95 amounted to $4,282.

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 (Crowe 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, [redacted] 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. In 1996 [redacted] estimated there were 13,972 mi^2 of bobcat habitat in the District. Based on [redacted]'s estimate of .59 bobcats per mi^2, a current population estimate of 8,243 bobcats is calculated for the District.

Bobcat Population Impact Analysis

State-wide population data are not available for 1995. The 1994 statewide estimated population was 76,000. The 1995 "Total Take" of bobcats in the state was 1,385 animals. The "Other Take" was 1,329 animals statewide and 241 in the District. The 1995 ADC harvest of bobcats was 56 animals statewide and 13 in the District.

The allowable harvest for bobcats in the USDA (1994) was established at 20% of the total population. The information available for 1995 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 1995, ADC Specialists released an additional 42 target and nontarget bobcats. In FY 1995, District personnel captured 28 bobcats of which 15 were released and 13 were killed.

Table 4-4
1995 Bobcat Harvest Data
Allowable Harvest = 20%

	Northwest	Oregon
Est. Population	8,200	76,000
ADC Take	13	56
Other Take	241	1,329
Total Take	254	1,385
ADC Take - % Population	0.16%	0.07%
Other Take - % of Population	2.9%	1.7%
Total Take -% of Population	3.1%	1.8%

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 $ 1,986.

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). 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). 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 Oregon is 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 are not available. In 1980, however, [redacted] estimated there were 20,300 animals, and an average density of 1.9 red fox/mi^2 of habitat. In 1995 [redacted] estimated there was 6,785 mi^2 of red fox habitat district-wide with an estimated population of 5,360 animals, and an average density of .79 red fox/mi^2 of habitat. These estimate will be used to determine ADC's impact on red fox populations.

Red Fox Population Impact Analysis

During 1995, 30 red fox were captured and 3 released. In FY 1994, 66 red fox were captured and 1 released. The "Total Take" and “other take”of red fox in 1995 statewide and in the District is shown in Table 4-5.

USDA (1994) determined the allowable harvest level for red fox to be 70% of the total population. The data for 1995 showed the ADC state-wide kill to be less than 0 .5 % of the total estimated population and for the district 0.5 % 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.

Table 4-5
1995 Red Fox Harvest Data
Allowable Harvest = 70%

	Northwest District	Oregon
Est. Population	5,400	20,300
ADC Take	27	65
Other Take	32	146
Total Take	59	211
ADC Take - % of Population	0.5%	0.3%
Other Take - % of Population	0.6%	0.7%
Total Take - % of Population	1.1%	1.0%

Raccoon Population Impact Analysis

Current state wide population estimates for raccoon in Oregon are not available. In 1980, however, [redacted] estimated there were 88,000 animals, and an average density of 3.5 raccoon/^{mi} of habitat in the state. In 1995 [redacted] estimated there was 13,752/ ^{mi} of raccoon habitat district-wide with an

estimated population of 48,000 animals, and an average density of 3.5 raccoons/^{mi} of habitat. These estimates will be used to determine ADC's impact on raccoon populations.

The 1995 data for the District show that 125 raccoons were killed and 132 released. Statewide, 182 were killed and 141 released. These numbers include raccoons captured in response to all damage and nuisance complaints. The "Total Take" and "other take" of raccoons in 1995 statewide and in the District is shown in Table 4-6. The allowable harvest level for raccoons found in USDA (1994) was established at 49% of the total population. The information available for 1995 shows the ADC take to be 0.26% of the 1995 estimated population in the District.

Table 4-6
1995 Raccoon Harvest Data
Allowable Harvest Level = 40%

	Northwest	Oregon
Est. Population	48,000	Unknown
ADC Take	125	182
Other Take	2,053	3,014
Total Take	2,178	3,196
ADC Take - % of Population	.26%	Unknown
Other Take - % of Population	4.3%	Unknown
Total Take - % of Population	4.5%	Unknown

Striped and Spotted Skunk Population Information

Skunks primarily cause odor problems around homes, transmit diseases such as rabies to humans and domestic pets, and prey on poultry. The problems caused by odor and disease are beyond the scope of this analysis, however our reporting system does not allow the take from odor or disease problems to be separated from the take for poultry predation. Therefore, the ADC kill may appear higher than warranted by the level of predation on poultry. Verified poultry losses due to predation by striped and spotted skunks in the District in FY 1995 were 8 domestic ducks and 115 chickens valued at $300.

The striped skunk is the most common member of the *Mustelidae* family. Striped skunks have increased their geographic range in North America with the clearing of forests, however there is no well-defined land type that can be classified as skunk habitat (Rosatte 1987). Striped skunks are capable of living in a variety of environments, including agricultural lands and in urban areas.

The home range of striped skunks is not sharply defined over space and time, but is altered to accommodate life history requirements such as raising young, winter denning, feeding activities, and dispersal (Rosatte 1987). Home ranges reported in the literature averaged between 0.85 to 1.9/mi^2 striped skunks in rural areas (Houseknecht 1971, Storm 1972, Bjorge et al. 1981, Rosatte and Gunson 1984). The range of skunk densities reported in the literature was from 0.85 to 67/mi^2 (Jones 1939, Ferris and Andrews 1967, Verts 1967, Lynch 1972, Bjorge et al. 1981). Many factors

may contribute to the widely differing population densities. Type of habitat, food availability, disease, season of the year, and geographic area are only a few of the variables (Storm and Tzilkowski 1982).

Spotted Skunk Population Information

The geographic range of the western spotted skunk extends from central Mexico through the western United States to British Columbia (Rosatte 1987). They prefer open lowlands but are equally at home in mountainous country and in a variety of habitats including farmyards, wetlands and chaparral (Orr 1943, Baker and Baker 1975). Few studies have been published on the home range, population density and mortality of spotted skunks. Crabb (1948), however, found the western spotted skunk in Iowa occupied a home range of about 160 acres at densities of 5.7/ mi^2. He also stated that spotted skunks are nomadic, traveling up to 3 mi/night, do not occupy a home range, and do not defend a territory.

Striped and Spotted Skunk Population Impact Analysis

There are no [redacted] 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 of striped skunks in the District is about 16,000. During 1994, District personnel killed 50 skunks and in 1995, 58 were captured and 3 released. This represents less than 0.4% 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.

Blackbirds/European Starlings Population Information

The predominant members of the blackbird group (Subfamily Icterinae) present in the District include red-winged, Brewer's blackbirds and brown-headed cowbirds.

The European starling (Family Sturnidae) is common in the District during the entire year. Large concentrations of starlings and blackbirds occur near dairies, livestock feeding operations, food processing facilities, berry fields and vineyards. 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 1995, District personnel documented over 800 starlings and blackbirds killed, while over 4,500 were killed statewide. 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.

Alternative 2. - Current Program (as described in Alternative 1) plus similar operational activities on Forest Service and [redacted] 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 would 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 would probably not exceed 5% of the current program. Under the current program as described in Alternative 1, District ADC field personnel are working under strict funding and work-time restrictions. Alternative 2 merely provides District ADC personnel an opportunity to respond to additional damage complaints on public lands not previously authorized or available. A 5% increase, based on 1995 data, would mean the kill of an additional 65 coyotes, 1 black bear and 1 cougar. At the 5% increase kill level, the "Total Take" of coyotes in the District would be about 4.2% of estimated population and remain below the 70% harvest level for a determination of "low magnitude" of harvest.

A 5% increase in black bear killed in the District would insignificantly 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 5% 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. However, a 5% increase would continue to have a low magnitude impact.

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

Alternative 3 - No Lethal Wildlife Damage Management Program (Technical Assistance Only) and Alternative 4.-No ADC Program

Both Alternatives 3 and 4 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. There would be increased 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 Program 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 [redacted] and Forest Service. We assume that a state agency such as [redacted] or [redacted] 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.

Alternatives 3 and 4 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.

Alternative 5 - Wildlife Damage Management Program Using Mechanical Methods Only (No Use of Chemicals).

Alternative 5 would not allow the use of M-44s, LPCs, or DRC-1339 in predator damage management activities within the analysis area. While these methods are at times important in resolving damage problems, the overall numbers of animals taken by these methods would be less in comparison to the take of animals by such methods as leghold traps and aerial hunting. The use of other methods would likely have to increase to offset the loss of chemical control methods. While this might result in decreased cost-effectiveness and reduced effectiveness in resolving damage situations, it would not likely result in any impacts on wildlife populations that differed significantly from the impacts of the current program.

Alternative 6 - Nonlethal Before Lethal Control Program

As noted throughout this document, most sheep producers and many cattle producers consistently practice some form of nonlethal wildlife damage management. ADC activities under Alternative 6 would be similar to those described and practiced under the current program. The impacts on target populations of coyotes, bear, cougar and other species would be identical to those described in Alternative 1.

Livestock Protection Collar (LPC) Option to 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 can be found in Appendix P of USDA (1994). It 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.

Issue 2. Concerns About Effectiveness and Selectivity of Wildlife Damage Management Methods.

Chapter 3 included discussion about the relative effectiveness and selectivity of the various methods used by ADC and that discussion will not be repeated here. Under the current program, all methods are used as selectively and humanely as possible, in conformance with the ADC Decision Model (Slate et al. 1992) and ADC Program Directives. The selectivity of each method is based, in part, on the application of the method and the skill of the ADC Specialist, and the direction provided by ADC Directives and policies. The humaneness of each method is based on the perception of pain or anxiety caused by the method. How each method is perceived often differs, depending on the person's familiarity and perception of the issue as discussed in Chapter 2.

The selectivity and humaneness of each alternative is based on the methods employed under that alternative. ADC personnel are trained in the use of each method and are certified by the ODA as public applicators for each pesticide that is used during management activities. Effectiveness of the various methods may vary widely depending on local circumstances at the time of application. Some methods may be more or less effective or applicable depending on weather conditions, time of year, biological considerations, economic considerations, legal and administrative restrictions, or other factors. Because these various factors may at times preclude use of certain methods, it is important to maintain the widest possible selection of control tools to most effectively resolve wildlife damage problems.

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

Several of the methods employed under the current program are typically 100% selective for target species. These methods include aerial hunting, shooting from the ground, and denning. Cage trapping may capture some nontarget species, but these animals can be released unharmed. DRC-1339 for controlling depredating ravens and magpies is very selective for the target species because prebaiting and baiting procedures ensure that nontarget species are unlikely to be exposed to the baits. If by some remote chance a nontarget mammal were exposed to DRC-1339 meat or egg baits, risks are very low because of the

product's low toxicity to mammals (DeCino et al. 1966, Schafer 1981).

While the methods discussed above are typically near 100% selective in killing only the target species, other methods such as leghold traps, snares and M-44 devices are somewhat less selective. Table 4-7 shows the FY 1993-1995 cumulative number of target and nontarget animals killed in the district by these methods, and their selectivity expressed as the average percent of targets taken by each method.

ADC's use of leghold traps would be more humane, and the number of nontargets killed would be lower, if traps could be monitored at least daily. Unfortunately, the amount of territory that each ADC Specialist is responsible for, and the number of requests for assistance is such that ADC personnel are not able to monitor traps daily. ADC's trap-check interval is more often closer to 2-4 days than daily. ADC uses leghold traps with either off-set jaws or rubber-padded jaws to reduce injuries, and ADC's use of pan-tension devices makes use of leghold traps much more selective. Pan-tension devices increase the amount of weight required to set off the trap, and are successful in significantly reducing the incidence of capturing smaller nontarget species (Turkowski et al. 1984, Phillips and Gruver 1996). They are always used by ADC unless their use would preclude capture of the intended target animal(s). ADC personnel often try to reduce the need for setting traps or snares by trying to first remove problem animals by calling and shooting. If shooting is unsuccessful or not feasible, then equipment must be placed to try and resolve the problem. Nontarget animals captured in traps or snares are released whenever it is judged that they would survive after release.

As used by ADC in the District, snares are slightly less selective for target species than leghold traps. Spring-activated leg snares set for black bears and cougars are near 100% selective for the target species, but neck snares are less selective. The selectivity of snares is largely a function of how and where they are set. Breakaway snares are used to provide release of hoofed mammals that might get accidentally caught by the leg.

Use of livestock guarding dogs by sheep producers has been proven effective in preventing at least some predation losses (Green 1989), and use of guard dogs is generally perceived as a selective form of nonlethal control. But use of guard dogs may also involve deaths of target and nontarget animals. Tim and Schmidt (1989) documented that guard dogs in their study regularly killed deer fawns, and anecdotal evidence from ADC field personnel and livestock producers suggest that guard dogs sometimes kill coyote and red fox pups. Llamas have also been advocated as effective livestock guarding animals (Franklin and Powell 1994), but some degree of nontarget hazard may likewise exist from the use of llamas for this purpose. Llamas are sometimes carriers of paratuberculosis (Johne's disease) which may be transmitted

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Table 4-7
Selectivity of Leghold Traps, Snares, and M-44s
as Used by ADC in the Northwest District
FY 1993-1995, by Method

TARGET	Traps	Snares	M-44s
Black bear		73	
Coyote	1,021	1,088	1,217
Bobcat	10	12	
Raccoon	52	61	3
Red fox	17	27	103
Stripped skunk	14	16	
Opossum	48	20	3
Cougar	1	2	
Feral dog		2	1
Badger	13	1	
3-Year Total	1,176	1,302	1,327

NON-TARGET	Traps	Snares	M-44's
Feral cat	5	2	
Stripped skunk	13	7	
Gray fox	1		
Nutria	2	1	
Feral dog	1	19	15
Opossum	38	26	5
Bobcat		2	
Porcupine	2	8	
Raccoon	23	50	8
Red fox	2	9	22
River otter		1	
3-Year Total	87	125	50
% Selectivity	**93**	**91**	**96**

to native ungulates or domestic livestock (Wildlife Management Institute 1995). This disease involves a chronic wasting of the intestinal tract and associated lymphoid tissues, and there is no known cure.

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

Selectivity and effectiveness of ADC methods would be similar to that described in Alternative 1. On public lands, primary control method used to protect livestock would be identical to those selected for private lands. Due to the small amount of public lands that would be require ADC activities in the district and the shortage of personnel resources, there would not be an increased use of leghold traps, snares and M-44s. The take of target and nontarget animals would not increase because current full-time ADC field personnel would not be able to implement and maintain increased operational activities. There would not be an increased ADC field effort under this alternative unless additional funds were acquired to employ temporary field personnel to assist in offsetting the current work load. If additional field personnel were employed to respond to this increased workload, the take of target and nontarget species could increase by 5%.

Alternative 3 - No Lethal Wildlife Damage Management Program (Technical Assistance Only) and Alternative 4 - No Wildlife Damage Management in the District (No ADC Program.

Neither of these alternatives would involve the use of any control methods by ADC, so concerns about effectiveness and selectivity of methods used by ADC are not relevant. Some type of wildlife damage management would most likely be implemented by livestock producers or private predator control specialists, however, these programs could involve methods that are less selective that ADC's activities. Damage management efforts by individuals with limited training and experience would be less likely to take offending individual animals and more likely to take nontarget species.

Alternative 5- A Wildlife Damage Management Program Using Mechanical Methods Only.

This alternative would preclude the use of the M-44 and the LPC, both of which are more selective that either the leghold trap and snares. Use of traps and snares would likely increase so overall selectivity would probably be slightly reduced. The ADC Decision Model would continue to be used to determine the most appropriate method(s) to be used, but without the use of chemicals the available options and overall effectiveness would be reduced. Producer implemented nonlethal methods would remain unchanged.

Alternative 6 - Nonlethal Before Lethal Control Program.

The effectiveness and selectivity of wildlife damage management methods would not be substantially different than Alternative 1.

Livestock Protection Collar (LPC) Option to Alternative 1 and 2.

This option under Alternatives 1 and 2 would allow ADC to implement the LPC. Use of the LPC would permit ADC to be more effective by broadening the selection of control methods available and more selective in taking only target coyotes. The more often LPC use could be substituted for other methods, the more selective the program could be. Use of the LPC would be limited due to its label restrictions. Under Alternatives 1 and 2, it is anticipated that the LPC would not be used more than 25 instances per year in the analysis area and would likely result in the take of up to 20 coyotes.

Issue 3 Potentials For Incidental Take Of Threatened Or Endangered (T&E) Species, Especially The Northern Bald Eagle And Columbian White-tailed Deer.

Federally listed T&E species inhabiting the NW ADC District that could be impacted by WDM activities include the Northern bald eagle (*Haliaeetus leucocephalus)*, the Peregrine falcon (*Falco peregrinus)*, Aleutian Canada goose (*Branta canadensis leucopareia)*, and the Columbian white-tailed deer (*Odocoileus virginianus leucurus)*. Endangered species consultations with the FWS have been completed on those species for which a "may affect determination" has been made as listed in the FEIS (USDA, 1994). Where applicable, the Reasonable and Prudent Alternatives and measures for these species have been implemented. Chapter 3 lists mitigation measures and standard operating procedures that would be implemented to insure that no T&E species would be adversely affected by the program.

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.

ADC has reviewed its activities nationwide and in the District and consulted with the USFWS. The USFWS has identified the Northern bald eagle and the Columbian white-tailed deer as those Federally listed T&E species that may be affected by NW ADC District activities. ADC and the USFWS have developed reasonable and prudent alternatives where a determination of jeopardy has been made. Because of this review and consultation, ADC adopted the reasonable and prudent measures for the Northern Bald Eagle and Columbian white-tailed deer and agreed to other procedural conditions that will insure ongoing consideration of T&E species in relationship to program activities. The reasonable and prudent measures 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.

Additional measures adopted by ADC to further reduce the likelihood of capturing a Columbian white-tailed deer with leghold traps and snares are:

1) Avoid setting foot and neck snares in trails and under fences where deer activity is evident.

2) Avoid using snares from June 1 through October 1.

3) Use "break-away" snares when they become operational in ADC.

4) Modify all snare lock loop holes to limit diameter of snare.

In addition, ADC will re-initiate the consultation process with USFWS if and when the LPC is approved. ADC will work with the [redacted], Forest Service and [redacted] 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 Northwest 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 and the Columbian white-tailed deer 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 not adversely affect federally listed T&E species on Northern Bald Eagles and the Columbian white-tailed deer.

ADC also requested similar concurrence from the ODFW regarding wildlife damage management activities on State listed sensitive species. The ODFW identified the following species that they determined may be affected by ADC's proposed action along with their specific concerns:

1) White-tailed jackrabbit - This species has a limited range in Oregon and may be susceptible to leghold traps used as blind sets in travel lanes.

2) Fisher - This predatory species may be attracted to bait sets.

3) Burrowing Owl - These owls may be susceptible to den fumigants or other rodent control fumigation methods.

4) Tricolored Blackbirds - These birds may be susceptible to DRC-1339.

ADC has agreed to mitigate these concerns and will implement techniques to avoid or minimize contact with these species. Specific geographic locations of each sensitive species will be identified during the Annual Work Planning process.

It is judged that Alternative 1 is not likely to adversely affect Federally listed T&E or State-listed Sensitive Species.

Alternative 2. - Current Program (as described in Alternative 1) plus similar operational activities on Forest Service and [redacted] lands 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 and discussions with ODFW Sensitive Specie's Coordinator considered species that could be found within the District. Other than the Northern bald eagle and the Columbian white-tailed deer and the state-listed species identified above, no additional species were found on public or private lands that could be affected by the ADC program. ADC will work with the [redacted], Forest Service and [redacted] personnel during annual work planning to avoid T&E and "Sensitive" species.

It is judged that Alternative 2 would not affect Federally listed T&E or State-listed Sensitive Species in the District.

Alternative 3 - Technical Assistance Only and Alternative 4. - No ADC Program.

Since Alternatives 3 and 4 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 Alternatives 3 and 4 could result in impacts on T&E species within the District.

Alternative 5 - Mechanical Methods Only (No use of Chemicals.)

M-44s, LPC, denning fumigants and DRC-1339 could not be used under this alternative. The likelihood of impacting the Northern bald eagle and Columbian white-tailed deer is higher with mechanical methods. The FWS and ADC determined that mechanical methods such as leghold traps and snares present a higher risk than chemical methods. Modifications to techniques such as traps and snares will reduce the likelihood of any incidental take.

Alternative 6 - Nonlethal Required Before Lethal Control Program

As previously noted, Alternative 6 is nearly identical to the current program, as most producers currently employ nonlethal methods. The impacts to T/E and State-listed species would be identical to that described in Alternative 1.

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 likely affect any T&E or State-listed 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 would not likely adversely affect T&E or State-listed species in the District. However, upon ODA approval, ADC would reinitiate consultation with the USFWS to determine if additional mitigation might be appropriate.

Issue 4 Level of take of nontarget species incidental to ADC's Wildlife Damage Management

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 89 animals in 1994 out of 2,343 target animals taken (3.7% of the total number of animals taken were nontarget animals). Of the 89 nontarget animals captured, 28 were released. In FY 1995, the nontarget take in the District was 129 animals out of 3,319 target animals taken (3.8% of the total number of animals taken were nontarget).

Because this take is below the 5% objective set for the District, it is judged that Alternative 1 would have a low impact on nontarget species populations in the District.

Alternative 2. - Current Program (as described in Alternative 1) plus similar operational activities on Forest Service and [redacted] lands 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 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.

Alternative 3. - Technical Assistance Only and Alternative 4. - No ADC Program.

Since both Alternatives 3 and 4 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 3 and 4 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 3 and 4 would have greater impacts on nontarget species populations than the current program.

Alternative 5 - Mechanical Control Methods Only

Under this alternative, nontarget take would be slightly reduced. In FY 1995, 407 target coyotes and 9 target red fox were killed by M-44s while 23 nontarget animals (raccoons, feral dogs and opossum) were killed. A total of 800 starlings were killed with DRC-1339 and no nontargets were taken. This alternative would reduce nontarget take in localized areas where raccoons, feral dogs and opossum are very common.

Alternative 6 - Nonlethal Required Before Lethal Control Program.

As noted throughout this document, Alternative 6 is nearly identical to the current program as most producers currently employ nonlethal methods. The impacts on nontarget wildlife, including T&E species would be identical to those described under Alternative 1.

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 3 and 4 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. LPC benefits of reduced nontarget take would increase selectivity and be forgone.

4.2 Economic Analysis of Wildlife Damage Activities

The public has expressed some concern over the costs associated with the ADC program. CEQ regulations (40 CFR 1502.23) do not require a formal, monetized cost-benefit analysis to comply with NEPA. Since a major intent of this EA is to assist agency planning and decision making, this EA will compare the relative costs of the alternatives being considered and the relative benefits to livestock operators and to the general public.

ADC's legislative mandate, the Animal Damage Control Act of 1931, as supplemented by the Rural Development, Agriculture and Related Agencies Appropriations Act of 1988, directed the Secretary of Agriculture to bring nuisance mammals under control and to work cooperatively with States, individuals, and public and private entities. The costs and benefits associated with implementing IWDM are shared by local, county, state and private entities. These costs 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).

Alternative 1 The Current Program Alternative

It is not possible to accurately determine the number of livestock saved from predators by ADC since that number represents losses that never occurred. Using the best information available, the ADC Programmatic EIS concluded that benefits, in terms of avoided sheep and lamb losses plus price benefits to consumers, are 2.4 times the cost of providing ADC predator damage management services for sheep protection in the 16 western states (USDA 1994). The District must assume the cost effectiveness of its program may not be the same because losses are not experienced statically throughout the country. Livestock loss data is also inconsistent from state to state because of the various survey procedures used to collect this data. In Oregon, the NASS does not routinely collect predator loss information from producers but relies on periodic national and regional survey efforts.

Calves are not included in the analysis since no studies exist that compare losses of calves to predators with control and without control. The National Agricultural Statistics Service shows losses of calves to predators in Oregon to be 0.7% of total inventory (NASS 1991). However, since ADC works only with producers who experience high loss levels, this number would be much higher for calves protected.

Data provided by the Oregon Agricultural Statistics Service (NASS) documented a total of 415,000 sheep in Oregon in 1994. The lamb crop was estimated at about 270,000. Predator losses to lambs in Oregon in 1994 were about 5.7% of the total inventory (NASS 1995). This predation rate is consistent with that reported in the literature and in other sheep-producing states. Based on 1993 ADC MIS reported loss data, the predation rate to lambs in the District was 2.7%, below the estimated state-wide average. Table 4-10 summarizes sheep and lamb losses with and without control using ADC MIS data. The difference between the predation rate with control activities and the predation rate without control results in a projected

number of livestock saved by the District ADC program. Program expenditures for the District in FY 1993 are not available. Using FY 1995 figures which are higher, ADC expenditures for livestock protection in the District were estimated to be about $ 224,736. This figure includes salaries and benefits for field, supervisory and administrative staff , vehicle, supplies and equipment and other program related costs. The value of losses without a program is $907,125 minus the value of reported losses for sheep and lambs ($171,600) plus the cost of the program ($224,736) is an estimated $510,789. This amount divided by the cost of the program yields a cost:benefit ratio of approximately 1:2.27. This cost benefit ratio errs on the conservative side since it is derived after considering the full cost of livestock damage management with benefits to only the sheep industry considered. The ratio would be more desirable if benefits to the other livestock commodities protected (cattle, calves, poultry, goats, etc.) were also calculated into the equation.

Table 4-8
Reported and Hypothetical Sheep and Lamb Losses to Predators in the Northwest ADC District Fiscal Year 1993

	Reported Losses with ADC (% Predation)	Projected Losses without ADC (% Predation	Difference	Average 1993 ($) Value/ Head	Total Saved ($)
Adult Sheep	579 (1.7%)	1,523 (4.5%)	984	75.00	73,800
Lambs	1,709 (2.7%)	10,572 (17%)	8,863	75.00	664,725
Total	2,288	12,095	9,847		738,525

Using FY 1995 cost figures for Oregon, ADC expenditures for livestock protection in the State were estimated to be about $718,135. This figure includes salaries and benefits for field, supervisory and administrative staff , vehicle, supplies, equipment and other program related costs. The value of losses without a program ($3,913,500) minus the value of reported losses for sheep and lambs ($642,450) plus the cost of the program ($718,135) is an estimated $2,552,915. This amount divided by the cost of the program yields a cost:benefit ratio of approximately 1:3.56.

Table 4-9
Reported and Hypothetical Sheep and Lamb Losses to Predators in Oregon Fiscal Year 1993

	Reported Losses with ADC Program	Livestock Protected by ADC	Projected Losses without ADC (% predation)	Difference	Ave. 1993 ($) Value/Head	Total Saved ($)
Adult Sheep	2,311	140,434	6,320 (4.5%)	4,009	75.00	300,675
Lambs	6,255	269,762	45,860 (17%)	39,605	75.00	2,970,375
Total	8,566	410,196	52,180	43,614		3,271,050

The sheep industry operates on a low profit margin. Predation is one of several factors attributable to low economic returns. The addition of a few percent loss could drive some operations into deficit. APHIS ADC responds to requests for service providing case-specific assistance. Other benefits not included in the

cost benefit ratio are inappropriate wildlife control measures which might be chosen by individuals performing control measures.

Cost effectiveness of human safety and wildlife protection cannot be easily determined since they are difficult to impossible to quantify. For example, wildlife protection is difficult to measure in terms of wildlife numbers protected and the monetary value placed on that wildlife.

Connolly (1981) examined the issue of cost effectiveness of federal predator control programs and concluded that public policy decisions have been made to steer the program away from being as cost effective as possible. This is because of the elimination of control methods believed to be effective but less environmentally preferable such as toxic baits. Thus, the increased costs of implementing the remaining available methods were to achieve other public benefits besides livestock protection and could be viewed as mitigation for the loss of effectiveness in reducing damage. The ADC EIS stated that "Cost effectiveness is not, nor should it be, the primary goal of the APHIS ADC program. Additional constraints, such as environmental protection, land management goals, and others, are considered whenever a request for assistance is received. These constraints increase the cost of the program while not necessarily increasing its effectiveness, yet they are a vital part of the APHIS ADC program."

Variables that would change the cost to benefit ratio of a predator damage management program include: local market values for livestock, age, class and type of livestock preyed upon, management practices, geographic and demographic differences, local laws and regulations and ADC policies, the skill and experience of the individual ADC specialist responding to the damage request, and others. However, a reasonable conclusion can be drawn based on available information, that the Northwest ADC District Program would have an overall positive benefit to cost ratio for protecting livestock, human health and safety and wildlife. More examples and a complete discussion of the economics of animal damage control can be found in he ADC Programmatic EIS.

USDA (1994) cited 4 studies where sheep losses to predators were documented with no control program in place (Henne 1977, Munoz 1977, McAdoo and Klebenow 1978, and Delorenzo and Howard 1976). Annual predation loss rates during these studies varied from 6.2-28.8% for lambs and 0.9-7.5% for adult sheep. The unweighted average rate of loss to predators was 4.5% for sheep and 17% for lambs.

Alternative 2 - Expanded Program

The cost effectiveness of the program expanded onto Forest Service lands would likely be higher than the Current Program in the District. Expanding the program would allow ADC to resolve depredation conflicts on some lands administered by the National Forest and [redacted] that are adjacent to private lands currently under agreement. Local coyote populations and individuals that prey on sheep would be more effectively removed since some jurisdictional boundaries currently in place, (and unobserved by coyotes), would no longer restrict ADC control work.

Alternative 3 - No Lethal Predator Management Program

Livestock losses would be greater than in the current program (USDA 1994). Federal costs to implement this alternative would be much lower than the current program. Numbers of ADC personnel could be reduced to only those needed to provide technical assistance and make recommendations to landowners or permittees wishing to conduct their own control work. No monies would be spent for operational activities. Livestock owners would likely have to absorb the cost of hiring private control agents or doing the work themselves. Losses to predators would probably increase substantially, and some sheep operations would probably not be able to afford to stay in business.

The current program uses or recommends nonlethal methods in instances in which they are considered likely to be effective. Imposing nonlethal methods as a first option where they are unlikely to be effective would result in higher costs, as a result of additional losses and/or larger expenditures for control.

Alternative 4 - No Federal Program

No Federal funds would be expended on ADC, so economic effectiveness of the Federal program would not be an applicable issue. This alternative would likely have more negative consequences than alternative 3 since there would be no technical assistance from professionals with federal oversight.

Alternative 5. - No Toxicants

Using mechanical methods only would likely lower the cost effectiveness compared with the current program. Wildlife damage problems can most effectively be resolved when the largest variety of control methods are available to choose from for each particular damage situation. M-44s, a chemical method that would be precluded under this alternative, are one of the cheapest control tools to use because they require relatively little maintenance as compared to traps or snares. Likewise, the LPC, a highly target-specific device, would not be available as a tool.

Alternative 6. - Nonlethal prior to Lethal Control

Under this alternative, ADC's costs would be very similar to that incurred in the current program, since this alternative does not differ substantially from Alternative 1. The economic impacts associated with Alternative 6 are the same as those associated with Alternative 1.

Option 7 - Livestock Protection Collar Option to Alternatives 1 and 2

Initial costs associated with implementation of LPC use in the program would be slightly higher for producers and ADC than for just currently employed methods. However, once LPCs are integrated into the current program, costs are expected to be similar to those of other labor-intensive methods. ADC would purchase an initial supply of LPCs, after which time producers would only have to pay to replace each collar lost or punctured on their property. After the predation problem was solved on a particular farm and the collars were no longer needed, they would then become available to be used on sheep at other farms in the future. If use of LPCs, allowed ADC to be more effective in resolving predation problems, their use would probably increase the cost-effectiveness of the program over the long term.

4.3 Alternative Consistency with Forest Service Land and Resource Management Plans (LRMP) and [redacted]

Before an Alternative can be considered for implementation on Forest Service or [redacted] 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 [redacted] lands, the equivalent documents are called [redacted] or in some cases, older [redacted]. If the Alternative is consistent with the LRMP or [redacted], no additional action will be necessary by the Forest Service or [redacted] should that alternative be selected.

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

The following is a review of the consistency of each LRMP, [redacted]/ [redacted] in the District:

Ochoco National Forest ([redacted]) LRMP

The Ochoco National Forest LRMP does not address WDM. The fact that the LRMP does not cover WDM does not necessarily indicate inconsistency. The 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.

Deschutes National Forest LRMP.

The Deschutes 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 [redacted].

Siuslaw National Forest LRMP

The Siuslaw NF LRMP does not address WDM. The fact that the LRMP does not cover WDM does not necessarily indicate inconsistency. The Siuslaw 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.

The [redacted] Districts [redacted]:

The [redacted] District has no current Annual Work Plan for livestock protection. WDM is not specifically identified and discussed in current land use plans for the District, although its practice is incorporated by default since it is permissible by state and federal law. The [redacted] District has been requested to make a consistency determination based on this EA and follow appropriate NEPA procedures in making amendments that may be needed.

4.4 Summary of ADC Impacts

Table 4-11 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 4-11
Alternative/Issues/Impacts Comparison

Issues/Impact	Alternative 1 Current Program	Alternative 2 Expanded Program	Alternative 3 Technical Assistance Only	Alterative 4 No Federal Program	Alternative 5 No Use of Chemicals	Alternative 6 Nonlethal Prior to Lethal	LPC
Cumulative Impacts to Wildlife Population	Low/ Moderate	Low/ Moderate	Low/ Moderate	Low/ Moderate	Low/ Moderate	Low/ Moderate	Low/ Moderate
T/E Species	Low	Low	Moderate	Moderate	Low	Low	Low
Nontarget Species	Low	Low	Moderate	Moderate	Moderate	Low	Low

Issues/Impact	Alternative 1 Current Program	Alternative 2 Expanded Program	Alternative 3 Technical Assistance Only	Alterative 4 No Federal Program	Alternative 5 No Use of Chemicals	Alternative 6 Nonlethal Prior to Lethal	LPC
Selectivity and /Effectiveness of methods	Low	Low	Low/Moderate	Moderate	Moderate	Low	Low
Humaneness	Low	Low	Moderate	Moderate	Moderate	Low	Low
Chemicals	Low	Low	Low	Low	Low		Low
Public lands and wilderness	Low	Low	Low	Low	Low	Low	
Cultural Resources	Low	Low	Low	Low	Low	Low	Low
Cost Effectiveness	Good	Best	Difficult to Judge	Not Applicable	Lower than Alternative 2	Same as Alternative 1	Good

APPENDIX A

LITERATURE CITED

LITERATURE CITED

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ADC Directive 2.430 Euthanizing and Immobilizing Agents

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APPENDIX B

LIVESTOCK LOSS REPORTS

DRAFT

APPENDIX B

1993 Reported Lamb and Sheep Losses and Comparison of Losses With and Without Predator Control, Northwest 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
[redacted]	8159	289	3.5%	289	1,387	1,098
[redacted]	1,208	156	1.3%	156	205	49
[redacted]	910	30	3.2%	30	155	619
[redacted]	10,516	57	0.54%	57	1,787	1,730
[redacted]	2,733	189	6.9%	189	465	276
[redacted]	28,983	536	1.8%	536	4,927	4,391
[redacted]	5,530	208	3.7%	208	940	732
[redacted]	331	28	8.4%	28	56	28
[redacted]	420	50	11.9%	50	71	21
[redacted]	3,411	166	4.8%	166	579	413
Total	62,201	1,709	2.7%	1,709	10,572	8,863

County	Number **Sheep** Protected	Number Lost to Predator	% Lost to Predators	Losses with Control	Losses without Control	Differences Between Losses with and without Control
[redacted]	3,362	81	2.4%	81	151	70
[redacted]	2,223	120	5.4%	120	100	20
[redacted]	673	2	0.3%	2	30	28
[redacted]	7,925	18	0.23%	18	356	338
[redacted]	1,712	26	1.5%	26	77	51
[redacted]	10,299	181	1.7%	181	463	282
[redacted]	4,013	114	2.8%	114	180	66
[redacted]	248	6	2.4%	6	11	5

DRAFT

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
[redacted]	475	12	2.5%	12	21	9
[redacted]	2,979	19	.63%	19	134	115
Totals	33,909	579	1.7%	579	1523	984

[1] Losses with control from ADC MIS, 1993.
[2] Losses without control are based on survey estimates of 4.5% rate of loss for adult sheep and 17% rate of loss for lambs applied to the numbers of sheep and lambs protected.

APPENDIX C

CONSULTATION WITH USFWS AND ODFW

DRAFT

United States Department of Agriculture

Animal and Plant Health Inspection Service

Animal Damage Control

2600 SE 98th, Suite 110
Portland, OR 97266
Telephone: (503) 231-6184
FAX: (503) 231-2291

March 11, 1996

Mr. Russell D. Peterson
Field Supervisor
USDI, Fish and Wildlife Service
Portland Field Office
2600 S.E. 98th Avenue, Suite 100
Portland, Oregon 97266

FILE COPY

Dear Russ:

The purpose of this letter is to request an informal consultation and concurrence of findings pursuant to Section 7 of the Endangered Species Act for those listed species found in the Northwest Oregon ADC District. I have reviewed these listings and analyzed the potential impact that our program might have on each specie. The Service's July 28, 1992 Biological Opinion (BO) (attachment A) reviewed and analyzed ADC programmatic activities. Those findings are pertinent to this review.

Our proposed action is to protect livestock and wildlife resources in the Northwest Oregon ADC District. The ADC program in the District will incorporate several control methods and techniques simultaneously or sequentially. This approach, commonly referred to as Integrated Wildlife Damage Management (IWDM), includes the use of a combination of chemical and non-chemical methods. A detailed list and description of each control method can be found on pp. 2-7 of the Biological Opinion.

After review and analysis, I have determined that the Northern Bald Eagle (*Haliaeetus leucocephalus*) is the only listed specie that may be affected. Specifically, I have analyzed each method and determined that the steel leg-hold trap is the only method that may negatively impact the Bald Eagle.

Leghold Traps

Leghold traps are frequently used to capture animals such as coyotes, bobcats, fox, mink, beaver, raccoon, skunk, muskrat, nutria, and mountain lion. These traps are the most versatile and widely used tool available to ADC for capturing many species. Traps are effectively used in both terrestrial and shallow aquatic environments.

Traps placed in the travel lanes of the target animal, using location rather than attractants, are known as "blind sets." More frequently, traps are placed as "baited" or "scented" sets. These trap sets use an attractant consisting of the animal's preferred food or some other lure such as fetid meat, urine, or musk to attract the animal into the trap.

In some situations a carcass or large piece of meat (i.e., a draw station) is used to attract target animals into an area where traps are set. In this approach, single or multiple trap sets are placed in the vicinity of the draw station. ADC program policy prohibits placement of traps or snares within 30 feet of a draw station to prevent the capture of nontarget scavenging birds. There are only two exceptions to this policy. One is when setting leghold traps or snares to capture bears or mountain lion returning to a kill. In these cases the weight of the target animals allows trap tension adjustments which precludes the taking of the lighter scavenging birds. The second exception is when leghold traps set next to carcasses are used to take raptors under FWS permits.

Two primary advantages of the leghold trap are that it can be set under a wide variety of conditions, and that underpan tension devices can be used to prevent animals of smaller size than the target animal from springing the trap, thus allowing a degree of selectivity not available with many other methods. Effective trap placement greatly contributes to trap selectivity. Another advantage to use of the leghold trap is that it is a livetrap, which generally permits the release of nontarget animals.

Disadvantages of using leghold traps include the difficulty of keeping them in operation during rain, snow, or freezing weather. In addition, they lack selectivity where nontarget species of similar size to target species are abundant. The selectivity of leghold traps is an important issue and has been shown to be a function of how they are used. The type of set and attractant used significantly influences both capture efficiency and the risk of catching nontarget animals.

The use of leghold traps in the ADC program is costly due to the amount of manpower and time involved. The leghold trap, however, is indispensable in resolving many animal damage situations.

ADC will implement the reasonable and prudent measures contained in the July 28, 1992 Biological Opinion. The review and analysis of the Northwest Oregon ADC District program to protect livestock and wildlife shows that none of the chemicals (Strychnine) are used to protect livestock or wildlife, so this reasonable and prudent measure does not apply to the scope of this review. ADC will conduct daily checks for carcasses or trapped individuals when bald eagles are in the immediate vicinity of a proposed control program.

Terms and Conditions of the BO that apply to non-chemical methods:

In order to be exempt from the prohibitions of section 9 of the Act, ADC will comply with the following terms and conditions which implement the reasonable and prudent measures described above.

1. ADC personnel shall contact either the local State fish and game agency or the appropriate regional or field office of the Service to determine nest and roost locations.

3. The appropriate U.S. Fish and Wildlife Service office shall be notified within 5 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.

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

Condition 2 of the BO dealt solely with southwestern U.S. populations of bald eagles and would not apply to the Northwest, Oregon area.

With implementation of the reasonable and prudent alternatives and current ADC policy, it is unlikely that the proposed action will result in an incidental take of bald eagles in the Northwest Oregon ADC District.

I have made a no effect determination on the Gray Wolf (*Canus lupus*) and the Pacific Fisher (*Martes pennanti pacifica*). In the case of the Gray Wolf, none are know to currently exist in Oregon. If the Service re-introduces wolves in Oregon, wolves naturally reestablish populations, or if ADC takes a wolf we will re-initiate consultation with the Service. ADC does not generally

conduct control activities in Fisher habitat and none have been taken by the program. The Fisher's arboreal nature precludes most possible impacts from ADC wildlife damage management activities.

If the ADC program is modified so as to possibly affect listed or proposed species or critical habitat, the ADC program will re-initiate consultation.

Sincerely,

for Thomas R. Hoffman
State Director

DRAFT

FILE COPY

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Damage Control
2600 SE 98th, Suite 110
Portland, OR 97266
Telephone: (503) 231-6184
FAX: (503) 231-2291

March 26, 1996

Mr. Russell D. Peterson
Field Supervisor
USDI, Fish and Wildlife Service
Portland Field Office
2600 S.E. 98th Ave., Suite 100
Portland, Oregon 97266

Dear Mr. Peterson:

The purpose of this letter is to supplement my March 11, 1996 letter to you requesting an informal consultation and concurrence of findings pursuant to Section 7 of the Endangered Species Act for those listed species found in the Northwest Oregon ADC District. On March 19, 1996, Patty Worthing of your staff requested the information that follows:

Project Area

The analysis area being considered is private lands in northwestern and north central Oregon in [redacted] counties.

Proposed Action - Specific Methods Used

As stated in my March 11, 1996 letter to you, ADC would protect livestock and wildlife resources in the Northwest Oregon ADC District. Control work would be targeted at offending coyotes, black bear, cougar, bobcat, red fox, gray fox, raccoon, striped and spotted skunk, and raven, starlings, cowbirds and blackbirds. The control methods and techniques that would be used are described in detail in the July 28, 1992 Biological Opinion. The specific methods used to control predators in the Portland ADC District are listed below.

1. ADC would provide technical assistance to livestock managers and property owners or managers on cultural practices and aversive tactics. These would be:
   a) animal husbandry;
   b) the use of physical barriers;
   c) habitat management and biological control;
   d) electronic distress sounds;
   e) gas exploders;
   f) pyrotechnics;
   g) effigies; scarecrows, and other scaring techniques; and
   h) lights and strobe devices

Technical assistance is dissemination of educational information. ADC does not normally implement these methods but recommends them to producers and property owners or managers.

DRAFT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oregon State Office
2600 S.E. 98th Avenue, Suite 100
Portland, Oregon 97266
(503) 231-6179 FAX: (503) 231-6195

9 April 1996

Re: 1-7-96-I-188

Tom Hoffman
State Director - Oregon ADC
U.S. Department of Agriculture
APHIS - Animal Damage Control
2600 SE 98th Avenue, Suite 110
Portland, Oregon 97266-1302

Dear Mr. Hoffman:

This responds to your request for informal consultation and concurrence of findings pursuant to Section 7 of the Endangered Species Act of 1973, as amended, for those listed species found in the Northwest Oregon ADC District. Your correspondence was received in this office on 11 March 1996, and a supplemental letter outlining additional animal damage control methods was received on 26 March 1996. The U.S. Fish and Wildlife Service (Service) has reviewed your agency's proposed Integrated Wildlife Damage Management program with respect to the listed species in the area.

Based on our review of the information that you provided, the actions proposed for immediate use in the Northwest Oregon ADC District are consistent with the terms and conditions specified in the Service's 28 July 1992 programmatic Biological Opinion on Animal Damage Control's nationwide actions. The scope of the nationwide consultation included the actions and methods proposed for implementation in the Northwest Oregon District. Adherence to the terms and conditions which implement the reasonable and prudent measures stipulated in the 1992 Biological Opinion should be sufficient to meet your Section 7 requirements under the Endangered Species Act of 1973, as amended, excluding the following two areas:

(1) The additional measures proposed by ADC to further reduce the likelihood of capturing a Columbian white-tailed deer with leghold traps or neck snares should also be implemented. As stated in your supplemental letter, ADC will a) avoid setting foot and neck snares in trails and under fences where deer activity is evident; b) avoid using snares from 1 June through 1 October; c) use "break away" snares when they become available; and d) modify snare lock loop holes to limit diameter of snare.

(2) Although addressed in the 1992 Biological Opinion, the Compound 1080 Livestock Protection Collar (LPC) has not yet been approved for use in Oregon. As per discussion

However, devices such as the Electronic Guard Device (a strobe-light siren) are implemented by ADC to scare and harass predators away from areas needing protection.

Currently, there are no chemical control agents registered as predator management tools.

2. ADC would use the following population management techniques:
   a) nonlethal methods (leghold traps, cage traps and foot snares);
   b) lethal non chemical methods (leghold traps (with euthanasia), neck snares, shooting, aerial hunting, tracking and trailing dogs, and denning);
   c) lethal chemical methods (sodium cyanide (M-44 capsule), and DRC - 1339)
   d) fumigants (gas cartridge).

Currently, strychnine and the various anticoagulants are not registered for predation management. However, these chemicals are registered for the control of certain rodents under various situations and would only be recommended for private landowner use.

The Compound 1080 Livestock Protection Collar (LPC) is not yet approved for use in Oregon. However, we will include it in our analysis in anticipation of pending approval. For your reference, I have enclosed information that includes descriptions of all of the methods listed above. A detailed risk assessment for each method can be found in the ADC Final Programmatic EIS, 1994.

Proposed Action and "May Affect" Species

The primary potential for impacts to any listed species would be associated with accidental injury or death of a nontarget listed species during efforts to control predation on livestock or wildlife by predators. None of the activities associated with the proposed ADC program will result in habitat modification.

According to the list provided by the Service and from communications with Ms. Worthing, in addition to the bald eagle (addressed in the March 11, 1996 letter), the Aleutian Canada goose, the Peregrine falcon, the Columbia whitetail deer and the Willamette chub may occur within the project area.

Peregrine falcon - Based on our evaluation and a review of the relevant section of the Service's 1992 Biological Opinion, we have concluded that implementation of our proposed action would have no effect on the peregrine falcon.

Aleutian Canada goose - The Service's 1992 Biological Opinion stipulates two reasonable and prudent measures as necessary and appropriate to minimize incidental take of the Aleutian Canada Goose. Neither of these measures relates to this proposal because ADC would not use avitrol, zinc phosphide or strychnine. Similarly, the Terms and Conditions indicated for exemption from the prohibitions of Section 9 of the Endangered Species Act would not apply. Based on these factors, we believe that the proposed action would have no effect on the Aleutian Canada goose.

with Service biologist Elaine Sproul on 1 April 1996, the effects of the LPC on listed species have not been evaluated here because it is unlikely that the LPC will be used in this area in the near future. If, upon approval of the LPC for use in Oregon, ADC intends to implement this method of predator control in this district, a re-initiation of consultation may be required to review the potential impacts on listed species.

The Service concurs that the proposed actions to protect livestock and wildlife resources in the Northwest Oregon ADC District will not adversely affect endangered or threatened species provided all terms and conditions of the 1992 Biological Opinion are implemented. The requirements established under Section 7(a)(2) and 7(c) of the Endangered Species Act of 1973, as amended (16 USC 1531 et. seq.) have been met for those Integrated Wildlife Damage Management actions proposed for the Northwest Oregon ADC District. Should additional information on listed or proposed species become available, or should additional predator control methods such as the approved use of the LPC become necessary for use in this District, this determination may be reconsidered. The Service recommends that the proposed actions be re-evaluated within two years; determination of any new information or impacts may warrant re-initiation of consultation.

We appreciate your conscientious efforts to comply with Federal listed species requirements. If you have any questions regarding this letter, please contact Elaine Sproul or Patty Worthing at (503) 231-6179.

Sincerely,

Gary L Miller

for Russell D. Peterson
Oregon State Supervisor

Oregon

DEPARTMENT OF
FISH AND
WILDLIFE

Ochoco District Office

Tom Hoffman
State Director
U.S. Department of Agriculture
APHIS-Animal Damage Control
2600 SE 98th Ave, Suite 110
Portland, Oregon 97266-1302

October 22, 1996

Dear Tom:

Thank you for the opportunity to comment on APHIS-ADC's environmental analysis process and review any potential adverse impacts it may have with Oregon's sensitive species. I have reviewed this with Chris Carey, Central Regional Diversity Biologist; Joe Pesek, Columbia Regional Diversity Biologist; and Larry Cooper, Portland Staff Biologist and we have listed below the species that may have the greatest potential to be affected by ADC's program activities. My apologies for not getting these comments to you in a more timely manner.

- White-tailed jackrabbit - These species have limited ranges in Oregon and they may be susceptible to leg hold traps used as blind sets in travel lanes.
- Fisher - These predatory species may be attracted to bait sets.
- Burrowing Owl - These owls may be susceptible to den fumigants or other ground squirrel controls.
- Tricolored Blackbirds - These birds may be susceptible to DRC 1339.

We realize that there are techniques available to avoid or minimize contact with these sensitive species and we request that consideration be given in areas of trapping. I have enclosed additional information on range and population status for these species.

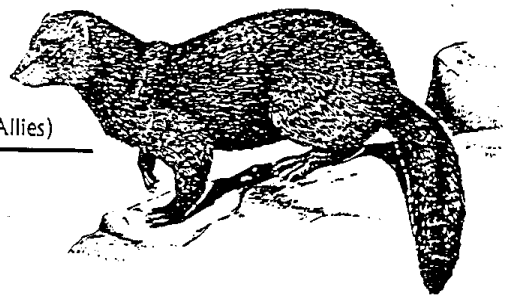
Please call me if you have any questions at (541) 447-5111.

Sincerely,

Meg Eden

Meg Eden
Asst. Dist. Wildlife Biologist
Ochoco District

2042 SE Paulina Highway
Prineville, OR 97754-9701
(503) 447-5111
FAX (503) 447-8065



FISHER *(Martes pennanti)*

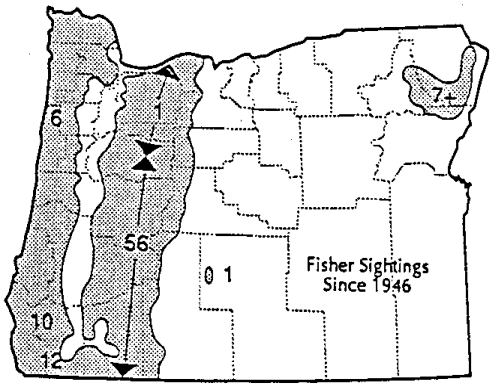
Family Mustelidae (Martens, Weasels, Skunks, Otters, and Allies)

Description

A long-bodied, short-legged, medium-sized carnivore having small rounded ears, a long bushy tail, wedge-shaped head, and a black nose. The fur is generally dark, although it varies by season, individuals, and sex. Adult males are 35 to 47 inches in length and weigh 7.5 to 12 pounds. Adult females are much smaller. This animal is solitary and territorial.[17]

Range

Forested areas of central and southern Canada, and south in the east to Wisconsin, Minnesota, Michigan, New York, and New England. In the west, south to northern Idaho, western Montana, Washington, Oregon, and the Sierra Nevada in California.[20] Formerly occurred further south in the central and eastern U.S.[17]



Range in Oregon

Coast Range, Klamath Mountains, Cascade Range, and east at least as far as Gearhart Mountain and the Blue Mountains. Occurs, or likely to occur, in Baker, Clackamas, Coos, Curry, Deschutes, Douglas, Jackson, Josephine, Klamath, Lake, Lane, Linn, Tillamook, Union, and Wallowa counties. Formerly occurred in all forested counties.[5,13,14,18,19,22]

Status

A Category 2 species on U.S. Fish and Wildlife Service Notice of Review.

In Oregon, depleted although never abundant; unknown but limited numbers remain today. Bailey,[5] writing in the mid 1930s, indicated the species was regularly found and mentions [9] having been taken by registered trappers during the winter of 1913-14. It is not known if this represented the complete take. Other accounts indicate the species was more common. Bill Clark, who trapped the upper Willamette drainage, reported in an undated letter to McAllister that "...wasn't uncommon for a trapper to catch 6 or 8 in a trap line" from 1912-1920.[12] Trapping and use of strychnine baits to eliminate wolves and control coyotes in the 1920s are the assumed cause of the decline, but this doesn't explain why the fisher population hasn't recovered.

Since 1937, when trapping was closed, information on the fisher has been limited to chance encounters with variable reporting and reliability. The literature, Oregon Department of Fish and Wildlife reports, and a master's thesis covering the 1946-1982 period account for approximately 56 fisher reports from the central and southern Cascades, 10 from the Klamath Mountains, 6 from the Coast Range, 5 from Wallowas, and 1 from the northern Cascades for a total of 78 eliminating possible duplications.[10,13,18,19,22] No effort has been made to methodically assemble fisher sightings since. For example, files in the Klamath Falls District of the Oregon Department of Fish and Wildlife contains observations in the Gearhart Mountain area north of Bly on the Klamath-Lake County border.

Woods[21] recalls releasing "around a dozen" fishers from bobcat traps over a period of several years, 10 to 15 years ago, south of O'Brien in Josephine County and just over the line in California. Anderson[2] receives periodic reports of fishers in the Wallowa Mountains and observed tracks there in 1974. One was sighted at Gold Lake, Willamette National Forest, in 1985.[14] A recent fisher sighting was reported by McAllister September 30, 1989 on the east slopes of Yamsey Mountain, Lake County.[12] The paucity of recent sightings may reflect a reduced reporting effort or a population decline.

For the 1970-87 period, there were 48 fisher reports from the two northwest California counties adjoining Oregon.[7] Frequent fisher reports come from Six Rivers National Forest, California, which borders the Siskiyou National Forest.[8] The number of records just inside California, in addition to Oregon records, indicate the fisher continues to occur in the state, but questions remain as to population stability and viability.

Habitat

No habitat studies have been made in Oregon. Most have been conducted in the eastern U.S. except for a Trinity County, California, study. A preference is shown for forests dominated by conifers; some hardwoods may be desirable for maximum prey numbers and diversity. A 70 to 80 percent canopy cover is believed optimum, although in the California study it was generally 40 to 70 percent. Dense, mature, and old-growth forest stands are believed to constitute optimum habitat, although study results vary by region.[1,5,6,17,20] In some areas, fishers use second growth, and even clearcuts, after cover is established.[5,6,17] A California study[6] involving 438 telemetry locations concluded fishers prefer multi-species old-growth conifer habitat with some hardwoods, but this was clouded by significant use of disturbed and open areas having shrubs.

Habitat type use also varies with sex, age, and season. Most investigators agree that fishers need access to a high degree of overhead cover, that they avoid open areas, and like forested riparian areas. Radioed individuals in Maine crossed road corridors and farm fields between forest stands.[4] There, at a high density of one per 4.2 square miles, fishers tolerate low-density housing, farms, roads, small clearcuts, gravel pits, and intense trapping pressure. Such a situation has not been reported in the western U.S.

Fishers sleep under logs or brush, in ground or snow burrows, and in tree nests. Females rear young in hollow logs, snags, stumps, or rock cavities.[17] In northwest California, they mainly use large living trees (average diameter at breast height 46 inches), snags, and fallen logs.[6] Principal foods are porcupines (*Erethizon dorsatum*), snowshoe hares (*Lepus americanus*), squirrels (*Sciuridae*), small mammals, and carrion, but they also take birds, eggs, insects, reptiles, amphibians, fruits, nuts, and other vegetable material.[4,17,20] False truffles (*Rhizopogon* sp.) were a significant food item in eight California fisher stomachs.[9]

Fishers occur in low densities; adults require large habitat blocks. Male and female territories overlap.[3,11,17] Home range and density varies by habitat carrying capacity, region, investigator methodologies, season, and sex and age of radioed animals. Home ranges of single males in square miles include: 7.6 in New Hampshire, 12.0 in Maine, 6.5 in California, and 10 to 25 in Idaho. For females: 5.8 in New Hampshire, 6.3 in Maine, 1.6 in California, and 10 to 15 in Idaho.[3,6,11,17,20] Densities are highest in summer before young are forced out of occupied territories. Densities in another Maine study were one animal per 1.1 to 4.0 square miles in summer, and one per 3.2 to 7.7 square miles in winter.[3] The northwest California study showed one individual per 5.1 square miles.[6] Models indicate the minimum amount of contiguous habitat required for occupancy by a population of fishers is 100 square miles, but subsequent telemetry work in Maine and California raises questions concerning what constitutes fisher habitat and the degree to which habitat can be interspersed with non-habitat.[1,3,4,6]

Oregon Habitat Ownership

Records are too sparse for determination. Fishers probably still occur in Crater Lake National Park; Roseburg, Medford, and perhaps other BLM districts in western Oregon; private forest lands; and in all national forests except possibly Ochoco, Malheur, and Umatilla. They may occur in state forests and state parks.

Reasons for Sensitive Status

General rarity and questionable status as a viable species in Oregon. Timber harvesting is not considered compatible with maintenance of maximum fisher numbers in most areas; and, if severe, eliminates fishers.[6,7,10,11,17,20] Based on research elsewhere, potential and actual fisher habitats in Oregon continue to be degraded, destroyed, or fragmented. This may result in isolated habitat areas that are too small for maintenance of viable populations. In Oregon, the initial decline of the species in the 1920s and 1930s probably came from overtrapping and poisoning aimed at coyotes and wolves. Fishers are easily trapped or taken in sets intended for other species and are attracted to baits.[11,17,21] Population modeling done in Michigan[16] showed that only small increases in fisher mortality above natural levels may cause local extirpations, but in Maine fisher density remained high despite trapping in a area broken up by farms and houses.[3,4] Fishers have a low reproductive rate (maximum three to a litter with reproduction initiated in the second year of life).[17]

Conservation Measures Taken

The fisher trapping season was closed in Oregon in 1937. In 1961, 24 fishers were transplanted from British Columbia to Buck Lake, Klamath County, and to the Minam drainage of Wallowa and Union counties. The success of the transplants is unknown.[10]

Conservation Measures Proposed

None.

Research/Survey Actions Taken

None aside from compilation of sightings described above.

Research/Survey Actions Needed

A full-scale evaluation of fisher population numbers, distribution, and habitat use is badly needed in Oregon. Finding sufficient animals could make data gathering difficult.

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BURROWING OWL *(Speotyto cunicularia)*

Family Strigidae (Typical Owls)
Columbia Basin, Blue Mountains, and Western Interior Valley Populations

Note

Sensitive status applies only to burrowing owls in the above physiographic provinces and not to the state as a whole.

Description

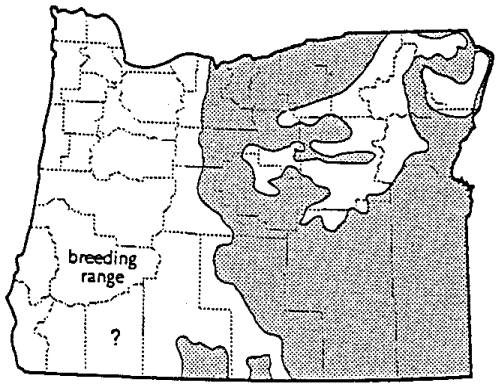
A medium-small owl of open or arid areas that is often seen in daylight. Plumage is generally brownish with dark bars, white spots, and a white chin stripe.

Range

Southern prairie provinces south through arid portions of western U.S. and Mexico to Central and South America. Most migrate from northern three-quarters of U.S. range. Separate populations and subspecies occur in Florida and the Caribbean.

Range in Oregon

Breeds in non-mountainous areas in all counties east of Cascade Range and in the Rogue River Valley, Jackson County (at least formerly). Appears sparingly in winter in the Willamette Valley; occasionally on the coast. Some burrowing owls remain for the winter in eastern Oregon.[1,2,4,5]



Status

Population trends in Oregon are unclear, but a viable population no longer exists in Rogue River Valley where formerly common. Gabrielson and Jewett,[2] referring to the period before World War II, said the species was "a familiar sight in the lower sections of eastern Oregon as well as in the pasture lands of the Rogue River Valley." While no longer a "familiar sight," the species still occurs throughout much of the area east of the Cascades. However, its situation appears much more precarious in northeast Oregon than in southeast Oregon because of widespread cultivation in the Columbia Basin.

Habitat

Sagebrush steppe, grasslands, pastures, roadsides, and even airports where vegetation is sparse and terrain is level. Found where soil and/or vegetation has been disturbed through overgrazing, fire, construction, or farming; or at sites where vegetation has been heavily clipped or grazed by ground squirrels. More bare ground and lower shrub densities than surrounding terrain are typical of nest sites. Nesting takes place in mammal burrows which the owls may modify or renovate. In most parts of their range, burrowing owls use ground squirrel burrows; but in Oregon burrows of the dominant Townsend's (*Spermophilus townsendii*) and Belding's (*S. beldingi*) ground squirrels are apparently too small. They use small rock outcrops in Idaho, and will use artificial nest structures such as culverts or specially constructed boxes. Nest burrows have a nearby perch, e.g., fence post or tall shrub from which the male stands guard.[3,4,6,7]

In Gilliam, Morrow, and Umatilla counties in north-central Oregon, 139 nests in abandoned badger burrows were studied in 1980 and 1981. Nest success was just over 50 percent. Desertion was a major cause of nest loss; it occurred when nests were within 360 feet of each other. This was attributed to competition between owl pairs for a limited food supply. Nest entrances lined with cow dung were significantly more successful than those without. It has been hypothesized that the odor from cow dung masks the owl's odor, thereby providing protection against such predators as the badger (*Taxidea taxus*). On the Crooked River National Grasslands, Jefferson County, nest sites were also in abandoned badger burrows.[3,4,6,7]

According to Rich,[6] this "may be one of only a few avian species that benefit from substantially disturbed habitat in the sagebrush steppe." Food consists mainly of small rodents and large insects and to a lesser degree

birds, amphibians, and reptiles. In the north-central Oregon study cited above, 78 percent of the biomass in 5,559 pellets was comprised of vertebrates of which 90 percent was rodents. A shift from rodents in the spring to insects in summer occurred. The major prey species was the pocket mouse (*Perognathus parvus*). On the Crooked River National Grassland study, the sage vole (*Lagurus curtatus*) was the most important prey followed by the burying beetle (*Nicrophorus becate*) and then the pocket mouse. This study was done year-round and was based on prey species numbers instead of bio-mass.[3,4]

Oregon Habitat Ownership
(within physiographic provinces listed)

Habitat ownership information is incomplete, but includes Crooked River National Grassland; Boardman Bombing Range; Umatilla National Wildlife Refuge; Hat Rock State Park; Umatilla Army Depot; and private lands.

Reasons for Sensitive Status

Loss of habitat to urbanization and irrigated agriculture, especially in the Rogue River Valley. Ground squirrel, badger, and possibly insect control programs. In the Columbia Basin of north-central Oregon and probably other parts of Oregon, this owl is tied to the presence of badgers, which are not looked upon favorably by agricultural interests.

Conservation Measures Taken

Unsuccessful reintroduction program conducted in Rogue River Valley in mid 1980s.

Conservation Measures Proposed

None formally, although recommendations may have been made on a project basis.

Research/Survey Actions Taken

Study by Green[3] in north-central Oregon.

Research/Survey Actions Needed

Monitoring and surveys of existing populations.

Sources Used

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WHITE-TAILED JACKRABBIT *(Lepus townsendii)*

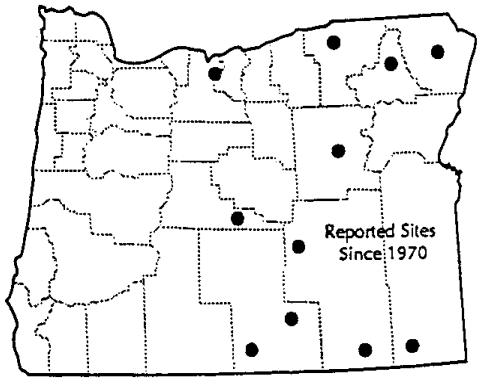
Family Leporidae (Hares and Rabbits)

Description

One of two jackrabbits found in Oregon. Similar to the more common and familiar black-tailed jackrabbit *(Lepus californicus)*. The most obvious field characteristic is that the top of tail is white instead of black as found in the black-tailed jackrabbit. The pelage of the white-tailed jackrabbit becomes white at higher elevations in winter. White-tailed jack rabbits are more nocturnal and less social than black-tailed jackrabbits and do not move from cover during the day unless flushed from very close range. Jackrabbits are really hares of which there are three in Oregon, the other one being the snowshoe hare *(L. americanus)*.

Range

Great Plains and Rocky Mountain region of the U.S. and southern Canada west to the Cascade Range in Washington, Oregon, and California. Also found in northern Nevada, Utah, and New Mexico.[3]



Range in Oregon

Formerly found throughout all of the state east of the Cascade Range. The present range needs clarification, but may be confined to the higher valleys and mountainous areas. After interviewing Oregon Department of Fish and Wildlife personnel, Olterman and Verts[4] reported the species from the Grande Ronde Valley, Union County; the area north of Enterprise, Wallowa County; the John Day area, Grant County; Juntura and Antelope Flat and areas north of McDermitt, Nevada, Malheur County; the Lakeview area and Hart Mountain Antelope Refuge, Lake County; eastern Deschutes County; Pendleton area, Umatilla County; and the Deschutes River Canyon east of Dufur, Wasco County. The writer has seen the species in recent years in the Trout Creek Mountains, Harney County, and Mark Henjum reports they are in the Clover Creek area, Union County.[1,2,4]

Status

Rabbits and hares are legally classed as predators in Oregon and are unprotected. This species was originally sufficiently common to afford hunting and to be a problem to farmers.[1] Present numbers and distribution needs to be determined. Confusion as to the status of this species is caused by a lack of interest, and similarity to the black-tailed jackrabbit and snowshoe hare. In 1972, Olterman and Verts[4] concluded this species was relatively common in Oregon, although not necessarily common in all the areas cited above.

Habitat

Open areas including sagebrush (*Artemisia* spp.) and grasslands, but more likely to occur where there is an abundance of native grasses. Not so likely to occur in dense sagebrush in valleys or sagebrush/rabbitbrush (*Chrysothamnus* spp.)/greasewood (*Sarcobatus vermiculatus*) flats and shadscale (*Atriplex confertifolia*) communities that are occupied by black-tailed jackrabbits.[3]

Food consists primarily of succulent grasses and forbs at early stages of growth in the spring, and woody stems of shrubs at other seasons.[3]

Oregon Habitat Ownership

Burns, Lakeview, Prineville, and Vale BLM districts (at least until recently); private lands; Hart Mountain National Antelope Refuge; and possibly some edges of the Deschutes, Fremont, Malheur, Mt. Hood, Ochoco, Umatilla, Wallowa-Whitman, and Winema national forests. Ownership information is incomplete due to uncertain present-day distribution and confusion with other hares.

Reasons for Sensitive Status

Declining population numbers and distribution. Disappearance of native grasses were reported to be cause of decline for this hare in the Okanogan Valley, Washington.[3]

Conservation Measures Taken

None except protection from taking by state administrative rule.

Conservation Measures Proposed

None.

Research/Survey Actions Taken

None.

Research/Survey Actions Needed

Field surveys to determine existing distribution and population numbers. Habitat analysis.

Sources Used

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TRICOLORED BLACKBIRD *(Agelaius tricolor)*

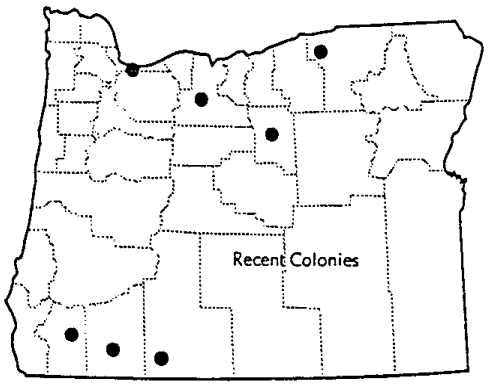
Family Emberizidae (Emberizids)
Subfamily Icterinae (Blackbirds and Allies)

Description

A blackbird that is similar in appearance to the familiar red-winged blackbird, but the red shoulder patch of the male has a white rather than yellow border. Female is darker than female red-winged blackbird. The tri-colored is a colonial rather than territorial nester like the red-winged blackbird, and has a very different voice.

Range

Breeds and winters primarily on central and southern coast and valleys of California. Local breeding colonies in Oregon.



Range in Oregon

Tricolored blackbird nesting colonies have a scattered distribution that is inconsistent and unpredictable from year to year. Most often they are found in the Rogue River and Bear Creek valleys, Jackson County; Klamath Basin, Klamath County; and in the Columbia River bottomlands on the north edge of Portland, Multnomah County; but have recently turned up near Hermiston in Umatilla County and have also been reported from Wheeler County.[1,2,4,5,6,7,8,10,11,12] In 1991, a colony containing at least 60 birds was discovered in Wasco County near Wamic.[9] There is an early September record of a group of 24 seen in 1982 at Summer Lake, Lake County, a potential nesting area.[3]

Status

A category 2 species on U.S. Fish and Wildlife Service Notice of Review.

This species breeds locally in Oregon with the number of colonies reported in any one year typically numbering one, two, or three. The number of individuals per colony has ranged from estimates of 1,800 in 1960 at a colony north of Medford, Jackson County, to less than a dozen at other colonies and time periods.[11] Information on colony presence and location have come from recognized birders, but information on colony size has seldom been reported.

Habitat

Most Oregon colonies for which information is available have been in either cattail (*Typha* spp.) marshes or in Himalayan blackberry (*Rubus discolor*) stands that border wetlands. Such habitats are subject to constant natural and human-induced changes.

Oregon Habitat Ownership

Includes a mix of public and private ownerships. Since the birds have not established colonies consistently over time at any one location, identifying ownerships is not practical.

Reasons for Sensitive Status

Small population numbers combined with inconsistent distribution pattern that makes habitat protection difficult.

Conservation Measures Taken

None.

Conservation Measures Proposed

None.

Research/Survey Actions Taken

The U.S. Fish and Wildlife Service has undertaken a status survey of the species in Oregon and California through a contract issued to Jones and Stokes of Sacramento. No field research or surveys have been conducted in Oregon.

Research/Survey Actions Needed

Systematic annual reporting on presence of colonies and population numbers. Identification of measures that could be taken to preserve colonies over time.

Sources Used

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APPENDIX D

METHODS USED OR PLANNED FOR USE

IN THE

NORTHWEST, OREGON ADC DISTRICT

APPENDIX D

METHODS USED OR PLANNED FOR USE
BY THE
NORTHWEST, OREGON ADC DISTRICT

METHODS THAT MAY BE RECOMMENDED BY ADC AND APPLIED BY LIVESTOCK PRODUCERS

Cultural methods include a variety of practices that can be implemented by livestock producers to reduce resource exposure to wildlife damage and economic loss. Use of these practices is appropriate when the potential for damage can be reduced when producer investments in labor, management, or infra structure are consistent with land management and production goals. ADC recommends changes in cultural practices when a change appears to represent a practical means of minimizing or preventing future losses.

Animal Husbandry

Animal husbandry involves modifications in the level of care and attention given to livestock, (i.e. shed lambing, night penning), and the introduction of livestock custodians (e.g., herders, livestock guarding dogs) to protect livestock.

The frequency of care or attention given to livestock may range widely. Generally, as the frequency and intensity of livestock handling increases, so does the degree of protection. In operations where livestock are left relatively unattended for extended periods, the risk of predation is greater. The risk or magnitude of predation can generally be reduced when livestock owners gather and pen livestock nightly. Additionally, the risk of predation is usually greater with immature livestock and diminishes as age and size increase. Holding pregnant females in pens or sheds offers greater protection at birth, and holding newborn livestock in pens for the first two weeks may reduce vulnerability, especially from avian predators but at times, too, only delays predation.

The use of herders and livestock guarding dogs has provided protection to grazing sheep. The presence of herders accompanying sheep generally helps to deter predators, however, while herders have proven successful, some operations have not shown such promising results. Often the use of other management measures is required to provide an acceptable level of livestock protection.

Use of Livestock Guarding Animals

The use of livestock guarding dogs to protect livestock can be traced back many centuries to Europe and Asia, but little was recorded about how the dogs were actually used. Only recently have researchers begun to find the answers to important questions about the function of livestock guarding dogs.

Livestock guarding dogs generally stay with sheep without harming them while aggressively repelling predators. The dog chooses to remain with sheep because it has been reared from puppyhood with them. Its protective behaviors are largely instinctive; relatively little training is required other than timely correction of undesirable behaviors (e.g. chewing on ears, overplayfulness, excessive wandering). The guarding dog, unlike a herding dog, becomes a full-time member of the flock.

It is important to understand the distinction between herding dogs and guarding dogs. Herding dogs (border

collies, Australian shepherds, and others) move sheep from one area to another. Herding dogs work according to signals (verbal and hand) from a handler, and they are generally not left alone with sheep. Guarding dogs usually do not herd sheep, are discouraged from biting, chasing, and barking at sheep, and act independently.

The behavior displayed by a mature guarding dog is the result of heredity (genetic factors) and how the dog was raised. Some dog breeds are selected for their responsiveness to humans, but the guarding dog breeds have been historically selected for their ability to act independently in their guarding role. A common trait of guarding dog breeds is a predisposition for independent behavior. This trait makes them difficult to train to verbal commands. Some training as a pup and familiarization with the handler can help eliminate problems with a mature dog.

The young guarding dog will respond in various ways to novel stimuli, and certain responses may be problematic. Some guarding dogs may chase wildlife (rabbits, deer, elk, antelope). This behavior should be discouraged if the chasing continues beyond a short distance. Harassing big game is illegal in most states, and this behavior removes the dog from the sheep it is supposed to protect.

Electronic Guard

A portable unit that houses a powerful strobe light and siren, known as the "Electronic Guard," was developed by the Denver Wildlife Research Center. Strobe lights, in combination with sirens, have been used with some success to avert coyote predation on sheep. The Electronic Guard should be placed on high areas and hung from a tree or post, near where predation has occurred. When possible, the guard should be placed in the center of the bedground with other guards around the edge. The number of guards needed to protect sheep will depend on the size, terrain, and vegetation in or around the pasture. The guard can easily be transported from one location to another, and should be moved frequently to provide a novel stimulus to the offending predators. The device activates automatically at nightfall and is programmed to discharge periodically throughout the night. The technique is most successful when used at "bedding grounds," where sheep are gathered to sleep for the night. The Electronic Guard is available through ADC's Pocatello Supply Depot.

METHODS APPLIED BY ADC

M-44 cyanide capsule

Sodium cyanide is used in the M-44, a spring-activated ejector device which was developed specifically to kill livestock depredating coyotes. The M-44 device consists of a capsule holder which is wrapped with fur, cloth, or wool; a spring-powered ejector mechanism; a capsule containing approximately 0.9 grams of powdered sodium cyanide (plus inert ingredients); and a 5 to 7 inch hollow stake. To set an M-44, a good location is found, the hollow stake is driven into the ground, the spring ejector unit is cocked and fastened into the stake by a slip ring, and the capsule holder containing the cyanide capsule is screwed onto the ejector unit. A lure is applied to the capsule holder. A warning sign is placed within 25 feet of to warn of the device's presence.

An animal lured to the device and, will attempt to pick up the lure in its mouth. When the M-44 is pulled upward, the device is triggered and the spring-activated plunger propels sodium cyanide into the mouth of the animal.

M-44s are highly selective for canids because:

- The lures are selected for their attractiveness to canids.
- ADC Specialists are highly selective in their choice of placement locations, targeting areas frequented by canids.
- The M-44 device releases the toxicant into the mouth only when pulled upward , and will deliver lethal amounts only if the animals mouth is positioned directly on or over the device at the moment of ejection.

Sodium cyanide is a fast-acting toxicant which, upon contact with moisture, hydrolyzes into hydrocyanic gas and sodium hydroxide. Cyanide released into the air quickly dissipates. Cyanide which is inhaled into the lungs, kills the animal quickly, leaving no residue harmful to other animals that might scavenge the carcass.

Livestock Protection Collar (LPC)

The LPC, if approved for use by the ODA, will be authorized only for use by ADC Specialists; LPCs will not be available for rancher use. In each ADC District, a Supervisory Wildlife Biologist will control and monitor all LPC use according to the ODA approved program.

The LPC was invented in the early 1970's and patented by the U.S. Government in 1974. Data provided by the Denver Wildlife Research Center (DWRC) and others led to EPA registration in 1985. The collar consists of two rubber reservoirs, each of which contains 15 milliliters of a 1-percent (w/v) solution of sodium fluoroacetate (Compound 1080). The LPC has Velcro straps for attachment around the neck of with the reservoirs on the throat just behind the jaw of a lamb or kid goat. Two size collars are available to accommodate various size livestock.

Coyotes typically attack sheep and goats by biting them on the throat and crushing the larynx, causing suffocation. Coyotes that attack collared sheep generally puncture the collar (in 75% or more of attacks) with their teeth and receive a lethal, oral dose of toxicant.

Use of the LPC involves the establishment of a "target flock" of 50 to 100 animals, of which 20 to 30 are lambs or kid goats with collars. These animals are placed in a high risk pasture where recent coyote attacks have occurred. Other (uncollared) livestock on the ranch are moved to a safe area or are penned until a coyote attacks a collared animal and punctures the collar, and predation stops.

The greatest advantage of the LPC is its selectivity. Only the coyotes causing damage are killed. Disadvantages of the collar include the death of some collared livestock, time and cost of certification required to use collars, potential hazards associated with the toxicant under field conditions, expenses of collaring and checking target lambs and kid goats, mandatory record keeping, and management efforts needed to protect livestock other than the target flock.

Numerous restrictions apply to the use of LPCs and are specified in the EPA-approved LPC technical bulletin, which legally is part of the label. Some important restrictions are:

- LPCs can be used only in fenced pastures up to 2,560 acres, or up to 10,000 acres in special circumstances.
- Collars cannot be used in unfenced, open range, or any other pasture where the applicator cannot monitor them properly.
- Bilingual (English/Spanish) warning signs must be posted.
- Damaged, punctured, or leaking collars must be disposed of by deep burial or as otherwise directed in state regulations.
- Collars must be stored under lock and key when not in use.
- No more than 20 collars can be used in any 100-acre (or smaller) pasture, and no more than 50 collars can be used in any pasture that is 100 to 640 acres.
- No contaminated animal may be used for food or feed.

The following conclusions have been taken from the studies conducted on the LPC:

- Environmental hazards resulting from the use of Compound 1080 in the LPC are minimal because of the small quantities used and the strict use restrictions.
- Compound 1080 is highly toxic to warm-blooded animals (including man) when taken internally or via dust inhalation.
- Primary and secondary hazards to nontarget scavengers such as magpies, skunks, and golden eagles, as well as primary hazards to dogs feeding on carcasses of coyotes poisoned from punctured LPCs, were found to be low or unlikely. However, experience with LPCs in Texas has shown that bobcats may sometimes be killed if they attack collared lambs and kid goats in the throat area. As a result APHIS has applied for a label modification to list the bobcat as a target species.
- In the event of an accidental spill, the soil concentration of Compound 1080 will diminish by water dilution, leaching, and bacterial degradation. Compound 1080 absorbed by plants is metabolized and no phytotoxicity is attributed to the compound. Compound 1080 is not volatile and does not appear to be released into air from water or soil.

Because of high administrative, labor, and materials costs and because intensive management of livestock is required, the LPC is generally regarded as a supplemental control method rather than a replacement for other damage management methods (e.g., trapping/snaring, aerial hunting, calling and shooting, denning, fencing, and guard dogs). The technique has proven effective in situations where other approaches to damage management have failed.

From an efficacy standpoint, use of the LPC is best justified in areas with a high frequency of predation (at least one attack per week) and where other control measures have failed or are not practical. Use of the LPC is not recommended where coyotes attacks are infrequent.

Leghold Traps

Leghold traps are used to capture animals such as coyotes, bobcats, fox, mink, beaver, raccoon, skunk, muskrat, nutria, and cougar. These traps are the most versatile and widely used tool available to ADC for capturing many species. Traps are effectively used in both terrestrial and shallow aquatic environments.

Traps placed in the travel lanes of the target animal, using location rather than attractants, are known as "blind sets." More frequently, traps are placed as "baited" or "scented" sets. These trap sets use an attractant consisting of the animal's preferred food or some other lure such as fetid meat, urine, or musk to attract the animal into the trap.

In some situations, a carcass or large piece of meat (i.e., a draw station) may be used to attract target animals to an area where traps are set. In this approach, single or multiple trap sets are placed at least 30 feet from the draw station. ADC program policy prohibits placement of traps or snares within 30 feet of a draw station to prevent the capture of nontarget scavenging birds. There are only two exceptions to this policy. One is when setting leghold traps to capture cougars returning to a kill. In these cases the weight of the target animal allows pan tension adjustments which preclude the taking of small non-target animals. The second exception is when leghold traps are set next to carcasses used to capture raptors under permit with the FWS.

Two primary advantages of the leghold trap are that they can be set under a wide variety of conditions, and that pan tension devices can be used to prevent smaller animals from springing the trap, thus allowing a degree of selectivity not available with many other methods. Effective trap placement by trained personnel greatly contributes to the leghold trap's selectivity. Another advantage of leghold traps is that the live-capture of animals permits release if warranted.

Disadvantages of using leghold traps include the difficulty of keeping them in operation during rain, snow, or freezing weather. In addition, they lack selectivity where nontarget species are of similar size to target species and are abundant. The selectivity of leghold traps is an important issue and has been shown to be a function of how they are used. The type of set and attractant used significantly influences both capture efficiency and the risk of catching nontarget animals.

The use of leghold traps in the ADC program is costly due to the amount of manpower and time involved; however, the technique is indispensable in selectively resolving many animal damage situations.

Snares

Snares, made of cable, are among the oldest existing wildlife damage management tools. Snares can be used to catch most species but are most frequently used by ADC to capture coyotes, cougar, bear and beaver. They offer the advantage of being much lighter than leghold traps and are not as affected by inclement weather.

Snares are used wherever a target animal moves through a restricted lane of travel (i.e., "crawls" under fences, trails through vegetation, den entrances, etc.). When an animal moves forward into the snare loop, the noose

tightens and the animal is held.

Snares can be set as either lethal or live-capture devices. Snares set to capture an animal by the neck can be a lethal use of the device, whereas snares positioned to capture the animal around the body or leg can be a live-capture method. Snares are particularly useful for the live-capture of beaver as they are easily caught around the body. Careful attention to details in placement of snares and the use of slide stops can also allow for the live-capture of neck-snared animals.

The foot or leg snare is a nonlethal device activated when an animal places its foot on the trigger of a snare throwing arm. When tripped, the spring-operated throwing arm tightens the snare around the leg and holds the animal. Foot snares are used effectively to capture grizzly bear, black bear, and cougar.

The catch pole snare is used to capture or handle problem animals. Catch poles are primarily used to remove live animals from traps without injury to the animal or danger to the ADC Specialist.

Ground Hunting

Shooting is selective for the target species but is relatively expensive due to the staff hours required. Shooting is, nevertheless, an essential wildlife damage management method. Removal of one or two problem animals can quickly stop extensive damage. Predator calling is an integral part of ground hunting. Trap-wise coyotes, while difficult to trap, are often vulnerable to calling. Shooting can be selective for offending individuals and has the advantage that it can be applied in specific damage situations.

Aerial Hunting

Shooting from aircraft is a commonly used coyote damage management method. Aerial hunting is species-selective and can be used for an immediate remedy where livestock losses are severe, if weather, terrain, and cover conditions are favorable. Aerial hunting can be effective in removing offending coyotes that have become "trap-wise" and/or are not susceptible to calling and shooting. Local depredation problems can often be quickly resolved by the use of aerial hunting.

Fixed-wing aircraft are useful over flat and gently rolling terrain. Helicopters have greater utility and are safer over brushy ground, timbered areas, or broken land where animals are more difficult to spot. In broken timber or deciduous ground cover, aerial hunting is more effective in winter when snow cover improves visibility or in early spring before leaves emerge. Aircraft are also used in searching for coyote dens. This method may also be used to reduce local coyote populations in lambing and calving areas with a history of coyote predation. Aerial hunting is also used to improve survival of deer and antelope by reducing local coyote populations.

Good visibility is required for effective and safe aerial hunting operations; relatively clear and stable weather conditions are necessary. Summer conditions may limit effective aerial hunting as heat reduces coyote activity, and visibility is greatly hampered by vegetative ground cover. High temperatures, which reduce air density, affect low-level flight safety and may further restrict aerial hunting activities.

Aerial hunting is most effective when ground support crews direct aircraft to the general location of animals which have been located by eliciting coyote howls using sirens, calls, or recorded coyote howls.

ADC aircraft guidelines have been developed to assure that aerial hunting programs are conducted in a safe and environmentally sound manner, and in accordance with federal and state laws. Pilots and aircraft must be certified under established ADC program procedures. Only properly trained and certified ADC employees are authorized as aerial hunting crew members.

Cage traps

Cage traps are frequently used to capture skunks, raccoons, cougars, and black bears. Cage traps can also be used to capture coyote pups, fox, and dogs. Cage traps capture the animal by mechanical closure of the entry way via the animals actuation of a triggering device. Cage traps commonly used or recommended by ADC to capture skunks and raccoons are drop-door wire box traps. Cage traps used to capture black bear and cougar are large drop-door culvert type traps. A specially designed cougar live trap, that consists of conventional heavy-duty metal gate panels fitted with a spring loaded door is now in use. Live traps are generally baited with food items as attractants.

The use of cage traps allows the release of captured nontarget animals or target animals that are to be relocated. Cage traps are frequently recommended to private individuals for capturing skunks and raccoons or used operationally by ADC personnel in situations where other methods may not be as safe or effective. These devices pose minimal risk to the humans, pets or nontarget animals, and are easily monitored and maintained.

Denning

Denning is the practice of seeking out the dens of depredating coyotes or red fox and eliminating the young, adults, or both to stop ongoing predation or prevent further depredations on livestock. The usefulness of denning as a damage management method is proven, however since locating dens is difficult and time consuming, and den usage is restricted to about 2 to 3 months of the year, its use is limited to specific, appropriate situations that must be determined by a specialist.

Coyote and red fox depredations on livestock often increase in the spring and early summer due to the increased food requirements of rearing and feeding. Removal of pups will often stop depredations even when the adults are not taken. When the adults are taken and the den site is known, the pups are killed to prevent their starvation. The pups are euthanized in the den with a registered fumigant. Denning is highly selective for the target species responsible for damage. Den hunting for adult coyotes and fox is often combined with other activities (i.e., aerial hunting, calling and shooting, etc.).

Den fumigants, also called gas cartridges, are fumigants, or gases, used to manage wildlife. They are highly effective but are expensive and labor intensive to use. In the ADC program, fumigants are only used in predator dens. The ADC program manufactures and uses den cartridges specifically formulated for this purpose. These cartridges are hand placed in the active den, and the entrance is tightly sealed with soil. The burning cartridge causes death from a combination of oxygen depletion and carbon monoxide poisoning.

DRC-1339

DRC-1339 is used in hard-boiled eggs to manage raven damage for the protection of livestock and certain

endangered species. It is also registered for application on various materials, such as grain, meat baits, sandwich bread, and cull french fries to control pigeons, gulls, crows, blackbirds, and starlings. DRC-1339 is only available for use under ADC program supervision.

APPENDIX E

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PERSONS AND AGENCIES CONSULTED

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LIST OF AGENCIES AND PERSONS CONSULTED

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