*Pre-decision*

ENVIRONMENTAL ASSESSMENT

# WILDLIFE DAMAGE MANAGEMENT IN NORTH DAKOTA FOR THE PROTECTION OF LIVESTOCK, PUBLIC HEALTH AND SAFETY, PROPERTY, AND WILDLIFE

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FOREST SERVICE (USFS)

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NORTH DAKOTA STATE UNIVERSITY EXTENSION SERVICE (NDSUES)

*Pre-decision*

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# 1.0 CHAPTER 1: PURPOSE AND NEED FOR ACTION

## 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 *Animal Damage Control Programmatic Final Environmental Impact Statement* (EIS) 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 is generally regarded as providing economic, recreational and aesthetic benefits . . . and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and value is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural and economic considerations as well."*

Animal Damage Control (ADC) is the Federal agency authorized to manage wildlife damage to livestock, agricultural products, natural resources, property, and threats to public health and safety. ADC's authority comes from the Animal Damage Control Act of March 2, 1931, as amended (46 Stat. 1486; 7 U.S.C. 426-426c) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988, Public Law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C. 426c).

Normally, according to the Animal and Plant Health Inspection Service (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. 6,000, 6,003, (1995)). To evaluate and determine if there are any potentially significant or cumulative impacts from the proposed and planned predator damage management program, this environmental assessment (EA) has been prepared.

Given the Congressional directive, efficacy of the program will be evaluated as an issue rather than a need for the program. To fulfill the Congressional direction, the purpose of wildlife damage management is to prevent or minimize damage to the protected resources. Therefore, wildlife damage management is not based on punishing offending animals but as one means of reducing damage and is used as part of the ADC Decision Model (Slate et al. 1992) described in the EIS (USDA 1994:2-23 to 2-36) and ADC Directive 2.201. The imminent threat of damage or loss of resources is often sufficient for individual actions to be initiated. The need for action is derived from the specific threats to the resources and the available methods for responding to those threats. This EA documents the analysis of the potential environmental effects of the proposed and planned predator damage management in North Dakota. This analysis relies mainly on existing data contained in published documents and the EIS (USDA 1994) to which this EA is tiered.

ADC is a cooperatively funded service oriented program. Before any wildlife damage management is conducted, Agreements for Control must be signed by the landowner/administrator for private lands and ADC Wildlife Damage Management Work Plans are in place for public lands. As requested, ADC cooperates with land and wildlife management agencies to reduce wildlife damage effectively and efficiently according to all applicable Federal, State and local laws (ADC Directive 2.210).

Wildlife damage management is the alleviation of damage or other problems caused by or related to the presence of wildlife and is recognized as an integral component of wildlife management (The Wildlife Society 1992). ADC uses an

may be related to predation and/or threats to public health and safety.

This EA would replace the existing USFS (1990) EA for the Sheyenne National Grasslands.

## 1.1 NEED FOR ACTION

The need for action is based on the necessity for a program to protect livestock, wildlife, property, and public health and safety from predator damage. Livestock predation by coyotes is a serious and chronic problem for many livestock producers. The National Agricultural Statistics Service (NASS) 1995 reported that a total of 368,050 sheep and lambs were killed by predators in 1994, representing 38.9% of the total losses and costing U.S. sheep producers $17.7 million. The NASS (1996) reported that 117,400 cattle were killed by predators in 1995, costing cattle producers $39.6 million. NASS (1995) reported that in North Dakota, predators killed about 4,000 sheep and lambs, and NASS (1996) reported that about 1,500 cattle and calves were killed by predators. Coyotes were the largest cause of predator losses and responsible for 81.8% of the sheep, 89.2% of the lamb, and 50.0% of the cattle predation in North Dakota. Despite intensive historical damage management efforts in livestock production areas, and despite sport hunting and trapping for fur, coyotes continue to thrive and expand their range, occurring widely across North and Central America (Miller 1995).

ADC has been authorized by Congress to provide a wildlife damage management service (Animal Damage Control Act of 1931 as amended (7 U.S.C. 426-426c Stat. 1468)), and the Rural Development, Agriculture and Related Agencies Appropriation Act of 1977 (Public law 100-202, Dec. 22, 1987. Stat. 1329-1331(7 U.S.C. 426c)). This guidance was upheld in a 1993 District Court decision (U.S. District Court of Utah 1993), whereby the court ruled that "*. . . the agency need not show that a certain level of damage is occurring before it implements an ADC program*" and "*Hence, to establish need for an ADC, the forest supervisors need only show that damage from predators is threatened.*" ADC accepts this standard as appropriate for establishing the need for an ADC program in North Dakota.

ADC cooperates with State, individual, public, and private entities in wildlife damage management programs, as directed by law. ADC has analyzed its overall program within the context of a programmatic EIS (USDA 1994).

### 1.1.1 Summary of the Proposed Action

The proposed action includes limited expansion of the current program based on funding and workforce to other Federal lands (USFS, BLM, BOR, USFWS, CE, and Department of Defense (DOD)) where a need exists and as requested to protect livestock, wildlife, threatened and endangered (T&E) species, property, and public health and safety in North Dakota. Currently, North Dakota ADC activities are for the protection of livestock, T&E species and other designated wildlife species, property, and public health and safety when requested. The North Dakota ADC program intends to continue with an Integrated Wildlife Damage Management (IWDM)(ADC Directive 2.105) approach that would allow for the prudent use of all legal techniques and methods, either singularly or in combination. Livestock producers would continue to be provided information regarding the use of animal husbandry methods and training in nonlethal and lethal techniques. Predator damage management methods used by North Dakota ADC would include shooting, calling and shooting, aerial hunting, trapping, snaring, M-44s, denning, and dogs. Predator damage management would be allowed, when requested, on USFS, BLM, BOR, DOD, USFWS, and CE administered lands where ADC Wildlife Damage Management Work Plans are in place. Predator damage management would also be conducted on State Trust Land, if requested, and on county, municipal and private lands where signed Agreements for Control are in place. All predator damage management would be consistent with other uses in the area and would comply with all appropriate Federal, State and local laws. North Dakota ADC Wildlife Damage Management Work Plans would be cooperatively developed with the NDDA, BLM, USFS, NDGF, USFWS or any American Indian Tribe requesting assistance as appropriate. These work plans would be reviewed annually. (See Chapter 3 for a more detailed description of the current program and the proposed action.)

| County | Cattle | | | Sheep | | |
|---|---|---|---|---|---|---|
| | 1993 | 1994 | 1995 | 1993 | 1994 | 1995 |
| Foster | 20,000 | 23,000 | 16,000 | 4,000 | 3,700 | 3,500 |
| Golden Valley | 23,000 | 24,000 | 25,000 | 3,000 | 2,700 | 2,000 |
| Grand Forks | 16,000 | 17,000 | 17,000 | 2,000 | 1,500 | 800 |
| Grant | 65,000 | 75,000 | 75,000 | 6,500 | 4,000 | 3,500 |
| Griggs | 17,000 | 18,000 | 20,000 | 1,500 | 1,500 | 900 |
| Hettinger | 22,000 | 23,000 | 28,000 | 3,200 | 2,500 | 1,600 |
| Kidder | 69,000 | 78,000 | 75,000 | 8,500 | 8,500 | 7,000 |
| LaMoure | 38,000 | 40,000 | 43,000 | 4,000 | 3,500 | 2,300 |
| Logan | 56,000 | 63,000 | 65,000 | 800 | 800 | 700 |
| McHenry | 60,000 | 65,000 | 67,000 | 5,000 | 4,300 | 3,800 |
| McIntosh | 46,000 | 50,000 | 55,000 | 2,000 | 1,500 | 1,000 |
| McKenzie | 64,000 | 73,000 | 70,000 | 8,500 | 5,500 | 3,800 |
| McLean | 38.000 | 42,000 | 41,000 | 2,300 | 1,600 | 900 |
| Mercer | 48,000 | 45,000 | 45,000 | 1,200 | 1,400 | 1,400 |
| Morton | 100,000 | 110,000 | 110,000 | 5,000 | 5,000 | 4,000 |
| Mountrail | 30,000 | 32,000 | 38,000 | 4,500 | 3,500 | 2,500 |
| Nelson | 14,000 | 13,000 | 15,000 | 3,500 | 3,000 | 2,300 |
| Oliver | 30,000 | 30,000 | 29,000 | 3,500 | 2,500 | 2,100 |
| Pembina | 9,000 | 9,000 | 9,000 | 400 | 300 | 300 |
| Pierce | 28,000 | 28,000 | 28,000 | 1,200 | 1,200 | 900 |
| Ramsey | 9,000 | 9,000 | 7,000 | 1,300 | 1,100 | 700 |
| Renville | 8,000 | 6,000 | 7,000 | 1,500 | 1,500 | 1,700 |
| Richland | 30,000 | 31,000 | 30,000 | 3,500 | 2,000 | 2,000 |
| Rolette | 23,000 | 25,000 | 24,000 | 1,300 | 1,000 | 800 |
| Sargent | 28,000 | 29,000 | 25,000 | 1,700 | 1,700 | 1,500 |

| Species | Adult Sheep | | Lambs | | Adult Cattle | | Calves | | Poultry | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rpt | Ver | Rpt | Ver | Rpt | Ver | Rpt | Ver | Rpt | Ver |
| **Striped Skunk** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| **Mink** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Badger** | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 170 | 63 | 1,095 | 411 | 29 | 14 | 233 | 157 | 788 | 755 |

Studies have shown that coyotes can inflict high predation rates on livestock (O'Gara et al. 1983, Henne 1977, Munoz 1977, Nass 1977), and the question of whether or not all coyotes kill sheep may be of little relevance since a depredating coyote may gain access and kill sheep in another coyote's core area (territory) (Shivik et al. 1996). Therefore, management that selectively leaves territorial non-sheep killing coyotes in a population would not necessarily safeguard against sheep kills by other coyotes. The beneficial secondary effects of leaving territorial, non-sheep killing coyotes within a population may be negligible because they do not necessarily prevent access to sheep by other coyotes (Shivik et al. 1996). Coyotes are the primary predators of lambs, adult sheep, calves, cattle, and swine in North Dakota (Table 1-3). Red fox are the primary poultry predator accounting for 55%, 55%, and 48% of the confirmed losses to all poultry in North Dakota in FY93, FY94, and FY95, respectively (MIS 1993, 1994, 1995). Raccoon and skunk predation was 7%, 11%, and 20% of all poultry predation in North Dakota during FY93, FY94, and FY95, respectively (MIS 1993, 1994, 1995). Mink accounted for 2.5% of the newborn lamb predation and 10% of the chicken predation in North Dakota during FY95 (MIS 1996). In FY94, mink accounted for 9% of the poultry predation (MIS 1995). During FY95 badgers accounted for 1.2% of the chicken predation and 42.8% of the swine predation in North Dakota (MIS 1996). In FY94, badgers accounted for 4.5% of the poultry predation (MIS 1995).

**Table 1-3. Coyote Predation (verified) as a Percent of Total Predation in North Dakota (MIS 1994, 1995, 1996).**

| Livestock | FY93 | FY94 | FY95 |
|---|---|---|---|
| Lambs | 96% | 95% | 95% |
| Adult Sheep | 100% | 64% | 82% |
| Calves | 99% | 100% | 99% |
| Cattle | 100% | 100% | 80% |
| Swine | 100% | 100% | 57% |

Connolly (1992) determined that only a fraction of the total predation attributable to coyotes is reported to ADC. North Dakota ADC personnel do not find every head of livestock reported to be killed by predators, but they do verify that a problem exists which requires management action. In the State, 37% of the sheep and lambs and 67% of the calves reported killed were verified by North Dakota ADC personnel (MIS 1993).

Although determining the amount of livestock saved from predation by ADC is impossible, it can be estimated. Scientific studies reveal that in areas without some level of predator damage management, losses of adult sheep and lambs to predators could be as high as 8.4% and 29.3%, respectively (Henne 1977, Munoz 1977, O'Gara et al. 1983) as compared with areas with predator damage management at about 0.5 and 4.3, respectively (USDI 1979).

*hemionus columbianus*), pronghorn antelope, and bighorn sheep (*Ovis canadensis*) populations.

**Deer**

Mackie et al. (1976) documented high winter losses of mule deer (*Odocoileus hemionus*) 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. Teer et al. (1991) concluded from work done at the Welder Wildlife Refuge in Texas that coyotes take a large portion of the fawns each year during their first few weeks of life. Another Texas study found that predators were responsible for 74% and 61% of the fawn mortality for two consecutive years (Beasom 1974a). Hamlin et al. (1984) observed that a minimum of 90% summer mortality of fawns was a result of coyote predation. Trainer et al. (1981) reported that heavy mortality of mule deer fawns during early summer and late fall and winter was limiting the ability of the population to maintain or increase itself and concluded that predation, primarily by coyotes, was the major cause for low fawn crops on Steens Mountain in Oregon. 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 88% to 97% of the mortality. Other authors observed that coyotes were responsible for most fawn mortality during the first few weeks of life (Knowlton 1964, White 1967). Remains of 4 to 8 week old fawns were also common in coyote scats (feces) in studies from Steele (1969), Cook et al. (1971), Holle (1977), Litvaitis (1978), Litvaitis and Shaw (1980).

**Table 1-4. Wildlife species that could require protection in North Dakota as requested by the NDGF and USFWS[1] (S. Allen, NDGF, A. Sapa, USFWS pers. commun. 1996).**

| Species to be Protected | Management Agency |
|---|---|
| White-tailed Deer | NDGF |
| Mule Deer | NDGF |
| Pronghorn | NDGF |
| Elk | NDGF |
| Moose | NDGF |
| Bighorn Sheep | NDGF |
| Prairie Chicken | NDGF |
| Ring-necked Pheasant | NDGF |
| Wild Turkey | NDGF |
| Waterfowl | USFWS |
| Piping Plover | USFWS |
| Gray Wolf | USFWS |
| Interior Least Tern | USFWS |
| Black-footed Ferret | USFWS |

[1]Other species protection requested by the management agencies would be evaluated on a case-by-case basis.

Guthery and Beasom (1977) demonstrated that after coyote damage management, deer fawn production was more than 70% greater after the first year, and 43% greater after the second year in their southern Texas study area. Stout (1982) increased deer production on 3 areas in Oklahoma by 262%, 92%, and 167% the first summer following coyote population management, an average increase of 154% for the 3 areas. Mule deer fawn survival was significantly increased and more consistent inside a predator-free enclosure in Arizona (LeCount 1977, Smith and LeCount 1976). Knowlton and Stoddart (1992) reviewed deer productivity data from the Welder Wildlife Refuge following coyote reduction; deer densities tripled compared with those outside the enclosure, but without harvest management regulated (hunting), ultimately returned to original densities due primarily to malnutrition and parasitism.

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

Johnson et al. (1989) found that rates of predation on duck nests early in the nesting season increased with the abundance of red fox, badger, and American crows (*Corvus brachyrhynchos*) and late in the season with the abundance of red fox and striped skunk. The red fox has also been identified by Duebbert and Lokemoen (1976), Higgins (1977), Sargeant et al. (1984), Sargeant et al. (1993), and Klett et al. (1988) as a major predator of ducks and duck eggs. In the prairie pothole region, which includes North Dakota, Sargeant et al. (1993) stated that coyote, red fox, and mink were numerous or common in one or more study areas.

Sargeant et al. (1993) stated that the abundance of red fox has a profound effect on the survival of adult ducks in the prairie pothole region, however, coyotes probably also prey extensively on adult ducks. Coyote, red fox, and mink are the primary mammalian species affecting duckling survival (Sargeant et al. 1973, Sargeant et al. 1993). At the Agassiz National Wildlife Refuge in Minnesota, Korschgen et al. (1996) found predation to be the number one factor of known mortality in 59% of the females and 60% of the male canvasback ducklings. Mink were the single greatest cause of mortality accounting for 39-100% each year (Korschgen et al. 1996).

All predators discussed in this EA prey extensively on duck eggs, although mink nest depredation is primarily in wetlands (Sargeant and Arnold 1984, A. B. Sargeant unpubl. data as cited in Sargeant et al. 1993). Among egg eating mammals, the striped skunk and red fox have the greatest effect on nesting success of ducks in uplands, and raccoons have the greatest effect on nesting success of ducks that nest over water (Sargeant et al. 1993).

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

Nesting colonies of wading birds can be rapidly destroyed by mammalian predators, such as red fox, gray fox (*Urocyon cinereoargenteus*) and raccoon, both through preying on nest contents and by causing the abandonment of nests, not directly affected (Burger and Hahn 1977, Southern and Southern 1979, Rodgers 1980, Rodgers 1987, Frederick and Collopy 1989). Frederick and Collopy (1989) stated that mammals and snakes accounted for 43% of nest failures in a wading bird colony and they suggested that raccoons were the primary mammalian predator.

**Threatened and Endangered (T&E) Species**

Predation can have a major impact on T&E species. Massey (1971) and Massey and Atwood (1981) found that the presence of predators alone can prevent least terns from nesting and cause them to abandon occupied sites. Mammalian predators were found to have significantly impacted the loss of least tern eggs on sandbars

program in North Dakota are:

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

A-1. Respond to requests for assistance with the appropriate action as determined by North Dakota ADC personnel, applying the ADC Decision Model (Slate et al. 1992).

A-2. Hold lamb losses due to predation to less than 3% for livestock producers who have signed ADC agreements.

A-3. Hold adult sheep losses due to predation to less than 2% for livestock producers who have signed ADC agreements.

A-4. Hold calf losses due to predation to less than 1% for livestock producers who have signed ADC agreements.

A-5. Provide requesting cooperators and cooperating Federal, State, Tribal and local agencies with information on nonlethal management techniques proven to be effective for reducing predation.

A-6. Maintain the lethal take of nontarget animals by North Dakota ADC personnel during damage management to less than 3% of the total animals taken.

A-7. Continue to monitor the implementation of livestock producer implemented (nonlethal) techniques.

B. Wildlife protection coordinated with NDGF or USFWS

B-1. Respond to 100% of the requests from NDGF, USFWS, and Tribes for protection of wildlife species, dependent on funding and workforce.

B-2. Involve the NDGF, USFWS or Tribes in wildlife damage management planning to consider specific wildlife to be protected and public health and safety when designing a wildlife damage management program.

C. Public Health and Safety Protection

C-1. Respond to requests for public health and safety protection from predators using the ADC Decision Model (Slate et al. 1992).

## 1.2 RELATIONSHIP OF THIS ENVIRONMENTAL ASSESSMENT TO OTHER ENVIRONMENTAL DOCUMENTS

**1.2.1 ADC Programmatic EIS.** ADC has issued a final EIS (USDA 1994) and Record of Decision on the National APHIS-ADC program. This EA is tiered to that EIS.

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

NEPA.

**1.4.4 Period for which this EA is Valid.** This EA would remain valid until North Dakota ADC and other appropriate agencies determine that new needs for action, changed conditions or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document would be supplemented pursuant to NEPA. Review of the EA would be conducted each year at the time of the Wildlife Damage Management Work Planning process by North Dakota ADC and the Federal land managing agency, and/or the NDGF and USFWS to ensure that the EA is sufficient.

**1.4.5 Site Specificity.** This EA addresses all lands under Cooperative Agreement, Agreement for Control or ADC Wildlife Damage Management Work Plans in North Dakota. These lands are under the jurisdiction of the USFS, BLM, USFWS, CE, BOR, DOD, State, county, municipal and private administration/ ownership. This EA analyzes the potential impacts of predator damage management and addresses activities on lands under MOU, Cooperative Agreement, the jurisdiction of the USFS, BLM, USFWS, DOD, Tribal, State, county, municipal, and private administration/ownership. It also addresses the impacts of predator damage management on areas where additional agreements may be signed in the future. Because the proposed action is to reduce predator damage and because the program's goals and directives are to provide services when requested, within the constraints of available technology, funding and workforce, it is conceivable that additional wildlife damage management efforts could occur. Thus, this EA anticipates any potential expansion and analyzes the impacts of such efforts as part of the program. This 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) would be the site-specific procedure for individual actions conducted by ADC in North Dakota (see Chapter 3 for a description of the ADC Decision Model and its application).

**1.4.6 Summary of Public Involvement.** Issues related to the proposed action were initially developed by an interdisciplinary team process involving ADC, USFS, BLM, USFWS, NDDA, NDSUES, and NDGF. A Multi Agency Team of ADC, USFS, BLM, USFWS, NDGF, NDDA and NDSUES personnel refined these issues, prepared objectives and identified preliminary alternatives. Due to interest in the North Dakota ADC Program, the multi agency team concurred that North Dakota ADC include an invitation for public involvement in this EA process. An invitation for public involvement letter containing the preliminary issues, objectives, alternatives, and a summary of the need for action, was sent to 427 individuals or organizations who had identified an interest in North Dakota ADC, USFS or BLM projects. Notice of the proposed action and invitation for public involvement were placed in six newspapers with circulation throughout North Dakota. Public comments were documented from 26 letters or written comments. The responses represented a wide range of opinions, both supporting and opposing the proposal or parts of the proposal. All comments were analyzed to identify new issues, alternatives, or to redirect the objectives of the program. All responses are maintained in the administrative file located at the North Dakota ADC State Office, 1824 N 11th Street, Bismarck, North Dakota 58501-1913.

## 1.5 AUTHORITY AND COMPLIANCE

### 1.5.1 Authority of Federal[1] and State Agencies in Wildlife Damage Management in North Dakota

#### ADC Legislative Authority

The primary statutory authority for the ADC program is the Animal Damage Control Act of 1931, as

[1]Detailed discussions of the ADC legal responsibilities, and key legislation pertinent to wildlife damage management are found in Chapter 1 of the ADC Final EIS (USDA 1994).

personal services by ADC, as may be necessary to execute the functions imposed upon NDDA by section 4-01-17.1 of the NDCC (NDCC 4-01-17.2).

**North Dakota Counties**

Boards of county commissioners may enter into cooperative agreements with the NDDA and ADC for control of predatory animals as defined in NDCC 4-01-17.1 and 11-11-57. Boards of county commissioners are authorized to make necessary expenditures from county special funds, county general funds or contingent funds for animal control (NDCC 11-11-57.1).

**U.S. Fish and Wildlife Service**

The USFWS has the statutory authority to manage Federally listed T&E species through the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1543, 87 Stat. 884). Under Section 10 of the ESA, ADC is authorized to conduct wolf damage management is in accordance with the USFWS's *Contingency Plan for Responding to Gray Wolf depredations on livestock in North Dakota* (USFWS 1992) on private and public land in North Dakota.

**U.S. Forest Service and Bureau of Land Management**

The USFS and BLM have the responsibility to manage the resources on Federal lands under their jurisdiction for multiple uses including livestock grazing, timber production, recreation, and wildlife habitat, etc., while recognizing the State's authority to manage wildlife populations. Both the USFS and BLM recognize the importance of reducing wildlife damage on lands and resources under their jurisdiction, as integrated with their multiple use responsibilities. The USFS and BLM sensitive species considerations and mitigations would be addressed during the ADC Wildlife Damage Management Work Plan process.

1.5.2 **Compliance with Federal Laws.** Several Federal laws regulate ADC wildlife damage management. ADC complies with these laws, and consults and cooperates with other agencies as appropriate.

**National Environmental Policy Act (NEPA).** This Wildlife Damage Management EA, with ADC as the lead agency, is the first time that all land classes under Cooperative Agreements, Agreements for Control and ADC Wildlife Damage Management Work Plans for North Dakota will be analyzed in a comprehensive manner. Environmental documents pursuant to NEPA must be completed before work plans, consistent with the NEPA supported decision, can be developed and implemented. Before 1993, each National Forest (and occasionally individual Ranger Districts) and each BLM District prepared its own NEPA document. This resulted in different requirements and procedures for different agencies, and omitted analysis of ADC wildlife damage management on lands under other ownership or jurisdiction.

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 agency requests for ADC assistance to protect resources outside the species discussed in this EA would be reviewed, and if necessary, the agency requesting the assistance would be responsible for NEPA compliance.

**Endangered Species Act (ESA)** It is ADC and Federal policy, under the ESA, that all Federal agencies shall seek to conserve T&E species and shall utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). ADC conducts consultations with the USFWS, as required by Section 7 of the ESA, to ensure that "*any action authorized, funded or*

# 2.0 CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT

## INTRODUCTION

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

### 2.1 ISSUES ANALYZED IN DETAIL IN CHAPTER 4

The Multi Agency Team, consisting of representatives from the lead (ADC) and cooperating agencies (BLM, USFS, NDGF, NDDA, NDSUES, USFWS) determined the issues to be:

- Concerns for the North Dakota ADC kill of predators to cause predator population declines, when added to other mortality.
- Concerns for the North Dakota ADC kill of nontarget wildlife and T&E species incidental to North Dakota predator damage management.
- Concerns for the potential use of each predator damage management method.
- Concerns about the selectivity, relative cost, and effectiveness of each predator damage management method.
- Concerns about the effects of North Dakota ADC predator damage management on public health and safety.
- Concerns about the economic effects of predator damage management.

### 2.2 ISSUES USED TO DEVELOP MITIGATION

#### 2.2.1 Wildlife Damage Management in Special Management Areas on Federal Lands

A number of different types of areas exist on Federal lands within North Dakota which currently have a special designation and/or require special management consideration (Table 2-1). These include wilderness (WAs) or primitive areas (PAs), research natural areas (RNAs), and wild and scenic rivers.

Wilderness or primitive areas are areas that have been designated by Congress to be managed for the preservation of wilderness values, and in North Dakota these areas are currently located on USFS, National Park Service, and USFWS lands. The special management required for these different areas varies considerably by designation, land administrator, and are governed by different legal mandates.

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

**Table 2-1. Special Management Areas within North Dakota.**

| Agency | Management Area Name | Designated Wilderness/ Primitive Area | Research Natural Area | Wild and Scenic River | Total Acreage |
|---|---|---|---|---|---|
| Little Missouri National Grasslands | Two top-Big top | Established | | | 14 |
| | Limber Pine | | Established | | 681 |
| | Black Cottonwood | | Candidate Botanical SIA* | | Undetermined |
| | Bullion Butte Escarpment | | Candidate Botanical SIA* | | Undetermined |
| | Ice Caves | | Candidate Geological SIA* | | Undetermined |
| | Pretty Butte | | Candidate Botanical SIA* | | Undetermined |
| | Black Butte | | Candidate Botanical SIA* | | Undetermined |
| Sheyenne National Grasslands | Sheyenne Springs | | Established | | 57 |
| Little Missouri River Commission | Little Missouri River State Scenic River | | | Little Missouri River | Undetermined |
| USFWS | Chase Lake National Wildlife Refuge | Chase Lake Wilderness | | | 4,155 |
| USFWS | Lostwood National Wildlife Refuge | Lostwood Wilderness | | | 5,577 |
| National Park Service | Theodore Roosevelt National Park | Theodore Roosevelt Wilderness | | | 29,920 |

* Special Interest Areas

### 2.2.2 Humaneness of Methods Used by ADC

The issue of humaneness, as it relates to the killing or capturing of wildlife is an important but very complex concept 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 the proposed action:

1. Animal welfare organizations are concerned that some methods used to manage predator damage expose animals to unnecessary pain and suffering. 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 red fox that had been chased by dogs for about 5 min as those restrained in traps (USDA 1994:81). However, such research has not yet progressed to the development of objective, quantitative measurements of pain or stress for use in evaluating humaneness.

ADC would, as requested by the State Historical Society of North Dakota, halt work and contact the Historical Society if any cultural resources or human remains are discovered as a result of North Dakota ADC program activities.

2.2.4.2 American Indian Concerns

The National Historic Preservation Act of 1966, as amended, requires Federal agencies to evaluate the effects of any Federal undertaking on cultural resources and to consult with appropriate American Indian Tribes to determine whether they have concerns for cultural properties in areas of these Federal undertakings. The Native American Graves and Repatriation Act of 1990 provides for protection of American Indian burial sites, human remains, associated and unassociated funerary objects and sacred objects, and establishes procedures for notifying Tribes of any new discoveries.

In most cases, predator damage management has little potential to cause adverse effects to sensitive cultural resources. The areas where predator damage management would be conducted are small and pose minimal ground disturbance. Mitigation measures developed to avoid impacts to these sites are listed in Chapter 3.

In consideration of American Indian cultural and archeological interests, the North Dakota ADC program solicited input from the following Tribes within North Dakota:

The Spirit Lake Sioux Tribe (formerly the Devils Lake Sioux Tribe)
The Sisseton-Wahpeton Sioux Tribe
The Standing Rock Sioux Tribe
The Three Affiliated Tribes (Hidatsu, Mandan, Arikara)
The Turtle Mountain Band of the Chippewa Tribe

Each tribe was requested to identify any cultural concerns relating to the proposed North Dakota ADC program. Only one tribe (The Three Affiliated Tribes (Hidatsu, Mandan, Arikara)) responded and requested to be kept informed and did not identify any concerns. To date no traditional cultural properties or American Indian burials have been identified to North Dakota ADC by the five tribes contacted.

2.2.4.3 Other American Indian Issues

There were no additional American Indian Issues raised as a result of the public involvement process within North Dakota.

## 2.3 Issues Not Considered in Detail With Rationale

### 2.3.1 ADC's impact on Biodiversity and Predator/Prey Relationships

No North Dakota ADC wildlife damage management is conducted to eradicate a wildlife population. North Dakota ADC operates in accordance with international, Federal, and State laws and regulations enacted to ensure species viability. By North Dakota State statute, *"The legislature recognized the importance of maintaining close contact with living communities and environmental systems. The policy mandates the acquisition of natural areas (NDCC 55-11-01). Other statutory policies are to preserve the State's natural resources and wildlife, and to protect wetlands (NDCC 4-22-01)"*

1992), discussed in Chapter 3 to determine the appropriate strategy. If damage management efforts are not initiated soon after a damage problem is detected, damages may sometimes escalate to excessive levels before the problem is solved.

In the Southern Utah Wilderness Alliance, et al. vs. Hugh Thompson, Forest Supervisor for the Dixie National Forest, et al., the United States District Court of Utah denied plaintiffs' motion for a 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 predator damage management (U.S. District Court of Utah 1993).

### 2.3.4 Public Land Management Issues

During public involvement, several people responded that they were opposed to public land grazing, because grazing fees were out-of-date, over grazing, etc. These issues are outside the scope of this EA as they fall under the jurisdiction of land management agencies. This EA is directed at requested predator damage management, as implemented by ADC in North Dakota to protect livestock, wildlife, property, and public health and safety.

### 2.3.5 Objectives are not reasonable

During public involvement, an individual questioned the reasonableness of the objectives established for North Dakota. North Dakota ADC has the authority and responsibility to set program objectives and to monitor the effectiveness in achieving those objectives. Setting objectives is part of a good planning process and it helps establish goals for the organization. The objectives were established to manage predator damage in cooperation and coordination with other agencies and individuals. North Dakota ADC believes that the objectives established are valid, pertinent to North Dakota ADC's legal responsibility and established based on research and program information.

### 2.3.6 Toxicants should be banned

During public involvement, an individual stated that toxicants should not be allowed to be used. North Dakota ADC only uses toxicants that have been registered by the EPA and NDDA under the provisions of FIFRA. A decision to ban toxicants is outside the scope of ADC's authority. North Dakota ADC could elect not to use toxicants, but those that are registered for use in North Dakota are an integral part of IWDM and their selection for use follows criteria in the ADC Decision Model (see Chapter 3).

### 2.3.7 No wildlife damage management at taxpayer expense, wildlife damage management should be fee based

During public involvement, some respondents felt that wildlife damage management should not be provided at the expense of the taxpayer or that it should be fee based. Funding for ADC comes from a variety of sources in addition to Federal appropriations. North Dakota general funds, NDGF funds, county funds, city funds, water resource districts, and livestock producer funds are all applied to the program under Cooperative Agreements. Federal, State, and local officials have decided that wildlife damage management should be conducted by appropriating funds. ADC was established by Congress as the agency responsible for providing wildlife damage management to the people of the United States. Wildlife damage management is an appropriate sphere of activity for government programs, since some aspects of wildlife damage management are a government responsibility and directed by

maintain predator losses of livestock at 0%. Maintaining predator losses at 0% would require North Dakota ADC to eliminate all predators, which North Dakota ADC, NDGF, and NDDA do not support.

### 2.3.12 Reintroduction of Predators

During public involvement, several people responded that they were for or against the reintroduction of predators (i.e., wolves and bears). This issue is outside the scope of this EA as it falls under the jurisdiction of USFWS and/or NDGF. This EA is directed at requested predator damage management as implemented by ADC in North Dakota to protect livestock, wildlife, property, and public health and safety.

### 2.3.13 Prairie Dog Control

During public involvement, an individual responded that they were for increased prairie dog control. This issue is outside the scope of this EA. This EA is directed at requested predator damage management of mammalian predators as implemented by ADC in North Dakota to protect livestock, wildlife, property, and public health and safety.

### 2.3.14 Impact Analysis on Mountain Lions and Bears

During public involvement, an individual stated that they wanted the EA to address the impact of predator damage management on mountain lion (*Puma concolor*) and black bear populations. Currently, there are no viable populations of mountain lions or black bears within North Dakota, but these species do occasionally enter the State from surrounding areas. Both mountain lions and black bears are protected by State law (NDCC 20.1-07-04). Should North Dakota ADC be requested to manage damage caused by either species, North Dakota ADC would respond on a case-by-case basis, obtain the proper permits, and work closely with NDGF.

### 2.3.15 Feral Dog Control

During public involvement, an individual stated that they wanted ADC to control feral dogs within North Dakota. It is North Dakota ADC's policy that the control of feral and/or free ranging dogs may be authorized by the ADC State Director after receiving a written request from a sheriff department when depredations of livestock, property, or wildlife have been confirmed to be dog related or when the NDSHD requests assistance with a public health and safety concern. Prior to any feral dog control activity, North Dakota ADC personnel follow the criteria in the ADC Decision Model (Slate et al. 1992) (see Chapter 3 p 3-4) and the following guidelines (ADC Directive 2.325):

A. If the damage cannot be confirmed, then no action will be taken.

B. If the damage can be confirmed to be caused by dogs, then
   - -The owner of the animal would be contacted, if known, to solve the problem
   - -The County Sheriff Department would be contacted to solve the problem
   - -The resource owner-manager may solve the problem
   - -North Dakota ADC would provide technical assistance upon written request from a sheriff office and authorized by the ADC State Director

If all measures are followed in steps A and B and the problem is still not resolved, then North Dakota

# 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 3), 3) a description of alternatives considered, but eliminated from detailed analysis, and 4) mitigation measures and SOPs. Six alternatives were recognized, developed, and analyzed in detail by the Multi-agency Team (ADC, BLM, USFS, USFWS, NDGF, NDDA, NDSUES); 3 alternatives were considered but not analyzed in detail with supporting rationale. The 6 alternatives analyzed in detail are:

1) Alternative 1 - Continue the Current North Dakota ADC Program: (No Action). This alternative consists of the current program of technical assistance and operational IWDM (ADC Directive 2.105) by North Dakota ADC on the Sheyenne National Grasslands, Tribal, State, county, municipal, and private lands under Cooperative Agreement and Agreement for Control with North Dakota ADC. The current program direction is primarily for the protection of agricultural resources and public health and safety.

2) Alternative 2 - No Federal North Dakota ADC Program. This alternative would terminate the Federal Predator Damage Management program in North Dakota.

3) Alternative 3 - Integrated Wildlife Damage Management for Multiple Resources and Land Classes: (Proposed Alternative). This alternative would allow for predator damage management based on the needs of multiple resources (livestock, wildlife, property, and public health and safety) and would be implemented following consultations with the NDGF, NDDA, Federal agencies or Tribes, as appropriate. The alternative would allow for a program to protect multiple resources as requested on lands owned or managed by the USFWS, BLM, USFS, BOR, CE, Tribal, State, county, municipal or private lands if a Cooperative Agreement, Agreement for Control, MOU and/or Wildlife Damage Management Work Plans with North Dakota ADC are in place, as appropriate.

4) Alternative 4 - Nonlethal Damage Management Required Prior to Lethal Control. This alternative would require that nonlethal damage management be implemented before the initiation of lethal predator damage management by North Dakota ADC.

5) Alternative 5 - Corrective Damage Management Only. This alternative would require that livestock depredation occur before the initiation of lethal damage management. No preventive lethal control would be allowed.

6) Alternative 6 Technical Assistance Only. Under this alternative, North Dakota ADC would not conduct operational predator damage management in North Dakota. The entire program would consist of only technical assistance.

## 3.2 DESCRIPTION OF THE ALTERNATIVES

### 3.2.1 ALTERNATIVE 1 - Continue the Current North Dakota ADC Program (No Action)

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

by ADC personnel in the decision making process, but the actual management work is the responsibility of the requester.

**Direct Damage Management Assistance** (management conducted or supervised by ADC personnel): Direct damage management assistance is implemented when the problem cannot be resolved through technical assistance and when Cooperative Agreements or work plans provide for ADC operational 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 resolve problems effectively and safely, especially if restricted pesticides are required or if the problem requires 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 ADC or other agency personnel, as appropriate. Two strategies are available:

1. **Preventive Damage Management.** Preventive damage management is applying predator damage management strategies before damage occurs, based on historical problems and data. When requested, ADC personnel provide information and conduct demonstrations or take action to prevent additional losses from recurring. For example, in areas where substantial lamb or calf depredations have occurred on lambing or calving grounds, ADC may provide information about livestock guarding animals, fencing or other husbandry techniques, or if requested, conduct operational predator damage management before lambing or calving begins.

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

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

   Wagner (In Press) determined that aerial hunting 3-6 months before sheep are grazed on an area was cost effective when compared to area without aerial hunting. Wagner (In Press) also determined that in areas where preventive aerial hunting was conducted fewer hours of subsequent ground work was required, and concluded that "The reduction in device nights as a result as a result of aerial hunting represents a potentially significant reduction in the risk to non-target species because species other than coyotes can fall prey to traps, snares, and M-44s."

2. **Corrective Damage Management.** Corrective damage management is applying predator damage management to stop or reduce current losses. As requested and appropriate, ADC personnel provide information and conduct demonstrations or take action to prevent additional losses from recurring. For example, in areas where verified and documented lamb depredations are occurring, ADC may provide information about livestock guarding animals,

## *Pre-decision*

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

**Predator Damage Management Methods Authorized for Use or Recommended in North Dakota.**

Mechanical Management Methods:

1. **Livestock producer practices** consist primarily of nonlethal preventive methods such as animal husbandry, habitat modification, and animal behavior modification and are implemented by the livestock producer. Producers are encouraged to use these methods, based on the level of predation, risk, need, and practicality.

    - Animal husbandry 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 animals,
        - herders,
        - shed lambing,
        - carcass removal,
        - temporary fencing, and
        - predator deterrent fencing.

    - Habitat modification alters habitats 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 brush 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 could be scare tactics or fencing to deter or repel animals that cause loss or damage to livestock or property. Scare devices often only produce the desired result for a short time until individual wildlife become accustomed to the disturbance (Pfeifer and Goos 1982, Conover 1982). Some but not all devices used to accomplish this are:

        - predator-resistant fences,
        - electronic guards (siren strobe-light devices),
        - propane exploders,
        - pyrotechnics, and
        - guarding animals.

    North Dakota ADC personnel cooperate with the ADC Livestock Guarding Dog Specialist to maintain a current file of guarding dog suppliers and to offer technical assistance to producers. In FY95, 134 sheep producers used guard dogs, 50 sheep producers used guard burros, 9 sheep producers used guard llamas, and 2 used guard goats (North Dakota ADC unpubl. data). Also during FY95, 9 cattle producers used guard dogs, 5 cattle producers used guard burros, and 1cattle producer used a guard llama (North Dakota ADC unpubl. data). North Dakota ADC also promotes and administers a cost-share program for guard animals and other non lethal techniques funded by NDGF. During FY95, North Dakota ADC approved cost-sharing for 5 guard dogs (North Dakota ADC unpubl. data). In FY94, North Dakota ADC cost-shared 13 guard dogs, 8 guard burros and 1 electronic guard (North Dakota ADC unpubl. data).

pups are killed to prevent their starvation. Pups are typically euthanized in the den through use of a registered gas fumigant cartridge (See discussion of Gas Cartridge under Chemical Management Methods).

8. **Aerial hunting**, the shooting of coyotes or red fox from fixed-winged aircraft, is used on all lands where authorized and determined appropriate. Aerial hunting consists of visually sighting target animals in the problem area and shooting them from the aircraft. Local depredation problems can often be resolved quickly through aerial hunting, particularly sheep and calf predation by coyotes. Cain et al. (1972) rated aerial hunting as *"very good"* in effectiveness for problem solving, safety, and lack of adverse environmental impacts. Smith et al. (1986) cited cost-effectiveness and efficacy as benefits of aerial hunting for protection of pronghorn antelope from coyote predation. Connolly and O'Gara (1987) documented the efficacy of aerial hunting in taking confirmed sheep-killing coyotes.

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

   Aerial hunting is one of the most important predator damage management methods available to ADC in North Dakota. In FY95, 1,167 coyotes (45% of the North Dakota ADC take) and 4 red fox (< 1.0% of the North Dakota ADC take) were taken by aerial hunting (MIS 1996).

Chemical Management Methods:

All chemicals used by North Dakota ADC are registered under FIFRA and administered by the EPA and the NDDA or are approved by the FDA. All ADC personnel in North Dakota are certified as restricted-use pesticide applicators by the NDSUES. No chemicals are used on public or private lands without authorization from the land management agency or property owner/manager. The chemical methods used and/or currently authorized for use in North Dakota are:

1. **Sodium cyanide** in the M-44 device - The M-44 can be used very effectively during winter months when leghold traps are more difficult to keep in operation, and M-44s are typically more selective for target canids than leghold traps. The M-44 is a spring-activated ejector device developed specifically to kill coyotes and registered with the EPA (EPA Reg No. 56228-15) to also kill red fox and feral dogs. The M-44 consists of a capsule holder wrapped in an absorbent material, an ejector mechanism, a capsule containing about 0.9 grams of a powdered sodium cyanide and fluorescent marker mixture, and a 5-7 inch hollow stake. To set a M-44, a suitable location is found, the hollow stake is driven into the ground, and the ejector unit is cocked and fastened into the stake by a slip ring. The wrapped capsule holder containing the cyanide capsule is then screwed onto the ejector unit and a coyote attractant is applied to the capsule holder. A canine attracted to the bait will try to bite and pick up the baited capsule holder. When the M-44 capsule holder is pulled, the spring-activated plunger propels sodium cyanide into the animal's mouth, resulting in death within seconds. Coyotes killed by M-44s present no secondary poisoning risks (USDA 1994:Appendix P, pp. 269-271). Bilingual warning signs (English and Spanish) are posted at major entries into the area where M-44s are placed and a bilingual warning sign (English and Spanish) is placed within 25 ft to warn of each device's presence.

   The M-44 is very selective for canids because of the attractants used and the requirement that the device is triggered by pulling upward. Connolly (1988), in an analysis of M-44 use by the ADC program from 1976-1986, documented more than a 99% selectivity rate for target species in northern States. Domestic dogs are susceptible to M-44s, and this limits the areas where the devices can be safely used. The 26 EPA use restrictions also preclude use of the M-44 in areas where it may pose a danger to T&E species. In FY95, 820

the animal to become immobilized in about 5 min and lasting from 30 to 45 min.

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

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

**Beuthanasia-D$^{R}$** (sodium pentobarbital) is regulated by the DEA and the FDA for euthanization of dogs, but legally may be used on other animals if the animal is not intended for human consumption (ADC Directive 2.430). Sodium pentobarbital is approved by the AVMA as an euthanizing agent.

### 3.2.2 Alternative 2 - No Federal North Dakota ADC Program

This alternative would eliminate all North Dakota ADC predator damage management (operational and technical assistance) on all land classes in North Dakota. However, State and county agencies, and private individuals could conduct wildlife damage management. North Dakota ADC would not be available to provide technical assistance or make recommendations to livestock producers. Occasionally, control methods applied by nonagency personnel could be used contrary to their intended or legal use, or used more than what is recommended or necessary. The illegal use of pesticides and aerial hunting could increase which would be extremely detrimental to wildlife (D. Kraft, USFWS, pers. commun. 1996, Schueler 1993).

Due to interest in this alternative, an analysis has been included. A "No Program" alternative was evaluated in the ADC EIS (USDA 1994).

### 3.2.3 Alternative 3 - Integrated Wildlife Damage Management for Multiple Resources and Land Classes (Proposed Action)

This alternative proposes to combine a North Dakota ADC livestock protection program with any potential need to protect designated wildlife resources and public health and safety on all land classes. Actions would only be conducted following consultation with NDGF and the USFWS for T&E and migratory bird species; land management agencies would be consulted before action would occur on lands under their jurisdiction. Damage management strategies, including areas to receive damage management, timing of damage management and methods to be used would be selected based on the combined needs of livestock, wildlife, and public health and safety, rather than just the needs of the livestock resources, mitigated by potential adverse impacts to wildlife. This strategy provides for more of an integrated management approach where North Dakota ADC conducts predator damage management. For any specific area of public land, the NDGF and USFWS could attend the ADC Wildlife Damage Management Work Plan meeting between North Dakota ADC and the BLM, USFS, BOR or CE. The Spirit Lake Sioux, Sisseton-Wahpeton Sioux, Standing Rock Sioux, the Three Affiliated Tribes, and the Turtle Mountain Band of the Chippewa Tribe are responsible for management of wildlife species on tribal lands and may request North Dakota ADC assistance. At that time a work plan would be developed consistent with this EA. North Dakota ADC would identify areas where requests for assistance to protect livestock have been received or are anticipated (based on historic loss data). The NDGF, Federal agencies or Tribes, would identify areas where protection of wildlife may be necessary to achieve their management objectives, and any mitigation necessary to protect other wildlife resources. The land management agency, consistent with existing MOUs, would identify areas where other mitigation would

The "technical assistance only" alternative would place the immediate burden of operational predator damage management work on State agencies and others experiencing wildlife damage. Individuals experiencing predator damage would, independently or with North Dakota ADC recommendations, carry out and fund management activities. Individual livestock producers could implement predator damage management as part of the cost of doing business or a State agency could assume a more active role in providing operational predator damage management. If this alternative were selected, North Dakota ADC could not direct how State agencies or individuals would implement damage management. Some agencies or individuals may choose not to take action to resolve predator damage while other situations may warrant the use of legally available management methods because of public demands. Predator damage management methods and techniques could be applied by people with little or no training or experience, and with no professional oversight or monitoring for effectiveness and safety. This in turn could require more effort and cost to achieve the same level of wildlife damage management, and could cause harm to the environment, including a higher take of nontarget animals. The illegal use of pesticides and aerial hunting could increase, which would be extremely detrimental to wildlife (D. Kraft, USFWS, pers. commun. 1996, Schueler 1993).

## 3.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL WITH THE RATIONALE

Several alternatives were considered but not analyzed in detail. These are:

### 3.3.1 Compensation for Wildlife Damage Losses

The compensation alternative would direct all North Dakota ADC program efforts and resources toward the verification of livestock and poultry losses from predators, and to providing monetary compensation to the producers for these losses. North Dakota ADC services would not include any direct predator damage management, technical assistance nor would ADC funded nonlethal methods be available.

This option is not currently available to North Dakota ADC because ADC is charged by law to protect American agricultural and natural resources, property and public health and safety (Animal Damage Control Act of 1931, as amended; and the Rural Development, Agricultural and Related Agencies Appropriation Act of 1988). Analysis of this alternative in the ADC EIS shows that it has many drawbacks (USDA 1994):

- It would require larger expenditures of money to investigate and validate all losses, and to determine and administer appropriate compensation,
- Timely responses to all requests to assess and confirm losses would be difficult, 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 livestock owners would rely completely on a compensation program and unregulated lethal control of predators would probably continue and escalate,
- Neither Congress or the State of North Dakota has appropriated funds to compensate for livestock predation or to administer a compensation program.

### 3.3.2 Eradication and Suppression

An eradication and suppression alternative would direct all North Dakota ADC program efforts toward planned, total elimination of predatory species.

Eradication of coyotes in North Dakota is not supported by North Dakota ADC, NDGF or NDDA. By North

- The ADC Decision Model (Slate et al. 1992) is used to identify effective biologically and ecologically sound predator damage management strategies and their impacts,
- leghold traps and snares are not set within 30 feet of exposed carcasses to prevent the capture of nontarget species,
- carcasses that are used for draw stations are staked to keep predators and scavengers from dragging the bait to within 30 feet of a leghold trap or snare,
- leghold trap pan-tension devices are used to reduce capture of nontarget wildlife that weigh less than the targeted species,
- captured nontarget animals are released unless it is determined by North Dakota ADC personnel that the animal would not survive,
- conspicuous, bilingual signs (English and Spanish) alerting people to the presence of leghold traps, snares and M-44s are placed at major access points into areas where damage management equipment is set. Bilingual signs (English and Spanish ) are also posted within 25 ft of each M-44,
- EPA-approved label directions are followed for all pesticide use,
- all North Dakota ADC personnel who use restricted chemicals and euthanasia drugs are trained and certified by experts in the safe and effective use of these materials,
- aerial hunting is conducted in compliance with all applicable Federal and State laws and the North Dakota ADC aerial hunting policies, and
- M-44s are used according to EPA label requirements and the 26 use restrictions (USDA 1994:Appendix Q).

Some additional mitigating measures specific to North Dakota include:

- ADC Wildlife Damage Management Work Plans for Federal, Tribal, State, municipal, and county lands, would be developed which delineate the areas where predator damage management would occur and the methods that would be used,
- 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 regulations administered by NDGF and North Dakota ADC policy, and
- M-44s would not be used on Federal lands without authorization from the appropriate land management agency.

### 3.4.2 Additional Mitigation specific to the issues

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

#### 3.4.2.1 Wildlife Populations

- North Dakota ADC personnel are directed to resolve depredation problems by taking action against individual problem animals, or local populations or groups, dependent on the species

- Research continues to improve the selectivity and humaneness of predator damage management equipment and methods.
- Leghold trap pan-tension devices designed to exclude most nontarget animals that weigh less than the target species are used.
- Only euthanasia procedures that are approved by the AVMA and the ADC Drug Committee would be used.
- North Dakota ADC personnel are trained and experienced to select the most appropriate humane method and equipment that is available.

3.4.2.5 Threatened and Endangered Species

Reasonable and prudent alternatives/measures and SOPs are identified by the USFWS and implemented to avoid impacts to T&E species (USDI 1992, USDA 1994:Appendix C), these include:

**Bald Eagle** - The USFWS's July 1992 Biological Opinion stipulates 2 reasonable and prudent measures as necessary and appropriate to minimize incidental take of the bald eagle. The first measure provided that strychnine shall not be used within 5 miles of an active eagle nest or roost site. This measure is not applicable because no above ground strychnine use would take place under the proposed action or any other alternatives being considered in the EA. The second measure requires that, *"When bald eagles are in the immediate vicinity of a proposed control program, ADC personnel must conduct daily checks for carcasses or trapped individuals. Carcasses of target animals taken with any chemical that may pose a secondary poisoning hazard must be immediately removed and disposed of in a manner that prevents scavenging by any non-target species."*

Although this measure may have been prescribed primarily to address secondary hazards posed by target animals taken with strychnine, the language does specifically refer to, *"any chemical that may pose a secondary hazard."*

The USFWS's July 1992 Biological Opinion also stipulates terms and conditions that ADC must comply with to implement the reasonable and prudent measure discussed above. The first of these terms and conditions requires that ADC contact local resource management authorities to determine bald eagle nest and roost locations. ADC maintains contact with local resources managers during the Wildlife Damage Management Work Plan involving the USFS, BLM, NDGF, USFWS, NDDA or Tribes.

The terms and conditions also require that ADC notify the USFWS within 5 days of finding any dead or injured bald eagle, and we will continue to follow this guidance should any dead or injured bald eagle be found or reported.

The final applicable requirement is that ADC not place any leghold trap (except for mountain lion) within 30 ft of any exposed bait. This is a standard operating procedure for all ADC trapping activities. In addition to this mitigation, our policy requires that in those instances where an exposed bait or carcass might conceivably be dragged or moved by scavengers to within 30 ft of a trap or snare, the carcass must first be secured to prevent moving.

with the USFWS to provide wildlife damage management for protection of whooping cranes. Drewien et al. (1985) found that predation by coyotes and red fox on whooping crane eggs and chicks was common during their research at Gray's Lake National Wildlife Refuge in Idaho, and they concluded that predator damage management was effective in reducing mortality of whooping cranes. If North Dakota ADC were involved in such activities as part of the proposed action, there could be a positive effect.

North Dakota ADC personnel restrict their use of and do not recommend use of avitrol, DRC-1339, zinc phosphide rodent baits or strychnine grain baits where whooping cranes are known or believed to be present. We are unaware of any previous adverse effects on whooping cranes that predator damage management for livestock or wildlife protection may have caused. Therefore, the North Dakota ADC Program's SOPs for chemicals and mechanical techniques limit the possibility of adverse effects upon the whooping crane. Pesticides used in the North Dakota ADC program are not likely to jeopardize the continued existence of the whooping crane or adversely modify its critical habitat.

# 4.0 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides information needed for making informed decisions on the predator damage management objectives outlined in Chapter 1, and the issues and affected environment discussed in Chapter 2. This chapter consists of: 1) analyses of how each alternative meets the objectives, 2) assesses the consistency of the alternatives with existing management plans, and 3) analyses of the environmental consequences of each alternative.

## 4.1 OBJECTIVE ANALYSIS AND CONSISTENCY DETERMINATION

### 4.1.1 Objective A-1 - Respond to requests for assistance with the appropriate action as determined by North Dakota ADC personnel, applying the ADC Decision Model (Slate et al. 1992).

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

The current North Dakota ADC predator damage management program responds to requests for livestock protection on the Sheyenne National Grasslands, State, Tribal, county, and private lands where there are signed Cooperative Agreements, Agreements for Control or Wildlife Damage Management Work Plans. North Dakota ADC cannot, however, respond to requests from livestock producers to protect sheep, lambs, cattle, and calves from predation on the Dakotas BLM District, the Little Missouri National Grasslands or the Cedar River National Grasslands.

Fully meeting Objective A-1 would be impossible for North Dakota ADC since livestock producers that graze on the Dakotas BLM District, the Little Missouri, and the Cedar River National Grasslands could not be provided operational predator damage management when it is requested. North Dakota ADC could not protect designated wildlife and T&E species on USFS and BLM lands under the current program as requested by NDGF or the USFWS. Further, implementing the ADC Decision Model (Slate et al. 1992) is compromised under the current program on Federal lands. Alternative 1 only partially allows North Dakota ADC to meet Objective A-1.

#### 4.1.1.2 Alternative 2. - No Program.

Under Alternative 2, no operational or technical assistance would be provided by ADC in North Dakota. State agencies, individuals, livestock producers or other entities would be responsible for conducting all predator damage management without support or advice from North Dakota ADC.

Alternative 2 would not allow North Dakota ADC to meet Objective A-1.

#### 4.1.1.3 Alternative 3. - Integrated Wildlife Damage Management (IWDM) for Multiple Resources (Proposed Action).

Alternative 3 would allow North Dakota ADC to coordinate with other resource management agencies to develop an integrated predator damage management program based on the needs of livestock, wildlife, including T&E species, property, and public health and safety. In the development of a livestock protection program, other resources needs would be considered and integrated into a program based on the needs of livestock producers and the management objectives of the responsible management agency (i.e., NDGF, USFWS, USFS, BLM, BOR, CE, Tribes) using the ADC Decision Model (Slate et al. 1992).

Alternative 3 would allow North Dakota ADC to best meet Objective A-1 since North Dakota ADC could respond to all requests with the appropriate action on all land classes, as mitigated by other concerns.

| Method | Cattle Producers | | Sheep Producers | | Goat Producers | |
|---|---|---|---|---|---|---|
| | Number | Percent | Number | Percent | Number | Percent |
| Total Producers | 1015 | | 394 | | 20 | |

Alternative 4 would require North Dakota ADC documentation of nonlethal method use, in effect reducing the workforce available for damage management and would restrict North Dakota ADC's ability to meet Objective A-1. In addition, implementing the ADC Decision Model (Slate et al. 1992) would be compromised under Alternative 4, thus allowing North Dakota ADC to only partially meet Objective A-1.

4.1.1.5 Alternative 5 - Corrective Control Only:

Alternative 5 would limit lethal predator damage management to situations where livestock loss from predators has been verified. This alternative would preclude North Dakota ADC preventive damage management in areas where historical losses have occurred. Many sheep producers and some cattle producers have predictable historic patterns of depredations which result in requests for damage management before damage begins.

Alternative 5 would allow North Dakota ADC to only partially meet Objective A-1 and the ADC Decision Model (Slate et al. 1992) would be compromised.

4.1.1.6 Alternative 6. - Technical Assistance.

Alternative 6 would limit North Dakota ADC to providing only technical assistance to requesters concerning the use of available and legal methods, make recommendations, and provide instructional information on predator damage management. North Dakota ADC would not provide any operational predator damage management on Federal, State, Tribal, county, municipal or private lands within North Dakota. State and Federal agencies, individuals, livestock producers or other entities would be responsible for conducting all predator damage management. North Dakota ADC could not provide operational assistance to protect public health and safety.

Based on these restrictions, Alternative 6 would not always allow North Dakota ADC to respond with the appropriate predator damage management strategies and methods, and Objective A-1 could not be met.

**4.1.2 Objective A-2. - Hold lamb losses due to predation to less than 3%/year for producers who have signed ADC Agreements.**

4.1.2.1 Alternative 1. - Continue the Current North Dakota Program (No Action).

The North Dakota ADC program has been able to limit the average annual lamb losses to below 3% of the total protected. The FY93 loss data (MIS 1994) showed that of the 69,516 lambs protected, 1,179 (1.7%) were reported to be killed by predators. Losses to individual producers, at times, could exceed the 3% criteria established in Objective A-2. Loss of lambs to predators in some areas may vary for several reasons including: 1) terrain, weather, and vegetative cover that restricts access and limits the array of available methods, 2) too few ADC personnel for the work load, 3) restrictions on method use, and 4) insufficient funding.

Alternative 1 could meet the criteria of Objective A-2 for the average Statewide lamb losses, but may not be met for every producer in North Dakota.

4.1.2.2 Alternative 2. - No Federal North Dakota ADC Program.

(MIS 1994). Losses to adult sheep may vary for several reasons including: 1) terrain, weather, and vegetative cover that restrict access and limits the array of available methods; 2) too few ADC personnel for the work load, 3) restrictions on method use, and 4) insufficient funding.

Alternative 1 meets the criteria for Objective A-3, however, the loss is not consistent among producers and the 2% goal may not be met for every producer in North Dakota.

4.1.3.2 Alternative 2. - No Program.

Under Alternative 2, no Federally administered North Dakota statewide ADC program would be available to livestock producers, leaving the predator damage management responsibility with the State, Tribal, local government or individuals. Without an effective predator damage management program, existing predation losses to adult sheep could increase significantly in relation to the current predation losses (Gee et al. 1977, O'Gara et al. 1983). Under Alternative 2, no Agreements for Control would be kept. These documents and their unique numbers are the mechanisms for collecting and managing most information gathered by North Dakota ADC; without them no producer or program information could be maintained.

Alternative 2 would not allow North Dakota ADC to meet Objective A-3.

4.1.3.3 Alternative 3. - Integrated Wildlife Damage Management for Multiple Resources (Proposed Action).

Alternative 3 would allow North Dakota ADC to protect adult sheep on private, Tribal, State, BLM, USFWS, county, municipal, and USFS lands. Therefore, the impacts of Alternative 3 in relation to Objective A-3 would be that adult sheep losses could be reduced statewide. However, the loss is not consistent between producers and the 2% goal may not be met for every sheep producer in North Dakota.

Alternative 3 best meets Objective A-3.

4.1.3.4 Alternative 4. - Nonlethal Control Prior to Lethal Control.

As noted in 4.1.1.4, 100% of the sheep producers having Cooperative Agreements with North Dakota ADC, currently practice some type of nonlethal predator damage management. Therefore, the impacts of Alternative 4 in relation to Objective A-3 would be the same as Alternative 1, the current program.

Alternative 4 meets Objective A-3, however, the loss is not consistent between producers and the 2% goal may not be met for every producer in North Dakota.

4.1.3.5 Alternative 5. - Corrective Control Only:

The Corrective Control Only alternative would require a loss before North Dakota ADC could implement predator damage management, thereby increasing adult sheep losses. The adult sheep loss with the current program is about 0.4% and it is feasible that, under a corrective control only program, losses could increase to 2.0% or higher.

Alternative 5 would probably allow North Dakota ADC to partially meet Objective A-3.

4.1.3.6 Alternative 6. - Technical Assistance.

Under Alternative 6, a technical assistance only program, North Dakota ADC could only provide information and training to requesters. Implementation of predator damage management would be the responsibility of the

Alternative 4 would meet Objective A-4.

4.1.4.5 Alternative 5 - Corrective Control Only.

Under Alternative 5, North Dakota ADC lethal damage management could only be implemented following the documentation of livestock predation. Losses of calves from coyote predation would be expected to rise above the current program level. Since calf predation under the current program is well below the standard set in Objective A-4, it is feasible that Alternative 5 could partially meet Objective A-4.

4.1.4.6 Alternative 6. - Technical Assistance.

Under Alternative 6, North Dakota ADC could only provide information, demonstrations, and training to requesters. Implementation of predator damage management would be the responsibility of the requester. Under Alternative 6, no Agreements for Control would be kept. These documents and their unique numbers are the mechanisms for collecting and managing most information assembled by North Dakota ADC; without these documents, no producer or North Dakota ADC program information would be maintained. Losses could be expected to rise, but the ability for North Dakota ADC to quantify those losses would be lost. Lacking an operational North Dakota ADC program, we believe Alternative 6 would not meet Objective A-4.

### 4.1.5 Objective A-5. - Provide requesting cooperators and cooperating Federal, State, Tribal, and local agencies with information on nonlethal management techniques proven to be effective for reducing predation.

4.1.5.1 Alternative 1. - Continue the Current North Dakota Program (No Action).

North Dakota ADC currently provides information on nonlethal management techniques to anyone that requests information. Currently, the program must modify the MIS before it can be used to monitor Objective A-5. When all the components of the MIS are fully modified and operational, North Dakota ADC would be able to determine which livestock producers have been provided information on nonlethal and other producer implemented methods, until then records could be compiled manually.

Alternative 1 would allow North Dakota ADC to meet Objective A-5.

4.1.5.2 Alternative 2. - No Program.

Without an ADC Program, no personnel would be available to provide or track the distribution of equipment or information.

Alternative 2 would not meet objective A-5.

4.1.5.3 Alternative 3. - Integrated Wildlife Damage Management for Multiple Resources (Proposed Action).

The analysis is the same as in Alternative 1. Alternative 3 would allow North Dakota ADC to meet Objective A-5.

4.1.5.4 Alternative 4. - Nonlethal Control Prior to Lethal Control.

Nothing in Alternative 4 precludes the distribution of information regarding nonlethal methods. Therefore the analysis is the same as Alternative 1.

As noted in 4.1.1.4, most livestock producers currently use some kind of nonlethal predator damage management and the current level and type of predator damage management would not change substantially. Therefore, the level of nontarget animal take would not substantially change from the level in Alternative 1.

Alternative 4 would allow North Dakota ADC to meet Objective A-6.

4.1.6.5 Alternative 5. - Corrective Control Only:

Under Alternative 5, North Dakota ADC lethal damage management could only be implemented following documented predation of livestock or to protect public health and safety. Following documented predation, North Dakota ADC could employ the same predator damage management methods currently available. We believe that the ratio of nontarget to target captures would remain about the same as the current program and the analysis is similar to Alternative 1.

Alternative 5 would allow North Dakota ADC to meet Objective A-6.

4.1.6.6 Alternative 6. - Technical Assistance.

Under Alternative 6, no operational predator damage management would be maintained, and therefore, no target or nontarget animals would be killed by North Dakota ADC.

Alternative 6 would allow North Dakota ADC to meet Objective A-6.

### 4.1.7 Objective A-7. - Continue to monitor the implementation of livestock producer nonlethal techniques.

4.1.7.1 Alternative 1. - Continue the Current North Dakota Program (No Action).

The North Dakota ADC program collects data on nonlethal and producer implemented methods recommended by North Dakota ADC personnel and those used by producers. The North Dakota ADC MIS can store the data needed to satisfy this objective, however, the output report programming has not been completed. Information for the analysis in this EA was collected and tabulated manually.

Alternative 1 would allow North Dakota ADC to meet Objective A-7.

4.1.7.2 Alternative 2. - No Program.

Alternative 2 would not allow North Dakota ADC to meet Objective A-7 as no program or personnel would be available to accumulate and evaluate data.

4.1.7.3 Alternative 3. - Integrated Wildlife Damage Management for Multiple Resources (Proposed Action).

The analysis for Alternative 3 is the same as Alternative 1. Alternative 3 would allow North Dakota ADC to meet Objective A-7.

4.1.7.4 Alternative 4. - Nonlethal Control Prior to Lethal Control.

Nothing in Alternative 4 precludes the monitoring of producer implemented nonlethal methods, and the analysis is the same as Alternative 1.

Alternative 4 would not allow North Dakota ADC to meet Objective B-1.

4.1.8.5 Alternative 5. - Corrective Control Only:

As with Alternative 4, Alternative 5 basically directs predator damage management for the protection of livestock only.

Alternative would not allow North Dakota ADC to meet Objective B-2.

4.1.8.6 Alternative 6. - Technical Assistance.

Under Alternative 6, no operational North Dakota ADC program would be available.

Alternative 6 would not allow North Dakota ADC to meet Objective B-1.

**4.1.9 Objective B-2 Involve the NDGF, USFWS or Tribes in wildlife damage management planning to consider specific wildlife to be protected and public health and safety when designing a wildlife damage management program.**

4.1.9.1 Alternative 1. - Continue the Current North Dakota Program (No Action).

The current North Dakota ADC program involves the NDGF, USFWS or Tribes in the design of an ADC wildlife damage management program and the implementation of mitigation to preclude adverse impacts to target and nontarget wildlife. It does not, however, allow for the consideration of wildlife resources to be protected in conjunction with livestock protection on the same ranges, nor does it allow protection of wildlife resources on BLM or USFS lands.

Alternative 1 would allow North Dakota ADC to partially meet Objective B-2.

4.1.9.2 Alternative 2. - No Program.

Under Alternative 2, no Federal predator damage management would be available, therefore there would be no opportunity to coordinate with NDGF, USFWS or Tribes on resources to be protected. Producer implemented control programs would give less consideration to wildlife resources and would likely be less target animal specific.

Alternative 2 would not allow North Dakota ADC to meet Objective B-2.

4.1.9.3 Alternative 3. - Integrated Wildlife Damage Management for Multiple Resources (Proposed Action.

Alternative 3 provides for the NDGF, USFWS or Tribal involvement in wildlife damage management planning to consider specific wildlife to be protected and public health and safety when designing a wildlife damage management program.

Alternative 3 would allow North Dakota ADC to fully meet Objective B-2.

4.1.9.4 Alternative 4. - Nonlethal Control Prior to Lethal Control.

Alternative 4 basically directs North Dakota ADC actions toward livestock programs where nonlethal methods have already been implemented. Therefore, the analysis is similar to Alternative 1. This alternative would not

Under Alternative 3, North Dakota ADC would respond to requests to manage wildlife damage to protect public health and safety, using the ADC Decision Model (Slate et al. 1992) to determine the appropriate course of action. Alternative 3 would permit North Dakota ADC to meet Objective C-1.

4.1.10.4 Alternative 4. - Nonlethal Control Prior to Lethal Control.

Alternative 4 basically directs predator damage management to primarily protect livestock, therefore Alternative 4 allows North Dakota ADC to only partially meet Objective C-1.

4.1.10.5 Alternative 5. - Corrective Control Only:

As with 4.1.10.4, under the strictest interpretation, Alternative 5 would only allow North Dakota ADC to respond to public health and safety complaints after public health or safety has been jeopardized. Under a more conventional interpretation, Alternative 5 directs corrective predator damage management to protect livestock.

Alternative 5 would not allow North Dakota ADC to meet Objective C-2.

4.1.10.6 Alternative 6. - Technical Assistance Only:

Under Alternative 6, no operational North Dakota ADC program would be available.

Alternative 6 would not allow North Dakota ADC to meet Objective C-2.

### 4.1.11 Summary

Table 4-2 summarizes how each alternative would: either best meets the objective, meets the objective, partially meet the objective or does not meet the objective.

**Table 4-2. Objectives/Alternatives Comparison**

| Program Objectives | Alternative 1 *No Action* | Alternative 2 *No Program* | Alternative 3 *Proposed* | Alternative 4 *Nonlethal* | Alternative 5 *Corrective* | Alternative 6 *Technical* |
|---|---|---|---|---|---|---|
| A-1 Requests | Partially Meets | Does not Meet | Best Meets | Partially Meets | Partially Meets | Does not Meet |
| A-2 *Lambs* | Meets | Does not Meet | Best Meet | Meets | Partially Meet | Does not Meet |
| A-3 *Sheep* | Meets | Does not Meet | Best Meets | Meets | Partially Meets | Does not Meet |
| A-4 *Calves* | Meets | Does not Meet | Best Meets | Meets | Partially Meet | Does not Meet |
| A-5 *Information* | Meets | Does not Meet | Meets | Meets | Meets | Meets |
| A-6 *Nontarget* | Meets | Meets | Meets | Meets | Meets | Meets |

## 4.2 ENVIRONMENTAL CONSEQUENCES

This section analyzes the environmental consequences using Alternative 1 (the current program) as the baseline for comparison with the other alternatives to determine if the real or potential impacts are greater, lesser or the same (Table 4-15).

The following resource values within North Dakota would not 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: Social and recreational concerns are discussed throughout the document as they relate to issues raised during public involvement, and they are discussed in the ADC EIS (USDA 1994).

Cumulative and Unavoidable Impacts: Cumulative and unavoidable impacts are discussed in relationship to each of the key wildlife species and the environmental impacts are analyzed in this chapter. This EA recognizes that the total annual removal of individual animals from wildlife populations by all causes is the cumulative mortality. Analysis of the North Dakota ADC "*takes*" during FY93 and FY94, in combination with other mortality, indicates that cumulative impacts are not significant. It is not anticipated that the North Dakota ADC program would result in any adverse cumulative impacts to T&E species, on WSAs or WAs, and predator damage management does not jeopardize public health and safety.

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

**Issues Analyzed in Detail:**

### 4.2.1 Concern for the North Dakota ADC kill of predators to cause predator population declines, when added to other mortality.

The species evaluated in this chapter were selected for analysis because they are taken by North Dakota ADC personnel in response to livestock and wildlife predation, property damage, and public health and safety threats. The "*Magnitude*" analysis for this EA follows the process described in the ADC EIS (USDA 1994:Table 4-2). Magnitude is defined in the ADC EIS 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 whenever 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 cited in the ADC EIS (USDA 1994:Table 4-2) and from NDGF data. "*Other Harvest*"[1] includes the known fur harvest, sport harvest, and other information obtained from NDGF. "*Total Harvest*" is the sum of the North Dakota ADC kill and the "*Other Harvest.*"[1]

Estimating wildlife densities is not precise and often dynamic, and professional judgement is required to

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

in groups of 3 to 5 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 researchers have estimated coyote populations throughout the west and elsewhere (Pyrah 1984, Camenzind 1978, Knowlton 1972, Clark 1972, USDI 1979). The total coyote population in North Dakota can be estimated by using scientific modeling. NDGF estimates the maximum coyote population at 0.4 coyotes/mi$^2$ and the minimum coyote population at 0.2 coyotes/mi$^2$ (Table 4-3). These estimates are based on current reported and estimated densities on public and private lands and are based on stable populations.

Coyote Population Impact Analysis

NDGF estimated population data, based on fur buyer purchases for 1993-94, will be used to examine Statewide potential impacts on coyote populations. The coyote population estimate, made in this document, will be used as a baseline, as it is the most current data available. It should also be noted that the level of "*Other Take*" reported to NDGF may be low because the reporting of coyotes killed is not required.

**Table 4-3. Coyote Population and Harvest Data for North Dakota (MIS 1994, 1995, NDGF 1996:15, S. Allen, NDGF, unpubl. data).**

| Coyote Population Statistics | 1993 | 1994 |
|---|---|---|
| Estimated Coyote Population | 31,407 | 22,072 |
| ADC Kill | 2,309 | 2,570 |
| Estimated Other Take | 12,133 | 9,147 |
| ADC Kill (% of population) | 7.3% | 11.6% |
| Other Take (% of population) | 38.6% | 41.4% |
| Total Take (% of population) | 45.9% | 53.0% |

Connolly and Longhurst (1975) determined that, *"If 75% of the coyotes are killed each year, the population would be exterminated in slightly over 50 years."* The authors further state that their *"Model suggests that coyotes through compensatory reproduction can withstand an annual population mortality of 70%."* To further demonstrate the coyote's recruitment (reproduction and migration) ability, if 75% mortality 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 and Longhurst (1975) model can result in rapid occupancy of vacant territories (Windberg and Knowlton 1988). A NDGF coyote population model determined that about 54% of the population could be removed annually and maintain a stable population (S. Allen, NDGF, unpubl. data). Connolly (1978) noted, the coyote has survived and even thrived in spite of early century efforts to exterminate it. Based on this information and NDGF coyote population field data, ADC's impact on the North Dakota coyote population, even with possible "*Other Harvest*" under reporting, would not affect the coyote population in North Dakota (Allen 1996b).

Red Fox Population Information

Red fox livestock predation reported to ADC in North Dakota has been limited to poultry, kid goats, lambs, and piglets. During 1993, red fox were responsible for 2.8% of the North Dakota ADC verified and 4.3% of the cooperator reported livestock losses (MIS 1994). Additionally, red fox predation on waterfowl, ring-necked pheasants, and prairie chickens are of concern to the NDGF, USFWS, and USFS.

Red fox are the most common and well-known species in the genus *Vulpes* and are the most widely distributed

was 13,487 and during 1994 was 11,327 animals in North Dakota. The ADC red fox kill was 652 animals in North Dakota in FY93, or less than 1% of the total take (MIS 1994). For FY94, the North Dakota ADC red fox kill was 549 animals or less than 1% of the total take (MIS 1995).

USDA (1994) determined the allowable harvest level for red fox to be 70% of the total population. The North Dakota ADC data for FY93 and FY94 suggest that the North Dakota ADC kill was about 0.6% of the total estimated population during both years (MIS 1994, 1995).

"*Total Red Fox Take*" was about 13% of the estimated Statewide population. As these harvest levels are less than 70% of the total population, the magnitude of impact is determined to be low.

Raccoon Population Information

Raccoons accounted for about 0.7% of the North Dakota ADC verified poultry and other fowl loss in North Dakota during FY95 (MIS 1996). In FY95, raccoons also accounted for North Dakota ADC verified losses of $1,710 in grains, crops, and livestock feed, and $4,275 to property (MIS 1996).

The raccoon is a member of the family *Procyonidae* that includes ringtails and coatis in North America. Raccoons are one of the most omnivorous of animals, feeding on carrion, garbage, birds, mammals, insects, crayfish, mussels, other invertebrates, a wide variety of grains, various fruits, other plant materials, and most or all foods prepared for human or animal consumption (Sanderson 1987).

Sanderson (1987) stated that absolute population densities of raccoons are difficult if not impossible to determine because of the difficulty in knowing what percentage of the population has been counted or estimated, and the additional difficulty of knowing how big an area the raccoons are using. Twichell and Dill (1949) reported one of the highest densities, with 100 raccoons removed from a winter tree den area on 101 acres of a waterfowl refuge in Missouri during winter. Other studies have found raccoon densities that ranged from 9.3/mi$^2$ to 80/mi$^2$ (Yeager and Rennels 1943, Urban 1970, Sonenshine and Winslow 1972, Hoffman and Gottschang 1977, Rivest and Bergeron 1981).

NDGF estimated the 1993 spring Statewide racoon population at 20,000 to 40,000 animals, a density of about 0.28 to 0.57 raccoons/mi$^2$ (Table 4-5) (S. Allen, NDGF, unpubl. data).

**Table 4-5. Raccoon Harvest and Population Data for North Dakota (MIS 1994, 1995, NDGF 1996:15, S. Allen, NDGF, unpubl. data).**

| Raccoon Population Statistics | FY93 | FY94 |
|---|---|---|
| Estimated Raccoon Population | 20,000 | 20,000 |
| ADC Kill | 58 | 88 |
| Estimated Other Take | 4,543 | 4,765 |
| ADC Kill (% of population) | 0.29% | 0.44% |
| Other Take (% of population) | 22.70% | 23.80% |
| Total Take (% of population) | 23.00% | 24.26% |

Raccoon Population Impact Analysis

The allowable harvest level for raccoons found in the USDA (1994) was established at 49% of the total population. The information available for 1993 shows the North Dakota ADC kill to be less than 1% of the 1993 estimated population in North Dakota. The FY94 data, the latest available that can be used for comparing North Dakota ADC kill to "*Other Take*" shows that the "*Total Take*" was about 24% of the estimated North Dakota population, and "*Other Take*"

about 0.02% of the population (MIS 1996). It is recognized that other mortality of skunks occurs but no reliable system exists for recording this information. The estimate "*Total Take*" of skunks in North Dakota is less than 1% and therefore of the low magnitude of impact. North Dakota ADC has not recorded any requests for or taken any spotted skunks the last 5 years.

**Table 4-6. Striped Skunk Harvest and Population Data for North Dakota (MIS 1994, 1995, S. Allen, NDGF, unpubl. data).**

| Skunk Population Statistics | FY93 | FY94 |
|---|---|---|
| Estimated Skunk Population | 300,000 | 300,000 |
| ADC Kill (striped skunk only) | 86 | 60 |
| Estimated Other (Harvest) Take | 18 | 185 |
| ADC Kill (% of population) | 0.03% | 0.02% |
| Other Take (% of population) | 0.006% | 0.06% |
| Total Take (% of population) | 0.036% | 0.08% |

Mink Population Information

During FY93 in North Dakota, mink killed 8 rabbits with a value of $56 (MIS 1994). In FY94, mink caused the loss of 2 pea fowl and 12 flamingos (*Phoenicopteridae*) valued at $3,350 (MIS 1995). During FY95, mink killed 10 newborn lambs valued at $500 and 84 chickens at a loss of $420 (MIS 1996). Although not frequently, mink, particularly adult males, do kill small newborn lambs.

The mink, as well as the skunk, is a member of the *Mustelidae* family. Mink are semiaquatic mustelids and associated with semipermanent and permanent wetlands, streams and rivers. Mink are distributed throughout North America, except in the desert southwest where stream flows are irregular (Jones et al. 1985).

Mink are opportunistic predators and feed primarily on birds and mammals including, but not limited to waterfowl, grebes (*Podicipedidae*), blackbirds (*Icterinae*), gulls (*Larinae*), partridges (*Perdix* spp.), ground squirrels (*Sciuridae*), and muskrats (*Ondatra zibethica*) (Sargeant et al. 1973, Yeager 1943). They have also been found to prey on tiger salamanders (*Ambystoma tigrinum*) (Sargeant et al. 1973), crayfish (*Decapod*), and fish (*Osteichthyes*).

During the spring of the year, territorial males occupy large areas and females occupy smaller areas (Gerell 1970, Whitman 1981, Eagle and Whitman 1987, Eagle 1989). Female mink with kits (offspring) restrict their activities to an average of 1 wetland (Eberhardt and Sargeant 1977, Eagle 1989). In the prairie pothole region, mink tend to occupy circular habitats that may encompass many wetlands (Sargeant et al. 1993). Home ranges of adult male mink during May through July in the pothole habitat of Manitoba averaged 2.5 $mi^2$ (range = 1.2-6.3 $mi^2$) and included all or parts of 285 wetlands (Arnold 1986).

Mink lead a precarious existence in prairie habitats because annual fluctuations in water levels affects abundance of food and availability of shelter. Eberhardt (1974) stated that the frequent widespread and local droughts characteristic of the prairie pothole region, decreased reproductive performance of mink. But Sargeant et al. (1993) found that mink were common in 2 study areas in southeastern North Dakota during the drought years of the mid to late 1980s.

Mink Population Impact Analysis

Using the 1992-1993 and 1993-1994 estimated "*Take*" by fur buyers as the basis of non-ADC Take, the "*Total Take*" of mink in 1993 and 1994 was 682 and 427 animals in North Dakota, respectively (Table 4-7) (NDGF

Bobcat Population Information

Bobcat predation on livestock in North Dakota is primarily on lambs and poultry, however predation is infrequent and North Dakota ADC generally removes less than 3 bobcats annually.

Bobcats reach reproductive maturity at approximately 9 to 12 months of age and may have 1 to 6 kittens following a 2-month gestation period (Crowe 1975, Koehler 1987). In Oklahoma, bobcat density ranges between 0.1 and 7.0/mi$^2$., and they may live up to 14 years, but annual mortality is as high as 47% (Rolley 1985).

**Table 4-8. Badger Harvest and Population Data for North Dakota (MIS 1994, 1995, NDGF 1996:15, S. Allen, NDGF, unpubl. data 1996).**

| Badger Population Statistics | FY93 | FY94 |
|---|---|---|
| Estimated Badger Population | 8000 | 8100 |
| ADC Kill | 32 | 21 |
| Estimated Other Take | 655 | 634 |
| ADC Kill (% of population) | 0.40% | 0.26% |
| Other Take (% of population) | 8.19% | 7.83% |
| Total Take (% of population) | 8.59% | 8.09% |

The NDGF manages bobcats as furbearing animals (NDCC 20.1-01-02(12)), with a regulated and controlled trapping season. Trapping regulations dictate that each bobcat that is harvested needs to be tagged so that take and disposition of each animal can be monitored. The NDGF has determined that a North Dakota ADC take of 20 bobcats or less each year would not adversely impact North Dakota's bobcat population (Allen 1996a).

4.2.1.2 Alternative 2. - No Control and Alternative 6 - Technical Assistance.

Both Alternative 2 and Alternative 6 would result in no North Dakota ADC operational program and the potential effects would be similar, therefore they will be analyzed together. Some type of predator damage management would most likely be conducted by livestock and poultry producers, by various State or local governmental agencies or other combinations. The impacts on wildlife populations may vary considerably from those described in Alternative 1, because of the potential for improper or inappropriate selection and use of damage management methods, emphasis on lethal methods, duplication of effort, and possible misuse of pesticides (D. Kraft, USFWS, pers. commun. 1996, Schueler 1993).

A thorough review of the potential impacts of these 2 alternatives can be found in USDA (1994) which summarizes the biological impacts of the no ADC program 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. Taking of target species would be more variable (i.e., lower for some species in some areas and higher in other areas). However, 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, people could use unapproved chemical methods. Misuse of chemicals could increase and thereby adversely affect certain wildlife populations and public health and safety."*

How predator damage management would be handled without ADC can only be speculated, although several

The impacts to target populations would then be similar to those described in 4.2.1.1 for Alternative 1.

### 4.2.2 Concern for the North Dakota ADC kill of nontarget wildlife and T&E species incidental to North Dakota ADC predator damage management.

4.2.2.1 Alternative 1. - Continue the Current North Dakota Program (No Action).

Nontarget animals are individuals killed that were not involved in the depredation situation being resolved, or target species inadvertently killed while attempting to take other target species. Nontarget animals could include red fox, feral cats, bobcat, raccoon, badger, striped skunk, porcupines *(Erethizon dorsatum)*, and dogs. ADC Policy (ADC Directive 2.450) states *"Nontarget animals captured would be released if it is determined that they are physically able to survive."* In FY93, North Dakota ADC's nontarget kill was 10 badgers, 6 feral dogs, 43 red fox, 7 striped skunks, 3 porcupines, and 29 raccoons (MIS 1994). In FY94, North Dakota ADC's nontarget kill was 2 badgers, 2 bobcats,1 feral dog, 1 muskrat, 1 porcupine, 12 raccoons, 2 striped skunks, and 32 red fox (MIS 1995). In FY95, North Dakota ADC's nontarget kill was 2 badgers, 2 bobcats, 2 feral cats, 3 feral dogs, 24 red fox, 1 porcupine, and 18 raccoons (MIS 1996).

Of the above animals listed as nontarget species, all are classified as furbearers by North Dakota statute except porcupine, feral cats, and dogs (NDCC 20.1-01-02(12)). All wildlife species classified as a furbearer are regulated by NDGF and have take restrictions, (i.e., method and time of take), however, all furbearers except bobcat may be taken in unrestricted numbers. ADC policy would continue to minimize nontarget catches whenever possible. Under Alternative 1, nontarget catch and kill rates are expected to remain at the same level.

Under Alternative 1, no capture of T&E species is anticipated. However, the potential does exist for ADC to capture a gray wolf as addressed in the USFWS Section 7, Biological Opinion (USFWS 1992) on the ADC Program and the informal Section 7 Consultation with the USFWS on the North Dakota ADC program (Appendix C and mitigation in Chap. 3).

Under Alternative 1, no predator protection would specifically be provided for other wildlife species on USFS and BLM lands, other than an incidental benefit from the damage management of predators to protect livestock during corrective actions. If reductions of big game abundance or other wildlife species occurred due to predation on USFS and BLM lands, North Dakota ADC could not assist NDGF to reduce predation to protect wildlife under Alternative 1.

4.2.2.2 Alternative 2. -No Program, and Alternative 6. - Technical Assistance Only:

Alternative 2 and Alternative 6 would result in no North Dakota ADC operational program. The impacts of Alternative 2 and Alternative 6 would be similar; no nontarget animals would be captured by North Dakota ADC. However, it should be considered that overall nontarget captures could increase as untrained individuals could attempt to conduct control activities. For the more common species, the population impact could be similar to that of the current North Dakota ADC program. However, it is feasible that T&E species could inadvertently be killed by nonprofessional efforts, especially if the efforts included the illegal use of pesticides (Schueler 1993). While North Dakota ADC would still be available to advise producers under Alternative 6, compliance with North Dakota ADC advice would be voluntary, as it is under the current program.

Alternative 2 could result in a nontarget take greater than North Dakota ADC nontarget take under Alternative 1, which may further harm some species. Alternative 6 could result in a greater nontarget take than those described in Alternative 1, although probably not as many as under Alternative 2. North Dakota ADC would

Under Alternative 1, method use would remain the same, with heavy reliance on selective methods such as aerial hunting, calling and shooting, and M-44s. Producer implemented nonlethal methods use would not change.

**Table 4-9. Target Animal Take by North Dakota ADC, by Method, During FY93 and FY94, Combined (MIS 1994, 1995).**

| Species | Trap | Neck Snare | Aerial Hunt | Denning | Calling/ Shooting | Shooting | Dogs/ Shooting | M-44 |
|---|---|---|---|---|---|---|---|---|
| Coyote | 513 | 462 | 2613 | 162 | 98 | 81 | 40 | 1084 |
| Red Fox | 377 | 286 | 15 | 74 | 12 | 11 | 1 | 425 |
| Raccoon | 158 | 32 | | | | 1 | | 1 |
| Striped Skunk | 128 | 4 | | 7 | | 6 | | |
| Mink | 4 | | | | | | | |
| Bobcat | 0 | 0 | | | | | | |
| Badger | 50 | 3 | | | | | | |

4.2.3.2 Alternative 2. - No Federal North Dakota ADC Program and Alternative 6. - Technical Assistance Only.

Under both Alternative 2 and Alternative 6, no Federal operational predator damage management would exist, therefore no methods would be employed by ADC personnel. Livestock producers or State and local agencies could conduct predator damage management programs. The use of predator damage management methods under some of these options could be less regulated and illegal use of pesticides could occur (Schueler 1993), along with indiscriminant trapping. State law currently provides that red fox and coyotes may be taken by livestock producers without a license to protect their livestock (NDCC 20.1-07-04). Without the Federally administered North Dakota ADC program, producer employed nonlethal methods could decrease, as producers focus their attention on lethal methods, in an attempt to reduce predation.

4.2.3.3 Alternative 3. - Integrated Wildlife Damage Management for Multiple Resources (Proposed Action).

Alternative 3 would provide for an integrated predator damage management strategy, based on the need to protect multiple resources. The major changes of this Alternative from Alternative 1 is: 1) potential for expanding predator damage management to additional lands (Dakotas BLM District, Little Missouri and Cedar River National Grasslands) where there is a need, request an ADC Wildlife Damage Management Work Plan, and 2) changing management strategies which could include the timing of damage management. Calling and shooting, aerial hunting, and denning are currently authorized on the Sheyenne National Grasslands on a corrective only basis (USFS 1990) and these methods could increase slightly. Leghold trap use on the Sheyenne National Grasslands may decrease slightly because problem areas could be addressed by other methods and before the arrival of livestock. M-44 devices could not be used for the protection of wildlife,

remove problem animals by calling and shooting. If calling and shooting is unsuccessful or not feasible, then capture equipment would be placed or aerial hunting used to resolve the problem. Nontarget animals captured in traps or snares are released whenever it is determined that they could survive after release.

As used by North Dakota ADC personnel, snares are slightly less selective for target species than leghold traps. The selectivity of snares is largely a function of how and where they are set. Breakaway snare locks are used to release hoofed mammals which are accidentally caught. Snares are less expensive initially than leghold traps, however, the longevity of traps may make traps more cost effective than snares. Use of livestock guarding dogs by sheep producers has proven effective in preventing or reducing some predation losses (Green and Woodruff 1987), 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. Timm and Schmidt (1989) documented that guard dogs in their study regularly killed deer fawns, and anecdotal evidence from North Dakota ADC personnel and livestock producers suggests that guard dogs sometimes kill coyote and red fox pups as well as deer fawns. Llamas have also been advocated as effective livestock guarding animals (Franklin and Powell 1994), but some degree of hazard to livestock may exist from the use of llamas for this purpose. Llamas are sometimes carriers of paratuberculosis (Johne's disease) which may be transmissible 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. Increased husbandry practices may temporarily decrease livestock depredations, but could increase anxiety in the livestock, resulting in lower birth rates and increased abandonment of young. Nonlethal methods are moderately expensive (e.g., guard animals and herders) to very expensive (e.g., fencing and habitat modification). Costs of many nonlethal methods are borne solely by livestock producers, with the exception of certain nonlethal methods (scare devices and guarding animals) that are cost-shared using NDGF money that is administered by North Dakota ADC.

**Table 4-10. Selectivity of Leghold Traps, Snares and M-44s used by the North Dakota ADC Program, FY93-FY95, by Method.**

| Take | Traps[1] | Snares[1,2] | M-44s |
|---|---|---|---|
| Targets | | | |
| Coyotes | 744 | 692 | 1904 |
| Red Fox | 447 | 352 | 790 |
| Striped Skunk | 92 | 8 | |
| Badgers | 50 | 2 | |
| Raccoon | 78 | 22 | |
| Mink | 4 | | |
| Weasel | 1 | | |
| Porcupine | 8 | 6 | |
| 3-Year Total | 1424 | 1082 | 2695 |
| Nontargets | | | |
| Red Fox | 12 | 29 | 56 |
| Striped Skunk | 8 | 1 | |
| Badger | 11 | 3 | |
| Porcupine | 3 | 2 | |
| Bobcat | | 3 | 2 |
| Feral Dog | 2 | 3 | 5 |
| Raccoon | 17 | 25 | 3 |
| Feral Cat | 1 | | |
| 3-Year Total | 54 | 66 | 66 |
| % Selectivity | 96% | 94% | 98% |

[1] Refers only to the lethal take of animals
[2] Refers to primarily to animals caught in neck snares

Most target animals captured are euthanized, and captured nontarget species are released if judged capable of surviving. Target to nontarget capture rates for trappers that do not use pan-tension devices contribute to the perception that leghold traps are not selective. However, traps are selective as used by North Dakota ADC personnel because of their skill, mitigation measures, and the ADC trapping policy restrictions (ADC Directive 2.450). In FY93 and FY94 combined, 1,058 target animals were captured and 60 nontarget animals were captured with leghold traps. Fourteen of the 60 nontarget captured animals were released, while 46 were

management to the immediate vicinity of verified predation losses, North Dakota ADC would be unable to resolve some depredation problems. Till (1992) found that depredating coyotes traveled an average of 2 mi and as far as 6 mi from their den site to the sheep flocks where they were killing lambs. Shivak et al. (1996) demonstrated that coyotes would travel more than 4 mi and ranged into other coyote territories to kill sheep.

Without preventive damage management, North Dakota ADC would be significantly less effective at reducing coyote predation on livestock. Decreased effectiveness is tied to the logistics of getting to predation areas and the difficulty of predator damage management during late winter months in North Dakota. Till and Knowlton (1983) noted that the coyotes most likely to kill sheep are the ones raising pups, and Gantz (1990) suggested that late winter aerial hunting of coyotes on summer sheep grazing allotments removes coyotes that otherwise would probably have produced pups. By conducting preventive damage management in late winter or early spring, the likelihood of transient coyotes reoccupying and establishing their own territories in time to produce pups is greatly reduced. Gantz (1990) concluded that late winter aerial hunting of coyotes on summer sheep range was an effective method to reduce coyote predation. Wagner (In Press) determined that aerial hunting 3-6 months before sheep are grazed on an area was cost effective when compared to areas without aerial hunting. Wagner (In Press) concluded that preventive aerial hunting reduced the number of traps, snares and M-44s needed in the field to reduce coyote predation and therefore a potentially significant reduction in risk to nontarget species.

Alternative 5 would be considered slightly more selective than Alternative 1, due to increased use of aerial hunting, if funding permitted, and calling and shooting; the cost of predator damage management could increase under Alternative 5, due to intensive predator damage management that would be required without preventive damage management. Livestock loss to predators would be expected to increase under Alternative 5 as compared to Alternatives 1 and 3 because predator damage management would only occur after a livestock loss was verified as predation.

### 4.2.5 Concerns over the effects of North Dakota ADC Predator Damage Management on Public Health and Safety.

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

Effects on public health and safety include potential benefits caused by North Dakota ADC fostering a safer environment and the potential negative effects that might result from the exposure of the public to predator damage management methods. The current program uses integrated methodologies to protect livestock on public and private lands. USDA (1994) identified risks to the public from ADC chemical and nonchemical methods and concluded low public health risks were associated with use of all nonchemical methods. The two chemical methods used in predator damage management (sodium cyanide in the M-44 and sodium nitrate in the gas cartridge) posed possible risks, but the risks associated with these methods are mitigated through specific direction provided by ADC program policies. Risks identified in the evaluation process for these chemicals were primarily environmental risks addressed by the EPA rather than safety or health risks to the public. The risks to health or safety are generally limited to ADC personnel associated with implementing the methods. The potential benefits from the North Dakota ADC Program include increased public health and safety on airport facilities, reduced disease threats to humans and domestic pets (e.g., rabies), and monitoring of diseases such as plague and mange.

4.2.5.2 Alternative 2. - No Federal North Dakota ADC Program, and Alternative 6. - Technical Assistance Only:

Alternative 2 and Alternative 6 would result in no Federal cooperative operational predator damage

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

Costs of the current program in North Dakota for FY94 included salary and benefits for field, supervisory and administrative staff, supplies, equipment, vehicles and transportation, aerial hunting, and all other related program expenditures. During FY93, about $1,161,365 was expended for the total North Dakota ADC operations (MIS 1995). Of this total, $484,378 was for livestock, livestock feed, and poultry protection (42 %), $17,586 for public health and safety protection (2 %), $11,299 for property (1%), $98,652 for forest and range (9%), and $549,450 for crop protection (47 %) (MIS 1994).

Benefits to sheep and cattle producers from predator damage management provided by North Dakota ADC can be measured by comparing the number of livestock protected, the number of livestock killed by predators, and livestock projected to have been saved, to the amount of funds expended for this protection. The North Dakota ADC Program protected 432,869 head livestock and poultry during FY93 (MIS 1994). During that same time, livestock and poultry producers reported that 2,302 head (Table 1-2) were killed by predators (0.5% of the total protected) valued at $179,207. These losses occurred with the current program predator damage management efforts.

**Table 4-12. Summary of Field Studies of Sheep Losses Without Coyote Control (%).**

| Source | Location | Year | Sheep | Lambs |
|---|---|---|---|---|
| Henne (1977) | Montana | 1974 | 20.8% | 29.3% |
| Munoz (1977) | Montana | 1975 | 16% | 24.4% |
| McAdoo and Klebenow (1978) | California | 1976 | Losses were not reported. | 6.3% |
| Delorenzo and Howard (1976) | New Mexico | 1974 | 0% | 12.1% |
| Delorenzo and Howard (1976) | New Mexico | 1975 | Were 0% lost or not reported | 12.1% |

Examples of benefits of the current program can be shown by examining predation rates to lambs, sheep, calves, cattle, and poultry. Verified lamb, sheep, and calf losses from predators in North Dakota in FY94 averaged 1.7%, 0.4%, and 0.4%, respectively (MIS 1995).

No research data exist for North Dakota to determine predation to livestock without predator damage management. However, hypothetical losses to sheep and lambs can be estimated by comparing the current predation rate from studies of sheep in other areas without predator damage management (Table 4-12).

Using the average rate of loss to predators from these studies, a hypothetical loss without predator damage management can be estimated when applied to the total number of sheep and lambs protected. These estimates serve as a basis for determining benefits from the current program.

Because no published data exist to show predator losses to calves in areas without predator damage management, estimating the number of calves that would be lost to predation is not known. The NASS (1996) survey reported North Dakota calf predation loss at 2.2%, which will be used as a possible calf loss rate for North Dakota. The difference between the predation rate with predator damage management and the predation

shown in Table 4-13 represents an estimate of the losses expected for Alternative 2. Consideration is not given to the overall loss to the agricultural economy when livestock producers are lost.

4.2.6.3 Alternative 3. - Integrated Wildlife Damage Management for Multiple Resources (Proposed Action).

Expenditures for the protection of livestock, property, and public health and safety under Alternative 3 are expected to increase. Positive changes realized under this alternative are expected to come from increased effectiveness through coordinated efforts.

Livestock losses would continue to occur under the proposed action, but are estimated to meet the objectives set forth in 1.1.5. Losses of livestock are expected to remain constant to decrease slightly. There would be a possible cost benefit to livestock producers, in addition to other nonmonetary benefits such as increased protection to T&E species and designated wildlife.

Neff et al. (1985) and Smith et al. (1986) conducted a cost:benefit analysis and concluded, that the favorable cost:benefit ratios at the end of a 10-year antelope population cycle appeared to reflect the fact that as the pronghorn antelope population increased, because of coyote damage management, the total number of antelope fawns produced increased resulting in increased payoff for the fixed annual cost of the control operation. In conclusion, coyote population control was a practical and economically sound management tool for certain wildlife management objectives.

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

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

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

In the long term, predator damage management would not affect coyote populations because of immigration from adjacent areas and increased survival of coyote pups (Windberg and Knowlton 1988, Stoddart 1984). If NDGF objectives are to be maintained, research indicates that monitoring and periodic predator damage management could be needed to achieve objectives. Alternative 3 would generate a favorable cost:benefit.

4.2.6.4 Alternative 4. - Nonlethal Control Prior to Lethal Control.

| Issues/Impacts | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5 | Alt. 6 |
|---|---|---|---|---|---|---|
| Striped Skunk | Low | Low | Low | Low | Low | Low |
| Mink | Low | Low | Low | Low | Low | Low |
| Badger | Low | Low | Low | Low | Low | Low |
| Bobcat | Neu/Low | Low | Neu/Low | Low | Low | Neutral |
| Nontarget | Low | Mod/High | Low | Low | Low | Low |
| Game Species | Low | Moderate (-) | Moderate | Low | Low | Neutral |
| T&E Species | Low | Mod/High (-) | Moderate | Low | Low | Mod/High (-) |
| Methods* | Moderate | Low | Moderate | Moderate | Low | Low |
| Selectivity | Low | Neu/Low | Low | Low | Low | Neu/Low (-) |
| Cost:Benefit | Moderate | Neu/Low | Moderate | Moderate | Moderate | Moderate |
| Humaneness* | Low | Low | Low | Low | Low | Low |
| WSAs/WAs* | Low | Low | Low | Low | Low | Low |
| Public Lands* | Low | Low | Low | Low | Low | Low |
| Public Health Safety | Moderate | Low | High | Low | Low | Low |
| Economics | Low | Low | Low | Low | Low | Low |

* Evaluated strictly on the use of predator damage management methods and not on perceptions because of a wide range of human perceptions on the issue.

Based on the diversity and distribution of the affected environment, the analysis in this EA failed to identify any cumulative impacts nor are any significant impacts to the human environment expected because of predator damage management conducted by the North Dakota ADC program. Any localized reduction of predator populations would soon be replaced and habitats reoccupied as North Dakota ADC personnel could only conduct predator damage management on areas with Agreements for Control, Cooperative Agreements or ADC Wildlife Damage Management Work Plans. The acres that North Dakota ADC work on annually amount to approximately 5% of the total state acreage. The effects (*"Other Take + North Dakota ADC Take"*) to predator populations that North Dakota ADC targets during predator damage management are low to low/mod and do not have long-term adverse impact on any species.

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# APPENDIX A

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# APPENDIX B

## ACRONYMS AND GLOSSARY

### ACRONYMS

| | |
|---|---|
| ACEC | Area of Critical Environmental Concern |
| ADC | Animal Damage Control |
| APHIS | Animal and Plant Health Inspection Service |
| AVMA | American Veterinary Medical Association |
| BLM | Bureau of Land Management |
| BOR | Bureau of Reclamation |
| CE | Army Corps of Engineers |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| Conf. | Confirmed |
| DEA | Drug Enforcement Agency |
| DOD | Department of Defense |
| EA | Environmental Analysis |
| EIS | Environmental Impact Statement |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| FDA | Food and Drug Administration |
| FIFRA | Federal Insecticide, Fungicide, and Rodenticide Act |
| FY | Fiscal Year |
| GAO | U.S. General Accounting Office |
| IPM | Integrated Pest Management |
| IWPD | Integrated Wildlife Damage Management |
| LRMP | Land and Resource Management Plans |
| MIS | Management Information System |
| MFP | Management Framework Plan |
| MOU | Memorandum of Understanding |
| NASS | National Agricultural Statistical Service |
| NDASS | North Dakota Agricultural Statistical Service |
| NDCC | North Dakota Century Code |
| NDDA | North Dakota Department of Agriculture |
| NDGF | North Dakota Game & Fish Department |
| NDSHD | North Dakota State Health Department |
| NDSUES | North Dakota State University Extension Service |
| NEPA | National Environmental Policy Act |
| NHPA | National Historical Preservation Act |
| PA | Primitive Study Area |
| RNA | Research Natural Areas |
| Rpt. | Reported |
| RMP | Resource Management Plan |
| SOP | Standard Operating Procedure |
| T&E | Threatened and Endangered Species |
| USDA | U.S. Department of Agriculture |
| USDI | U.S. Department of Interior |
| USFWS | U.S. Fish & Wildlife Service |
| USFS | U.S. Forest Service |
| Ver. | Verified |

## GLOSSARY

**Abundance**: The number of individuals in a population of a species in a given unit of area

**Annual Work Plan**: A management plan developed jointly by the BLM, Forest Service, ADC, UDWR, and UDA specifying when, where, how, and under what constraints wildlife damage management would be conducted during the next 12 months. The plan would include a map showing planned control, restricted control, no control, and special protection areas.

**Allotment:** A specific area of public lands within which grazing by one or more livestock operators is authorized.

**Animal Behavior Modification:** The use of scare tactics/devices to deter or repel animals that cause loss or damage to resources or property. It includes the use of electronic distress sounds, propane exploders, pyrotechnics, lights, scarecrows.

**Animal/Livestock Husbandry:** The use of livestock management practices, such as shed lambing, night penning, or employing herders and guarding dogs, to reduce mortality from weather, predation or other causes.

**Animal Rights**: A philosophical and political position that animals have inherent rights comparable to those of humans.

**Animal Welfare**: Concern for the well-being of individual animals, unrelated to the perceived rights of the animal or the ecological dynamics of the species.

**Behavior Modification**: see "Animal Behavior Modification"

**Candidate Species**: Any species being considered by the Secretary of the Interior for listing as an endangered or threatened species but is undergoing a status review or is proposed for listing.

**Canid:** A coyote, dog, fox, wolf or other member of the dog (Canidae) family.

**Carnivore**: A species that lives primarily on meat (member of the Order Carnivora).

**Carrying Capacity**: The number of animals a given unit of habitat can support.

**Compensation**: Monetary reimbursement for loss of agricultural resources.

**Confirmed Losses:** Wildlife-caused losses or damages verified by APHIS-ADC. These figures usually represent only a fraction of the total losses.

**Corrective Damage Management:** Management actions applied when damage is occurring or after it has occurred.

**Denning/Den Hunting:** The process of finding burrows where predators (primarily coyotes) have their young and then euthanising the pups. The adult predators may also be euthanised.

**Depredating Species:** An animal species causing damage to or loss of crops, livestock, other agricultural resources, or wildlife.

**Depredation**: The act of killing, damaging or consuming animals, crops or other agricultural resources.

**Direct Control**: Administration or supervision of wildlife damage management by ADC, often involving direct capture or intervention with depredating animals.

**Diversity**: The distribution and abundance of living organisms.

**Non-Lethal Control Methods/Techniques:** Wildlife damage management methods or techniques that do not result in the death of target animals (e.g., live traps, repellents, fences, etc.).

**Non-Target Species/Animal:** An animal or local population that is inadvertently captured, killed, or injured during wildlife damage management. The same species may be either a target or non-target animal, depending on the control situation.

**Offending Animal:** The individual animal or animals within a specified area causing damage to public health and safety, to other wildlife, or to forest, range and agricultural resources.

**Omnivore/Omnivorous**: An animal that eats both animal and plant matter; a generalist, opportunistic feeder that eats whatever is available.

**Open Range**: Unfenced grazing lands.

**Pesticide:** A chemical substance used to control pest animals.

**Pesticide Use Proposal (PUP):** A procedure whereby, a petition is submitted to government agency(ies), and must be approved by the agency(ies), before a pesticide, in a specific formulation and purpose can be used.

**Population:** A group of organisms of the same species that occupies a particular area.

**Predacide:** A toxicant used to control or manage predators or damage caused by predators.

**Predator:** An animal that kills and consumes another animal.

**Preventive Damage Management**: Management applied before damage begins.

**Prey:** An animal that is killed and consumed by a predator.

**Public Land:** Land that is owned and controlled by a government agency (i.e., federal, state, regional, county or other municipal jurisdiction).

**Pyrotechnics:** Fireworks or projectiles used to frighten wildlife.

**Range Allotment**: An area, usually on public land, allocated for the use of a prescribed number of grazing animals under a management plan.

**Range Condition**: The relative status of rangeland in terms of available forage.

**Range Lambing**: Lambs born on the open-range or pasture situation.

**Rangeland**: Land on which the natural plant cover is made up primarily of native grasses, forbs, or shrubs valuable for forage.

**Raptors:** Carnivorous bird species (e.g., owls, hawks, falcons) that prey on other birds, amphibians, reptiles, and mammals.

**Registered Chemical**: A chemical that has been approved by the appropriate governmental agency(ies), such as the EPA or UDA, for use in a specific formulation and for a specified purpose.

**Repellent:** A substance with taste, odor or tactile properties that discourages specific animals or species from using a food or place.