

Washington State Elk Herd Plan

NORTH CASCADE (NOOKSACK) ELK HERD

draft

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NORTH CASCADE (NOOKSACK) ELK HERD PLAN

Executive Summary

The North Cascade Elk Herd is one of ten herds identified in the State. It is the northern most herd in western Washington. It is a small herd with the core population in Game Management Unit (GMU) 418 (Nooksack). It is an important resource that provides significant recreational, aesthetic, and economic benefit to Washington citizens and a valued cultural, subsistence, and ceremonial resource to the native American people of the area.

The North Cascade elk herd is a reintroduced herd resulting from a failed transplant of stock from Montana in 1912 and subsequent successful augmentations in 1946 and 1948 of stock from eastern and western Washington. The estimated peak population of 1,700 elk occurred in 1984. Since then, the population has exhibited a sharp decline with a current estimate of #350 elk.

The core population in GMU 418 occupies about 492 square miles with about 125 elk occurring in the lowland agricultural lands along the Skagit River. The remaining elk occupy the higher elevation, forested lands north of the Skagit River.

Analysis of population and trend data shows good potential for this herd. Survey data, although limited in sample size, shows good calf production. Despite these favorable conditions the herd has remained static and at low levels. Unaccounted mortality, despite closure of hunting seasons, may be a significant factor preventing population response.

Habitat changes caused by increased timber harvest should have been favorable for elk population growth except that increased human access and visibility may be contributing to suppressed elk population. Elk damage and use on agriculture lands is an issue. However, it is recognized that private lands along the Skagit River are important areas for elk and that habitat must be preserved and protected.

The purpose of this plan is to provide direction for the management of the North Cascade elk resource into the future. This is a five-year plan subject to amendment. Before the end of the fifth year of this plan, it should be updated, reevaluated, amended and carried out for another 5-year period. It will be a valuable reference document and guideline for WDFW, Tribes, agency cooperators, landowners and the public. Priority management activities can be carried out as funding and resources become available.

There are three primary goals stated in the North Cascade Elk Herd Plan; (1) to manage the elk herd for a sustained yield; (2) to manage elk for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography; and (3) to preserve, protect, perpetuate, manage and enhance elk and their habitats

to ensure healthy, productive populations.

Specific elk herd and habitat management objectives, problems and strategies have been stated in the plan. These are priority objectives identified to address specific problems in elk management. To accomplish each objective a variety of strategies have been developed. The following objectives have been identified:

- ! Manage the North Cascade elk herd using the best available science.
- ! Increase elk population numbers in the North Cascade elk herd to levels at or above late 1980's estimated population of 1700 animals (GMU 418 (Nooksack)).
- ! Promote expansion of the North Cascade elk herd into potential elk range south of the Skagit River, GMU 437 (Sauk).
- ! Reestablish hunting seasons (tribal/non-tribal).
- ! Increase public awareness of the elk resource and promote viewing and photographic opportunities.
- ! Manage hunted elk units for post season bull ratios consistent with the statewide plan (currently \$12 bulls per 100 cows) in combination with overall bull mortality rates #50%.
- ! Reduce damage complaints caused by elk.
- ! Maintain elk habitat capability of USFS, DNR and private timberlands.
- ! Preserve and enhance critical elk use areas.
- ! Develop partnerships to improve habitat and management of elk.

Spending priorities have been identified for the first year and the next five years. Achieving spending levels will be contingent upon availability of funds and creation of partnerships. The recommended prioritized expenditures for the North Cascade elk herd are as follows:

<u>Prioritized Expenditures</u>	<u>1st year</u>	<u>5 years</u>
! Herd Composition Surveys: (jointly with tribes, tribal funding not included here)	\$7,500.00	\$37,500.00
! Improve precision and accuracy of recreational elk harvest data collection.	\$5,000.00	\$25,000.00
! Preserve critical elk winter range on private lands	\$20,000.00	\$100,000.00
! Enhance habitat quality of the primary elk range		\$40,000.00
! Augment elk into GMU 418 (Nooksack) and 437 (Sauk). (Jointly with tribes, funding not included here)	\$20,000.00	\$40,000.00
! Maintain and advocate current research activities		
1. Movements and habitat description study	\$30,000.00	\$30,000.00

2. Nutritional ecology study	advocate	
3. Landscape habitat evaluation		\$10,000.00
4. Genetic's study	\$5,000.00	\$5,000.00
! Population estimates: (jointly with tribes)	\$7,500.00	\$7,500.00
! Establish public viewing areas: (Wildlife Diversity)	_____	<u>\$50,000.00</u>
Total	\$95,000.00	\$345,000.00

North Cascade (Nooksack) Elk Herd Plan

I. Introduction

The herd plan is a step-down planning document under the umbrella of the Washington State Management Plan for Elk (McCall, 1997) and the Environmental Impact Statement for Elk Management (McCall, 1996). For management and administrative purposes the State has been divided into Game Management Units (GMUs). A group of GMUs is described as a Population Management Unit (PMU). In this context an elk herd means a population within a recognized boundary as described by a combination of GMUs. The North Cascade Herd is one of ten herds designated in Washington. The core area of the North Cascade elk herd is in GMU 418 (Nooksack) of PMU 45 (Appendix A). The larger herd planning area includes peripheral elk distribution in GMUs 437 (Sauk), 448 (Stillaguamish) and 450 (Cascade) in PMUs 45 and 46. These areas have small and relatively isolated elk groups living in pockets of useable habitats.

The North Cascade Elk Herd Plan is a five-year planning document subject to annual review and amendment. The Washington Department of Fish and Wildlife (WDFW) recognizes the sovereign status of federally recognized treaty tribes and their relationship as co-managers of the elk resource. This document recognizes a responsibility of the WDFW and the Point Elliot Treaty Tribes, (Lummi, Nooksack, Muckleshoot, Upper Skagit, Sauk Suiattle, Stillaguamish, Swinomish, Suquamish and Snohomish 'Tulalip Reservation'), to cooperate and collaborate. It also recognizes the role of private landowners and public land management agencies, notably the U.S. Forest Service, Washington Department of Natural Resources in elk management.

II. Area Description

- A. Location:** The core area of the North Cascade elk herd occupies approximately 492 square miles of habitat contained within GMU 418 (Skagit and Whatcom counties). The herd boundaries correspond approximately with State Route 9 to the west, the Mount Baker Highway (SR 542) to the north, the west shoreline of Baker Lake, Shannon Lake, and the Baker River to the east, and the Skagit River to the south (Appendix B). The entire area is within the Northern Cascade physiographic province as described by Franklin and Dryness (1973).
- B. Ownership:** Land ownership within the herd area is distributed between private, state, and federal holdings. Private ownership accounts for 212 square miles (43 percent of the total North Cascade elk range). The Washington State Department of Natural Resources (DNR) and the US Forest Service (USFS) owns 168 square miles (34 percent) and 112 square miles (23 percent), respectively. Most of the private land ownership is managed by commercial timber companies.
- C. Topography:** Elevations in the North Cascade elk herd area range from 200 ft. along

the SR 9 corridor to 10,781 ft. at the summit of Mount Baker. Most of the herd area consists of low to mid-level mountainous terrain bordered by agricultural lands to the west and south. The steepest and least accessible range includes Mount Baker and peripheral slopes to the northeast.

- D. Vegetation:** Much of the area below timberline is covered by coniferous forests. Three major forest zones, each named after the climax coniferous tree species characteristic of the zone, occurs along a large elevational gradient as follows; the western hemlock (*Tsuga heterophylla*), Pacific silver fir (*Abies amabilis*), and mountain hemlock (*Tsuga mertensiana*) zones.

The Western Hemlock Zone is the most important timber production zone. In the northern Cascades it generally reaches its upper limit at 600 m (approximately 2,000 ft.) elevation. Major tree species is Douglas Fir (*Pseudotsuga menziesii*), western hemlock and, on moist sites, western red cedar (*Thuja plicata*). Hardwood species such as red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*) occurs mainly as pioneer species on recently disturbed sites or in riparian habitats. Species composition in the under story varies, depending on site moisture and soil class. Therefore, moist sites with better soils tend to be dominated by sword fern (*Polystichum munitum*) communities while poorer, dry soils often support salal (*Gaultheria shallon*) under stories. Most of the elk winter ranges are within the western hemlock zone. Portions of this zone, in the foothills along the western and southern perimeters of the herd range, have been converted to agricultural use.

The Pacific Silver Fir Zone occurs from about 600-1,300 m (approximately 2,000-4,300 ft.). Wetter and cooler than the lower western hemlock zone, it has more winter snows and so a shorter growing season. Vegetative under stories in this zone are often characterized by herbaceous genera such as *Vaccinium* and *Menziesia*.

The highest forest zone in the area is the Mountain Hemlock Zone characterized by heavy winter snow packs that often persist from six to eight months. This zone generally occurs between 1,300-1,700 m (approximately 4,300-5,600 ft.) and gradually changes in structure from closed forests at its lower elevational range to open parklands of a distinct subalpine character near its upper limits.

Timber harvesting operations, mostly by clear cutting, have greatly changed forest habitat structures and stand ages in all three forest zones. Analysis of 1979 "landsat" satellite imagery data showed only about 20 percent of old growth stands remaining within the North Cascade Elk Herd area. Cutting has continued since then and there are indications that elk in the area are limited by the lack of cover which manifests itself mainly through poor habitat use associated with human disturbance (Davison 1990).

- E. Human Influences:** The cumulative impacts of human activities within the primary

range of the North Cascade elk herd is believed to be a cause of recent declines in this population. Intensive logging, primarily as clear cutting, appears to have compromised the carrying capacity for elk on both winter and summer range areas where high road densities and excessive human disturbances persist.

Urban development and agricultural conversion are common along the west, southwest, and southern peripheries of the elk range. County approved residential construction is widespread throughout most lowland areas once considered winter elk use areas. Agricultural conversion of low elevation forest lands is occurring at an accelerated rate, particularly along the Highway 9 and Highway 20 corridors. Agricultural activities include small acreage farms emphasizing beef and dairy, row and hay crops, orchards, horse ranching, and alternative livestock.

Human recreational use is particularly high throughout the North Cascade elk range. Recent timber harvest reductions on USFS lands to the east have significantly shifted the management emphasis toward increased public recreational access in that area. Recreational activities are diverse and include camping, hiking, hunting, fishing, picnicking, birdwatching, photography, mountain climbing, horse riding, riding motorcycles and All Terrain Vehicles (ATVs), snowmobiling on winter range, hang gliding and flying ultra-light aircraft, and cross country skiing.

Thomas and Toweill (1982) noted that elk response to human presence or activity is characterized by either high levels of adaptation or else extreme intolerance, depending upon variables in habitat condition, seasons of the year, previous exposure, and the degree of repetitive disturbance. Altmann (1952) and Craighead et al. (1973) both documented a high level of intolerance to human disturbance within hunted elk herds, as opposed to un-hunted populations that become conditioned to human activity more readily. Other researchers have confirmed varying degrees of disturbance response by elk to activities such as camping, fishing and picnicking, and vehicles stopped along roadsides, audible gunshots and sonic booms (Ward et al., 1973; Ward, 1976; and Cupal, 1979).

Physiological impacts and effects on habitat use by elk are discussed at length in the literature and, although differences of opinion occur regarding the degree and predictability of human disturbances, there is general agreement on the following:

1. Otherwise suitable habitats (both resting and feeding) may be avoided by deer and elk because of human disturbance (Lyon and Basile, 1980).
2. Access by elk to important breeding and calving areas may be obstructed by human disturbance (Roberts, 1974), (Phillips and Alldredge, 2000).
3. Disturbance and harassment of deer and elk can increase metabolic rate and

use of energy resources needed for normal growth and reproduction (Geist, 1978).

- F. Other Ungulates:** Black-tailed deer (*Odocoileus hemionus columbianus*) occupy most of the North Cascade elk range. Mountain goats (*Oreamnos americanus*) represent the only other wild ungulate species known to permanently inhabit portions of elk range. Mountain goat populations occur only on USFS lands on the eastern part of the North Cascade elk range. Neither black-tailed deer nor mountain goats are sufficiently numerous or dispersed to presently be considered limiting factors to elk management.

III. Distribution

- A. Historic Distribution:** Although generally regarded as a "reintroduced" population, the North Cascade elk herd currently occupies habitats historically associated with the native Roosevelt elk (*Cervus elaphus roosevelti*) range in western Washington. Genetically, the North Cascade herd is considered predominantly the Rocky Mountain subspecies (*C. e. nelsoni*). However, it is known that Roosevelt elk were included in early releases. The first attempt at reintroduction of elk into the Whatcom/Skagit County area occurred in the central Skagit River drainage near Birdsvie on March 12, 1912 (Appendix C). These animals were trapped in Yellowstone National Park with 46 elk released in Skagit County, 60 elk released near Startup in Snohomish County, and 80 elk in King County. Following the reported elimination of these animals due to poaching, a second release of 15 elk in 1946 expanded throughout the Middle Fork Nooksack, South Fork Nooksack and north Skagit River drainages. Eight additional elk from the Yakima area were released in the same general area in 1948 (Adkins, 1978). It should be noted that the release of elk into the North Cascade area resulted in the mixing of Roosevelt and Rocky Mountain elk on what is considered historical Roosevelt elk (*C. e. roosevelti*) range. Testing of current elk populations will help to decide their genetic makeup.
- B. Current Distribution:** The North Cascade elk herd is currently considered a declining and fragmented population. A pattern of outward migration of elk from the central portion of the range to peripheral areas (agricultural damage areas) first observed in the late 1980s has continued. As many as 200 animals (approximately 57 percent of the remaining North Cascade elk herd) presently occupy areas outside the primary elk range or in locations outside GMU 418 formerly managed as non elk areas. Appendix B illustrates the "core management" and "peripheral management" areas currently occupied by North Cascade elk.
- C. Proposed Distribution:** Management recommendations for the North Cascade elk herd include the potential for adding all suitable habitats in GMU 437 (Suak) into the

managed range for the North Cascades herd (Appendix A). This area has historically been managed as a non elk unit with specific emphasis upon deer management. Elk colonization in GMU 437 is anticipated to occur slowly but could potentially result in herd expansion into areas north of Day Lake, into the upper Skagit River basin, and into both the Sauk and Suiattle drainage's (Appendix B). The small, isolated populations in GMU 448 and 450 will be maintained. Rapidly expanding urban development threatens the continued existence of elk in GMU 407.

IV. Herd Management

A. Herd History, Current Status, and Management Activities:

Estimated Population Size: The North Cascade elk herd steadily increased in size following successful reintroduction efforts in 1946 to an estimated peak population level of 1,700 animals in 1984 (Davison, unpublished data). Since 1984, extensive timber harvest in critical habitat areas, increased human disturbance on both summer and winter ranges, and excessive hunting harvest (including poaching) are cited as causes of significant population declines. Projected population estimates made in 1997 based upon herd composition surveys (aerial and ground) and field observations by WDFW personnel in Whatcom and Skagit counties place the current population at #350 animals. One of the highest priorities for management of the North Cascade elk herd is the establishment of a statistically valid population estimate. Recent efforts to formulate a population model have been hampered by small sample sizes for herd composition surveys completed during the 1998, 1999, and 2000 seasons (Appendix D).

The minimum sustainable population objective for the North Cascade elk herd is 1,250 animals. With the addition of GMU 437 (Sauk) as extended elk range, population expansion in GMU 437 could occur from natural migration of existing elk inhabiting areas along the Skagit River and/or from augmentation. It should be noted that WDFW is committed to full recovery of the primary elk range north of Highway 20 and views the potential for expansion of GMU 437 as a secondary priority. Evaluation of GMU 437 as potential elk range is planned utilizing GIS/Landsat habitat analysis. The proposed population objective for historical range areas in GMU 418 (Nooksack) is to recover elk numbers to a minimum of 750 animals and in GMU 437 (Sauk) to a minimum of 500 animals.

Herd Composition: Herd composition data is collected in fall (September-October) because this is when the most unbiased information can be obtained. Statewide objectives for bull:cow:calf ratios are reported using post season ratios to provide comparable objectives for western and eastern Washington.

Pre hunting season herd composition information was not collected before 1981 in the North Cascade area. During the period 1981-1983 pre hunting season composition averaged 22.2

bulls and 24.7 calves per 100 cows (Appendix E). Post hunting season composition data was not collected during this period. Following application of a 3-point minimum harvest strategy for bulls in 1984, pre hunting season herd composition for the period 1984-90 averaged 30.6 bulls and 50.8 calves per 100 cows. Reliable post hunting season herd composition data was only available for the years 1987 and 1990. Post hunting season composition for these years averaged 18.1 bulls and 35.3 calves per 100 cows.

The most current herd composition surveys conducted in the Nooksack elk range reflect the typically high numbers of older age class bulls in this herd resulting from limited harvest over the last five years. Pre season herd composition surveys conducted in 1997 indicated a bull:cow:calf ratio of 31.7 bulls and 37.8 calves per 100 cows in a relatively small sample size of 112 classified animals. Animals observed were widely dispersed throughout the range in small fragmented groups. Post season surveys were not conducted in 1997. Elk surveys conducted since 1998 have been accomplished through funding from the Upper Skagit Tribe.

Mortality: No mortality studies have been conducted in the North Cascade range. However, bull elk mortality rates in the North Cascade herd are projected to have historically paralleled those documented by Smith et al. (1994) during a four-year study where human related mortality accounted for 82% of the total. According to Smith et al. (1994), in Washington State, 59% of total mortality was related to hunter harvest, 15% to poaching, 12% to malnutrition, 7% to wounding loss, 2% to predation, 1% to vehicle collisions, <1% to accidents, and 3% to unknown causes.

Current levels of bull elk mortality are too high to allow elk to meet WDFW escapement objectives. Management strategies that reduce overall bull elk mortality to $\leq 50\%$ would allow these units to meet WDFW objectives by allowing for an increased bull elk survivorship. This would result in increased bull:cow ratios and increased survivorship of bull elk. A bull elk mortality rate of $\leq 50\%$ in combination with pre hunting season bull:cow ratios of ≥ 25 bulls per 100 cows is necessary to meet WDFW escapement objectives for general hunt units (Lou Bender, pers. comm., May 1981).

Mortality rates between 1993 and 1997 have not been evaluated for the North Cascade elk herd but are believed to be significantly different from historical rates due to severely restricted hunting seasons (GMU 417 - closed to all elk harvest between 1993-1996), extensive road access restrictions throughout much of the elk range in GMU 418 (Nooksack), and reduced hunter effort.

Elk harvest as reported by State hunters in the North Cascade herd for the period 1980-1989 was very different compared with the period 1991-1998 (Appendix H-1). Harvest currently occurs primarily in the lowland damage areas where primitive weapons damage related hunting seasons (archery and muzzleloader) allow limited access onto private property. Appendix F and Appendix G document historical summaries of hunting season's and unit boundary changes

in the North Cascade elk herd area. Regional estimates for a non tribal damage oriented harvest during the 1998 and 1999 seasons were 15 and 10 animals, respectively. Tribal harvest reporting began in 1988 and has ranged from a high reported harvest of 60 animals in 1990 to a low of three animals in 1998 (Appendix H-2).

B. Social and Economic Values

The value of elk to the state and local economy was estimated to be as high as \$1,945 per harvested elk in the Blue Mountains (Meyers 1999). The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reported that trip and equipment expenditures for big game hunting in 1996 averaged \$860 per hunter (U.S. Department of Interior, et al. 1996). There were only 30 hunters reported hunting GMU 437 (Sauk) in 1997. Using the \$860 average expenditure per hunter from the National Survey, GMU 437 hunters added \$375,820 to the local and state economy in 1997.

J J

Tribal Values: The **k a e g l c c d** (elk) has been an intrinsic part of tribal culture for thousands of years. The elk has helped Northwest Indian people survive throughout the centuries by continually providing a source of nutritional meat and marrow for sustenance and vitamins. Elk is used for religious purposes, clothing and drum making. To this day, elk can still be found at traditional ceremonies and is essential for maintaining tribal culture. Ceremonial and subsistence needs are met by hunting deer and elk.

Hunter Days: During 1991-1999 non tribal hunting effort has been extremely limited due to limited hunting area and reduced seasonal hunting opportunities in peripheral range areas. GMU 417 was created from the core elk area of GMU 418 and closed to elk hunting in 1993. This closure lasted through 1996 and in 1997 GMU 417 was recombined with the larger GMU 418 which remains closed to elk hunting by state hunters except for limited agriculture damage hunts along the Skagit River bottom lands (Appendix F). Tribal hunting efforts were similarly reduced because of restricted access to privately owned lands.

Harvest Strategies: Elk have been managed under a variety of harvest strategies in the North Cascade herd area (Appendix F). Season formats have included any bull (any bull elk), three-point minimum (only bulls with three or more antler points can be harvested), and permit only (only hunters successfully drawing one of a limited number of permits can harvest bull elk). Harvesting of antlerless animals (cow and calf elk) have only occurred during primitive weapons seasons (bow or muzzleloader), damage related kill permits, or tribal harvest. Both antlered and antlerless elk harvest occurs in the lowland damage hunt area next to the Skagit River (Sedro Woolley to Concrete).

The North Cascade herd is currently closed to hunting (“conservation closure” in GMU 418 - initiated in 1997). A “Conservation Closure “ is a specific geographical area closed to hunting as a result of low or significantly decreased population levels. Tribes participate in this closure

on a voluntary basis.

Specific recommendations for harvest strategies will be made every three years as a part of the current WDFW Commission policy of adopting hunting seasons for a three-year period with annual establishment of permit seasons and necessary amendments. The three-year hunting package will serve as the harvest management implementation plan. Tribal participation in the formulation of specific recommendations and harvest strategies begins at the regional level. WDFW regional staff and field personnel meet with tribal representatives periodically to coordinate harvest management strategies and other elk management activities.

Non-hunting Uses: Viewing of elk associated with the North Cascade herd is limited within the core or primary range, but is occasionally available along the Highway 20 and Highway 9 corridors when elk occupy agricultural areas. Public viewing opportunities do exist within primary elk range but would require cooperative agreements and site development with private timber companies, DNR, and USFS.

Damage: Historically, elk damage in the North Cascade elk range has been concentrated in the Saxon/Acme area along Highway 9 and throughout the lower Skagit River Valley bottom from Bacus Hill to Concrete. Elk damage has been primarily focused upon commercial agriculture and horticultural crops with little or no silvicultural problems. From 1990 to the present, elk depredation has shifted to the Skagit River Valley bottom entirely with a notable increase in elk use south of the river and on densely vegetated islands along the river channel itself. Particularly heavy damage is occurring in the Day Creek area (south side of the Skagit River) with approximately 125 elk competing with dairy and cattle farm operations. RCW 77.36.040 requires the payment of claims submitted to the state (WDFW) by landowners for agricultural crop damages caused by deer or elk (Appendix I). To date, WDFW has made only one elk damage related payment in the North Cascade area in the amount of \$5,000. This claim was related to elk damage to a local apple orchard along Highway 20. The actual number of complaints received annually is relatively low (averages 2-4 complaints per year) with only three animals having been harvested via special Landowner preference permits.

Hunting seasons (both general and damage seasons) have traditionally been designed to limit or prevent expansion of the North Cascade elk herd into range areas south of the Skagit River and GMU 437 (Sauk). During the past 14 hunting seasons (1985-1999) for which information is available, total harvest averaged 6 elk by an average of 160 hunters. Five of 14 years there was no harvest recorded from GMU (433)-Sauk. Potential expansion of the elk range would encourage southward expansion of elk into suitable habitats throughout GMU 437. The North Cascade elk herd is currently closed to general hunting due to low population numbers. GMU 418 (Nooksack) is currently designated as a "conservation closure" area.

Management strategies in chronic elk damage areas throughout the Skagit River Valley bottom and in the Acme area will emphasize suppression of elk responsible for damage as opposed to

total eradication of damage oriented elk. Approximately 125 elk inhabit the damage area.

V. Habitat Management

Both winter and summer ranges within the primary habitat area supporting the North Cascade elk herd in GMU 418 (Nooksack) are in poor condition. Intensive logging, road densities in excess of prescribed levels, loss of thermal cover, high levels of human disturbance, and loss of critical travel corridors between low and high elevation range areas are collectively cited as the cause (Davison, 1990). More recent studies by Cook, et al (1998), Cole, et al (1997), Merrill (1991), and McCorquodale(1991) suggest diminished importance of thermal cover on winter ranges when disturbance is low and high energy forage is present.

Mitigation for the loss of critical winter range has been accomplished through a number of cooperative enhancement projects involving WDFW, Rocky Mountain Elk Foundation (RMEF), DNR, USFS, and private timber companies. Projects have included: (1) the establishment of habitat forage enhancement sites involving clearing, seeding, and fertilization of key elk use locations; (2) road closures on systems effecting enhancement sites and critical habitat on summer and winter ranges; (3) roadside seeding and fertilization; (4) placement of mineral blocks throughout habitats immediately adjacent to damage areas (Appendix J). Elk use of established forage enhancement sites has been extensive regardless of season but is highest during winter and spring periods. Habitat degradation continues at an accelerated pace on private timber lands. The Department of Natural Resources (DNR) has recently developed a block timber management plan on the lower North Fork Nooksack River that specifically addresses the needs of resident elk on that portion of critical winter range. A recent acquisition of 2300 acres of forested land along the SF Nooksack River has also enhanced winter carrying capacity for elk.

VI. Research Needs

1. The highest research need for the Nooksack elk herd continues to be the development of a statistically accurate population estimate (Management Plan - Nooksack Elk Herd, 1993-1998). Population levels can be obtained via population modeling (Pop-II).
2. Elk depredation to commercial agricultural crops continues to be a significant management problem. Monitoring of elk numbers using damage areas and evaluation of the effectiveness of damage control hunts are high research priorities.
3. Habitat evaluation analysis: Updated evaluation of the Nooksack elk range utilizing "Landsat" satellite imagery combined with geographical information systems (GIS) analysis is needed to assess current habitat status and to project future carrying capacity of critical range areas. A similar analysis of GMU 437 (Sauk) is also recommended in

order to identify habitats suitable for elk expansion or potential re-introductions (augmentation).

4. Elk nutritional evaluation to determine the general health of the elk herd in relationship with the habitat.
5. Evaluation of the elk genetic makeup and integrity of the North Cascade Elk Herd in light of the past practice of augmentation of Rocky Mountain Elk in historical Roosevelt elk range.
6. Migrational studies: Investigate elk seasonal movements and identify travel corridors used by the North Cascade Elk Herd.

VII. Herd Management Goals

The North Cascade (Nooksack) Elk Herd Plan provides the historical background, current condition and trend of this important resource. It is essentially an assessment document that, identifies management problems, develops solutions to overcome these problems, and sets direction. The plan outlines goals, objectives, problems, and strategies and helps establish priorities in resolving management of the elk herd. It provides a readily accessible resource for biological information collected from the herd and identifies inadequacies of scientific information. Fundamental goals for the management of the North Cascade elk herd are to:

1. Manage the North Cascade (Nooksack) elk herd for a sustained yield.
2. Manage elk for a variety of recreational, educational, and aesthetic purposes including hunting, scientific study, cultural, and ceremonial uses by Native Americans, wildlife viewing and photography.
3. Preserve, protect, perpetuate, manage and enhance elk and their habitats to insure healthy and productive populations.

VIII. Management Objectives, Problems and Strategies

A. Herd Management Objectives, Problems and Strategies:

1. *Objective:* Manage the North Cascade elk herd using the best available science.

(1) *Problems:* Harvest information (kill and hunter effort) collected from report cards and the hunter questionnaire is not providing accurate information for use

at the GMU level. Tribal harvest is not available from all tribes. Herd surveys and harvest data are critical elements for making management recommendations.

Strategies:

- a. Increase precision and accuracy of recreational and tribal harvest through mandatory reporting.
- b. Work cooperatively to increase precision, accuracy, and timely exchange of tribal harvest.

(2) *Problem:* Biological surveys of herd condition and habitat status are limited or outdated.

Strategies:

- a. Increase level of herd composition surveys (pre- and post-season) necessary to complete a modified Pop-II population modeling technique in GMU 418.
- b. Monitor elk numbers and distribution in agricultural damage areas.
- c. Monitor elk numbers and distribution in GMU 437 (Sauk).
- d. Develop methods and standardize collection of data between WDFW and tribes.

(3) *Problem:* The North Cascade elk population was re-established by transplants of Rocky Mountain elk from Montana, eastern and western Washington dating back to 1912, 1946 and 1948. Historically, this area was occupied by native Roosevelt elk.

Strategies:

- a. Conduct genetic's study of North Cascade elk herd to determine if the North Cascade elk herd is a mixed genetic stock or is predominately Rocky Mountain (*C. e. nelsoni*) or Roosevelt (*C. e. roosevelti*) subspecies.

(4) *Problem:* The North Cascade elk herd area has experienced some dramatic landscape changes through the twentieth century which are far different than pristine habitats used by native populations of Roosevelt elk. Those changes should have benefitted elk, yet the population remains low.

Strategies:

- a. Update and expand GIS/landsat habitat evaluation to include potential range expansion area in GMU 437.
- b. Evaluate nutritional condition of elk on a seasonal basis.

2. *Objective:* Increase elk population numbers in the North Cascade elk herd to levels at or above late 1980's estimated levels of 1700 animals (GMU 418 Nooksack).

(1) Problems: Elk population levels in the North Cascade elk herd have declined from peak 1987 levels of approximately 1700 animals to an estimated #350 animals currently. Existing animals are sparsely distributed throughout the primary elk range (GMU 418) with as many as 125 elk located in peripheral damage areas.

Strategies:

- a. Continue antlerless hunting closure in GMU 418 (Nooksack), until minimum population objective of 750 is achieved.
- b. Implement road management programs designed to protect and support specific sub-herds on impacted range.
- c. Develop and implement habitat enhancement projects on a large scale. Projects should be widely dispersed throughout the range and include sites on both summer and winter ranges.
- d. Augment the existing population with releases of elk from other elk herds in the State of Washington or from adjacent states with surplus animals. (See Appendix D for summary of population modeling projections based upon growth models with and without augmentation).
- e. Seek additional available funding sources for augmentation and enhancement.

(2) Problems: Elk in damage areas occupy privately owned agricultural habitats where crop and property damage occur. Gaining hunting access to these lands is limited for both tribal and state authorized hunters.

Strategies:

- a. Work with local landowners in an effort to allow elk use of private lands through conservation easements or other programs.
- b. Evaluate the potential for cover crop subsidies linked to increased tribal and non-tribal hunter access.

3. *Objective:* Promote expansion of the North Cascade elk herd into potential elk range south of the Skagit River, GMU 437 (Sauk).

Problems: The potential for population increase of the North Cascade elk herd within historical range (GMU 418 - Nooksack) is limited. This herd is the smallest in Washington State occupying a total range area of only 492 square

miles. An estimated 125 elk (approximately 40 percent of the estimated total population) currently occupy lowland agricultural lands along the Skagit River. Management efforts to discourage elk use in these areas because of damage may result in elk migration into GMU 437 (Sauk). Without management protection, elk moving into this habitat would be subject to hunting and potentially lost as the nucleus of a future population in suitable range. GMU 437 (Sauk) has not been systematically evaluated as potential elk range for either migrating elk or potential augmentation.

Strategies:

- a. Maintain a state hunting closure in GMU 437 (Sauk), except damage hunts, until a minimum elk population level is achieved. (Hunting seasons, harvest levels, and management options are to be established as part of the existing three year season setting process).
- b. As long as damage is verified on agricultural lands adjacent to the Skagit River use landowner damage hunts, kill permits, or hot spot hunts to target offending animals and to encourage depredating animals to either return to historical range in GMU 418 or migrate south into potential new range areas in GMU 437.
- c. Complete GIS/Landsat habitat analysis of GMU 437 as potential elk range. Quantify summer and winter range areas, identify potential damage conflicts, evaluate road densities and existing disturbance factors.
- d. Evaluate the potential for augmentation (elk transplants) into GMU 437 (Sauk).
- e. Begin aerial surveys in GMU 437 to determine current elk use levels.
- f. Place radio-collars on 10 - 15 elk in the damage areas to evaluate seasonal movements (both within the damage areas and in the adjacent GMU's 418 and 437).

4. *Objective:* Re-establish tribal/state authorized hunting seasons.

Problems: Current elk population numbers are down 83 percent below historical high levels in 1987 of 1700 animals. Hunting in the North Cascade herd is currently closed in the primary elk range areas with limited hunting opportunity in the damage areas. Targets for re-opening the hunting season and for conservative management of the herd need to be identified. Opportunities to provide access for tribal and non-tribal hunters need to be developed.

Strategies:

- a. Increase elk population numbers to a minimum sustainable level of 750+ animals in GMU 418 and 500 animals in GMU 437
- b. Provide controlled harvest in GMU 418 and GMU 437 for bull only

consistent with bull mortality objectives until population objective is met.

- c. Maintain existing road access when compatible with elk management objectives.

5. *Objective:* Manage hunted elk units for post-season bull ratios consistent with the statewide plan (currently ≥ 12 bulls per 100 cows) in combination with overall bull mortality rates $\leq 50\%$.

Problem: Target levels for conservative management of the North Cascade elk herd must be established to insure healthy sustained growth of the population once hunting seasons have been re-established.

Strategies:

- a. Maintain management strategies for hunted GMUs for at least 3 consecutive years to determine whether they achieve objectives for bull:cow ratios, bull mortality rates, and population growth.
- b. Evaluate bull elk survivorship under a permit-only harvest strategy with regard to achieving bull:cow ratios, bull survivorship objectives, and population growth.
- c. If recruitment levels are inconsistent with population objectives, strategies for harvest management will be adjusted and the cause will be investigated.

6. *Objective:* Reduce damage complaints caused by elk.

(1) Problem: Elk damage continues to occur in the lowland agricultural areas along the Skagit River and is likely to expand into additional areas as the population increases

Strategies:

- a. Continue to use hot-spot hunts, landowner damage hunts, and tribal hunting to target depredating elk. In specified damage areas, special hunts and early or late season formats may be used.
- b. Increase forage enhancement projects on public and industrial forest lands only within primary elk range. Work with individuals or groups of landowners and develop incentive programs or conservation easements that reward them for maintaining or enhancing elk populations and elk use opportunities on their lands.
- c. Discourage elk from increasing west of Highway 9 where potential conflicts are high.

(2) *Problem:* Public demand for recreational activities such as motorcycle, ATV, horse and hiking that are in conflict with elk and other wildlife has increased.

Strategy:

- a. Recommend placement of trail systems away from core elk areas and experiment with the placement of these trail systems in peripheral range areas immediately adjacent to damage areas in hopes of displacing elk from damage prone areas.

7. *Objective:* Increase public awareness of the elk resource and promote non-consumptive values of elk including viewing and photographic opportunities.

Problem: Developed public viewing sites do not exist in the North Cascade elk area.

Strategies:

- a. Work with private timber companies, DNR, USFS, local communities, RMEF, land trust organizations and school districts to promote, identify, and fund elk viewing site(s) in Whatcom and Skagit counties.
- b. Develop a brochure for the public with general information on where elk are likely to be found and their natural history and management.
- c. Promote regional (WDFW) strategy for minimizing human disturbance problems associated with management of all wildlife species in north Region four by dispersing wildlife viewing

B. Habitat Management Objectives, Problems, and Strategies:

1. *Objective:* Maintain elk habitat capability on USFS, DNR, and private timberlands.

(1) *Problem:* WDFW has management authority for elk in the State of Washington, but does not own or control the majority of the land base supporting regional elk herds. Management strategies for improving elk habitat quality rely on the cooperation and participation of individual landowners.

Strategies:

- a. Work with landowners, RMEF, and Treaty Tribes to develop agricultural and silvicultural treatments on both primary elk winter and summer ranges to increase elk.
- b. Develop landscape level management plans with landowners, designed to preserve or enhance elk habitat on large tracts of land.

2. *Objective:* Preserve and enhance critical elk use areas.

(1) Problem: Habitat availability and quality is decreasing on private, state, and federally owned public lands

Strategies:

- a. Acquire management authority over critical elk wintering areas and summer range through conservation easements, lease agreements, land exchanges, landowner incentives, and fee purchases.
- b. Work with both public and private landowners to design development strategies which do not result in declines in winter range capability for elk.
- c. Continue to work with the USFS and Department of Natural Resources (DNR) to manage for no net loss of winter range resulting from forest practices.
- d. Continue efforts to reduce overall road densities on primary elk range to one linear mile per square mile or less.
- e. Coordinate with local government entities to develop comprehensive land use plans (Growth Management Act) that maintain current winter range capability for elk.
- f. Participate in District Teams and review Forest Practice Applications and other project proposals review and regulatory processes for their potential effects on elk habitat and provide mitigative measures.
- g. Continue forage enhancement plot projects in cooperation with RMEF, DNR, USFS, and private timber companies.
- h. Decrease noxious weed levels on important elk habitats.

3. *Objective:* Develop partnerships to improve habitat and management of elk.

(1) Problem: Effective management of the North Cascade elk herd is dependent upon a strong working relationship with all stakeholders and effective communication with the general public and legislative representatives.

Strategies:

- a. Seek funding and support from conservation organizations for elk herd and habitat management.
- b. Work closely with agencies and industrial timber companies on road management and habitat enhancement.
- c. Solicit volunteers to conduct projects and to participate in surveys.
- d. Maintain close cooperation and coordination with Point Elliot Treaty

tribes through annual meetings where counsels are held on elk herd status, trend, condition and establish respective hunting seasons and rules.

- e. Work closely with local community leaders and legislative representatives to insure that elk management issues reflect the needs of the community and that opportunities for social, cultural, educational, and economic development are not lost.

IX. Spending Priorities

- A. **Herd Composition Surveys:** Pre hunting season and post hunting season herd composition surveys should be increased in the North Cascade elk herd area. These surveys are necessary during the conservation closure period to facilitate population estimates and to monitor herd distribution and dispersal patterns. Additionally, pre-and post-season composition surveys allow the estimation of both bull mortality rates and potential cow elk harvest rates. Composition surveys facilitate WDFW evaluation of implemented harvest strategies and trends. Jointly funded cooperative herd surveys.
Priority: High
Time line: Annually(2001 - 2005)
Cost: \$7,500 per year (Tribal funding not included here; actual cost about \$12,000.)
- B. **Improve precision and accuracy of elk harvest data collection:** Increase the precision and accuracy of tribal and recreational harvest estimation from the North Cascade elk herd by implementing mandatory hunter reporting.
Priority: High
Time line: ASAP
Cost: \$5,000 per year. The cost for gathering harvest information for this herd was estimated on the percentage of the total statewide harvest calculated at approximately 2% for the North Cascade.
- C. **Protect critical elk winter range on private lands:** Purchase, lease, acquire easements and use other opportune ways to protect and enhance critical elk winter ranges located along the Skagit River bottom lands. A value of \$10.00 per acre for conservation easement to enhance agricultural lands for elk and other wildlife is used. A modest start of 2,000 acres would require \$20,000.
Priority: High
Time line: January 2001-December 2005
Cost: \$20,000. Annually for 2,000 acres.
- D. **Augment elk in GMU 418/437:** Once landscape and genetic evaluations are complete, elk should be transplanted into GMU 418/437 and monitored to determine effectiveness of increasing populations to meet goal/objective.

Priority: High

Time line: 2001 or 2002 GMU 418 Nooksack.
2002 or 2003 GMU 418 Nooksack or 437 Sauk

Cost: \$20,000 per GMU.

Capture cost approximately \$500 per animal released (25).

Monitoring estimated at \$300 per animal for one year.

Number of animals released may be increased with cooperative funding.

- E. Enhance habitat quality on primary elk range:** Maintaining existing forage enhancement plots and the establishment of additional habitat enhancement projects (road closures, control of noxious weeds) on both winter and summer range areas is a high priority for recovery of the North Cascade elk herd.

Priority: High

Time line: Jan. 1, 2002 - Dec. 31, 2005

Cost: \$10,000 per year @ 4 years = \$40,000

F. Maintain and/or advocate current study and research activities:

1. Movements and Habitat Description Study - This ongoing cooperative study with WDFW, RMEF and Point Elliot Treaty Tribes is designed to evaluate migration patterns, habitat use, mortality and habitat description of elk range in GMU 418 (Nooksack).

Priority: High

Time line: Ongoing thru December 31, 2003

Cost: \$30,000 (Graduate Student)

2. Nutritional Ecology Study - This study is part of a multi-state study to monitor and evaluate elk nutritional levels on a seasonal basis. Three recaptures of radio collared elk @ \$10,000 per capture.

Priority: High

Time line: March 2000 - March 2002 (First year already funded)

Cost: WDFW is an advocate of this study and provides assistance in sampling elk in the state.

3. Landscape Habitat Evaluation - A landscape habitat evaluation needs to be conducted for GMU 437 prior to elk transplant actions.

Priority: High

Time line: January 1, 2001 - December 31, 2002

Cost: \$5,000 per year @ 2 years = \$10,000 (re-prioritize existing staff)

4. Genetic's Study - The North Cascade elk herd genetic study will determine whether the remaining elk are Roosevelt, Rocky Mountain or a mixed breed and will help

determine source of elk for transplants.

Priority: High

Time line: January 1, 2000 - December 31, 2001.

Cost: \$5,000.

- G. Population estimates:** Surveys designed to achieve statistically valid herd population estimates are the highest research priority for the North Cascade elk herd. Recent population declines coupled with a re-distribution of elk from primary range areas to peripheral damage areas have resulted in the establishment of a conservation closure (no hunting). Re-establishment of hunting in the future will require accurate population surveys to define population status and to provide monitoring capability once harvest impacts begin. An adapted Pop-II modeling procedure is recommended for establishing reliable population estimates (Point in time population estimate to be conducted every 3-5 years).

Priority: Moderate

Time line: Year 2002

Cost: \$7,500 per year (re-prioritize existing staff)

- H. Establish public viewing areas:** Public viewing opportunities of the North Cascade elk herd have been limited to chance encounters along state highways. Development of site-specific viewing areas (generally associated with forage enhancement projects) is practical in both Skagit and Whatcom counties but would require joint partnerships between WDFW and individual landowners (private, state, federal) as well as, numerous community based organizations.

Priority: Medium

Time line: Establish Jan. 1, 2001 - Dec. 31, 2003

Cost: \$50,000

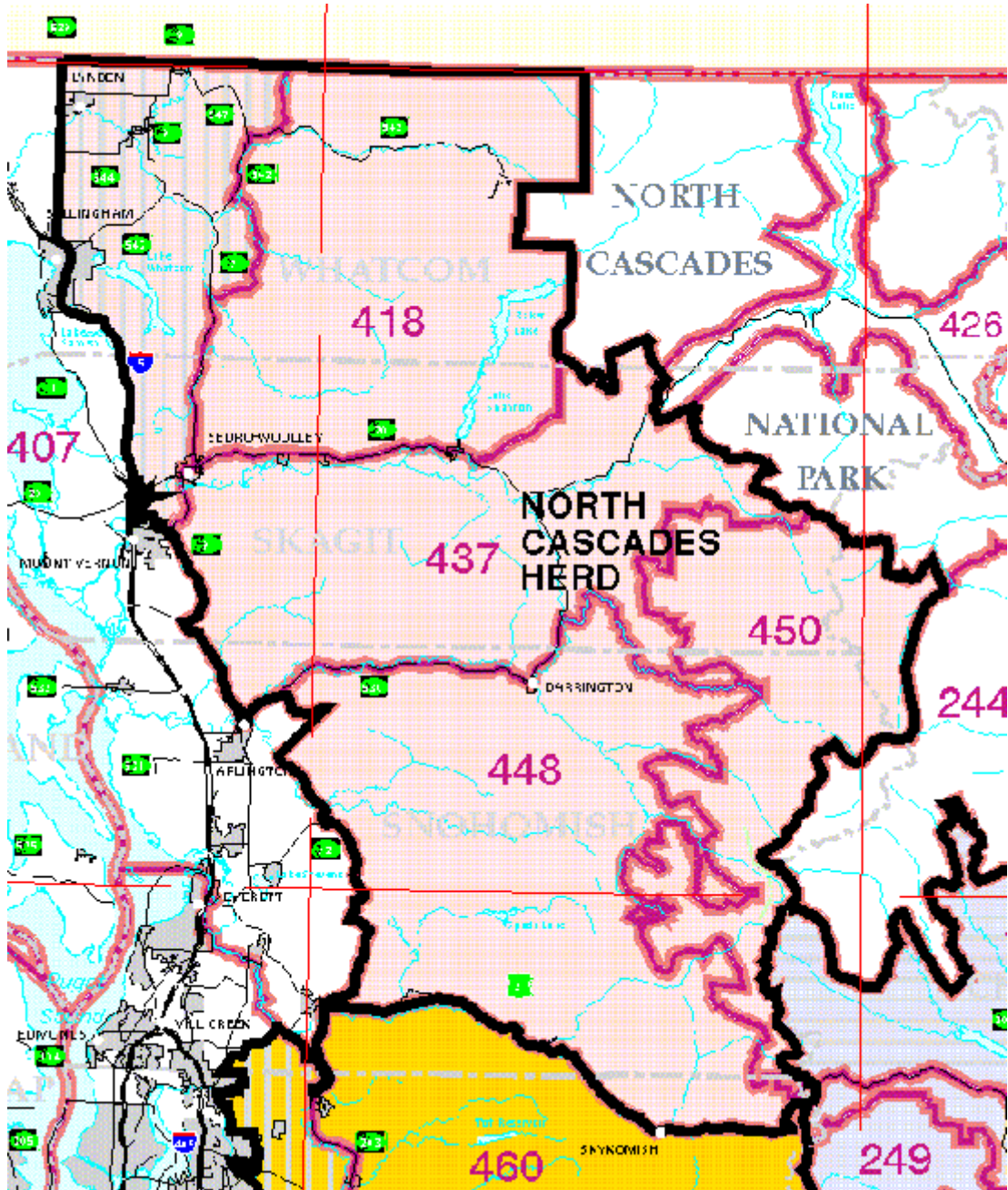
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APPENDIX A

GAME MANAGEMENT UNIT MAP OF THE NORTH CASCADE ELK HERD AREA



APPENDIX B

The Core Area of the North Cascade Elk Herd

APPENDIX C

HISTORY OF ELK RELEASES IN THE NORTH CASCADE ELK HERD AREA

Date	Release site	# Elk	Origin	Results	By
1912	Startup, Snohomish Co.	60	Gardner, Montana	failed, poaching	Co. Game Com.
	Birdsview, Skagit Co.	46	Gardner, Montana	failed after 10 yr	Skagit Co.
	King Co.	80	Gardner, Montana	successful	King Co.
1946	S. Fork Nooksack River	15	9 from King County (6 believed to be Roosevelt elk from the Olympic Peninsula). 6 from Yakima County		WGD
1948	S. Fork Nooksack River	8	Yakima County		WGD

APPENDIX D

POP-II Modeling of the North Cascade Elk Herd (Population Responses) with and without augmentation Lou Bender, WDFW

To evaluate potential management options for the Nooksack herd, I used Pop-II software to build a deterministic population model of the Nooksack herd. My goal for the model was to (1) mimic the minimum population trend estimates observed; (2) mimic mortality rates derived from age-structure; and (3) mimic observed herd sex and age ratios.

I used this simulation model to model 7 management options for the Nooksack herd. These options are not intended to be exhaustive; rather, they provide an idea on the magnitude and timing of population responses that might be expected from the Nooksack population. Each option was run for only the core population, with an initial population size of 100 elk. Pregnancy rates were assumed to be 10% for yearling cows and 85% for adults (except in Option 6).

Option 1. Base: projection of the base population model with expected elk survival rates; assumes that the 100 elk act as a single population.

Option 2. MSI_5: projection of the base model with a mortality severity index (MSI) of 5 to simulate lower than expected of all elk sex and age classes. This might be expected if the 100 elk are acting as 2 or more distinct sub-populations, and experiencing small population effects.

Option 3. MSI_10: projection of the base model with an MSI of 10 to simulate lower than expected of all elk sex and age classes, such as may be expected with severe winters or dry summers.

Option 4. MSI_15: projection of the base model with an MSI of 15 to simulate the lowest expected level of survival of all elk sex and age classes, based on interpretation of the historical Nooksack herd data.

Option 5. S_50: projection assuming that calf mortality rates are $\frac{1}{2}$ that in the base model. This option results in population ratios similar to those observed in the Nooksack during the periods of rapid herd development.

Option 6. Augmentation: Identical to Options 1-4, with the exception that the initial population is augmented by the introduction of 100 additional elk (25 bulls; 75 cows) prior to calving. The introduced 75 cows produce 25 calves, for a total 1 time population augmentation of 125 elk (25 bulls, 75 cows, 25 calves).

Options 1-6 were each run for 20 yr using Pop-II and compared in terms of resultant population sizes.

Option 7. Stochastic model: projections incorporating variation in each survival or mortality rate of

the base Pop-II model. Rates were distributed normally with the mean used in the base model, and with a range = 1/2 the mean estimate. This Option results in a mean estimate for 100 runs of the model, with an estimate of the variance associated with the population estimate and a range of population responses.

Options 1-5 -- no augmentation.

Only Option 5 results in significant growth of the Nooksack herd. In no other Option does the initial population (100) grow to exceed 250 elk within 20 years (Table 1; Figure 1).

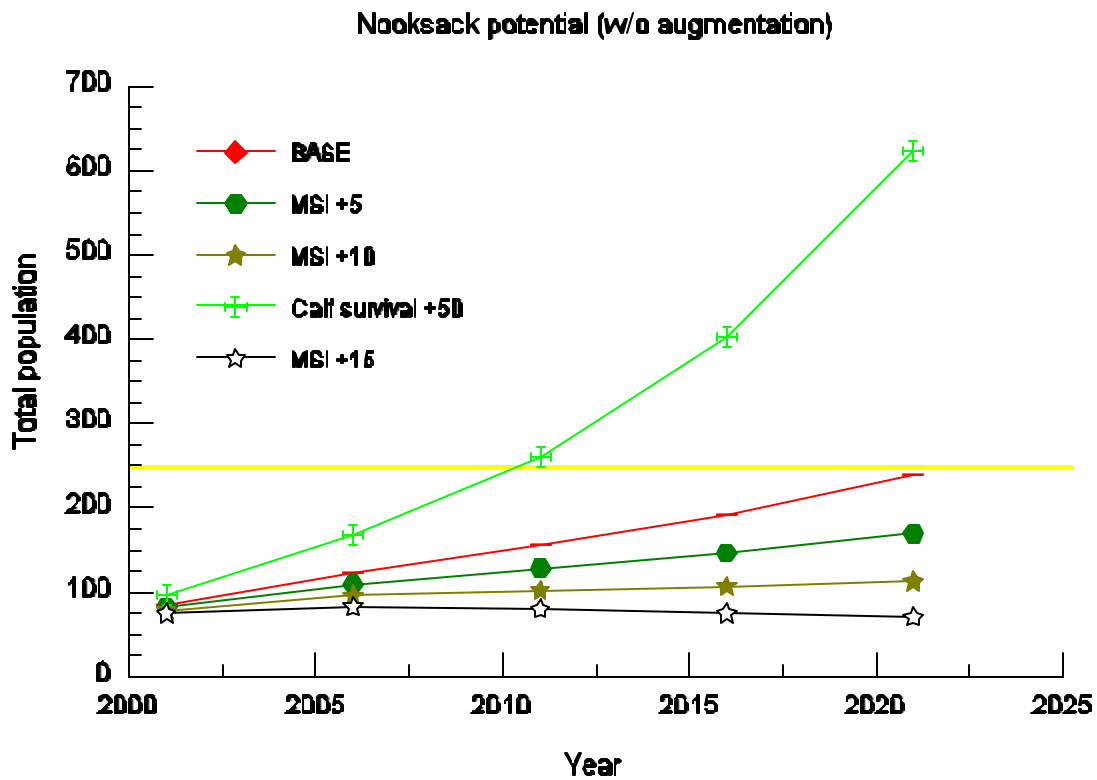


Figure 1. Expected population responses of the Nooksack herd without augmentation. No population response exceeds 250 elk with the exception of Option 6 (calf mortality decreased by 50%).

Options 1-5 -- augmentation.

Options 4 and 5 result in significant growth of the Nooksack herd (Table 1; Figure 2). All Options

except the MSI_15 option exceed 250 elk.

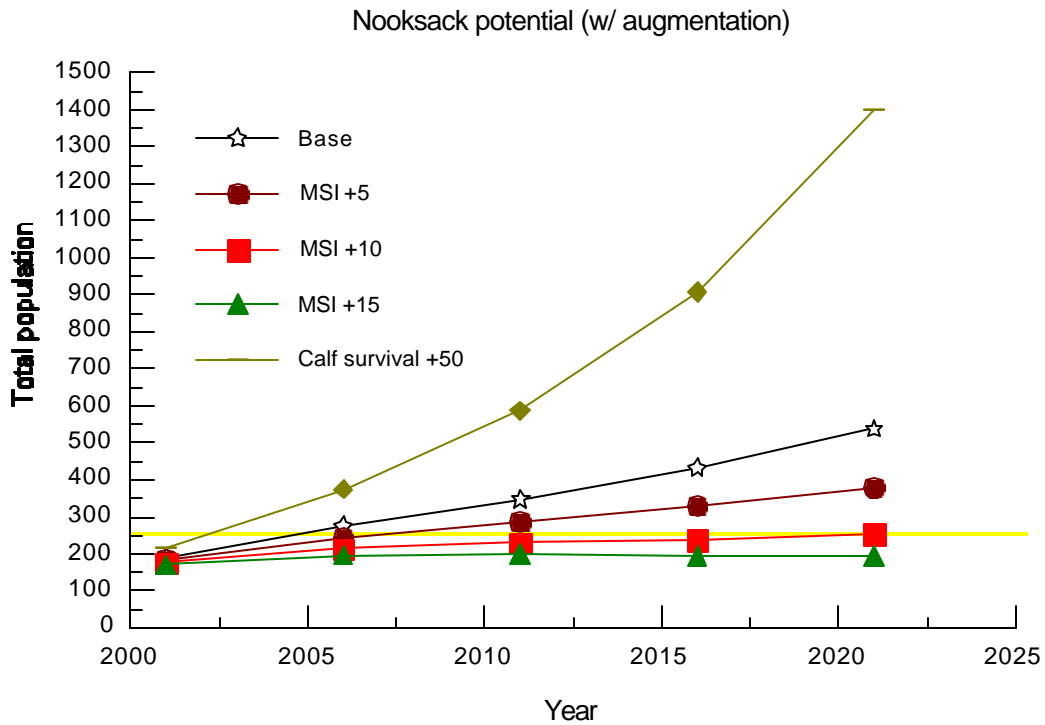


Figure 2. Expected population responses of the Nooksack herd following augmentation. All options exceed 250 except the MSI_15 option.

Option 6.

Adding environmental variation to the deterministic population model provides an idea of the range of population response due to chance alone. The base model without augmentation predicts a population of 285, within a potential range of 154—474. With a 1 time augmentation, the expected population is 655, within a range of 360—1,083.

APPENDIX E

NORTH CASCADE ELK HERD COMPOSITION SURVEY SUMMARY

YEAR	MONTH	SURVEY TYPE	GMU	TOTAL CLASSIFIED	ADULT BULLS	SPIKE BULLS	TOTAL BULLS	COWS	CALVES	RATIO B/COW/C
2000	March	Aerial	418	57	13	4	17	28	12	61/100/43
1999	August	Aerial	418	86	14	3	17	43	26	40/100/61
1998	September	Aerial	418	45	10	4	14	24	7	58/100/29
1997	August	Aerial	418	112	17	4	21	66	25	32/100/38
1997	March	Aerial	418	27	2	1	3	14	10	21/100/72
1996	June	Aerial	418	94	11	13	24	51	19	47/100/37
1995	September	Aerial	418	83	7	8	15	50	18	15/100/36
1994	August	Aerial	418	148	11	17	28	84	35	33/100/41
1994	March	Aerial	418	203	5	11	16	126	29	13/100/23
1993	March	Aerial	418	139	6	12	18	88	33	21/100/38
1992	August	Aerial	418	123	9	8	17	74	32	23/100/43
1992	February	Aerial	418	116	11	2	13	86	17	15/100/20
1991	September	Aerial	418	82	24	4	28	36	18	78/100/50
1991	February	Aerial	418	285	9	28	37	183	65	20/100/36
1990	July	Aerial	418	241	21	18	39	139	63	28/100/45

APPENDIX F

STATE HUNTING SEASON'S IN THE NORTH CASCADE ELK HERD AREA

YEAR	GMU # & Permit (#s)	DATES	DAYS	LEGAL ANIMAL	HUNT DESCRIPTION AND TAG TYPE
2000	407, 448.	09/01 - 09/14	14	3pt. Min. or antlerless	Early Archery general (WA)
	407	11/22 - 12/15	24	3pt. Min. or antlerless	Late Archery general (WA)
	407, 448.	11/04 - 11/12	9	3pt. Minimum	Modern firearm general (WF)
	ML Area 941 damage hunt. (Muzzleloader only) ML Area 941 (archery only)	11/01 - 01/31 10/01 - 10/31	92 31	Any elk Any elk	Elk Hunts Open to Specified Tag Holders (WM) Elk Hunts Open to Specified Tag Holders (WA)
1999	407, 448.	09/01 - 09/14	14	3pt. Min. or antlerless	Early Archery general (WA)
	407	11/24 - 12/15	22	3pt. Min. or antlerless	Late Archery general (WA)
	407, 448.	11/06 - 11/14	9	3pt. Minimum	Modern firearm general (WF)
	Muzz. Area 941 damage hunt	10/01 - 01/31	123	Any elk	Muzzleloader only (WM)
1998	407, 448.	09/01 - 09/14	14	3pt. Min. or antlerless	Early Archery general (WA)
	407 Elk Area 041 damage hunt	11/25 - 12/15 11/25 - 12/31	21 37	3pt. Min. or antlerless Antlerless only	Late Archery general (WA) Late Archery general (WA)
	Elk Area 041	10/10 - 10/16	7	Antlerless only	Early Muzzleloader only (WM)
	Elk Area 041 damage hunt	11/25 - 01/31	37	Any elk	Late Muzzleloader only (WM)
	407, 448	11/07 - 11/15	9	3pt. Minimum	Modern firearm general (WG)
1997	407, 410, 426, 448. 437	09/01 - 09/14 09/01 - 09/14	14 14	spike or antlerless Any elk	Early Archery general (WA)
	407, 437 and Bow area 841	11/26 - 12/15	20	Spike or antlerless	Late Archery general (WA)
	437	10/04 - 10/10	7	Spike or antlerless	Early Muzzleloader General (WM)
		11/26 - 12/15	20	Spike or antlerless	Late Muzzleloader General (WM)
	407, 426, 437, 448.	11/08 - 11/16 11/10 - 11/16	9 7	Spike bull only Spike bull only	Modern firearm general (WG) Modern firearm general (WP)
1996	405, 426, 433, 440, 442, 448. 418.	09/01 - 09/14 09/01 - 09/14	14 14	Either-sex 3pt. Minimum	Early Archery general (WA)
	405, 433 Bow area 841 damage hunt	11/27 - 12/15 11/27 - 12/15	19 19	Either-sex Either-sex	Late Archery general (WA)

YEAR	GMU # & Permit (#s)	DATES	DAYS	LEGAL ANIMAL	HUNT DESCRIPTION AND TAG TYPE
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	405, 418, 426, 433, 440, 442, 448.	11/06 - 11/17 11/09- 11/17	9 7	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WG) Modern firearm general (WP)
1995	405, 410, 426, 433, 440, 442, 448, 450. 418	09/01 - 09/14 09/01 - 09/14	14 14	Either-sex 3pt. Minimum	Early Archery general (WA)
	405, 433 Bow area 841 damage hunt	11/22 - 12/15 11/22 - 12/15	24 24	Either-sex Either-sex	Late Archery general (WA)
	405, 410, 418,426, 433, 440, 442, 448, 450.	11/01 - 11/13 11/04- 11/13	14 10	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WB) Modern firearm general (WC)
1994	405, 410, 426, 433, 440, 442, 448, 450. 418	09/01 - 09/14 09/01 - 09/14	14 14	Either-sex 3pt. Minimum	Early Archery general (WA)
	405, 433 Bow area 841 damage hunt	11/23 - 12/15 11/23 - 12/15	23 23	Either-sex Either-sex	Late Archery general (WA) Late Archery general (WA)
	405, 410, 418,426, 433, 440, 442, 448, 450.	11/02 - 11/13 11/05- 11/13	12 9	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1993	405, 410, 426, 433, 440, 442, 448, 450. 418	09/01 - 09/14 09/01 - 09/14	14 14	Either-sex 3pt. Minimum	Early Archery general (WA)
	405, 433 Bow area 831 damage hunt	11/24 - 12/15 11/24 - 12/15	23 23	Either-sex 3pt. Minimum	Late Archery general (WA) Late Archery general (any archery tag)
	405, 410, 418,426, 433, 440, 442, 448, 450.	11/03 - 11/14 11/06- 11/13	12 9	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1992	405, 410, 426, 433, 440, 442, 448, 450. 418	09/01 - 09/14 09/01 - 09/14	14 14	Either-sex 3pt. Minimum	Early Archery general (WA)
	405, 433 Bow area 831 damage hunt	11/25 - 12/15 11/25 - 12/15	21 21	Either-sex 3pt. Minimum	Late Archery general (WA) Late Archery general (any archery tag)

YEAR	GMU # & Permit (#s)	DATES	DAYS	LEGAL ANIMAL	HUNT DESCRIPTION AND TAG TYPE
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	405, 410, 418,426, 433, 440, 442, 448, 450.	11/04 - 11/15 11/07- 11/15	12 9	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1991	405, 410, 426, 433, 440, 442, 448, 450. 418	09/28 - 10/11	14	Either-sex, except antler-less or 3pt min. In GMU 418	Early Archery general (WA)
	405, 433 Bow area 831 damage hunt	11/27 - 12/15 11/25 - 12/15	21 21	Either-sex 3pt. Min or antlerless	Late Archery general (WA) Late Archery general (any archery tag)
	405, 410, 418,426, 433, 440, 442, 448, 450.	11/06 - 11/17 11/09- 11/17	12 9	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1990	405, 410, 418, 426, 433, 440, 442, 448, 450.	09/29 - 10/12	14	Either-sex, except antler-less or 3pt min. In GMU 418	Early Archery general (WA)
	405, 433 Bow area 831 damage hunt	11/21 - 12/09 11/21 - 12/09	19 19	Either-sex 3pt. Min or antlerless	Late Archery general (WA) Late Archery general (any archery tag)
	405, 410, 418,426, 433, 440, 442, 448, 450.	10/31 - 11/11 11/09- 11/17	12 9	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1989	405, 410, 418, 426, 433, 440, 442, 448, 450.	09/30 - 10/13	14	Either-sex, except antler-less or 3pt min. In GMU 418	Early Archery general (WA)
	405 433 Bow area 831 damage hunt	11/22 - 12/15 11/22 - 12/15 11/22 - 12/10	19 19 14	Either-sex 3pt. Min or antlerless 3pt. Min or antlerless	Late Archery general (WA)
	405, 410, 418,426, 433, 440, 442, 448, 450.	11/01 - 11/12 11/04 - 11/12	12 9	Bulls with visible antlers, except GMU 418 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1988	405, 410, 418,426, 433, 440, 442, 448, 450.	09/30 - 10/13	14	Either-sex, except Either-sex or 3pt min. In GMU 418 & 433.	Early Archery general (WA)
	405 Bow area 822 and 831	11/23 - 12/11 11/23 - 12/11	19 14	Either-sex Either-sex, 3pt minimum	Late Archery general (WA)

YEAR	GMU # & Permit (#s)	DATES	DAYS	LEGAL ANIMAL	HUNT DESCRIPTION AND TAG TYPE
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	405, 410, 418,426, 433, 440, 442, 448, 450.	11/02 - 11/13 11/05 - 11/13	12 9	Bulls with visible antlers, except GMU 418 & 433 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1987	405, 410, 418,426, 433, 440, 442, 448, 450.	10/01 - 10/16	16	Either-sex, except Either-sex or 3pt min. In GMU 418 & 433.	Early Archery general (WA)
	405-Chuckanut Bow area 822B and 831B.	11/25 - 12/10 11/25 - 12/10	16 16	Either-sex Either-sex, 3pt minimum	Late Archery general (WA)
	405, 410, 418,426, 433, 440, 442, 448, 450.	11/04 - 11/15 11/07 - 11/15	12 9	Bulls with visible antlers, except GMU 418 & 433 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
1986	400, 426, 430, 440, 442, 448, 450. 418, 424, 433	09/03 - 09/07 09/08 - 09/17 09/03 - 09/17	5 10 15	Bull only Either-sex 3pt min. or antlerless	Early Archery general (WA)
	GMU 400, Bow area 831. Bow area 822.	12/08 - 12/31 12/06 - 12/31	24 26	Either-sex Either-sex, 3pt minimum	Late Archery general (WA)
	Elk area 005-So. Skagit	11/29 - 12/07	9	Either-sex	Muzzleloader General (WM)
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/05 - 11/16 11/08 - 11/16	12 9	Bulls with visible antlers, except GMU 418, 424 & 433 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
	Elk area 031(100) Hamilton	11/29 - 12/07	9	Antlerless Only	Modern firearm Permit Only (W1 or WM)
1985	400, 426, 430, 440, 442, 448, 450. 418, 424, 433.	09/04 - 09/08 09/09 - 09/18 09/03 - 09/17	5 10 15	Bull only Either-sex 3pt bull or antlerless	Early Archery general (WA)
	400 & Bow area 822 Bow area 831	12/07 - 12/31 12/09 - 12/31	25 23	Either-sex Either-sex, 3pt minimum	Late Archery general (WA)
	Elk area 005-So. Skagit	11/30 - 12/08	9	Either-sex	Muzzleloader (WM)
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/06 - 11/17 11/09 - 11/17	12 9	Bulls with visible antlers, except GMU 418, 424 & 433 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
	Elk area 031(100) Hamilton	11/30 - 12/08	9	Antlerless Only	Modern firearm Permit Only (W1 or WM)

YEAR	GMU # & Permit (#s)	DATES	DAYS	LEGAL ANIMAL	HUNT DESCRIPTION AND TAG TYPE
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1984	400, 426, 430, 440, 442, 448, 450. 418, 424, 433.	09/05 - 09/09 09/10 - 09/19 09/05 - 09/19	5 10 15	Bull only Either-sex 3pt bull or antlerless	Early Archery general (WA)
	400 & Bow area 831 Bow area 822	12/10 - 12/31 12/08 - 12/31	22 24	Either-sex	Late Archery general (WA)
	Elk area 005-So. Skagit	12/01 - 12/09	9	Either-sex	Muzzleloader (WM)
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/07 - 11/18 11/10 - 11/18	12 9	Bulls with visible antlers, except GMU 418, 424 & 433 3pt. Min	Modern firearm general (WE) Modern firearm general (WL)
	Elk area 031(100) Hamilton	12/01 - 12/09	9	Antlerless Only	Modern firearm Permit Only (W1 or WM)
1983	Bow area 804	09/15 - 10/09	24	Either-sex	Early Archery (WKXYAB tags) plus archery stamp
	Bow area 831 400 and Bow area 822	12/12 - 01/01 12/03 - 01/01	21 29	Either-sex Either-sex	Late Archery (WKXYAB tags) plus archery stamp
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/05 - 11/15	11	Bulls with visible antlers	Modern firearm general (W)
	Elk area 031(100) Hamilton	12/03 - 12/11	9	Either-sex	Permit Only (W)
1982	Bow area 804	09/15 - 10/09	24	Either-sex	All Archery tags valid(WKXYAB) plus stamp
	400 Bow area 831	12/03 - 01/01 12/13 - 01/02	29 21	Either-sex Either-sex	Late Archery (WKXYAB tags) plus stamp
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/05 - 11/15	11	Bulls with visible antlers	Modern firearm general (W)
	Elk area 031(100) Hamilton	12/03 - 12/11	9	Either-sex	Permit Only (MKWY tags)
1981	Bow area 4-Cavanaugh	09/12 - 10/04	23	Either-sex	Early Archery (WKXYAB tags) plus stamp
	400 (closed in Elk Area 31- Hamilton Dec. 5 - 13)	12/05 - 01/03	30	Either-sex	Late Archery (MKWXY tags) plus stamp
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/07 - 11/17 11/09 - 11/17	11 9	Bulls with visible antlers Either-sex	Modern firearm general (W) Open to all elk hunters with (W) tag.
	Elk area 31(200) Hamilton	12/05 - 12/13	9	Either-sex	Permit Only (MKWY tags)

1980	400 (closed in Elk Area 31- Hamilton Dec. 6 - 14) & 424	12/06 - 01/04	30	Either-sex	Late Archery (WXYKM tags) plus stamp
	400, 418, 424, 426, 430, 433, 440, 442, 448, 450.	11/09 - 11/19	11	Bulls with visible antlers	Modern firearm general (W)
	Elk area 31(200) Hamilton	12/06 - 12/14	9	Either-sex	Permit Only (MKWY tags)

APPENDIX G

GAME MANAGEMENT UNIT BOUNDARY CHANGES FOR THE NORTH CASCADE ELK HERD AREA

North Cascade (Nooksack) Elk Herd Geographic Description: That portion of Whatcom, Skagit and Snohomish counties east of the following described boundary line; beginning at the Canadian border on Silver lake Road south to Hwy 542, south on Hwy 542 to the Mosquito Lake Road, south on Mosquito Lake Road to State Hwy 9, south on Hwy 9 to Arlington, West on Hwy 530 to Trafton, south on 242nd St. N.E. (Jim Cr.-Trafton Road) to the Seattle power transmission lines, southwest on the transmission lines to Jordan Road, south on Jordan Road to Granite Falls, then south on Menzel Lake Road to Monroe and Hwy 2; and that portion of Snohomish and King counties north of Highway 2; and that portion of King, Snohomish, Skagit and Whatcom counties west of the North Cascades National Park, Ross Lake National Recreation Area, and the Glacier Peak Wilderness Area.

Year	GMUs and Elk Areas	Adjustments
1980	400 Lummi, 418 Nooksack, 424 Lyman, 430 Samish, 433 Rockport, 442 Tulalip, 448 Stillaguamish. Elk Area 31, Hamilton.	No changes from previous year.
1981	GMUs 400, 418, 424, 430, 433, 442, 448. Elk Area 5, S. Skagit Elk Area 31, Hamilton Bow Area 4, Cavanaugh	GMU 448 boundary description changed. Added Elk Area 5 and Bow Area 4.
1982	GMUs 400, 418, 424, 430, 433, 442, 448. Elk Area 031, Hamilton	Only one elk area and no bow areas.
1983	GMUs 400, 418, 424, 430, 433, 442, 448. Bow Areas 804 Cavanaugh, 822 Cultus Mt., and 831 Hamilton. Elk Area 031, Hamilton	Bow Area 831 same as Elk Area 031. Bow Area 822 Cultus Mt. is new. Bow Area 831 is a new opportunity.
1984	GMUs 400, 418, 424, 430, 433, 440, 442, 448. Bow Area 822 Cultus Mt., and 831 Hamilton. Elk Area 005, S. Skagit.	No changes made from previous year.
1985	GMUs 400, 418, 424, 430, 433, 440, 442, 448. Bow Area 822 and 831. Elk Area 005 and 031.	No changes made from previous year.
1986	GMUs 400, 418, 424, 430, 433, 440, 442, 448. Bow Area 822 and 831. Elk Area 005 and 831	Elk Area 031 is 831.
1987	GMUs 405, 418, 433, 440, 442, 448. Bow Area 822B and 831B.	GMUs 400 and 430 combined to form 405 Chuckanut.

1988	GMUs 405, 418, 433, 440, 442, 448. Bow Area 822 and 831.	No changes made from previous year.
1989	GMUs 405, 418, 433, 440, 442, 448. Bow Area 831	No changes made from previous year.
1990	GMUs 405, 418, 433, 440, 442, 448. Bow Area 831	No changes made from previous year.
1991	GMUs 405, 418, 433, 440, 442, 448. Bow Area 831	No changes made from previous year.
1992	GMUs 405, 418, 433, 440, 442, 448. Bow Area 831	Common boundary of GMU 448 and 450 modified slightly.
1993	GMUs 405,417(closed), 418, 440, 433, 442, 448. Bow Area 831	GMU 417 Bald Mt. created within GMU 418 Nooksack GMU 433 and 448 description clarification.
1994	GMUs 405,417(closed), 418, 440, 433, 442, 448. Bow Area 831	GMU 418, 442, and 448 description clarification. GMU 433 new description although area not substantially changed.
1995	GMUs 405,417(closed), 418, 440, 433, 442, 448. Bow Area 831	GMU 433 identified Sauk Valley Rd as SR 530.
1996	GMUs 405,417(closed), 418, 440, 433, 442, 448. Bow Area 831	No changes made.
1997	GMUs 407 North Sound, 418 Nooksack, 426 Diablo, 437 Sauk, 448 Stillaguamish. Elk Area 041	GMU 405 and 442 were combined to form 407, North Sound. GMU 417 and 418 were combined to form 418 Nooksack. GMU 433 and 440 were combined to form 437 Sauk.
1998	GMUs 407, 426, 448. Elk Area 041	GMU 418 and 437 (closed).
1999	GMUs 407, 426, 448. Muzzleloader Area 941	GMU 418 and 437 (closed). Common boundary between GMU 497 and 410 clarified. GMU 426 boundary with wilderness area clarified.
2000	GMU 407, 448.	GMU 426 new description, same area. GMU 437 boundary clarification.

APPENDIX H-1

Summary of State Elk Harvest in the North Cascade Elk Herd Area*

YEAR	GMUs	ANTLERED	ANTLER- LESS	TOTAL HARVEST	TOTAL HUNTERS	TOTAL DAYS	% SUCCESS
1980	ALL	100	85	185			
1981	ALL	50	15	65			
1982	ALL	48	19	67			
1983	ALL	85	44	129			
1984	ALL	18	48	66			
1985	ALL	91	64	155	2825	9750	5.49%
1986	ALL	99	62	161	3197	9728	5.04%
1987	ALL	55	11	66	2188	10408	3.02%
1988	ALL	40	16	56	1535	7270	3.65%
1989	ALL	29	13	42	1129	4930	3.72%
1990				NO DATA COLLECTED			
1991	ALL	28	8	36	1448	5814	2.49%
1992	ALL	34	3	37	973	3667	3.80%
1993	ALL	3	0	3	193	619	1.55%
1994	ALL	16	0	16	377	1225	4.24%
1995	ALL	14	3	17	482	2036	3.53%
1996	ALL	9	0	9	321	1248	2.80%
1997	ALL	9	8	17	30	146	56.67%
1998	ALL	6	30	36	346	2509	10.40%

* State harvest questionnaire data includes damage hunts but not hot spot or other authorized removals.

APPENDIX H-2

Tribal Harvest in the North Cascades Elk Herd area as reported to WDFW by the various tribes.

YEAR	BULL	COW	UNKNOWN	TOTAL
1988	2	10		12
1989	5	23	10	38
1990	23	36	1	60
1991	15	22		37
1992	8	9		17
1993	4	5		9
1994	9	11		20
1995	7	9		16
1996	3	3		6
1997	2	2		4
1998	2	1		3

APPENDIX I

Management Authority and Strategies For Controlling Elk Damage

Authority:

RCW 77.36.005

Findings.

The legislature finds that:

(1) As the number of people in the state grows and wildlife habitat is altered, people will encounter wildlife more frequently. As a result, conflicts between humans and wildlife will also increase. Wildlife is a public resource of significant value to the people of the state and the responsibility to minimize and resolve these conflicts is shared by all citizens of the state.

(2) In particular, the state recognizes the importance of commercial agricultural and horticultural crop production and the value of healthy deer and elk populations, which can damage such crops. The legislature further finds that damage prevention is key to maintaining healthy deer and elk populations, wildlife-related recreational opportunities, and commercially productive agricultural and horticultural crops, and that the state, participants in wildlife recreation, and private landowners and tenants share the responsibility for damage prevention. Toward this end, the legislature encourages landowners and tenants to contribute through their land management practices to healthy wildlife populations and to provide access for related recreation. It is in the best interests of the state for the department of fish and wildlife to respond quickly to wildlife damage complaints and to work with these landowners and tenants to minimize and/or prevent damages and conflicts while maintaining deer and elk populations for enjoyment by all citizens of the state.

(3) A timely and simplified process for resolving claims for damages caused by deer and elk for commercial agricultural or horticultural products is beneficial to the claimant and the state.
[1996 c 54 § 1.]

RCW 77.36.010

Definitions.

Unless otherwise specified, the following definitions apply throughout this chapter:

(1) "Crop" means a commercially raised horticultural and/or agricultural product and includes growing or harvested product but does not include livestock. For the purposes of this chapter all parts of horticultural trees shall be considered a crop and shall be eligible for claims.

(2) "Emergency" means an unforeseen circumstance beyond the control of the landowner or tenant that presents a real and immediate threat to crops, domestic animals, or fowl.

(3) "Immediate family member" means spouse, brother, sister, grandparent, parent, child, or grandchild.
[1996 c 54 § 2.]

RCW 77.36.020

Game damage control -- Special hunt.

The department shall work closely with landowners and tenants suffering game damage problems to control damage without killing the animals when practical, to increase the harvest of damage-causing animals in hunting

seasons, and to kill the animals when no other practical means of damage control is feasible.

If the department receives recurring complaints regarding property being damaged as described in this section or RCW 77.36.030 from the owner or tenant of real property, or receives such complaints from several such owners or tenants in a locale, the commission shall consider conducting a special hunt or special hunts to reduce the potential for such damage.

[1996 c 54 § 3.]

RCW 77.36.030

Trapping or killing wildlife causing damage -- Emergency situations.

(1) Subject to the following limitations and conditions, the owner, the owner's immediate family member, the owner's documented employee, or a tenant of real property may trap or kill on that property, without the licenses required under RCW 77.32.010 or authorization from the director under RCW 77.12.240, wild animals or wild birds that are damaging crops, domestic animals, or fowl:

(a) Threatened or endangered species shall not be hunted, trapped, or killed;

(b) Except in an emergency situation, deer, elk, and protected wildlife shall not be killed without a permit issued and conditioned by the director or the director's designee. In an emergency, the department may give verbal permission followed by written permission to trap or kill any deer, elk, or protected wildlife that is damaging crops, domestic animals, or fowl; and

(c) On privately owned cattle ranching lands, the land owner or lessee may declare an emergency only when the department has not responded within forty-eight hours after having been contacted by the land owner or lessee regarding damage caused by wild animals or wild birds. In such an emergency, the owner or lessee may trap or kill any deer, elk, or other protected wildlife that is causing the damage but deer and elk may only be killed if such lands were open to public hunting during the previous hunting season, or the closure to public hunting was coordinated with the department to protect property and livestock.

(2) Except for coyotes and Columbian ground squirrels, wildlife trapped or killed under this section remain the property of the state, and the person trapping or killing the wildlife shall notify the department immediately. The department shall dispose of wildlife so taken within three days of receiving such a notification and in a manner determined by the director to be in the best interest of the state.

[1996 c 54 § 4.]

RCW 77.36.040

Payment of claims for damages -- Procedure -- Limitations.

(1) Pursuant to this section, the director or the director's designee may distribute money appropriated to pay claims for damages to crops caused by wild deer or elk in an amount of up to ten thousand dollars per claim. Damages payable under this section are limited to the value of such commercially raised horticultural or agricultural crops, whether growing or harvested, and shall be paid only to the owner of the crop at the time of damage, without assignment. Damages shall not include damage to other real or personal property including other vegetation or animals, damages caused by animals other than wild deer or elk, lost profits, consequential damages, or any other damages whatsoever. These damages shall comprise the exclusive remedy for claims against the state for damages caused by wildlife.

(2) The director may adopt rules for the form of affidavits or proof to be provided in claims under this section. The director may adopt rules to specify the time and method of assessing damage. The burden of proving damages shall be on the claimant. Payment of claims shall remain subject to the other conditions and limits of this chapter.

(3) If funds are limited, payments of claims shall be prioritized in the order that the claims are received. No claim

may be processed if:

(a) The claimant did not notify the department within ten days of discovery of the damage. If the claimant intends to take steps that prevent determination of damages, such as harvest of damaged crops, then the claimant shall notify the department as soon as reasonably possible after discovery so that the department has an opportunity to document the damage and take steps to prevent additional damage; or

(b) The claimant did not present a complete, written claim within sixty days after the damage, or the last day of damaging if the damage was of a continuing nature.

(4) The director or the director's designee may examine and assess the damage upon notice. The department and claimant may agree to an assessment of damages by a neutral person or persons knowledgeable in horticultural or agricultural practices. The department and claimant shall share equally in the costs of such third party examination and assessment of damage.

(5) There shall be no payment for damages if:

(a) The crops are on lands leased from any public agency;

(b) The landowner or claimant failed to use or maintain applicable damage prevention materials or methods furnished by the department, or failed to comply with a wildlife damage prevention agreement under RCW 77.12.260;

(c) The director has expended all funds appropriated for payment of such claims for the current fiscal year; or

(d) The damages are covered by insurance. The claimant shall notify the department at the time of claim of insurance coverage in the manner required by the director. Insurance coverage shall cover all damages prior to any payment under this chapter.

(6) When there is a determination of claim by the director or the director's designee pursuant to this section, the claimant has sixty days to accept the claim or it is deemed rejected.

[1996 c 54 § 5.]

RCW 77.36.050

Claimant refusal -- Excessive claims.

If the claimant does not accept the director's decision under RCW 77.36.040, or if the claim exceeds ten thousand dollars, then the claim may be filed with the office of risk management under RCW 4.92.040(5). The office of risk management shall recommend to the legislature whether the claim should be paid. If the legislature approves the claim, the director shall pay it from moneys appropriated for that purpose. No funds shall be expended for damages under this chapter except as appropriated by the legislature.

[1996 c 54 § 6.]

RCW 77.36.060

Claim refused -- Posted property.

The director may refuse to consider and pay claims of persons who have posted the property against hunting or who have not allowed public hunting during the season prior to the occurrence of the damages.

[1996 c 54 § 7.]

RCW 77.36.070

Limit on total claims from wildlife fund per fiscal year.

The department may pay no more than one hundred twenty thousand dollars per fiscal year from the wildlife fund for claims under RCW 77.36.040 and for assessment costs and compromise of claims. Such money shall be used to pay animal damage claims only if the claim meets the conditions of RCW 77.36.040 and the damage occurred in a place where the opportunity to hunt was not restricted or prohibited by a county, municipality, or other public entity during the season prior to the occurrence of the damage.

[1996 c 54 § 8.]

RCW 77.36.080

Limit on total claims from general fund per fiscal year -- Emergency exceptions.

(1) The department may pay no more than thirty thousand dollars per fiscal year from the general fund for claims under RCW 77.36.040 and for assessment costs and compromise of claims unless the legislature declares an emergency. Such money shall be used to pay animal damage claims only if the claim meets the conditions of RCW 77.36.040 and the damage occurred in a place where the opportunity to hunt was restricted or prohibited by a county, municipality, or other public entity during the season prior to the occurrence of the damage.

(2) The legislature may declare an emergency, defined for the purposes of this section as any happening arising from weather, other natural conditions, or fire that causes unusually great damage to commercially raised agricultural or horticultural crops by deer or elk. In an emergency, the department may pay as much as may be subsequently appropriated, in addition to the funds authorized under subsection (1) of this section, for claims under RCW 77.36.040 and for assessment and compromise of claims. Such money shall be used to pay animal damage claims only if the claim meets the conditions of RCW 77.36.040 and the department has expended all funds authorized under RCW 77.36.070 or subsection (1) of this section.

[1996 c 54 § 9.]

Strategies:

Current management strategies for controlling or reducing elk damage problems include more traditional uses of primitive weapons seasons (archery and muzzleloader) in lowland areas with dispersed residences and associated human safety issues. Seasons of this type are generally stratified early, mid, and late season with regard to timing and can be either general season or permit only depending upon the degree of hunting pressure desired.

Two new strategies for reducing elk damage are currently implemented on an experimental basis.

C Landowner preference permits allow landowners to kill an elk and is a form of compensation to landowners for damage.

C Landowner damage hunts are based upon an allocation of a specific number of permits to the landowner that they distribute to hunters of their choice. The advantage of this technique is that landowners can select the hunters. Management of elk damage in other areas of the elk range utilizes hot spot hunts that emphasize removal of individual depredating elk.

Damage control hunts in any form within semi-populated areas are inherently controversial with human safety, livestock safety, fence damage, and trespass complaints as the more common issues.

APPENDIX J

Summary of Habitat Enhancement Projects Conducted in the North Cascade Elk Area.

Year	Project	Cost	Acres	Cooperators
1994	Larsen Flat forage seeding, fertilization	\$31,718	11	WDFW, Crown Pacific, RMEF, Nielsen Bros. Timber Co.
1994	Nooksack (South) forage seeding, fertilization and mineral blocks.	\$15,101	10	WDFW, Crown Pacific, RMEF, Nielsen Bros. Timber Co.
1998	Nooksack/Bear Creek forage seeding and fertilization	\$3,800	45	LBR Logging, Crown Pacific, RMEF.
1998	Skookum Creek II forage seeding and fertilization.	\$2,170	25	RMEF and Campbell Group.
1999	S. F. Plot Grooming Project (Mow Larsen Flats forage plot)	\$800	11	RMEF and Crown Pacific
1999	Elk Meadows forage enhancement (forage seeding, fertilization, mineral blocks)	\$2,900	15	RMEF and Crown Pacific

STATE OF WASHINGTON

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DEPARTMENT OF FISH AND WILDLIFE
JEFF KOENINGS, DIRECTOR

WILDLIFE PROGRAM
DAVE BRITTELL, ASSISTANT DIRECTOR

GAME DIVISION
DAVE WARE, MANAGER

This Program Receives Federal Aid in Wildlife Restoration funds.
Project W-00-R, Category A, Project 1

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Washington Department of Fish and Wildlife. 2000. North Cascade (Nooksack) Elk Herd Plan.
Wildlife Program, Washington Department of Fish and Wildlife, Olympia. 43pp.

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