Washington State Elk Herd Plan

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COLOCKUM ELK HERD

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Wildlife Program
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December 2005

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This Program Receives Federal Aid in Wildlife Restoration funds.
Project W-96-R11

This report should be cited as:
Washington Department of Fish and Wildlife. 2004. Colockum Elk Herd Plan. Wildlife Program, Washington Department of Fish and Wildlife, Olympia. 59 pp.

LIST OF MAPS, TABLES AND FIGURES

ACKNOWLEDGMENTS

The original draft of Colockum Elk Herd plan was written by John Musser (retired), Roger McKeel (retired) and Tom McCall of the Washington Department of Fish and Wildlife. Tom McCall, Jeff Bernatowicz, Edd Bracken, Pete Lopushinsky, Beau Patterson, Leray Stream, Scott McCorquodale and George Tsukamoto updated the original draft.

COLOCKUM ELK HERD PLAN

EXECUTIVE SUMMARY

The Colockum Elk Herd is the fifth largest of ten herds identified in the State. It is an important resource that provides significant recreational, aesthetic, cultural, and economic benefits to recreationists, local communities, and Native Americans. The purpose of this plan is to provide direction for the management of the Colockum elk resource for the next 5 years. The plan is subject to amendment. Priority management activities will be implemented as funding and resources become available.

There are three primary goals for the Colockum Elk Herd: (1) to preserve, protect, perpetuate, and manage elk and their habitats to ensure healthy, productive populations; (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 manage the elk herd for a sustainable yield.

Specific elk herd and habitat management goals, objectives, and strategies have been identified 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:

- Maintain the short-term population objective at the current level of 4,500 animals +/- 5% in the surveyed portion of the winter range. Assess the long-term social tolerances and habitat limitations for the Colockum elk herd and if necessary, adjust the population objective accordingly.
- Maintain the post-season elk population composition ratios in surveyed area of the Colockum Herd at 12-20 bulls:100 cows.
- Improve elk habitat quality, and minimize disturbance to the elk herd during critical times of the year.
- Minimize complaints and damage caused by elk thereby improving landowner support for Colockum elk management.
- Work cooperatively with the Yakama Nation to collect and share data pertaining to the Colockum herd.
- Increase public awareness of the Colockum herd and develop elk viewing opportunities.
- Work with public land managers to improve and protect elk habitat on state and federal lands including WDFW, DNR, and USFS. Work with private land managers to improve and protect elk habitat on private lands.
- Conduct research where needed to provide essential data for improving management of Colockum Elk.

Spending priorities have been identified for the first year and next 5 years. Achieving spending levels will be contingent upon availability of funds and creation of partnerships. The recommended annual priority expenditures for the Colockum herd are as follows:

Priority	**1st year cost**	**5 year cost**
Herd population/composition surveys	$14,000	$70,000
Reduce burden of elk on private landowners	$112,000	$480,000
Work with landowners and livestock operators to enhance elk forage	$25,000	$75,000
Access Management	$65,000	$215,000
Habitat Management	$30,000	$90,000
Purchase critical elk habitat	$1,000,000	$5,000,000
Research	$75,000	$350,000
TOTAL	$1,321,000	$6,280,000

INTRODUCTION

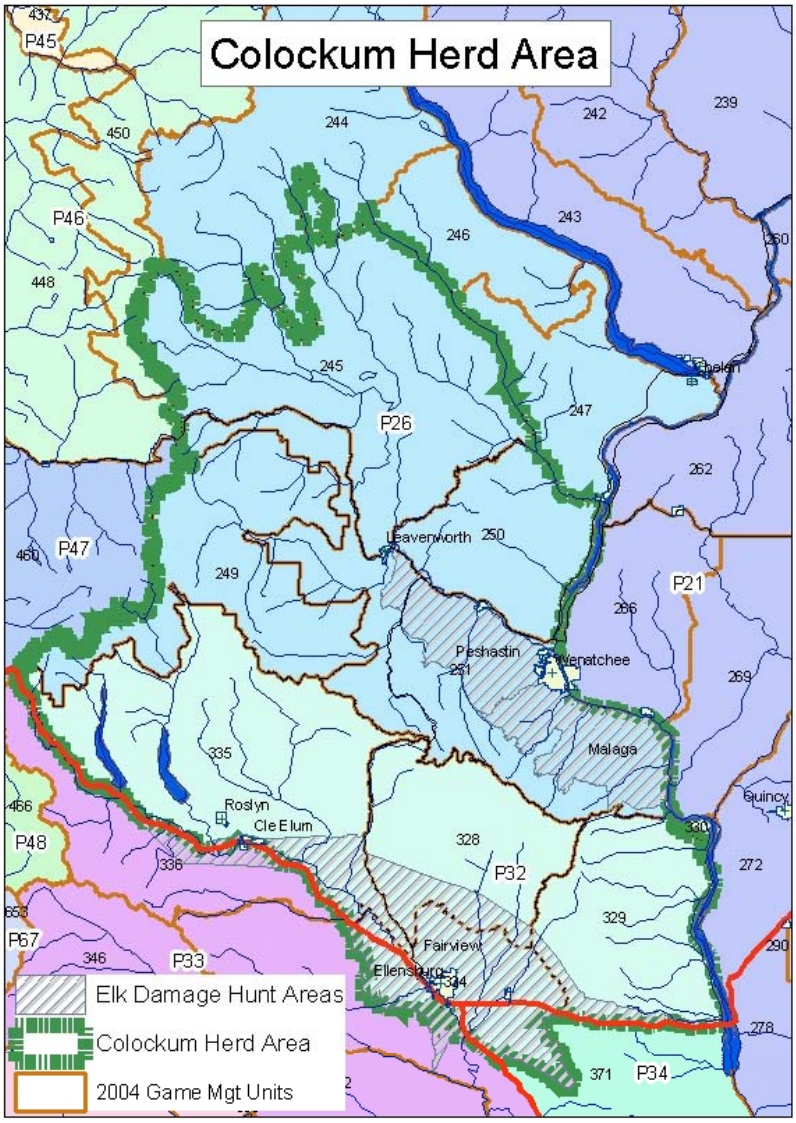
The Colockum Elk Herd Plan is a step-down planning document under the umbrella of the Final Environmental Impact Statement for the Game Management Plan (WDFW 2002). For management and administrative purposes, the State has been divided into Game Management Units (GMUs). Logical groups of GMUs are described as a Population Management Units (PMU). The Colockum elk herd is one of ten herds designated in Washington. In this context a herd means a population within a recognized boundary as described by a combination of PMU's. The Colockum Elk Herd is in south portion PMU 26 (GMUs 249 and 251) and PMU 32 (GMUs 328, 329, 330, 334 north of Interstate 90, 335). The core population resides in PMU 32 and most elk in this area exhibit a typical seasonal migration from high elevation summer ranges to lower elevation wintering grounds.

The Colockum Elk Herd Plan is a five-year planning document subject to annual review and amendment. The Washington Department of Fish and Wildlife recognizes the sovereign status of federally recognized treaty tribes. This document recognizes the responsibility of the Washington Department of Fish and Wildlife and Yakama Nation to work cooperatively in achieving elk management goals and objectives. It also recognizes the role of private landowners and public land management agencies in providing habitat for elk, notably the U.S. Forest Service, Bureau of Land Management, Washington Department of Fish and Wildlife and Washington Department of Natural Resources.

HERD AREA DESCRIPTION

Location

The Colockum elk herd ranges over 1,600 mi^2 between the Columbia River to the east and the Cascade crest to the west and U.S. Highway 2 to the north and Interstate 90 to the south. Areas north of Highway 2 are within the herd range, but are managed to minimize elk. Approximately 85 percent of the elk use occurs on the eastern half of this area; the Teanaway River and Peshastin Creek form the western boundary (Map 1). The western half has about 15 percent of the elk use (Bracken and Musser 1993). The Game Management Units (GMUs) that comprise the Colockum elk herd area include 249 (Alpine), 251 (Mission), 328 (Naneum), 329 (Quilomene), 330 (West Bar), 334 (Ellensburg) north of Interstate 90, and 335 (Teanaway).



Map 1: Colockum Elk Herd Area

Land Ownership

Land within the Colockum herd's range is of mixed ownership and includes lands owned by Washington Department of Fish and Wildlife, U.S. Forest Service's Wenatchee National Forest, Washington Department of Natural Resources, U.S. Timberlands, Plum Creek Corporation, Longview Fiber Corporation, and many private landowners. Timber, livestock, mining, oil and gas exploration, irrigation, hydroelectric power, winter sports and a variety of outdoor recreation pursuits are all industries and activities important to the economy of the area. During spring, summer, and fall when elk are widely distributed, the U.S. Forest Service manages the greatest percentage of the elk habitat. The Washington Department of Fish and Wildlife manages the greatest proportion of the Colockum elk herd winter range. Depending on the season, individual private landowners collectively control about one-quarter of the core elk habitat identified by Bracken and Musser (1993) (Table 1). Bracken and Musser did not evaluate land ownership in GMU's 249 (all USFS wilderness), the west portion of 251, or the western majority of 335.

Table 1. Percentage of area managed by ownership and season for the Colockum elk herd
(Bracken and Musser 1993).

Season	WNF/BLM[a,b]	WDFW[a]	DNR/PARKS[a,b]	Corporate	Private
Spring	28	23	9	19	21
Summer	38	16	8	21	18
Fall	21	30	22	8	19
Winter	2	49	11	14	25

[a]WNF = Wenatchee National Forest, BLM = Bureau of Land Management, WDFW = Washington Department of Fish and Wildlife, DNR = Washington Department of Natural Resources, Parks = Washington State Parks.

[b]The BLM and PARKS manage relatively little land used by Colockum elk. In winter, State Parks manages 2% of the elk winter range. In other seasons, these ownerships total less than 1%.

Topography

The Colockum herd area varies in elevation from 584 feet on the Columbia River to over 9,000 feet in the Alpine Lakes Wilderness. Physiographically, the area is part of the Northern Washington Cascades and the Columbia Basin Provinces as described in Franklin and Dyrness (1973).

Climate

During the summer, afternoon temperatures in the lower valleys occasionally reach over 100°F. In winter, average maximum temperatures are from 30° F to lower 40 ° F, while minimums range from between 10-20° F. During some of the coldest winters, minimums have dropped to -20° F.

Precipitation is light in summer, increases in the fall, and reaches a peak during the winter. Annual precipitation ranges from less than 10 inches along the Columbia River to over 100 inches in the Cascade Range. Average winter snowfall ranges from 10 to 40 inches in the lower elevations, 30 to 70 inches in the intermediate areas, and 100 inches or more in the Cascade

Range. Snow seldom remains on the ground longer than six weeks in the lower elevations (Donaldson 1979).

Vegetation

The east facing slopes of the Cascade Range are a diverse mosaic of forest cover-types. On drier low-elevation sites ponderosa pine (*Pinus ponderosa)* and Douglas fir *(Pseudotsuga menziesii)* are the most conspicuous over-story species. Canopy cover typically ranges between 20-50 percent on these relatively dry, low-elevation sites. At mid-elevations, grand fir *(Abies grandis)* is the climax species, with Douglas fir, lodgepole pine *(Pinus contorta)*, ponderosa pine, and western larch *(Larix occidentalis)* as minor components. At higher elevations, sub-alpine fir *(Abies lasiocarpa)* is the climax tree species. Canopy cover at higher elevations is generally greater than 40 percent. Other tree species commonly found in the sub-alpine fir zone include Engelmann spruce *(Picea engelmannii)*, lodgepole pine, and western larch.

The under-story component of the forest cover types varies greatly with precipitation, aspect, elevation, and canopy cover. Under sparse canopy cover, the under-story often resembles shrub steppe communities with antelope bitterbrush *(Purshia tridentata)*, ocean spray *(Holodiscus spp)*, Oregon grape (*Berberis nervosa)*, sagebrush *(Artemisia spp)*, snowbrush *(Ceanothus velutinus)*, and Spiraea *(Spirea spp)* in the shrub component. At higher elevations additional shrubs include barberry *(Berberis spp)*, currant *(Ribes spp)*, huckleberry (*Vaccinium spp*), mountain snowberry *(Symphoricarpos albus)*, and mountain boxwood *(Paxistima myrsinites)*. Forbs commonly found in under story communities include arrowleaf balsamroot *(Balsamorhiza sagittata)*, cinquefoil *(Potentilla spp)*, heartleaf arnica *(Arnica cordifolia)*, lupine *(Lupinus spp)*, vetch *(Astragalus spp)*, and western yarrow *(Achillea millefolium)*. Pine grass *(Calamagrostis rubescens)* and elk sedge *(Carex geyeri)* are the major forage plants of the grass/sedge component.

The remaining area supports shrub-steppe plant communities characteristic of the Columbia Basin physiographic province (Franklin and Dyrness 1973). Bunchgrass and sagebrush communities are the typical vegetation types on deep gently sloping upland soils (Daubenmire 1970). Common shrubs include antelope bitterbrush, big sagebrush, gray rabbitbrush *(Chrysothamnus spp)*, and spiny hopsage *(Gray spinosa)*. Perennial bunchgrasses, such as basin wildrye *(Elymus cinereus*), bluebunch wheatgrass *(Agropyron spicatum)*, Idaho fescue *(Festuca idahoensis)*, and Thurber's needlegrass *(Stipa thurberiana)*, are important forage species on relatively undisturbed sites. Alien grasses (e.g. cheat grass *Bromus tectorum)* and Kentucky bluegrass (*Poa pratensis*) and forbs (e.g. knapweeds, *Centaurea spp*) often are dominant on disturbed areas. On shallow soils, low-growing shrubs, such as stiff sagebrush (*Artemisia rigida)* and a variety of buckwheat *(Eriogonum spp)*, and Sandberg bluegrass *(Poa secunda)*, are the dominant species. Common forbs in the shrub-steppe zone include Carey's balsamroot *(Balsamorhiza careyana)*, lupine *(Lupinus spp)*, longleaf phlox *(Phlox longifolia)*, western yarrow, and Indian paintbrush *(Castilleja spp)*.

Human Influences

Humans greatly influence the Colockum elk herd. Timber and livestock management has altered much of the landscape occupied by elk. Recreational use has a major impact on the herd.

Hunting accounts for much of the annual adult elk mortality. The core area has a high density of roads, and activities such as off-roading, deer and bird hunting, antler hunting, horseback riding, hiking, etc greatly influences the distribution of elk. Elk seek refuge from disturbance in the Coffin Reserve summer through fall where forage maybe limited. In the spring, elk concentrate in remote areas or on private lands when large numbers of people descend on winter range looking for antlers. Agricultural and horticultural crops attract elk to the periphery of the herd area where they tend to cause damage.

Other Ungulates

Mule deer (*Odocoileus hemionus)* use the entire range of the Colockum elk herd. Mountain goats (*Oreamnos americanus*) occupy portions of the high-elevation rugged terrain in GMU's 249, 251 and 335. California bighorn sheep (*Ovis canadensis californiana*) occur primarily along the breaks of the Columbia River in GMU's 251 and 329. Domestic horses, cattle and sheep are common throughout much of the area. Exact numbers of domestic animals are unknown, but likely exceed the number of elk during the summer months.

HERD DISTRIBUTION

Historic Distribution

Zooarchaeological data from the Columbia Basin suggest elk were present and utilized by early inhabitants (Dixon et al. 1996 and McCorquodale 1985). By the late-1800s elk may have been extirpated from the Region (McCorquodale 1985). The current Colockum elk population developed from the reintroduction of Rocky Mountain elk (*Cervus elaphus nelsoni*) from Yellowstone National Park in 1913 and 1915, which significantly contributed to any remnant animals in the area (Bryant and Maser 1982).

Current Distribution

Most Colockum elk display distinct seasonal migrations. They generally move northwest to higher elevation during summer (Bracken and Musser 1993). With the progression of winter, snow accumulation causes elk to move southeast and use more arid, lower-elevation ranges. Elk are usually concentrated on winter-spring range from mid-November through March. The main concentration of elk is in GMU's 251, 328, 329, 330, and 335 (Map 1). Bracken and Musser (1993) estimated 90% of the Colockum elk winter in an area bounded by Colockum Creek, the Columbia river, Rocky Coulee and the 1,281 meter (4,200 feet) elevation contour west to Naneum Creek. Small subherds also winter near Cle Elum, between Peshastin and Colockum Creeks, and along the Wenatchee River. The majority of elk summer in the Naneum, Swauk and Teanaway Drainages. Some of the Cle Elum elk may migrate north, but surveys and casual observations suggest the majority do not make long movements. Bracken and Musser (1993) believed elk wintering between Colockum and Peshastin Creeks probably stayed within GMU's 251 and 249.

The majority of elk summering east of Naneum Creek move into the Aurthur Coffin Game Reserve (ACGR) as soon as hunting starts in early September. The ACGR elk probably start moving toward the area as soon as activity (scouting, setting up camps) begins in August.

Roughly 50% of the Colockum herd is thought to be in or around the ACGR by early September. The ACGR is about 5 square miles and does not have enough forage to support the high density of elk sometimes seeking refuge there. Some of the ACGR elk move to GMU 330, which is not open to modern firearm and muzzleloader general season elk hunting. Elk seeking refuge on ACGR often move off at night to feed and return by sunrise.

The distribution of Colockum elk is managed through hunting. The amount of hunting pressure which is directed toward different sub-populations at various times of the year is determined by the following considerations: (1) maximizing hunting recreation, (2) maintenance of desired elk population level, (3) control of damage to commercial agricultural or horticultural crops, and (4) reduction of competition with mule deer during the winter in Chelan County.

Proposed Distribution

No major change in the distribution of Colockum elk is proposed. The Washington Department of Fish and Wildlife will continue to encourage elk use on public lands south of Highway 2 and discourage elk use of private lands where damage to agricultural areas is a problem. The Washington Department of Fish and Wildlife will continue to discourage elk in the Kittitas and Teanaway Valleys.

HERD MANAGEMENT

History, Current Status, and Management Activities

The main Colockum herd developed from 45 Montana Rocky Mountain elk released near Boylston and driven north at Vantage in 1915 (Pautzke, 1939). In 1939, the Colockum herd was estimated at 300-350. In contrast, the Yakima herd was initiated in 1913 with 50 elk and had expanded to 3,000 by 1939. Elk from the rapidly expanding Yakima herd probably contributed to the Colockum population. There was no mention of damage being an issue for Colockum elk in 1939.

The elk population continued to expand in the 1940's and 50's. Interest in securing elk habitat was also increased. The Colockum Wildlife Area was purchased in the mid 1950's, followed by the Whiskey Dick and Quilomene Wildlife areas in 1966 and 1972-74. Together, these Wildlife Areas total approximately 228 mi^2. Almost half of this total area is controlled through DNR lease or agreement. Wheat farming on the Colockum Wildlife area was reduced from 1890 acres in 1986 to about 100 acres today. Most official grazing on the Quilomene, Whiskey Dick, and Colockum WRA's was eliminated in 1972, 1980, and late 1990's. The range of the Colockum Elk Herd has a long history of domestic stock use.

In the 1960s, the 3,000 acre Coffin Reserve was established in the Colockum Wildlife Area as a refuge for elk. Elk concentrate on and around the Coffin Reserve from spring through early winter when snow pushes them out of the higher elevations. The main concentration occurs during the hunting seasons from September to November. Up to one-half of the Colockum elk herd can be found on the Reserve during the fall based on radio-telemetry data (J. Musser, Wash. Dept. Fish and Wildl., unpubl. data). The impact of the high density of elk has become a concern in recent years. Cattle utilization surrounding the reserve is also high. The combination

of a high density of elk and cattle has the potential to influence vegetation and animal health.

West Bar (GMU 330) has also been a semi-reserve since the late 1970's. Elk would concentrate on wheat fields on the ~3500 acre bar. The unit is bounded mostly by cliff and river. Hunters would push elk across the river where either sex elk were fair game. Elk were shot in the river and from the highway as they scrambled up steep, unstable slopes. GMU 330 was created to reduce unethical hunting behavior. However, large numbers of elk were not desired, so small numbers of permits have been used to control elk numbers on West Bar. In 2000, GMU 330 was eliminated to simplify the regulations. Before the hunting season, large numbers of elk were observed in the unit and fears of unethical hunting arose. The unit was closed by emergency regulation to prevent elk from being pushed across the river and permits re-instated in 2001. Early general season archery hunting was established in 2002 for spike bull and antlerless elk hunting.

Hunting

Kittitas County had its first either-sex elk hunting season in 1927 (Appendix A). In 1929, harvest was restricted to bulls only. In 1939, Pautzke et al. (1939) estimated the Colockum elk population at 300 to 350 animals. The next either-sex seasons did not occur until 1944, when Chelan County and the Teanaway area of Kittitas County were opened in a special early-December season to address elk damage. In 1951 the special either-sex elk season lasted for 65 days. The first special permit-controlled elk hunting season was established in 1955 in two areas of the Colockum herd with 100 permits each.

The increase of elk hunting pressure from 1935 to 1978 proceeded at a more rapid rate than the noticeable increase in the elk population. Hunting pressure problems in the Colockum necessitated changing the opening day of elk hunting season from the traditional Saturday opening to Monday from 1971 to 1978 when several disagreeable "shoot-outs" occurred. This strategy was partially successful but was replaced for the 1979 season when the Washington Game Commission established a four-area, five-tag system to relieve congestion. The four elk tag areas were Blue Mountains, Colockum, Yakima, and Western Washington. This strategy was successful in reducing hunter participation in the Colockum from 13 percent to 9 percent of the statewide total in 1979 (Parsons 1980). In 2000, elk tags were consolidated into eastern and western units (Appendix A).

From 1940 to 1994, unlimited hunting for any antlered bull was allowed during general hunting seasons. This strategy resulted in low post-hunting season bull:cow ratios with few adult bulls in the population. In 1994, the harvest strategy was changed to a spike-only general season with branch-antlered bull hunting limited to special permit.

A review of Appendix A shows a steady progression in complexity of elk hunting seasons from 1927 to the present. We now have seasons for archery, muzzleloader, and modern firearm hunters; general, special and permit-only seasons; stratified or early and late seasons; area tags and various legal animal descriptions. All of these strategies are used to provide maximum hunting opportunity, manage damage, and maintain a healthy and productive elk population.

Elk Surveys
Surveys prior to 1999 focused on estimating population composition (i.e., calf:cow:bull ratios), and therefore provide limited inference to actual total elk abundance. Most surveys were conducted post-season (January, February, or early March). Ground and aerial surveys were attempted in September, but were found to be of limited utility, especially for estimating bull numbers.

A protocol for estimating the post-hunt elk population using aerial surveys and a sightability model (Unsworth et al. 1994) was established in 1999. Initial surveys returned wide confidence intervals around the estimated population parameters. More precise estimates have been obtained the last few years by increasing the amount of area flown, using previous survey information to better stratify the sampling units, and focusing efforts on higher density units. Post-hunt herd data from the Colockum area 2000-2004 indicated that sampling 70 percent of the units yielded a confidence interval at the herd level that has improved from $\pm$ 20% of the estimate in 2000, to $\pm$5% of the estimate in 2004. The precision of estimates of cow numbers and estimates of calf numbers were $\pm$3% and $\pm$10% respectively in 2004.

It is difficult to obtain good estimates of the post-hunt bull population because bull groups in late winter are relatively small in size and have a clumped distribution. Small groups of elk that are not evenly distributed across the landscape and using heavy cover can be difficult to see from the air. Precision of the bull estimates has ranged from $\pm$18% to $\pm$38%. The bull estimates represent those animals on traditional winter range that is routinely surveyed. There are indications that a number of bulls in timbered areas outside the surveyed winter range may be missed. The cost of surveying all of potential bull range for the Colockum is prohibitive. The landscape encompassing all bull range is too widespread and bull groups are small and unevenly distributed which requires a substantial investment in flight time with minimal return on bull groups sighted. Another confounding factor is survey timing. In the Colockum, surveys conducted during the fall rut seem to be less effective as dominant bulls tending harems are more likely to be seen than subordinate bulls on the periphery. Surveys are typically conducted in late February so the data can be incorporated into hunting season recommendations. The visibility of bulls seems to increase after green-up in mid-March. However, green-up surveys are not practical due to hunting season recommendation requirements.

Estimated Population Size
Population estimates for the surveyed winter range are shown in Figure 1. Although the data suggests a slight population decline since 1995, the wide variances prior to 2000 cloud any trend analysis. From 2001-2004, the number of animals estimated on the surveyed winter range was declining. The trend was reversed in February 2005, potentially because of a dramatic reduction in antlerless harvest in fall 2004 (Figure 2). Bull harvest since the early 1990's (Figure 2) suggests recruitment has declined. The March 2005 estimate on the surveyed winter range was 3,596-4,378 elk. The objective for the Colockum elk herd in the game plan was 4,275 to 4,725 animals (WDFW 2003).

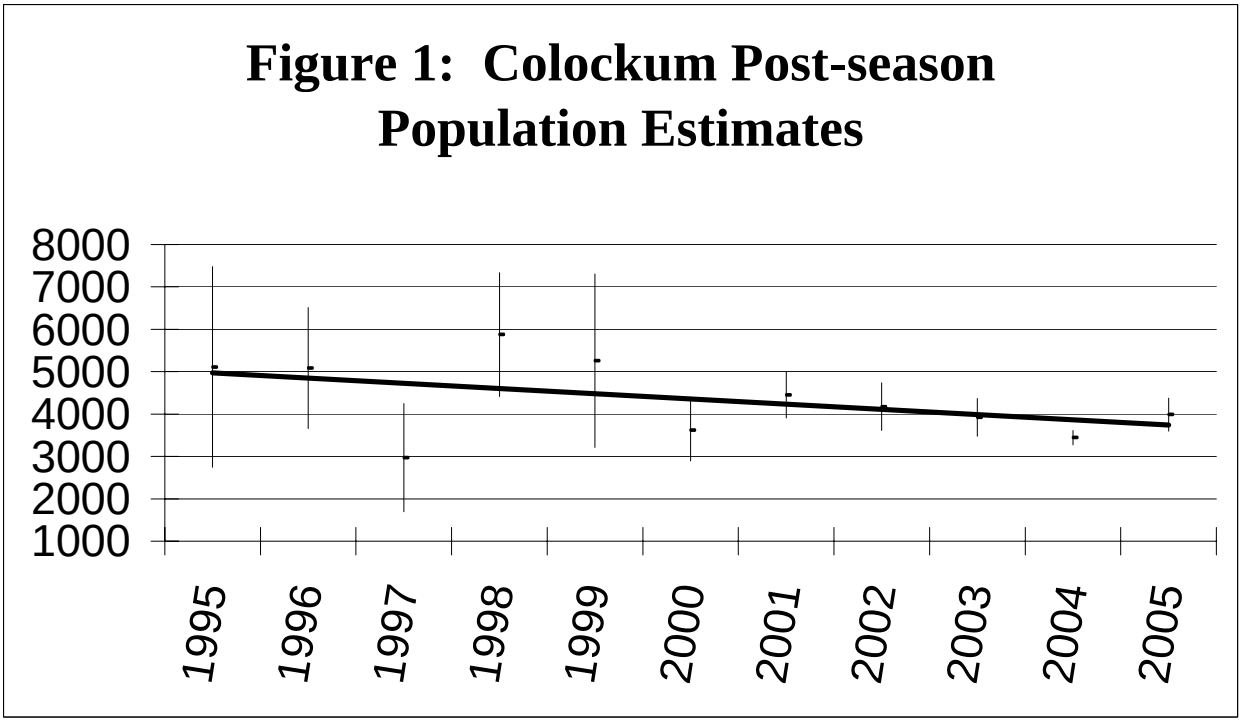


Figure 1: Population Estimates

Herd Composition

Bull Population/Ratios: Post-season aerial surveys for composition were begun in 1990. Observed bull ratios were 2-4 bulls per 100 cows prior to the 1994 spike-only general season. They increased to 18 in 2002, and decreased to 4 in 2005 (Table 2). As noted previously, the bull population is very difficult to estimate and the estimates have a wide variance (Figure 3). Adult bulls are typically segregated from cows and more difficult to detect (McCorquodale, 2001). Bulls 2+ years and older don't always use traditional winter range and are probably often under represented in the surveys. This is especially true if mature bulls have a greater tendency to winter in higher elevations with more timber. Harvest report cards from 1987-93 indicate 100-250 bulls >3 point in the harvest, which had to be alive during post-season surveys. Assuming approximately 3,500 cows in the population, the post-season bull ratio prior to 1994 was 3-7 bulls per 100 cows.

From February 1994-2002, the bull segment of the population was likely increasing (Figure 3). In fall 2002, bull permits were issued for the core of the Colockum herd after a 2-year moratorium on bull permits. Since 2002, the bull population appears to be declining, but it is not known if the trend is real or a result of survey bias. Since 1999, surveys have been refined to address potential biases associated with the distribution and behavior of bulls. By surveying at least 70% of the range annually since 2000, much has been learned about the movements and distribution of the bulls in February and March. Light snow pack years such as 2005 probably also greatly influence estimates. Rough models using spike recruitment (post-season) and potential mortality suggest the bull population is probably decreasing. The reliability of the estimates of different sex/age classes is less straightforward in light of harvest data that WDFW monitors.

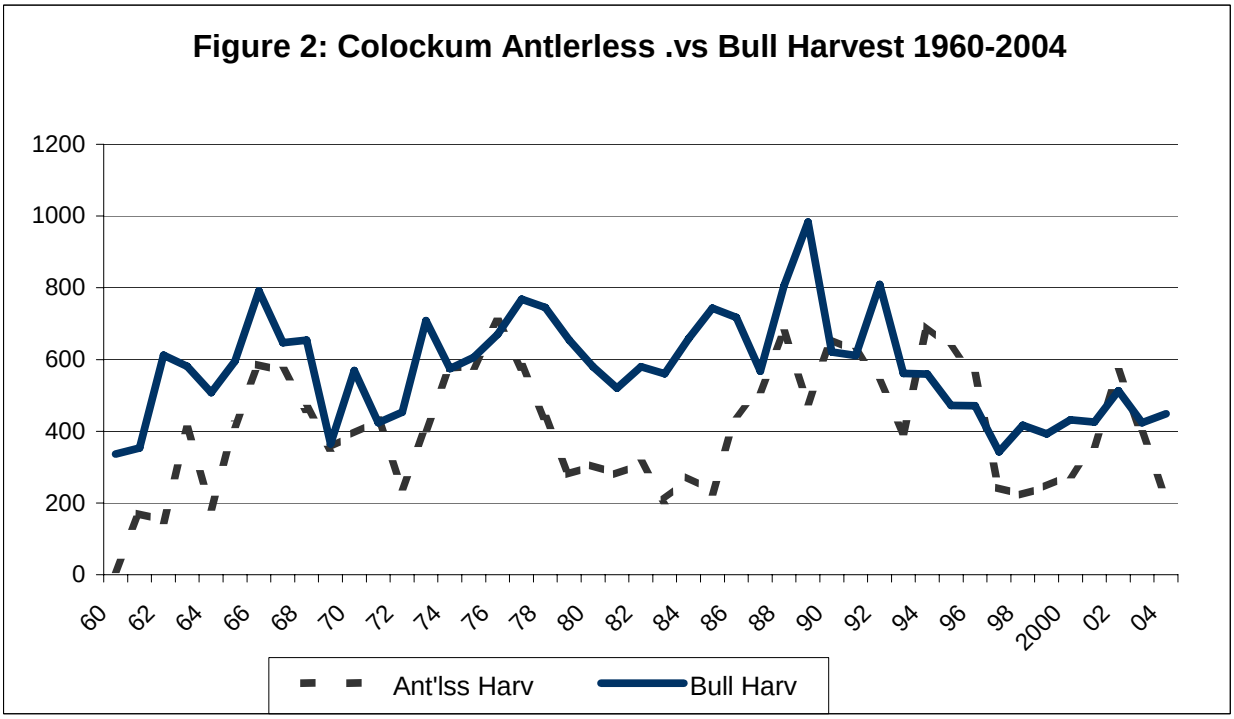


Figure 2: Colockum Antlerless vs Bull Harvest 1960-2004

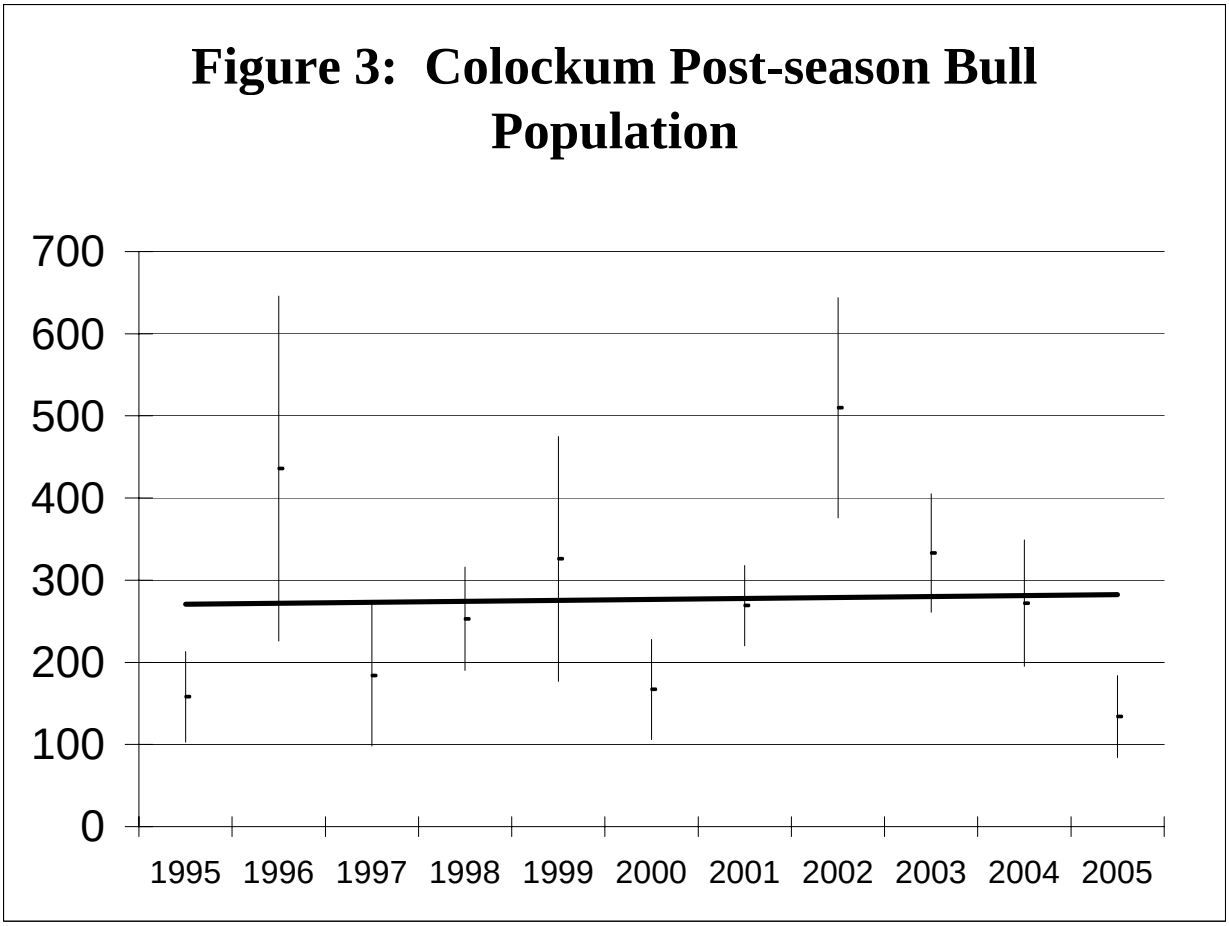


Figure 3: Colockum Post-season Bull Population

Calf Population/Ratios: Yearling bull harvest can be used to index bull calf recruitment given certain assumptions if that elk population is being hunted under an any-bull harvest structure. Under that scenario, yearling bull harvest should provide an index to bull calf recruitment trends. The Colockum herd, however, is not hunted under an any-bull season structure. Another way to index calf production is to survey elk populations by air or ground for and classify calves as a proportion of the antlerless population (calf:cow ratios). Typically these data are presented as a ratio of calves per 100 cows (Table 2).

Since 1995, WDFW has been able estimate the calf population which is preferable to using an index (Figure 4). Calves observed in February, should correlate with yearling bull harvest the following fall (i.e., strong calf cohorts should predict high harvests of spike bulls the following fall and weak calf cohorts should predict lower spike harvest). The estimates depict an ambiguous relationship between observed calf ratios and yearling bull harvest (Figure 5) or estimated calf population and harvest (Figure 6). In years when there were major changes in the calf ratio (’92,’93,’00), the yearling bull harvest shows an inverse relationship to calf ratio. Since 2000, yearling bull harvest has typically been higher than predicted based on surveys.

The confidence intervals on calf population estimates have been fairly narrow and averaged 702

from 2000-05. Back-calculating the calf population from spike harvest and spike recruitment suggests the average calf population was closer to 1,000 for this time period.

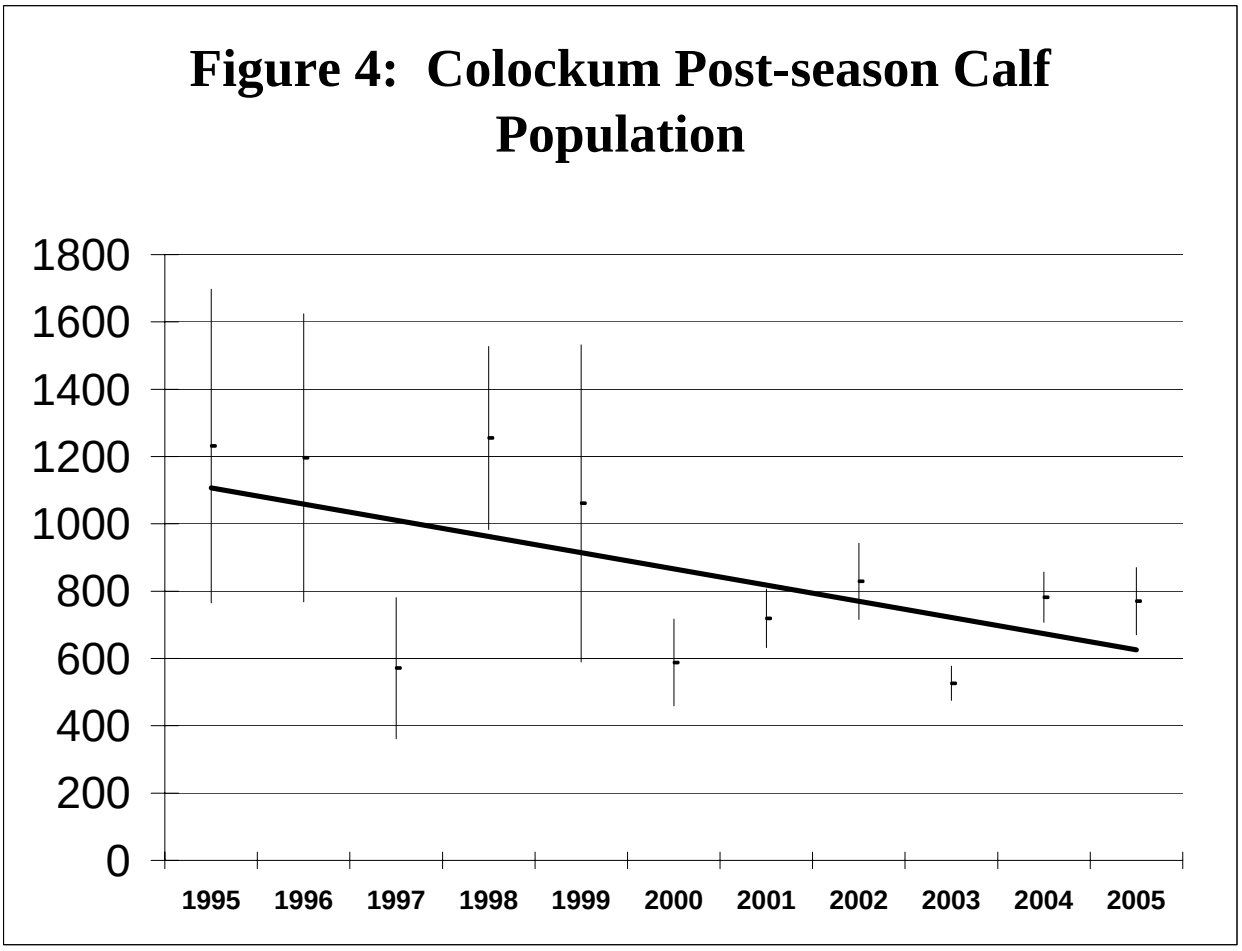


Figure 4: Colockum Post-season Calf Population

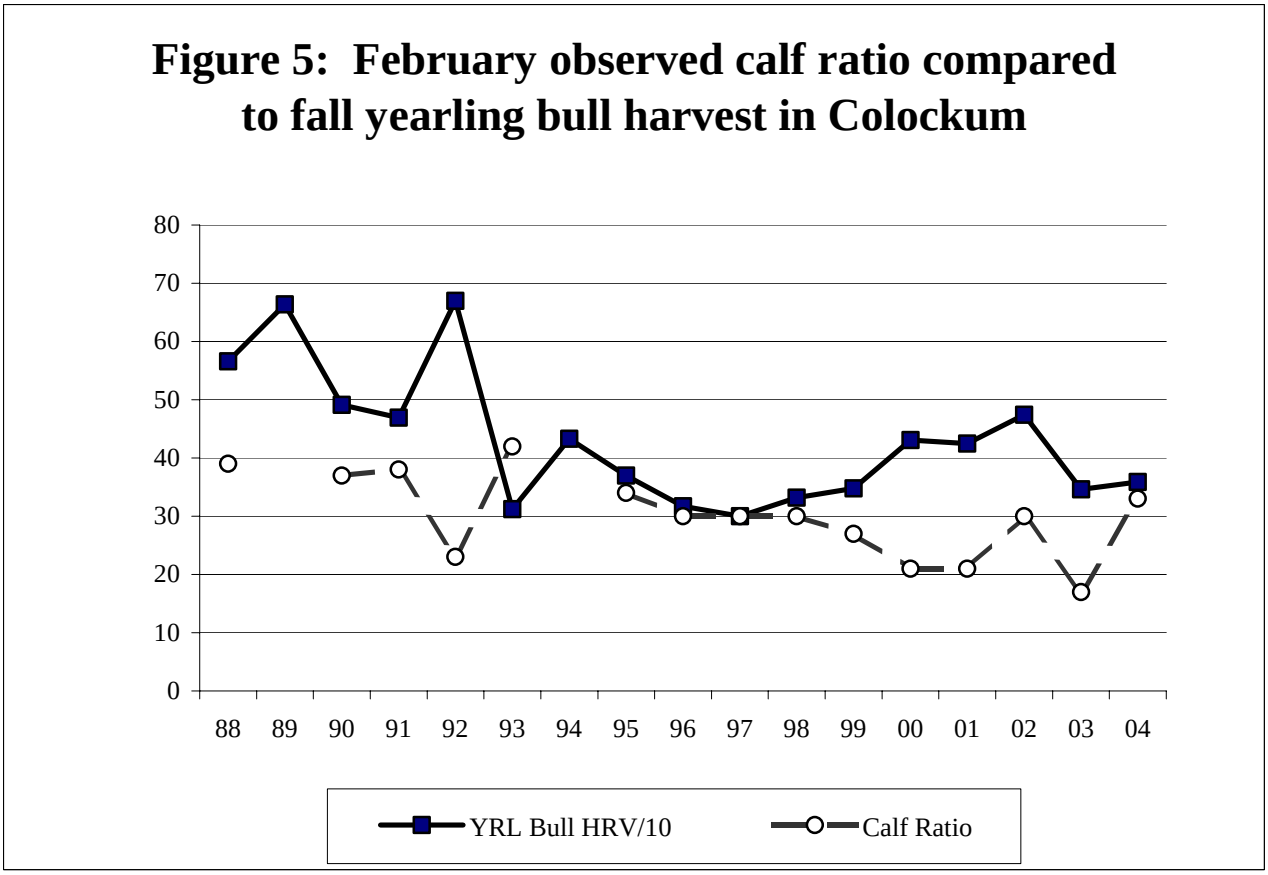


Figure 5: February observed calf ratio compared to fall yearling bull harvest in Colockum

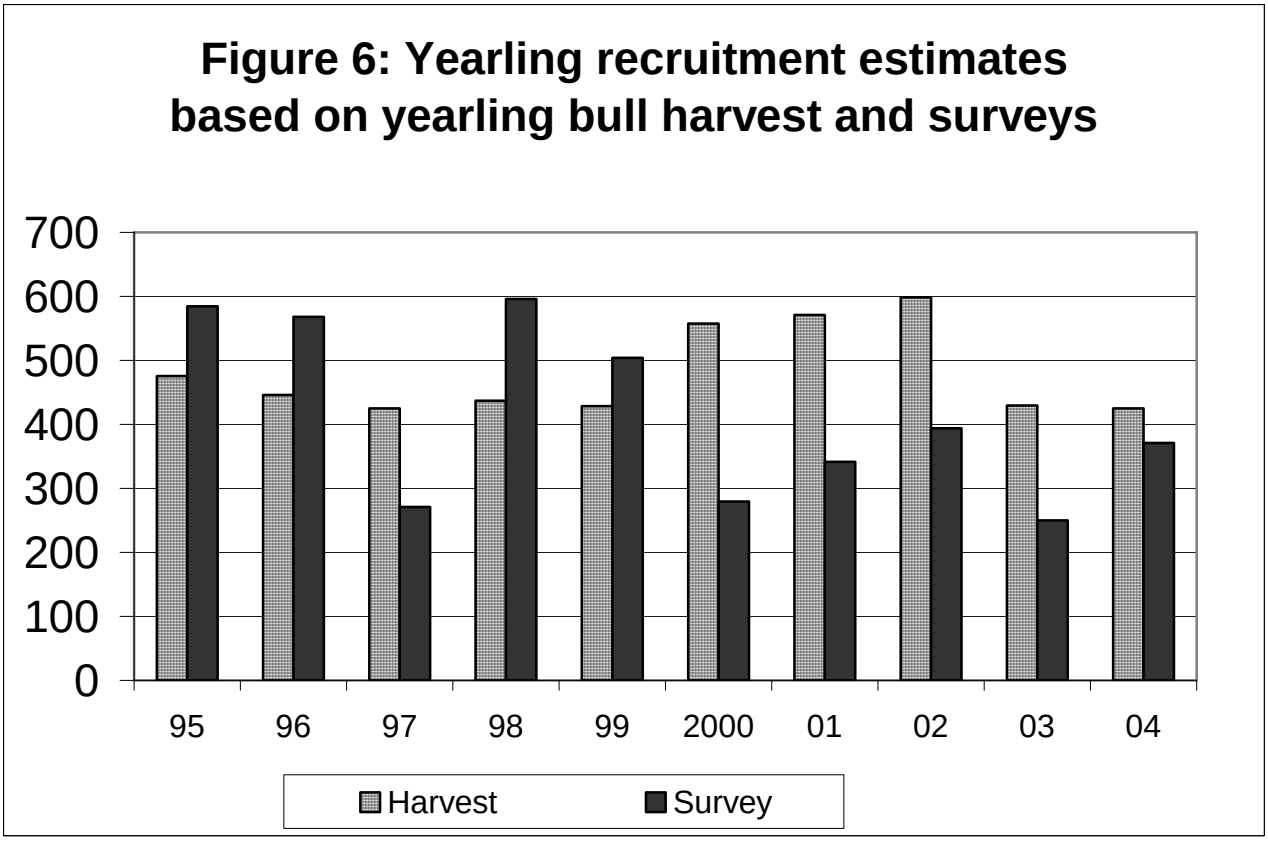


Figure 6: Yearling recruitment estimates based on yearling bull harvest and surveys

There are a number of possibilities for the discrepancies between calf ratios and yearling bull harvest. The calf ratio could remain stable or increase, while total recruitment decreased because the overall population is decreasing (i.e. high antlerless harvest). Weather can also be a confounding variable by impacting the number of elk on the winter range, harvest (by affecting hunter success), and calf survival. There are probably significant numbers of elk wintering outside the surveyed range. While a growing number of elk may be wintering in GMU 335, only 23-29 yearling bulls have been harvested in the area annually since 1999. Elk wintering in GMU 329 do migrate into 335 and contribute to the harvest, which averaged 121 bulls from 1989-94. It is unlikely elk wintering in GMU 335 are migrating east in large numbers and being harvested in GMU 328 and contributing to the harvest discrepancy. Elk wintering in GMU 251 could migrate into 328 or 329, but extensive surveys have not been conducted.

Another contributing factor could be systematic misclassification of calves during surveys attributable to environmental variation. Noyes et al. (1996) theorized that higher bull ratios would result in earlier breeding, calf drop, and thus larger healthier calves going into the winter. Cook et al. (2004) found there was some advantage to a "head start" for calves, but summer-autumn nutrition was the most significant variable affecting parturition date and calf size. Calves on a high nutritional plane were 40-70% larger than those on a low and medium diet. In years of abundant forage, some calves could be gaining enough mass by February to be classified as adult (yearling) cows. In years of poor nutrition, all the calves may be small and easily classified. The

increasing bull population may be resulting in more calves being born early and magnifying the influence of nutrition. Bracken and Musser estimated 77% of cows sampled in the fall were lactating. Their highest observed calf ratio in February was 39:100. Recent sampling of cows harvested in September and October suggests the elk are in good condition and approximately 60% are lactating in the fall. Observed calf ratios the following February averaged 25:100 on aerial surveys. Most studies suggest calf survival is high after late summer. It would be very unusual for more than half the calves to perish in the fall, especially considering antlerless harvest is weighted toward adult cows.

Mortality

Bracken and Musser (1993) found all Colockum radio collared elk mortalities from 1988-91were attributed to hunters during the hunting season. Smith et al. (1994) used the same data to calculate annual mortality estimates for bulls and cows of 66% and 13%. Sample sizes were small for sources of mortality other than legal hunting. One bull and cow were killed illegally with modern firearms and 1 cow died from an archery wound. No deaths were attributed to predation or winter mortality.

Mortality rates in recent years may not be the same as 12 years ago. There is a perception that illegal bull harvest and crippling loss are much higher under spike-only management. Many also believe predation is becoming a factor, particularly by cougars. Myers et al. (1997) found a minimum of 58% of Blue Mountains calves died the first year with 78% of the mortality due to predation. Smith et al. (1994) determined adult mortality due to natural causes was 9%. Of the 9% natural mortality, only 16% was due to predation. Ballard (2001) found predator control was often ineffective at increasing deer populations or harvest. Ballard et al. recommended that predator control only be considered when populations are well below carrying capacity and predators are known to be a limiting factor. Neither is currently known to be true for Colockum elk.

Harvest

Figure 2 shows the harvest since 1960. It should be noted that changes in harvest estimation probably caused inflated harvest estimated prior to 1984. While fluctuations occurred, the harvest (and theoretically, the population) seems to have gradually increased from 1960-1989. Since 1992, there has been an obvious decrease in bull harvest. Some of the decrease is possibly from spike-only general season, which was implemented in 1994. In 1977, 84% of the antlered harvest was yearlings. Yearling bulls comprised 73% of the Colockum bull harvest from 1987-93 and 84% from 1994-2000. Interestingly, the bull harvest did not decline in 1994 when a "spike only" general season was implemented. The small increase in the 1998 bull harvest was due to a regulation change that allowed muzzleloaders to harvest any bull in a damage area. Muzzleloaders reported taking about 140 branched antlered bulls in 1998. While all were tallied as Colockum harvest, report cards indicate about half of the 140 bulls harvested were taken from the Yakima herd portion of the damage area. The 1997-2001 bull harvest was the lowest 5-year average bull harvest in recent history. Harvest has increased slightly since 1998, but is still well below average.

The reasons for the decline in the late 1990's may have been due to over harvest and hard winters. Prior to 1987, antlerless harvest was relatively low compared to bull harvest (Figure 2),

which should have led to an increasing population if herd size was limited by harvest. Bracken and Musser (1993) reported the Colockum herd was one of the most heavily harvested western herds from 1987-91 with low post-season bull ratios and the highest antlerless harvest rate (90 antlerless/100 antlered). The winter of 1992-93 was apparently severe as yearling bull harvest declined from a record high of 670 in 1992 to 312 in 1993. The hard winter was followed by high antlerless harvest from 1992-96 (1.08 antlerless/100 antlered). Another hard winter hit in 1996-97. The lowest yearling bull harvest in recent history occurred in 1997. The reduction in antlerless harvest may be the reason bull harvest increased 1999-2002. A high antlerless harvest in recent years may have again reduced the recruitment.

Tribal Harvest

The Yakama Nation has traditionally exercised their treaty hunting rights within the boundaries of the Colockum Herd. The season for Yakama members is year-round, but is restricted to bull-only from January 1- August 31. In the 1990's, tribes other than Yakama were also documented hunting Colockum herd elk, but recent court decisions have limited non-Yakama activity. Tribal harvest for the herd is not available, but it is not believed to be significant relative to nontribal harvest. Of the 25 documented mortalities of radio-collared elk, Bracken and Musser (1993) found only one to be from tribal hunting.

Social And Economic Values

Number of Hunters and Hunter Days

In the 1990's, an average of 10,373 state authorized hunters spent an estimated 50,306 days afield hunting Colockum elk (Appendix B). This represents a decrease of 823 hunters compared to the 1980's average. Hunter numbers seem to have declined further the last 3 years averaging 8,490. The largest decline occurred in 1997 when 33% fewer hunters went after Colockum elk compared to 1996. The decline followed several years of declining harvest, a severe winter and reduction in special permits.

The Colockum elk herd provides economic value to the State and local communities. The value of elk to the state economy is estimated to be as high as $1,945 per harvested elk in the Blue Mountains (Meyers 1999). The *2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation* reported that trip-related and equipment expenditures for hunting big game averaged $925 per hunter (U.S. Department of Interior et al. 2001). Using the $925 average expenditure per hunter from the national survey, Colockum elk hunters have averaged spending $7.8 million from 2000-02. This estimate is obviously high. The $925 figure includes all big game, not just elk. It is likely many of the hunters also pursued deer and other big game. However, it is clear that Colockum elk-centered recreation has considerable economic value and contributes to local community economies.

Hunter participation during any given year is influenced by many factors. During 1984-2000, the Department annually tracked hunter participation and hunter effort through a harvest questionnaire (Table 3). Since 2001, hunter statistics have been tracked through mandatory reporting. Season structure, license and tag fees, climatic conditions, season forecasts, and previous year's hunter success rates, etc has influenced hunter participation. Similarly, hunter days a field can be highly variable from one year to the next. The elimination of herd specific

tags in 2000 has probably made hunter shifts more likely. The movement of hunters between the Yakima and Colockum herds is very likely.

Harvest Strategies

General hunting seasons will be set every three years as a part of the current Washington Fish and Wildlife Commission's policy of adopting hunting seasons for a three-year period and annually establishing permit seasons and necessary amendments to manage populations or control damage. The three-year hunting package will serve as the State's harvest plan. Tribal participation in formulating specific recommendations and harvest strategies begins at the regional level. The WDFW's regional and field personnel meet with tribal representatives periodically to coordinate harvest strategies, share harvest data and discuss elk management activities.

Elk hunting seasons in the Colockum elk herd prior to 1994 generally allowed archery hunters to take any elk; muzzleloader hunters to take any elk until 1983 and any elk or bull-only depending on the unit during 1984-94 (Appendix A). Modern firearm hunters were restricted to any bull elk with antlerless elk by special permit. These seasons and regulations resulted in low bull escapement. In 1994, the strategy for bull harvest was changed to spike-only general season with branched antlered bulls by permit-only for all hunters. Archery and muzzleloader hunters have seasons that allow for antlerless harvest in designated units and modern firearm antlerless hunting opportunity remains by permit-only.

Hunter density is managed by offering multiple seasons for various weapon types. Washington elk hunters are required to select one elk tag area and hunt with one of three types of weapons (archery, modern firearm, or muzzleloader). From 1979-2000, the majority of the Colockum was a separate tag from the remainder of the state. In 2000, the Colockum became part of a much larger eastern Washington tag area. In addition, hunters can apply for special elk permits (Appendix A).

Access Management

Recreational use in the range of Colockum elk is likely increasing and may be disturbing elk and affecting movements. The number of people recreating in the outdoors has increased dramatically in the last 20 years (The Interagency Committee for Outdoor Recreation (IAC) (2003)). Many of the activities overlap. For example, there are now 400,000-500,000 people using off road vehicles (ORVs) in Washington. Many people are using ORVs to get to destinations or participate in hiking or nature activities. The ORVs have made much of the range accessible year round. Snowdrifts and mud used to limit use of the winter range until mid-spring. It is now common to see ORV activity on the range February, March and April. The late-winter/early spring activity is largely due to people looking for shed antlers. Peek et al. (2002) in a report to the Washington Fish and Wildlife Commission stated "Most authorities recommend restrictions in human activity to reduce displacement and energy loss in winter...". Elk avoiding disturbance on public lands often seek refuge on private lands. Private landowners around the Colockum herd have noticed such a movement and have requested WDFW address the situation. Closing either motorized access or portions of the range to all access for a portion of the late winter and spring represent potential alternatives to address this issue.

Elk generally avoid areas within 400 ft. of primary roads and 200 ft. of secondary roads in forested habitat (Pedersen et al. 1980). In general, greater traffic levels on well-maintained unpaved roads produce a large area of avoidance by elk (Perry and Overly 1976). The avoidance of roads in open habitat is greater. Powell and Lindzey (2003) found elk avoid areas within 1.2 miles of major roads in summer and 0.6 miles in winter in open habitat in Wyoming. Wertz (2001) found that by reducing road densities on public lands in Oregon, they were able to get 48% of radio collared animals to move from private to public land for at least a portion of the season.

An effective road-closure program is one method of reducing disturbance. Roads closed to vehicle traffic increase security for elk and help reduce vulnerability to harvest while still maintaining hunter opportunity. Most of the Colockum elk range has some form of road management in place. The largest of these is the Naneum Green Dot Road Management System, which covers approximately 334 mi^2. Within this system, open roads are posted with green reflective dots on white posts. All other roads within the system are closed to vehicle travel. However, road densities on much of the Colockum elk herd area probably exceed statewide objectives for road densities set forth in RCW 77.12.210 and WAC 232-12-177. Objectives are $\leq$1 mi/mi^2 on spring and winter range and $\leq$1.5 mi/mi^2 on summer and fall range. Because of the more open habitat on the Colockum, road densities of less than 1 mi/mi^2 are desirable. An assessment of current road densities is needed on the Colockum range, as well as the development of a plan for managing on-road and off-road vehicle access.

Damage

Almost since the inception of the modern eastern Washington elk herd in 1913, conflicts with the agricultural industry have occurred. Most historic accounts refer to contention over Yakima and Blue Mountains elk. Few references to problems with Colockum elk were noted prior to about 1970 and no fences constructed in the range of Colockum elk to prevent elk damage. Hunters have desired larger elk populations while many agricultural interests desire lower elk numbers. The Washington Department of Fish and Wildlife currently has responsibility to address elk damage complaints (Appendix B). In the Kittitas and Wenatchee Valleys from 2000 to 2005 damage complaints averaged 12 and 37 respectively, and is becoming a chronic problem. By working with landowners, WDFW enforcement has been able to keep claims to a minimum (Table 4). Officers averaged 37 man-days on Colockum elk complaints/damage 2000-2001. Damage to alfalfa fields, grass, fruit trees, and fences are the most common complaints. In the Kittitas Valley and the Teanaway drainage, elk typically move onto irrigated hay (timothy, alfalfa) fields in August as the range dries. If elk are permitted to stay in the area through fall, damage to a new seeding can be significant. In the winter, as snow depth builds, haystack damage can be a problem. More elk are also moving into the area earlier as antler hunters push elk off public lands. The long elk season in elk area 3911, and the August through February special permit hunts in elk areas 2032 and 2033, have been used to reduce damage. Elk damage control in some portions of the area is getting more difficult as open lands are converted to vacation resorts, residential development and no hunting parcels. Herding the elk is often ineffective, especially if human use of surrounding public lands is high. Some landowners have expressed considerable frustration with the number of elk using the valley areas. Targeting the problem elk with special permits and hunts in elk area 3911 may be the most effective short-term

solution. In the longer term, reducing disturbance and increasing habitat quality on public lands is needed.

A potential major problem is emerging in the southern portion of GMU 335. Recreational and residential development is creating reserves for elk. Some individuals are feeding elk and encouraging animals to reside next to fields the elk damage. Local Teanaway farmers and ranchers are reporting an increasing elk population. Some of the land that is currently in the Conservation Reserve Program (CRP) may go back into grain production. Muzzleloader and modern firearm antlerless permit holders had relatively poor success in 2003. Hunter access agreements, permits or special hunts designed to target local animals will probably be needed in the near future.

In the Wenatchee Valley, damage to fruit trees, alfalfa fields, and fences are the most common problems. Landowners report an increasing number of elk in the area. The Malaga and Peshastin permit hunts are designed to address some of the problems. The size and location of damage hunt areas should be adjusted as the need arises. Special landowner permits may be needed to target specific problems. Fencing individual orchards or constructing long drift fences are potential options for reducing damage.

Historically, West Bar has been a source of problem animals. The geography of the bar makes it possible for hunters to drive animals across the river where they become fair game and potentially cause damage in orchards. However, WDFW does not want West Bar to become a reserve. The solution has been to issue small numbers of permits. The permits keep large numbers of elk from gathering on the bar, but the number of hunters small enough so that the elk do not swim the river.

Table 2: Colockum Elk Herd Damage Claimed and Paid (1980-2005)

Year	County	# Claims	Species	Crops	Total amount Claimed	Total Amount paid
2005	Kittitas	5	Elk	Hay, Pasture	$86,375	
2004	Kittitas	6	Elk	Hay, Pasture	$13,601	$10,339
2003	Kittitas	6	Elk	Hay, Oats	$62,307	$22,857
2002	Kittitas/Chelan	4	Elk/Deer	Hay, Range, Trees	$7,738	$1,585
2001	Kittitas/Chelan	4	Elk/Deer	Hay, Range	$29,000	$5,430
2000	Kittitas	3	Elk	Hay	$4,000	$1,000
2000's AVG		**5**			**$33,837**	**$8,242**
1999	Kittitas	2	Elk	Hay	$1,550	$961
1998	Kittitas/Chelan	5	Elk	Hay, Trees	$3,701	$2,705
1997	Kittitas/Chelan/Grant	10	Elk/Deer	Hay, Trees	$187,641	$12,885
1996	Kittitas/Chelan	2	Elk/Deer	Hay, Trees	$3,204	$1,829
1995	None	0			0	0
1994	Kittitas/Chelan	3	Elk	Orchard	$2,980	$2,980

1993	Kittitas/Chelan	6	Elk/Deer	Hay, Orchard, Oats	$30,026	$6,098
1992	Kittitas/Chelan	3	Elk	Hay, Pasture	$4,412	$1,584
1991	Kittitas/Chelan	9	Elk/Deer	Hay, Orchard, Oats	$41,151	$42,194
1990	Kittitas	5	Elk	Hay, Oats, Ditch	$8,352	$5,520
1990's AVG		**4**			**$28,302**	**$7,676**
1989	None	0			0	0
1988	Kittitas/Grant	3	Elk	Hay, Trees, Oats	$2,975	$2,955
1987	Kittitas/Chelan	6	Elk	Hay, Orchard, Trees	$11,561	$3,314
1986	Kittitas	4	Elk/Deer	Hay, Grain	$9,990	$2,490
1985	Kittitas	1	Elk	Grain	$220	$220
1984	None	0			0	0
1983	None	0			0	0
1982	Chelan	1	Elk	Orchard	$800	$800
1981	Kittitas	1	Elk	Hay	$425	$0
1980	Kittitas	2	Elk	Hay, Pasture	$790	$790
1980's AVG		**2**			**$2,676**	**1,057**

Non-consumptive Uses

Viewing elk is becoming an increasingly popular activity, which has a positive impact on local community economies. While less readily estimated than hunting economic inputs, wildlife viewing economic contributions to the state's economy exceed $1 billion per year (U.S. Department of Interior et al. 2001). The IAC (2003) estimated about 18% of Washington residents participated in observing/photographing wildlife and projected a 23% growth in 10 years. Wildlife viewing is often a secondary activity associated with primary trip such as hiking or camping. However, there has been a noticeable increase of people on winter range since 1994. The increase in the numbers of large bulls has encouraged spring "shed-antler hunting" and viewing/photographing as a primary activity. The popularity has raised concern over the harassment of elk.

HABITAT MANAGEMENT

Winter Range

Approximately 80% of the core winter range is in public ownership. The Washington Department of Natural Resources (DNR) owns approximately 30% of the core winter range and has proposed disposing of the properties for financial reasons. WDFW acquisition of these DNR lands should be a high priority.

Slightly over 20% of the core winter range is in private ownership. Unfortunately, a large percentage is in the middle of the winter range, fragmenting the continuity of the public lands. Development is moving into the area. Long term, development of the lands could be detrimental to the stability of the herd and further complicate management. Acquiring either the land or development rights to as much of the private land associated with the core winter range as possible should be a priority.

Cow/calves and adult bulls are somewhat segregated in the winter (McCorquodale, 2001; Bracken and Musser, 1993). Cows and calves are much more likely to winter in the open shrub-steppe than bulls. However, in late winter as green-up occurs, bulls seem to move into similar habitat. The forage on the winter range is mostly seasonal grasses, most of which are low in digestability. Sporadically, adequate fall moisture and temperatures stimulate a fall green-up, providing high quality forage. An effective strategy for elk is to fatten up in the fall, then conserve energy during the winter. On winter range, habitat improvements may be helpful, but limiting disturbance is probably more critical.

Spring/Transition Range

The spring range is a geographically dynamic area that varies with snow conditions and human use. Elk would likely spend more time on winter range if not for the influx of antler hunters. On the south end of the range, large numbers of animals are concentrating on private lands, some of which are just being developed. Land conservation measures would be helpful long term. However, the tolerance of the landowners in the area is reaching an upper limit, and many are asking that WDFW reduce spring use of our lands in an attempt to stop the early movement of elk onto private property. Habitat improvements could be helpful if used in conjunction with reduced disturbance.

Summer/Fall Range

Managing the summer/fall range is probably one of the most important factors for the long-term stability of the herd. Most of the damage complaints for the Colockum herd occur during August-October. Elk in good condition in the fall are more likely to breed and survive the winter (Cook et al 2004). The majority of summer range has 4 major ownerships with multiple uses. WDFW may be exchanging the majority of summer range for winter range. This may reduce the influence WDFW can have on summer habitat.

There are 3 particularly important factors relating to human activities that affect summer habitat quality for elk: timber harvest, livestock grazing, and disturbance (open road density). From late summer through fall, approximately half of the Colockum elk are heavily concentrated in and near the ACGR. The majority of the remainder are scattered west, typically in areas of low human use. Only a small portion of the herd remains on the winter range. Recent timber harvest throughout the summer range has produced forage, but reduced security cover, potentially causing even heavier concentrations in the reserve during peak human use. These concentrations have raised concerns over long-term habitat quality in the reserve. The area south, west and east of the reserve has received heavy utilization from sheep and cattle. Range studies suggest a rest rotation grazing system can be beneficial to wildlife (Ganskopp et al 2004, Danvir and kearl 1996, Yeo et al 1993) the Colockum would likely benefit from such a system. The Coffin Reserve is fenced to exclude cattle. Maintaining the fence is costly. The best management

would involve closing numerous roads to better disperse the elk and improving forage in and around the reserve. Grazing options that better disperse the cattle, rest pastures, and improve forage quality on WDFW lands should be considered.

The Washington Department of Fish and Wildlife has a partnership in the operation of Mission Ridge winter ski area on the Colockum Wildlife Area. Year-long operation and a summit lodge had been proposed by the owners of Mission Ridge. These requests would have negatively impacted elk and were withdrawn. Proposals have been submitted for access to the ski area from the south. While winter use might not impact elk, having a major road through the summer/fall range could have substantial impacts.

Use of Livestock to Improve Forage

Much of the range of Colockum elk has had a long history of livestock use dating from early settlement of the area. At present there is one livestock-grazing permit issued on a portion of the Colockum WA. While livestock does not currently graze most of the Colockum and Quilomene WAs, the available forage resources are annually utilized by wild ungulates and other wildlife. Some people have suggested that WDFW should increase the area available for livestock grazing on WAs within the range of Colockum elk to improve forage quality. The relationship between elk forage quality and livestock grazing is complicated, and results of research on this relationship are mixed. Some studies have suggested that livestock can have a positive effect on condition of forage for elk (Ganskopp et al. 2004, Taylor et al. 2004, Danvir and Kearl 1996, Yeo et al 1993, Grover and Thompson 1986) when the timing, intensity, and duration of livestock grazing are controlled. Other research (Skovlin et al. 1983, Wambolt et al. 1997, Westenkow-Wall et al. 1994) has failed to find forage improvements or increases. Spring livestock grazing that results in improved nutritional quality of forage also results in reduced fall standing crop (Ganskopp et al. 2004). Livestock can also have a negative influence on vegetation and wildlife (Carrier and Czech 1996, Ohmart 1996) and have frequently been found to displace elk on the range (Coe et al. 2004, Danvir and Kearl 1996, Yeo et al 1993, Mackie 1970). Any livestock-grazing program aimed at improving forage quality for elk will have to take into account all potential impacts.

RESEARCH NEEDS

1. Refinement of elk population monitoring strategies is needed and would be aided by better data on seasonal elk movements and experimentation on sources of error inherent to current survey methods.
2. Data are needed to better define the interactions between the core Colockum elk herd and developing sub-herds along the periphery of the historical core herd range (e.g., Kittitas Valley, rural Cle Elum, Wenatchee Valley).
3. Data are needed on the dynamics and movements of elk in areas where landowner complaints are becoming chronic.
4. Better data on the effects of human disturbance on seasonal elk movements would be useful in refining strategies to manage elk distribution.
5. Data are needed to evaluate the effects of recent and current livestock herbivory on leased rangelands within the core Colockum elk herd range (i.e., effects of livestock grazing on seasonal elk forage availability and elk movement).

6. Better data on the consequences of elk use of the Arthur Coffin Reserve on elk nutritional dynamics and productivity would be useful in long-term Colockum elk herd management planning.

HERD MANAGEMENT GOALS

The Colockum Elk Herd Plan provides a historical background and current condition of the herd. The plan is an assessment document that identifies management problems, suggests solutions, and sets direction. The plan outlines goals, objectives, problems, strategies, and helps establish priorities for managing the elk herd. It provides readily accessible resource and biological information from the herd and identifies inadequacies in scientific information. Fundamental goals for the management of the Colockum elk herd are to:

1. Preserve, protect, perpetuate, manage and enhance elk and their habitats to ensure healthy, productive populations and ecosystem integrity.
2. Manage elk for a variety of recreational, educational, and aesthetic purposes, including hunting, scientific study, wildlife viewing, photography, and use by Native Americans.
3. Manage the Colockum elk herd for a sustained yield.

MANAGEMENT OBJECTIVES, PROBLEMS, AND STRATEGIES

Herd Management

Objective #1
Manage for 4,275 to 4,725 elk in the surveyed portion of the winter range, consistent with the Game Management Plan (WDFW 2003).

Problem: The elk population on the core winter range appears to be declining and is below the current objective. Since the total population and sub-group movement are unknown, a broad population objective is needed. Antlerless harvest increased dramatically in 2002 without non-damage oriented general season permits. A reduction in antlerless harvest opportunity was implemented for the fall of 2004. Hunting pressure must be kept on damage causing elk, including bulls, in GMU's 335 and Elk Areas 2032, 2033 and 3911.

Strategies:
Continue sampling >70% of the winter range units and search for other wintering concentrations. Use harvest data and possibly ground survey data to check aerial survey estimates of recruitment.

1. Monitor antlerless harvest and adjust to meet population objectives.

2. If below population objective, attempt to increase recruitment and decrease animals in damage areas through habitat enhancements, hunting seasons, and damage permits.
3. Allow hunting of either sex in select damage areas.

Objective #2
Manage for post-hunting season bull ratios consistent with the Game Management Plan of 12 to 20 bulls per 100 cows post season (WDFW 2003).
Problem: The annual variation in measured bull:cow ratios has been high. The dispersed nature of small, bull groups has lead to ambiguity in estimates of bull abundance while demand is high for trophy hunting opportunity. Some bulls cause damage to orchards and must be harvested. Recruitment of yearlings into adult bull class appears to be low.

Strategies:
1. Continue steps to improve surveys. Consider conducting surveys later in the spring over a wider area.
2. Use a second method to estimate bull populations such as modeling using spike recruitment and estimates of bull mortality.
3. Adjust branched antler bull permits to obtain goal 12-20 bulls per 100 cows.

Objective #3
Improve elk habitat quality and reduce disturbance of elk.
Problem: Maintaining herd objectives will be difficult if large numbers of elk move onto private lands and cause damage. Improving habitat quality may help keep elk out of agricultural areas, but not if human disturbance is high. Recreational use of the Colockum elk herd area is increasing and may be causing elk to move onto private lands. Road densities exceed optimal levels in many areas and violations of the green-dot road management system are common. Timber harvest has probably reduced security cover, magnifying the impact of increased human use. People looking for antlers may be causing extra winter stress on elk and pushing them off the range prematurely.

Strategies:
1. Look for areas to improve elk forage through clearing, fertilizing, livestock management and other vegetation management techniques. Consider a CRM within the Wildlife Area Plans.
2. Develop a road management plan that addresses the need for security for elk.
3. Cooperate with other public land agencies and private landowners to develop a cooperative road management system.
4. Identify where on the landscape road density needs to be addressed.
5. Determine which roads should be targeted to best manage road densities to benefit elk, given the limited funding available.
6. Close some roads permanently (e.g. gates or tank traps) or maintain seasonal closures of roads during critical periods. Use gates where access for specific uses is needed, such as fire control.
7. As part of the road management plan, address road densities on winter range on the Colockum and Quilomene wildlife areas.

8. Increase enforcement on road management systems and/or potential closures. Emphasize patrols on weekends during spring and winter.
9. Maintain areas of timber to provide security cover for elk.

Objective #4
Minimize conflicts caused by the Colockum elk herd and improve Washington Department of Fish and Wildlife relations with landowners.
Problem: Elk damage complaints are a chronic problem. The WDFW is required to address damage complaints. The Enforcement Program has historically been responsible for mitigating elk damage. The response to landowner complaints has been below expectations in some areas due to changes in Enforcement priorities, limited human resources and funding.

Strategies:
1. Continue to use general seasons and special permits in the three elk areas to put pressure on elk that are using private agricultural lands.
2. Where it is justified and can be implemented safely, use hot-spot hunts, kill permits, and/or landowner preference permits to remove elk causing crop damage and other specific damage problems. Adjust seasons, area boundaries, and permits to target problem elk.
3. Pursue a program that would include Wildlife Control Specialists who are devoted specifically to resolving wildlife damage problems.
4. Redistribute elk where desirable by reducing human disturbance and increasing habitat quality.
5. Work closely with landowners who are experiencing elk damage to alleviate conflicts. Develop solutions to elk/agriculture conflicts through The Kittitas Big Game Management Roundtable (BGMR) and Coordinated Resource Management Planning (CRMP) process.
6. Encourage use of fencing individual orchards to reduce damage problems. Consider drift fence in Kittitas Valley. Provide information to landowners about WDFW cost-share fencing program.

Objective #5
Work cooperatively with the Yakama Nation, U.S. Forest Service, Department of Natural Resources, Bureau of Land Management, and private landowners to manage the Colockum elk herd.
Problem: There has been little communication between the Yakama Nation and the Washington Department of Fish and Wildlife on management of the Colockum elk herd. Other agencies, timber companies and private individuals control the majority of summer range and access. Successful management of the Colockum elk herd is dependent on good communication among agencies and private landowners.
Strategies:
1. Meet at least once a year with tribal, agency and private landowners representatives to review the status of the herd, share management information, and discuss options.

2. Encourage tribal participation in studies and surveys of elk.

3. Continue working with the Big game Management Round Table and consider developing Private Lands Access Programs to better manage the herd.

Objective #6
Increase public awareness of the Colockum herd and develop elk viewing opportunities.
Problem: Non-consumptive appreciation of elk is becoming more and more popular. hose involved with non-consumptive uses may not realize that their activities may impact the Colockum elk herd, especially during winter and spring.

Strategies:
1. Increase efforts to educate public on management of Colockum elk, especially on how disturbance can negatively affect elk and increase damage.
2. Promote elk viewing that has the least impact, especially to wintering elk.

Objective #7
Conduct research where needed to provide essential data for improving management of the Colockum Herd.

Problem: A number of significant management issues relating to the Colockum elk herd require new or better data for adequate resolution. These needs include refinement of strategies to monitor abundance and structure of the elk herd. Some ambiguity exists in currently available data used to infer trends in productivity of the herd and relative abundance of a harvestable surplus of cows and branch-antlered bulls. Related to questions about general trends in productivity are questions regarding the effects of concentrating elk use on the Arthur Coffin Reserve during hunting seasons on cow elk nutritional condition and calf recruitment. Data on body condition of cow elk with known patterns of use of the reserve would clarify any negative impacts of the reserve on herd productivity. Among the most pressing questions surrounding the Colockum elk herd is uncertainty regarding the relationship between the core population and what appear to be growing subherds in areas peripheral to the historic core range of the herd. Chronic human-elk conflicts may develop and be difficult to manage if these subherds grow and elk avoid areas where general season elk hunting occurs. Management options could be clarified by a better understanding of the movement patterns and interactions of the core Colockum elk and these subherds.

Strategies:
1. Continue to evaluate the geographic scope of the aerial survey design to assure good coverage of the winter distribution of Colockum elk.
2. Experiment with survey replication to evaluate the reliability of the current sightability-based estimation protocol.
3. Identify opportunities to assess sources of sampling error (e.g., antlerless elk classification error) currently unaccounted for in estimation models.

4. Explore other means of estimating elk recruitment (e.g., lactation rates from hunter-killed cow elk).
5. Radio-mark elk from the core population and one or more peripheral subherds to assess distributional dynamics and interactions among these groups.
6. Collect data from hunter-killed elk and possibly assess condition of live radio-marked live elk to quantify landscape-referenced nutrition dynamics among Colockum cow elk (e.g., relative to use of the ACGR, public lands, agricultural lands).
7. Implement forage production/removal monitoring to assess influences of livestock grazing on movements of elk into potential damage areas.
8. Monitor levels of human activity in selected areas of the Colockum herd range to evaluate the role of disturbance on elk distribution, with particular reference to elk use of private lands (this assessment would be improved if radioed elk were available for monitoring from #5, #6 above).
9. Monitor survival of priority sex and age classes in the core elk population.

SPENDING PRIORITIES

The following is a prioritized list of projects and expenses for managing the Colockum elk herd.

Priority #1
Herd Population/Composition Surveys.
The Washington Department of Fish and Wildlife needs adequate funding to conduct annual population surveys, with the objective of obtaining precise and accurate data on population size and composition.

Post-season surveys: Current post-season aerial surveys require approximately 15 hours of helicopter flight time in order to cover >70 percent of the core winter range. Helicopter charter time has increased 50% in 5 years, while the budget has remained static. There are a number of potential problems with the current surveys. The discrepancy between survey and harvest data raises questions about the accuracy of the surveys. Elk are wintering outside the area traditionally surveyed. Light winters and increased recreation maybe increasing the percentage of elk residing outside traditional winter range. Surveys have been designed mostly to estimate population, and may not be accurately estimating bull numbers.

Priority: High - Basic biological data collection is essential for responsible management of the Colockum Elk Herd.
Time-line: Annually.
Cost: $14,00/year; $70,00 for 5 years ($450/hr for helicopter).

Priority #2
Reduce burden of elk on private landowners.
The enforcement division has historically been responsible for mitigating elk damage. Changes in priorities and other factors have left the response to landowner complaints below expectations

in some areas. Funds should be used to hire herder/hazers that would decrease damage claims.

Priority: High.
Time-line: Annually.
Full-time Control Specialist: $65,000/year; $325,000 for 5 years.
Seasonal Herder/Hazers: $17,000/year, $85,000 for 5 years.
Equipment: $20,000 first year
Cost Share Fencing: $10,000/year; $50,000 for 5 years

Priority #3
Range management
Forage utilization across the range of Colockum elk appears to vary with elk and livestock densities. Cattle interests would like to see more grazing on state lands. The cost of excluding cattle from WDFW lands is fairly high. There may be an opportunity to develop a grazing system that would benefit wildlife and reduce WDFW's cost of maintaining fences. The first step is to document current utilization, then develop a grazing system and measure the change in utilization. The most efficient means of documenting range condition would be through a university. The fence must be maintained while the data is being collected.

Priority: High.
Time-line: 2006-2010.
Monitoring Costs: $25,000 in 2006; $75,000 for 3 years.
Materials for measuring utilization: $5,000
Fence Maintenance/Replacement: $35,000 in 2006, $175,000 for 5 years.

Priority #4
Access Management.
The year round road density and disturbance is higher than desired. The human use is making it difficult to keep elk on public lands. Some roads need to be closed permanently, others seasonally. Enforcing any closures is key to success. One of the most common criticisms of road management is lack of enforcement. Physically closed roads are more effective than posted roads. Flight time, especially in the spring, would greatly aide the enforcement capabilities.
Priority: High.
Time-line: 2007-2010
Develop Road Management Plan: $65,000
Implement Plan (Gates, Signs, Maps) and Monitor: $150,000

Priority # 5
Habitat Enhancement.
There are various habitat enhancements that have/can take place. These include maintaining meadows, burning, weed control, and fertilizing. Develop a prioritized list of projects and seek partnerships to implement.
Priority: Medium.
Time-line: 2006, 2008, 2010.
Cost: $30,000 every other year; $90,000 for 5 years.

Priority #6
Gain management control of critical elk habitat.
Development is moving into areas that have been used by elk historically. As land use changes, elk "refuges" near agricultural lands can develop, limiting ability to control problem elk. Large-scale development has the potential to completely displace elk. Habitat should be secured through purchases, leases, easements, or incentives. Funds would also be needed for operation and management of these areas. The winter range is a top priority.

Priority: Medium.
Time-line: 2003-2008.
Cost: The estimated cost is $1,000,000-$5,000,000 total.

Priority #7
Elk study.
There are numerous questions that need to be addressed regarding the Colockum herd. Data are needed on: 1) Movements of subherds in relation to damage and contribution to herd objectives; 2) Impacts of recreational use on elk distribution; 3) Effects of management actions (grazing, habitat improvements, road closures, etc.) on elk distribution; 4) Survival of priority sex and age classes; 5) Impacts of the ACGR reserve on vegetation and elk.

Priority: Medium.
Time-line: 2007-2010
Cost: $350,000 for 5 years.

Plan Review and Amendments
The Colockum Elk Herd Plan is identified as a five-year document subject to annual review and amendment. As new information is gathered and conditions change it will be necessary to maintain a free exchange of communication between the Washington Department of Fish and Wildlife, Yakama Nation, and cooperators. Washington Department of Fish and Wildlife's Regions 2 and 3 will meet on an annual basis to discuss pertinent issues related to the Colockum herd. An annual review meeting with delegates from Tribes will be arranged by the Washington Department of Fish and Wildlife's Region 3 Wildlife Program Manager. Emergent issues can be addressed, as needed either at the technical or policy level.

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APPENDICES

Table 3. September (pre-hunting) and February (post-hunting) composition counts for the Colockum elk herd, 1988-2002.

	September				February			
Year	Bulls: 100 cows	Adult bulls: 100 cows	Calves: 100 cows	Sample size	Bulls: 100 cows	Adult bulls: 100 cows	Calves: 100 cows	Sample size
1987-88	29[a]		66	674	14		39	1,847[a]
1988-89	30[a]		65	556				
1989-90	37[a]		51	570	3	2	33	1,328
1990-91	19[a]		43	429	4	4	38	795
1991-92	18		51	438	2	0.1	26	1,887
1992-93					2	0.3	42	2,197
1994-95	23[a]	4.7	30	197[b]	4	3	34	1,656
1995-96					10	4	30	2,261
1996-97	24[a]		39	237[b]	6	5	30	2,220
1997-98	25[a]		58	417	5	2	30	3,809
1998-99	18[a]		37	372	8	6	27	1,600
1999-00					7	5	21	2,348
2000-01	14	7.5	24	1,521	8	5	21	3,661
2001-02	20	7.1	37	1,391	18[c]	14[c]	30	3,418
2002-03	15	7.1	25	629	11	8	17	3,358
2003-04					11	8	33	3,218
2004-05					4	2	25	3,523

[a]Surveys from the ground.

[b]Counts based on small samples may not be representative of the population.

[c]In 2002, bull:cow ratios may not have been representative of the population.

Table 4. Elk harvest and hunter trends for the Colockum elk herd, 1985-2001.

Year	Antlered	Antlerless	Total	Hunters	Hunter Days
1960's AVG	**544**	**332**	**876**		
1970's AVG	**617**	**464**	**1081**		
1980	580	305	885		
1981	520	280	800		
1982	580	310	890		
1983	560	208	768		
1984	658	272	930	8,886	36,692
1985	743	231	974	12,266	52,134
1986	717	450	1,167	11,087	46,447
1987	567	581	1,148	10,509	54,761
1988	806	735	1,541	11,543	57,012
1989	983	537	1,520	12,884	61,299
1980's AVG	**671**	**391**	**1,062**	**11,196**	**51,391**
1990[a]	621	681	1,302		
1991	611	657	1,268	13,811	61,598
1992	809	616	1,425	13,253	59,169
1993	561	445	1,006	13,815	62,561
1994	559	741	1,300	11,338	53,154
1995	472	663	1,135	11,371	52,409
1996	471	596	1,067	12,553	54,939
1997	343	268	611	8,388	40,327
1998	496	247	743	9,776	53,563
1999	393	235	628	9,428	65,341
1990's AVG	**534**	**515**	**1022**	**10,373**	**50,306**
2000	438	293	731	8,374	37,522
2001	433	398	831	7,660	36,317
2002	436	593	1029	9,436	49,334
2003	424	393	817	7,756	39,571
2004	445	221	666	7,847	38,257

[a]Harvest estimated from report cards.

APPENDIX A. ELK HUNTING SEASONS IN THE COLOCKUM HERD AREA

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
1927-8	Kittitas County	10/21 – 10/31	11-12	One elk	First elk season
1929-2	Kittitas County	11/01 –11/05	5-6	One bull elk	
1933-4	Kittitas County	11/01 – 11/10	6-11	1 male / branched antlers	
1935	Kittitas County	11/03 – 11/15	13	1 bull w/ >2" horns	
1936-9	Kittitas County	10/24 – 11/15	7-12	1 male / branched antlers	
1940-2	Kittitas County	10/30 – 11/11	11-13	1 male / visible horns	
1943-4	Chelan & Kittitas counties	11/10 – 11/21	12	1 male / visible horns	
1944	Elk area 4 Chelan/Teanaway	12/03 – 12/10	8	Either-sex	Late season elk reduction hunt
1945-6	Chelan & Kittitas counties	11/04 – 11/13	10	1 elk / visible horns	
1946	Chelan Co. special elk season	11/17 – 11/30	14	Either-sex elk	
1947-8	Chelan & Kittitas counties	10/31 – 11/08	7-8	1 bull/ visible horns	
1948	Chelan Co. special elk season	10/31 – 11/07	8	Either-sex elk	
1949	Chelan & Kittitas counties	10/31 – 11/07	8	1 bull/ visible horns	
	Chelan Co. special elk season	10/31 – 11/07	8	Either-sex elk	
1950-1	Chelan & Kittitas Cos. Colockum	10/29 – 11/05	8	1 bull / visible horns	General hunting season
1951	Chelan Co. special elk season	10/28 – 12/31	65	Either-sex elk	
1952	Chelan & Kittitas Cos. Colockum	11/02 – 11/11	8	bull / visible horns	General hunting season
	Teanaway, Chelan Co. N. of Squilhuik – Mission Rd., *Kittitas Co. Elk Area 2*	11/02 – 12/31 *11/02 – 11/11*	59 8	Either-sex elk	Open to all elk hunters
1953	Chelan & Kittitas; *Chelan County*	11/1–11; *11/1 – 12/31*	11, *61*	Bull, *Either-sex elk*	General hunting season
1954	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/7–14; *11/7-12/31*	8, *54*	Bull, *Either-sex elk*	General hunting season
1955	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/11–20; *11/11–12/31*	10, *50*	Bull, *Either-sex elk*	General hunting season
	Permit areas 4A & 4E **(100 ea)**	11/21 – 11/23	3	Either-sex elk	Permit Controlled Elk Hunting Season
1956	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/10–19; *11/10–12/31*	10, *51*	Bull, *Either-sex elk*	General hunting season
	4A &4E **(100-200 ea);** Area 3 **(150)**	11/20 – 22; 12/16 – 18	3	Either-sex elk	Permit Controlled Elk Hunting Season
1957	Chelan/Kittitas; *Chelan/Kittitas N. of 4E.*	11/09 – 11/17	9	Bull, *Either-sex elk*	General hunting season
	Area 4 **100);** 4A & 4E **(100-200 ea)**	10/04–6; 11/18–20	3	Either-sex elk	Permit Controlled Elk Hunting Season
1958	Unit 4E Naneum	11/17 – 01/31	75	Either-sex elk	Bow and Arrow only season
	Chelan/Kittitas; *Teanaway/Chelan*	11/08–16; *11/17–12/31*	9, *45*	Bull, *Either-sex elk*	General season
1959	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/1 – 15; *11/16 – 12/31*	15, *46*	Bull, *Either-sex elk*	General season
	Unit 4E **(200)**	11/16 – 11/18	3	Either-sex elk	Permit Controlled Elk Hunting Season
1960	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/05 – 11/16	12	Bull, *Either-sex elk*	General season
1961-4	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/04–12; *11/13-12/31*	9, *49*	Bull, *Either-sex elk*	General season; both 9 days in 1963
	Unit 4E Naneum **(300-400)**	11/18 – 11/20	3	Either-sex elk	Permits in 4A w/21 day season in 1964
1965	Unit 4E Naneum	11/28 – 12/13	16	Either-sex elk	Bow and Arrow only season
	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/13 – 11/21	9	Bull, *Either-sex elk*	General season
	Unit 4A Teanaway **(350)**	11/15 – 12/05	21	Either-sex elk	Permit Controlled Elk Hunting Season
1966	Unit 4E Naneum	12/03 – 01/31	60	Either-sex elk	Bow and Arrow only season
	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/05–20, *12/3 - 18*	16, *16*	Bull, *Either-sex elk*	General season
	Unit 4A, 4E &4K **(500-550)**	11/07 – 11/18	12	Either-sex elk	Permit Controlled Elk Hunting Season
1967	Unit 4E Naneum; *Elk Area 11 & 12*	11/20–12/31;*12/11-17*	42, 7	Either-sex elk	Bow and Arrow only season
	Chelan/Kittitas; *5J, Chelan NW of 5J*	11/04–19, *12/3-18*	16, *16*	Bull, *Either-sex elk*	General season
	Unit 4A, 4E & 4K **(500-550)**	11/06 – 12/10	5-35	Either-sex elk	Permit Controlled Elk Hunting Season
1968	Unit 4E Kittitas; *Chelan*	11/20–12/31;*9/7–12/15*	42, *99*	Either-sex elk	Bow and Arrow only season
	Chelan & Kittitas counties	11/02 – 11/17	16	Bull / visible antler	General season
	Unit 4A, 4E & 4K **(500-550)**	11/04 – 11/29	5-26	Either-sex elk	Permit Controlled Elk Hunting Season
1969	Unit 4E Kittitas; *Chelan*	11/29–12/31;*9/7–12/15*	33, *99*	Either-sex elk	Bow and Arrow only season
	Chelan & Kittitas counties	11/01 – 11/16	16	Bull / visible antler	General season
	Elk area 3,4, 5J, Chelan N&W of 5J.	11/29 – 12/31	23-33	Either-sex elk	Open to all hunters
	Unit 4A, 4E & 4K **(500-550)**	11/03 – 11/28	5-26	Either-sex elk	Permit Controlled Elk Hunting Season
1970	4E; *Bow Area 1 Nason Creek*	11/28-12/31;*9/12-12/20*	34, *100*	Either-sex	Archery Elk Season
	5J, 4A, 4E, 4K, 4P; *Area 3, 4*	11/07-22;*11/28-12/31*	16; *34*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	4E/4K Kittitas **(400)**	11/09 - 11/13	5	Either-sex	Modern Firearm Elk Permit Hunts
1971-2	4E; *Bow Area 1 Nason Creek*	11/20-12/19,*9/11-12/19*	30, *100*	Either-sex	Archery Elk Season
	4A Kittitas (Teanaway)	11/15 - 11/21	7	Either-sex	Muzzleloader Elk Season

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
	5J, 4A, 4E, 4K, 4P; *Area 3, 4*	11/01-14;*11/27-12/31*	14;*16,35*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	4E Kittitas **(500)**	11/03 - 11/06	4	Either-sex	Modern Firearm Elk Permit Hunts
1973	Areas 9; *1, 4E*	9/22–30, *9/8-12/26*	9,*33,100*	Bull, *Either-sex elk*	Archery Elk Season
	ML Area 03 Teanaway Area	11/ 22 - 11/30	9	Either-sex	Muzzleloader Elk Season
	5J, 4A, 4E, 4K, 4P; *Area 3, 4*	11/5-18;*12/01-12/31*	14;*9,31*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	4E Naneum **(650)**	11/06 - 11/09	4	Either-sex	Modern Firearm Elk Permit Hunts
1974	Areas 9; *1, 4E*	9/14–29, 9/7-12/29	6,*37,100*	Bull, *Either-sex elk*	Archery Elk Season
	ML Area 03 Teanaway Area	11/ 23 - 11/29	7	Either-sex	Muzzleloader Elk Season
	5J, 4A, 4E, 4K, 4P; *Area 3, 4*	11/4-17,*11/30 - 12/29*	14,*9,30*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	4E , Elk 19, Elk 20 **(500,150,200)**	11/04 - 11/15	4,4,11	Either-sex	Modern Firearm Elk Permit Hunts
1975	Area 9; *20, 328*	09/13-10/5,*11/22-12/28*	23,*16,37*	Bull, *Either-sex elk*	Archery Elk Season
	ML Area 03 Cle Elum	11/ 22 - 11/28	7	Either-sex	Muzzleloader Elk Season
	5J, 4A, 4E, 4K, 4P; *Area 3, 4*	11/03-16,*11/29-12/28*	14,*9,30*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	328 **(450),** Elk Area 20 **(200)**	11/04 - 11/28	4, 25	Either-sex	Modern Firearm Elk Permit Hunts
1976	328, *Bow Area 9*	11/20-12/31,*9/11-10/10*	42, 30	Either-sex, *Antlered bull*	Archery Elk Season
	ML Area 03 Cle Elum	11/ 20 - 11/26	7	Either-sex	Muzzleloader Elk Season
	310 – 332; *Area 003, 004*	11/1-14;*11/27-12/26*	14;*9,30*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	328 **(400),** 332 **(150),** Area 20 **(200)**	11/02 - 11//12	4,4,11	Either-sex	Modern Firearm Elk Permit Hunts
1977	328, *Bow Area 9*	11/19-12/31, *9/10-10/9*	43, *30*	Either-sex, *Antlered bull*	Archery Elk Season
	ML Area 03 Lookout Mt.	11/ 19 - 11/21	3	Either-sex	Muzzleloader Elk Season
	310 – 332; *Area 003, 004*	10/31-11/13,*11/26–2/25*	14;*9,30*	Bull, *Either-sex elk*	Modern Firearm General Elk Season
	328 **(400),** 332 **(75),** Area 20**(200)**	11/01 – 11/11	4,4,11	Either-sex	Modern Firearm Elk Permit Hunts
1978	328, Bow Area 9	11/23–12/17, 9/9–10/8	55	Either-sex	Archery Elk Season
	ML Area 03 Lookout Mt.	11/ 25 – 12/03	9	Either-sex	Muzzleloader Elk Season
	310-332, *Area 033, 003, 004* Elk Area 003	11/06 - 12/25 11/25 – 12/03	14,*5,31* 9	Bull with visible antlers Either-sex	Modern Firearm General Elk Season
	328**(400),** Area 032 & 033 **(75ea)**	11/07 - 11/10	4	Either-sex	Modern Firearm Elk Permit Hunts
1979	328, *Bow Area 9*	11/23-12/16, *9/8-10/7*	54	Either-sex	Archery Elk Season
	ML Area 10 Cle Elum	11/24 - 12/02	9	Either-sex	Muzzleloader Elk Season (MKWY)
	310-332 (exclude 320), *Area 033* Elk Area 004; *320*	10/29-11/7,*10/29 -11/2* 11/24-12/23; *11/4-18*	10, *5* 30;*9,15*	Bull with visible antlers Either-sex; *Bull*	Modern Firearm General Season (K) (Any elk tag); (*Y late, X early*)
	328 (**350),** Area 032 **(50),** *Area 033 (75)*	10/30 - 11/02	4	Either-sex, *Antlerless only*	Modern Firearm Elk Permit Hunts (K)
1980-1	328, *Bow Area 9*	11/22-12/14, *9/6-10/5*	53	Either-sex	Archery Elk Season
	ML Area 10 Cle Elum	11/ 22 - 11/30	9	Either-sex	Muzzleloader Elk Season (MKWY)
	310-332 (exclude 320), *Area 033* Elk Area 004; *320*	10/27-11/5;*11/22-12/21* 11/02 - 11/16	12,*30* 9,*15*	Bull with visible antlers Either-sex; *Bull*	Modern Firearm General Season (K) (Any elk tag); (*Y late, X early*)
	328**(275),** Elk Area 032,33 **(50,150)**	10/28 - 10/31	4	Either-sex	Modern Firearm Elk Permit Hunts (K)
1982	328, *Bow Area 809*	11/20-12/12, *9/8-10/3*	49	Either-sex	Archery Elk Season
	324	11/23 - 12/05	13	Either-sex	Muzzleloader Elk Season (MKWXY)
	314, 328, 329, 334 Elk Area 004 Wenatchee; *320, 324*	10/25 - 11/05 11/07 - 12/19	12 30,*9,15*	Bull with visible antlers Either-sex, Bull	Modern Firearm General Season (K) Modern Firearm General (Y,X)
	328**(275),** Area 032**(100)**, 330(**150)**	10/26 - 10/29	4	Either-sex	Modern Firearm Elk Permit Hunts (K)
1983	328, *Bow Area 809*	11/19-12/11,*9/7-10/2*	49	Either-sex	Archery Elk Season
	ML Area 910 Cle Elum	11/ 22 - 12/04	13	Either-sex	Muzzleloader Elk Season (MKWXY)
	314, 328, 329, 334 Elk Area 004; *320, 324*	10/27 - 11/05 12/01-15; *11/6-20*	6,10 6,*9,15*	Bull with visible antlers Either-sex; *Bull*	Modern Firearm General Elk Season (CL,K) (K or B); *(Y,X)*
	328 **(175),** 329 **(50);** *330 (50), 331 (50)*	10/28-31; 10/30- 11/1	4, 3	Either-sex, Antlerless only	Modern Firearm Elk Permit Hunts(K)

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
1984	312, 316, 320, 324, 328-335	10/01-05, *10/6-12*	12	Bull only, *Either-sex*	Early Archery Elk Season
	314, 328	11/20 - 12/02	11,13	Either-sex	Late Archery Elk Season (any archery tag)
	310, 314; *Area 910, 003*	10/06-11;*11/20-12/15*	6,*11,26*	Bull only, *Either-sex*	Muzzleloader Season (CM); *(CM or YM,CM)*
	310, 312, 314, 316, 328, 329, 334 Elk Area 004; *320, 324*	10/28 - 11/06 12/01 – 15; *11/1 - 18*	6,10 15,*9,18*	Bull with visible antlers Either-sex, *Bull*	Modern Firearm General (CL,CB) CE, CL or CM; *YL, YE*
	328**(100),** 329**(50),** 330**(50),** 331**(50)**	10/25 - 10/27	3	Antlerless only	Modern Firearm Elk Permit Hunts (CL or CM)
1985	312, 316, 320, 324, 328-335	10/01-04,*10/05-11*	11	Bull only, *Either-sex*	Early Archery Elk Season
	314,328	11/19 - 12/01	11,13	Either-sex	Late Archery Elk Season (any archery tag)
	310,314; *Area 003, Area 910*	10/1-11;*11/20-12/15*	11;*26,15*	Bull; *Either-sex, Antlerless*	Muzzleloader Season(CM);(*CM, YM)*
	310-316, 328, 329, 334; *Area 004* 320, 324	10/27-11/5;*12/1-15* 11/05 - 11/17	7, 9,*15* 9,12	Bull; *Either-sex* Bull with visible antlers	Modern Firearm Season CL,CB; *CE,CL or CM* Modern Firearm General (YL,YE)
	328**(100),** 329**(50),** 330**(50),** 331**(50)**	10/24 - 10/26	3	Antlerless only	Modern firearm Elk Permit Hunts (CL or CM)
1986	312, 316, 320, 324, 328-335	10/01-03, *10/4-10*	10	Bull only, *Either-sex*	Early Archery Elk Season
	314, 328	11/18 - 11/30	12	Either-sex	Late Archery Elk Season (any archery tag)
	310,314 ML Area 910 Cle Elum	10/01 - 10/10 9/15-10/16,11/18-12/7	10 52	Bull only Antlerless only, Either sex	Early Muzzleloader Elk Season (CM) (CM, YM)
	Elk Area 003, 004	11/18 - 12/15	27,15	Either-sex	Late Muzzleloader Elk Season (CM)
	310,312,314, 316, 328, 329, 334 Elk Area 004 Wenatchee 320, 324	10/26 - 11/04 12/01 - 12/15 11/05 - 11/16	7, 9 15 9,12	Bull with visible antlers Either-sex Bull with visible antlers	Modern Firearm General (CL,CB) CE, CL or CM Modern Firearm General Season (YL,YE)
	328**(150),** 329**(250),** 330**(75),** 331**(75)**	10/23 - 10/25	3	Antlerless only	Modern Firearm Elk Permit Hunts(CL or CM)
1987	316,328-35*; 314, 328*	10/01-16, *11/25-12/6*	28	Either-sex	Early Archery Season, *Late Archery Elk Season*
	302,314 ML Area 910 Cle Elum	10/10 - 10/16 9/15-10/16,11/16-12/6	7 53	Bull, Branched antler bull Antlerless only	Muzzleloader Elk Season (CM) (CM, YM)
	Elk Area 003, *Elk Area 004*	11/16,*12/1* - 12/15	30,*15*	Either-sex	Late Muzzleloader Season (CM), *(CM, YM)*
	302, 314, 316, 328, 329, 334; *335*	10/26-11/4; *11/1-12*	7,9;*9,12*	Bull with visible antlers	Modern Firearm General (CL,CE); *(YL,YE)*
	328**(150),**329**(250),**330-31**(75 ea),***335(50)* Elk Area 002 Caribou **(250)**	10/23-25, *11/13-15* 11/21 - 11/30	3 10	Antlerless only Antlerless only	Modern Firearm Elk Permit Hunts(CL or CM) (CL or CM)
1988	316,328-35*; 328*	10/1-14, *11/23-12/4*	26	Either-sex	Archery Elk Seasons (CA, YA in 335)
	302, 314 (portion closed) ML Area 910 Cle Elum	10/08 - 10/14 09/17-10/7, 10/8-14	7 21,7	Bull only Antlerless, Either-sex	Early Muzzleloader Season (CM or YM, CM) (CM, YM)
	Elk Area 003 Kingsbury ML Area 910 Cle Elum	11/16 - 12/15 11/16-25,11/26-12/4	30 10, 7	Either-sex Antlerless, Either-sex	Late Muzzleloader Elk Season (YM) (CM, YM)
	302, 314, 316, 328, 329, 330, 334; *335*	10/26-11/4; *11/1-12*	7,9;*9,12*	Bull with visible antlers	Modern Firearm General (CL,CE); *(YL,YE)*
	328**(150),** 329**(325),** 330**(25)** Area 002 **(250),** 005 **(50)**	10/23 - 10/25 11/19 - 11/30	3 12	Antlerless only Antlerless only	Modern Firearm Elk Permit Hunts(CL or BM) (CL or BM)
1989	316, 328-335; *328*	9/30-10/13,*11/22-12/3*	26	Either-sex	Archery Elk Seasons (CA, YA in 335)
	302, 314 (only a portion of) ML Area 910 Cle Elum	10/07 - 10/13 09/16-10/6, *10/7-13*	7 21, *7*	Bull only Antlerless, *Either-sex*	Early Muzzleloader Season (CM or YM, CM) (CM, YM)
	Elk Area 003 Kingsbury ML Area 910 Cle Elum	12/02 - 12/10 11/17-26,*11/27-12/3*	9 10, *7*	Antlerless only Antlerless, *Either-sex*	Late Muzzleloader Elk Season (YM) (CM, YM)
	302, 314, 316, 328, 329, 334; *335*	10/25-11/03,*11/5-13*	9, *9*	Bull with visible antlers	Modern Firearm Season (CL, CB; *YL, YE*)
	314(1**00),** 329 **(150)** 330 West Bar A, B, C **(25 ea)** Elk Area 002 Caribou **(100)**	10/22 - 10/24 10/22, 23, 24 11/18 - 11/21	3 1 4	Antlerless only Antlerless only Antlerless only	Modern firearm Elk Permit Hunts (CL or BM) (CL or CM) (CL or CM)
1990	316, 328, 329, 330, 334, *335*	10/6-10/12,*9/29-10/12*	7,*14*	Either-sex	Archery Elk Seasons (CA, *YA in 335*)
	328	11/21 - 12/02	12	Either-sex	Late Archery Elk Season (any archery tag)
	302, 314 (portion of). ML Area 910 Cle Elum Area 003 Kingsbury	10/06 - 10/12 9/15-10/12,*11/17-12/* 12/08 - 12/23	7 44 16	Bull only Either-sex Antlerless only	Muzzleloader Seasons (CM or YM, CM) (YM, *CM, YM*) (YM)
	302,314,316,328,329,334,*335*	10/24-11/02; *11/5-13*	7,9; *6,9*	Bull with visible antlers	Modern Firearm Season (CL,CB); *(YL,YB)*

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
	314**(100),** 328**(150),** 329**(150);** *030 (75)* Elk Area 032 **(150),** 033 **(100)** 330 West Bar A,B,C **(25 ea)** Elk Area 002 Caribou **(175)**	10/21-23; *10/6-12* 09/15 - 10/23 10/21, 22, 23 11/21 - 12/02	3; *7* 39 1 12	Antlerless only Antlerless only Antlerless only Antlerless only	Modern Firearm Elk Permit Hunts(CL or CM) (CL or CM) (CL or CM) (CL or CM)
1991	316, 335; *328, 329, 334*	09/28-10/11; *10/5-11*	14; *7*	Either-sex	Early Archery Elk Season (CA), (YA in 335)
	328, 334	11/27 - 12/08	12	Either-sex	Late Archery Elk Season (any archery tag)
	302, *314* (only a portion of) ML Area 910 Cle Elum	10/05 - 10/11 10/5-11*; 11/17-12/8*	7 29	Bull only Either-sex, *Antlerless*	Muzzleloader Season (CM or YM, *CM*) (YM)
	302,314,316,328,329,334; *335*	10/23-29; *11/5-13*	4,7;*6,9*	Bull with visible antlers	Modern Firearm Season (CL,CB);*(YL,YB)*
	316, 302(in Chelan Co)	12/07 - 12/22	16	Antlerless only	Open to Tag Holders CE, CL, CM
	328 Naneum **(150)** Elk Area 030 A **(75),** B **(75)** Elk Area 032 Malaga A **(150),** B **(150)** Elk Area 033 Peshastin **(100)** 330 West Bar A, B,C **(25 ea)** Elk Area 002 Caribou **(175)**	10/20 - 10/22 10/05-11, 12/09-15 9/15-10/7, 10/30 -11/6 09/01 - 10/04 10/20, 21, 22 11/20 - 12/01	3 7, 7 7, 23 34 1 ea 12	Antlerless only Antlerless only Antlerless only Antlerless only Either-sex Antlerless only	Modern Firearm Elk Permit Hunts (CL or CM) (CL or CM) (CL or CM) (CL) (CL or CM) (CL or CM)
1992	328-330; *316, 335*	10/5-14; *10/1-10/14*	10, *14*	Either-sex	Early Archery Elk Season (CA), (YA in 335)
	328	11/25 - 12/08	14	Either-sex	Late Archery Elk Season (any archery tag)
	302, 314 (only a portion of) ML Area 910 Cle Elum	10/08 - 10/14 10/05-14, *11/17-12/8*	7 32	Bull only Either-sex, *Antlerless*	Early Muzzleloader Season (CM or YM,CM) (CM), (YM)
	302,314,316,328,329,334; *335*	10/28-11/3; 11/5-13	4,7; *6,9*	Bull with visible antlers	Modern Firearm General (CL, CB); *(YL,YB)*
	328 **(250),** 329 **(200)** Elk Area 033 A **(100),** B **(150)** 330 West Bar A, B, C **(25 ea)** Elk Area 034 Parke Cr. **(25)**	10/25 - 10/27 9/15-10/7,11/4-20 10/25, 26, 27 11/25 - 12/15	3 23,17 1 22	Antlerless only Antlerless only Antlerless only Antlerless only	Modern Firearm Elk Permit Hunts (CL or CM) (CL or CM) (CL or CM) (CL or CM)
	Elk Area 032 A **(200);** *B (200)*	9/15-10/14; *11/4-12/20*	30; *47*	Antlerless only	Muzzleloader Only Permit Hunts (CM)
1993	316, 335; *328, 329, 330*	10/01–14; *10/4-14*	14; *11*	Either-sex	Early Archery Elk Season (CA), (YA in 335)
	328	11/24 - 12/08	15	Either-sex	Late Archery Elk Season (CA)
	302, *314* (only a portion of) ML Area 910 Cle Elum	10/08 - 10/14 10/04-14; *11/17-12/8*	7 33	Bull only Either-sex;*Spike/antlerless*	Muzzleloader Elk Season (CM, YM; *CM)* (YM)
	302,314,316,328,329,334; *335*	10/27-11/02; *11/5-13*	4,7; *6,9*	Bull with visible antlers	Modern Firearm General (CL, CB); *(YL,YB)*
	328 **(100),** 329 **(150)** Elk Area 032A **(150);** *032 B (150***) Elk Area 033 A **(150),** *B (150)* 330 West Bar A, B, C **(25 ea)** Elk Area 034**(25)**	10/24 - 10/26 09/01-10/7; *11/4 -12/31* 9/1-10/7, *11/4-12/31* 10/24, 25, 26 11/24 - 12/15	3 76; *58* 7,*58* 1 22	Antlerless only Antlerless; *Either-sex* Antlerless only Antlerless only Antlerless only	Modern Firearm Elk Permit Hunts (CL or CM)
1994	*316;* 328, 329, 330, 335	09/01 - 09/14	14	*Either-sex*; Spike/antlerless	Early Archery Elk Season (CA), (YA in 335)
	328, 335	11/23 - 12/08	16	Spike bull or antlerless	Late Archery Elk Season (CA), (YA in 335)
	302; *314 (portion of).* ML Area 910 Cle Elum	10/06 - 10/12 10/1-12, 11/16-12/8	77 35	Any Bull; *Spike bull* Spike bull or antlerless	Early Muzzleloader Season (CM, YM); *(CM)* (YM)
	314,316,328,329; *302, 335*	10/26-11/03; *11/5 -15*	7/9;*8/11*	Any bull (304), Spike bull	Modern Firearm Season (CL/CB); *(YL/YB)*
	316 et al, Chelan **(40)** 328A**(100),**329A**(200);***328B(100),329B(80***)*** Elk Area 032 **(150)** Area 033 **(150)** Elk Area 032 **(150)** Area 033 **(150)** 330 West Bar A, B, C **(25 ea)** 302/335 Swauk **(60)**	10/15 - 11/01 10/23-25; *10/26-11/1* 09/01 - 10/06 11/02 - 01/15 10/23, 24, 25 10/25 - 11/13	18 3, *7* 36 75 1 ea 19	Any elk Antlerless; *Any bull* Antlerless only Either-sex Antlerless only Any bull	Modern Firearm Elk Permit Hunts (CL or CM)
	314 Mission **(55)** ML 910A **(75),** ML 910B **(75)**	10/07 - 10/12 10/1-12,11/16-12/8	6 12, 23	Any bull Any elk	Muzzleloader Bull Permit Hunts (CM) (YM)
	328, 329 Colockum **(130)**	09/01 - 09/14	14	Any elk	Archery Bull Permit Hunts (CA)
	329, Quilomene C **(10)**	11/01 - 11/13	13	Antlerless only	Persons of Disability Only Permit (CC or CM)
1995	*316;* 328, 329, 330, 335	09/01 - 09/14	14	Either-sex; Spike/antlerless	Early Archery Elk Season (CA), (YA in 335)
	328, 335.	11/22 - 12/08	17	Spike bull or antlerless	Late Archery Elk Season (CA), GMU 335 (YA)

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
	302, 314 (only a portion of) ML Area 910 Cle Elum	10/05 - 10/11 10/1-11,11/16-12/8	7 34	Spike bull Spike bull or Antlerless	Early Muzzleloader Elk Season (CM) (YM)
	314, 316, 328, 329; *302, 335*	10/26-11/3; *11/5 -15*	7, 9;*11*	Any bull (304), Spike bull	Modern Firearm Season (CL/CB); *(YL/YB)*
	316 et al, Chelan A **(20),** B **(10)** 328A**(150),**329A**(225);***328B(40)***,329B(30)*** Elk Area 032A **(150);** *B (150)* Elk Area 033 A **(150),***B (150)* 330 West Bar A, B, C **(25 ea)** 302/335 Swauk **(20)**	10/15 - 11/01 10/23-25; *10/26-11/01* 09/01-10/6;*11/2 -01/15* 09/1-10/6,*11/2 -1/15* 10/23, 24, 25 10/25 - 11/13	18 3; *7* 36; *75* 36,*75* 1 19	Antlerless (A), Any bull (B) Antlerless; *Any bull* Antlerless only Either-sex , *Antlerless* (B) Antlerless only Any bull	Modern Firearm Permit Hunts (CP or CM)
	314 **(25);** *ML 910A **(30), B (30)***	10/1–12, 11/16-12/8	7;*12,23*	Any bull; *Either-sex*	Muzzleloader Permit Hunts (CM); *(YM)*
	328, 329 Colockum **(130)**	09/01 - 09/14	14	Either-sex	Archery Bull Permit Hunts (CA)
	329, Quilomene C **(10)**	11/01 - 11/13	13	Antlerless only	Persons of Disability Only Permit (CC or CM)
1996	*316, 334;* 328, 329, 330, 335	09/01 - 09/14	14	Either-sex; Spike/antlerless	Early Archery Elk Season (CA), (YA in 335)
	328, 335	11/21 - 12/08	18	Spike bull or antlerless	Late Archery Elk Season (CA), GMU 335 (YA)
	314 (only a portion of) ML Area 910 Cl Elum	10/03 - 10/09 9/1-15,11/16-12/8	7 38	Spike bull Spike bull or antlerless	Early Muzzleloader Elk Season (CM) (YM)
	316 (East of Hwy 2)	12/09 - 12/16	8	Either-sex	Open to Specified Tag Holders (CG, CP, CM)
	302, 314, 316, 328, 329, 335; *304, 334*	10/26 - 11/03	6, 9	Spike only; *Any Bull*	Modern Firearm Elk Seasons (CP, CG)
	316 et al, Chelan A **(20),** B **(20)** 328A**(150),**329A**(150);** *328B**(40)**,329B**(30)*** 032A**(150),**033B**(50);***032B**(150),033A(75)*** Elk Area 035 Brushy **(75)** 330 West Bar A, B, C **(25ea)** 302, 335 Swauk **(20)**	10/15 - 11/01 10/23-25;*10/26-11/01* A9/1-10/6,B11/2-1/15 9/1-10/6, 11/2-01/15 09/21 - 09/23 10/23, 24, 25	18 3; *7* 36,75 75,36 3 1 ea	Antlerless (A), Any bull (B) Antlerless; *Any bull* Antlerless, *Either-sex* Antlerless only Antlerless only Any bull	Modern Firearm Elk Permit Hunts (CP or CM)
	314, Mission **(25)**	10/03 - 10/09	7	Any bull	Muzzleloader Bull Permit Hunts (CM)
	328, 329 Colockum **(130)**	09/01 - 09/14	14	Either-sex	Archery Bull Permit Hunts (CA)
	329, Quilomene C **(10)**	11/01 - 11/13	13	Antlerless only	Persons of Disability Only Permit (CP or CM)
1997	*334*; 328, 329, 335	09/01 - 09/14	14	*Any elk;* Spike or antlerless	Early Archery Elk Season (CA), (YA in 335)
	328	11/26 - 12/08	13	Spike bull or antlerless	Late Archery Elk Season (CA)
	314(portion of), 316 ML Area 910	10/04 - 10/10 9/1-14,11/26-12/8	7 27	Spike bull Spike bull or antlerless	Early Muzzleloader Elk Season (CM)Early Muzzleloader Elk Season (YM)
	302(Chelan), 314-329, 335	10/25 - 11/02	9	Spike bull	Modern Firearm Elk Season (CP,CG)
	328A **(25)**, 329A **(13)**	10/20 - 11/02	14	3 Pt. minimum	Modern Firearm Bull Permit Hunts (CP)
	302,335 Wenatchee Mts. **(24)** Elk Area 032 A **(75),** 33 A **(25)** Elk Area 032 B **(75),** *33 B (25)* Elk Area 035 Brushy **(50)** 330 West Bar A, B, C **(10ea)**	10/01 - 10/10 09/01 - 10/03 11/07 - 12/31 09/20 - 09/22 10/22, 23, 24	10 33 21,*55* 3 1 ea	3 Pt. minimum Antlerless only Antlerless, *Any elk* Antlerless only Antlerless only	Modern Firearm Elk Permit Hunts (CP or CM)
	328 C **(21),** 329/330 C **(22)**	10/01 - 10/10	10	3 Pt. minimum	Muzzleloader Bull Permit Hunts (CM)
	328 D **(85),** 329 D **(68)**	09/01 - 09/14	14	3 Pt. minimum	Archery Bull Permit Hunts (CA)
	329 Quilomene E **(5)**	11/01 - 11/07	7	Antlerless only	Persons of Disability Only Permit (CP or CM)
1998	*334*; 328, 329, 335	09/01 - 09/14	14	*Any elk;* Spike or antlerless	Early Archery Elk Season (CA), (YA in 335)
	328, 335	11/25 - 12/08	14	Spike bull or antlerless	Late Archery Elk Season (CA) GMU 335 (YA)
	314 (only a portion of), 316 (S Hwy2) ML Area 910	10/10 - 10/16 08/15 - 09/14	7 31	Spike bull Any elk	Early Muzzleloader Elk Season (CM) Early Muzzleloader Elk Season (YM)
	302,314,316(S Hwy 2),328 ,329, 335	10/31 - 11/08	9	Spike bull	Modern Firearm Season(CG), GMU 335 (YG)
	328 A **(19),** 329 A **(10)**	10/25 - 11/08	15	3 Pt. minimum	Modern Firearm Bull Permit Hunts (CG)
	302,335 Wenatchee Mts. **(18)** Elk Area 032 Malaga A **(75),** *B (75)* Elk Area 032 C **(75),** 033 B **(25)** Elk Area 033 Peshastin A **(25)**	10/01 - 10/10 9/1-10/3,*10/11-31* 11/10 - 12/31 09/01 - 10/03	10 33,*21* 51 33	3 Pt. minimum Any elk Any elk Antlerless	Modern Firearm Elk Permit Hunts (CG or CM)

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
	328 C **(2),** 329/330 C **(4)**	10/01 - 10/10	10	3 Pt. minimum	Muzzleloader Bull Permit Hunts (CM)
	328 D **(77),** 329/330 D **(23)**	09/01 - 09/14	14	3 Pt. minimum	Archery Bull Permit Hunts (CA)
1999	*334*; 328, 329, 335	09/01 - 09/14	14	*Any elk;* Spike or antlerless	Early Archery Elk Season (CA), (YA in 335)
	328, 335	11/24 - 12/08	15	Spike bull or antlerless	Archery Elk Season (CA), GMU 335 (YA)
	314, 316 (S of Hwy2) ML Area 911	10/09 - 10/15 08/1409/12;*11/24-12/7*	7 30; *14*	Spike bull Any elk; *AHE only*	Early Muzzleloader Elk Season (CM)
	302,314,316(S Hwy 2), 328,329, 335	10/30 - 11/07	9	Spike bull	Modern Firearm Season (CF), GMU 335 (YF)
	328 A **(21),** 329 A **(9)**	10/24 - 11/07	15	Any bull	Modern Firearm Bull Permit Hunts (CF)
	Elk Area 032 Malaga A **(75),** *B **(40)***	9/1-10/3,*11/10-12/31*	33,*52*	Antlerless	Modern Firearm Permit Hunts (CF or CM)
	328 B **(2),** 329/330 B **(1)**	10/01 - 10/10	10	Any bull	Muzzleloader Bull Permit Hunts (CM)
	Elk Area 032 Malaga C **(75)**	10/09 - 10/29	21	Antlerless	Muzzleloader Elk Permit Hunts (CM)
	328 C **(17),** 329/330 C **(9)**	09/01 - 09/14	14	Any bull	Archery Bull Permit Hunts (CA)
2000	*334*; 328, 329, 335	09/01 - 09/14	14	*Any elk;* Spike or antlerless	Early Archery Elk Season (EA)
	328, 335	11/22 - 12/08	17	Spike bull or antlerless	Archery Elk Season (EA), GMU 335 (EA)
	ML Area 911	8/19-9/10,*11/24-12/7*	30,*14*	Any elk; *AHE only*	Early Muzzleloader Elk Season (EM)
	250(S of Hwy 2), 251, 328, 329, 335	10/28 - 11/05	9	Spike bull	Modern Firearm Season (EF)
	Elk Area 032 Malaga A **(63),** *B **(37)***	9/1-10/1,*11/11-12/31*	31,*51*	Antlerless	Modern Firearm Permit Hunts (EF or EM)
	Elk Area 032 Malaga C **(75)**	10/07 - 10/29	23	Antlerless	Muzzleloader Elk Permit Hunts (EM)
2001	*249, 250, 334*; 328, 329, 330, 335	09/01 - 09/14	14	*Any elk*; Spike or antlerless	Early Archery Elk Season (EA)
	328, 335	11/21- 12/08	18	Spike bull or antlerless	Late Archery Season (EA)
	249, 250, 251 ML Area 911, *911 AHE only*	10/06-12 8/19-9/10, *11/24-30*	7 30,*14*	Any elk Spike bull or antlerless	Early Muzzleloader Elk Season (EM)
	249,250 (S Hwy 2), 251, 328, 329, 335	10/27 - 11/04	9	Spike bull	Modern Firearm Season (EF)
	Elk Area 032 Malaga A **(65),** *B **(75)*** Elk Area 033 Peshastin A **(5)** GMU 330 A **(10),** *B **(10)***	9/1-10/1,*11/10-12/31* 12/01-31 10/22-31,*11/01-04*	31,*51* 31 10, 5	Antlerless Any elk Antlerless	Modern Firearm Permit Hunts (EF or EM)
	GMU 330, West Bar C **(10)** Elk Area 032 D **(75);** *033 **(20)***	10/01-12 10/6 – 25; *8/18 - 09/23*	12 20, *37*	Antlerless Antlerless	Muzzleloader Elk Permit Hunts (EM)
2002	*249, 250, 334*; 328, 329, 330, 335	09/01 - 09/14	14	*Any elk*; Spike or antlerless	Early Archery Elk Season (EA)
	328, 335	11/20 - 12/08	18	Spike bull or antlerless	Late Archery Season (EA),
	250; ML Area 911	10/5-11; *8/19 - 9/10*	7; *23*	Spike bull; *Any elk*	Early Muzzleloader Elk Season (EM)
	ML Area 911	12/01 - 12/31	31	Spike bull or antlerless	Elk Hunts Open AHE only (EM)
	249,250(S Hwy 2), 251, 328, 329, 335	10/26 - 11/03	9	Spike bull	Modern Firearm General Elk Season (EF)
	328 A **(6)**, 329 A **(8)**, 335 A **(6)** 032 Malaga A **(75),** *C **(75)*** 032 Malaga B **(10),** *Malaga E **(5)*** 033 A **(20),** C **(20) ,** E **(20)** 033 B **(5),** D **(5),** F **(5)** GMU 330 A **(10),** B **(10)**	10/21 - 11/03 8/17-9/29,*11/4-12/31* 9/7-15, *11/11-17* 08/17-, 9/16-, 11/30- 08/19-,9/21-,12/7- 10/22-31, 11/01-04	14 34,57 9,7 9,14,44 7,9,37 10,4	Any bull Antlerless Any elk Antlerless Any elk Antlerless	Modern Firearm Elk Permit Hunts (EF) (EF or EM)
	Elk Area 032 F **(75),** *G **(10),*** 330 C **(10)**	10/08-27(032);10/1-11	20, 11	Antlerless,*Any elk*,	Muzzleloader Elk Permit Hunts (EM)
	328 C **(35),** 329C **(12),** 335C **(35)**	09/01-14	14	Any bull	Archery Elk Permit Hunts (EA)
2003	*249, 250, 334*; 328, 329, 330, 335	09/8 - 09/21	14	*Any elk*; Spike or antlerless	Early Archery Elk Season (EA)
	328, 335	11/20 - 12/08	18	Spike bull or antlerless	Late Archery Elk Season (EA)
	250, 251, 335	10/04 - 10/10	7	Spike bull	Early Muzzleloader Elk Season (EM)
	AHE Area 3911	8/01 - 2/28	212	Antlerless	AHE (EA, EM, EF)
	AHE 3028 A **(40)**, B **(40)**	10/4-10; 11/8-14	7 ea	Antlerless	AHE only A=EM, B=EF
	249, 251, 328, 329, 335	10/25 - 11/02	9	Spike bull	Modern Firearm General Elk Season (EF)

Year	GMU # & Permit (#s)	Approx. Dates	Days	Legal Animal	Hunt description and Tag
	328A**(19)**, 329A**(20)**, 335A**(12);** *B **(30)***	10/20-11/2; *10/25-11/2*	14, *9*	Any bull, *Antlerless*	Modern Firearm Elk Permit Hunts (EF)
	Area 2032 Malaga A **(100),** C **(150)**	8/16-9/28, 11/3-1/31	34,90	Antlerless	
	Area 2032 B**(5),** D**(5),** E **(5),** F**(5)**	9/6-,11/3-,12/13-,1/1-	16,14,919	Any elk	
	Area 2033 A **(20),** C**(20),** E**(20)**	08/16-,9/16-,11/30-	10,18,63	Antlerless	
	Area 2033 B **(5),** D **(5),** F **(5)**	8/18-,9/21-, 12/15-	8, 9,4	Any elk	
	GMU 330 A **(10),** B **(10)**	10/25-29; 10/30-11/2	5, 4	Antlerless	
	328B **(4)**, 329B **(5)** , 335B **(3)**	10/4-10	7	Any Bull	Muzzleloader Elk Permit Hunts (EM)
	330C **(10);** 335D **(50)**	10/1-10, 10/4-10	11, 7	Antlerless	
	328 C **(35),** 329C **(12),** 335C **(35)**	09/8-21	14	Any bull	Archery Elk Permit Hunts (EA)
2004	*249*, *250*, *334*; 328, 329, 330, 335	09/8 - 09/21	14	*Any elk*; Spike Only	Early Archery Elk Season (EA)
	328, 335	11/20 - 12/08	18	Spike Only	Late Archery Elk Season (EA)
	250, Area 2051, 335	10/02 - 10/8	7	Spike bull	Early Muzzleloader Elk Season (EM)
	AHE Area 3911	8/01 - 2/28	212	Antlerless	AHE (EA, EM, EF)
	249, 251, 328, 329, 335	10/30 - 11/07	9	Spike bull	Modern Firearm General Elk Season (EF)
	328A**(19)**, 329A**(18)**, 335A**(12)**	10/25-11/7	14	Any bull	Modern Firearm Elk Permit Hunts (EF)
	Area 2032 Malaga A **(100),** C **(150)**	8/14-9/26, 11/8-2/28	34,113	Antlerless	
	Area 2032 B**(10),** D**(10),** E **(15)**	9/6-, 11/8-, 12/20-	16,47,113	Any elk	
	Area 2033 A **(20),** B**(20),** D**(30)**	08/16-,9/15-,11/30-	10,17,91	Antlerless	
	Area 2033 C **(5),** E **(10)**	9/22-30,12/15-2/28	9, 91	Any elk	
	3028 **(35)**; 330 A **(5),** B **(5)**	10/9-; 10/30-; 11/4-	7, 5, 4	Antlerless	
	328B**(4)**, 329B**(5)**, 335B**(3)**; *330C**(5)***	10/1-10	11	Any Bull; *Antlerless*	Muzzleloader Elk Permit Hunts (EM)
	328 C **(30),** 329C **(41),** 335C **(31)**	09/8-21	14	Any bull	Archery Elk Permit Hunts (EA)

APPENDIX B. WILDLIFE DAMAGE RULES.

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, 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, and rangeland used for grazing or browsing of domestic livestock is beneficial to the claimant and the state.

[1996 c 54 § 1; 2001 c 274 § 1 expired June 30, 2004, pursuant to 2001 c § 5.]

NOTES:

Expiration date -- 2001 c 274 §§ 1-3: "The following expired June 30, 2004:

(1) Section 1, chapter 274, Laws of 2001;

(2) Section 2, chapter 274, Laws of 2001; and

(3) Section 3, chapter 274, Laws of 2001." [2001 c 274 § 5.]

Effective date -- 2001 c 274: "This act is necessary for the immediate preservation of the public peace, health, or safety, or support of the state government and its existing public institutions, and takes effect July 1, 2001." [2001 c 274 § 6.]

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; (2001 c 274 § 2 expired June 30, 2004, pursuant to 2001 c 274 § 5).]

NOTES:

Expiration date -- 2001 c 274 §§ 1-3: See note following RCW 77.36.005.

Effective date -- 2001 c 274: See note following RCW 77.36.005.

RCW 77.36.020
Game damage control -- Special hunt/remedial action.

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 or take remedial action to reduce the potential for such damage. The commission shall authorize either one or two antlerless permits per hunter for special hunts held in damage areas where qualified staff, or designee, have confirmed six incidents of drop damage by deer or elk.

As an alternative to hunting, the department shall work with affected entities to relocate deer and elk when needed to augment existing herds.

[2003 c 385 § 1; 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. *(Expires June 30, 2004.)*

(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 by deer or elk to commercially raised agricultural or horticultural crops by deer and 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; (2001 c 274 § 3 expired June 30, 2004, pursuant to 2001 c 274 § 5).]

NOTES:

Expiration date -- 2001 c 274 §§ 1-3: See note following RCW 77.36.005.

Effective date -- 2001 c 274: See note following RCW 77.36.005.