

# Washington State Elk Herd Plan

## YAKIMA ELK HERD

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February 2002

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

This report should be cited as:  
Washington Department of Fish and Wildlife. 2001. Yakima Elk Herd Plan. Wildlife Program,  
Washington Department of Fish and Wildlife, Olympia. 43 pp.

This program receives Federal financial assistance from the U.S. Fish and Wildlife Service Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972. The U.S. Department of the Interior and its bureaus prohibit discrimination on the bases of race, color, national origin, age, disability and sex. If you believe that you have been discriminated against in any program, activity or facility, please write to: U.S. Fish and Wildlife Service, Office of External Programs, 4040 N. Fairfax Drive, Suite 130, Arlington, VA 22203

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## **Acknowledgements**

The original draft of Yakima Elk Herd plan was written by John Musser (retired), Roger McKeel (retired) and Tom McCall of the Washington Department of Fish and Wildlife. George Tsukamoto (Washington Department of Fish and Wildlife 2000) wrote the original Rattlesnake Mountain elk herd plan. Brett Tiller of Pacific Northwest National Laboratory provided the majority of data for the Rattlesnake Mountain Sub-herd. We thank them for doing an excellent job of tracking movement and population dynamics of the Rattlesnake herd and for sharing their data with the Department. Jeff Bernatowicz and George Tsukamoto merged the previous Yakima and Rattlesnake herd plans into the current document. Leray Stream, Robert Schafer, Jeff Tayer, Dave Ware, Rolf Johnson, and Jerry Nelson provided additional editorial support.

# YAKIMA ELK HERD PLAN

## Executive Summary

The Yakima Elk Herd is the largest of ten herds identified in the State. It is an important resource that provides significant recreational, aesthetic and economic benefit to the people. The purpose of this plan is to provide direction for the management of the Yakima elk resource for the next 5 years. The plan is subject to amendment. Priority management activities can be implemented as funding and resources become available.

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

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

- ! Reduce and then maintain the post-season elk population at 9,500 animals for the Cascade slope portion of the Yakima Herd.
- ! Reduce and maintain the Arid Lands Ecology Reserve population in the Rattlesnake Hills at a population level that does not result in significant damage to private lands (estimated <350 elk).
- ! Improve the scientific database for managing the elk population.
- ! Manage for a post hunting season bull ratio consistent with the Statewide Plan (12 bulls/100 cows in combination with overall bull mortality of <50 percent).
- ! Minimize damage caused by elk and improve Department/ landowner relations.
- ! Maintain an effective and efficient elk winter-feeding program.
- ! Share elk population data with the Yakama Indian Nation and The Confederated Tribes of the Umatilla Indian Reservation.
- ! Increase public awareness and viewing opportunities of the elk resource.
- ! Cooperate with the U. S. Fish Wildlife Service and U. S. Department of Energy in the management of elk on the Arid Lands Ecology Reserve, and with the U. S. Army on the Yakima Training Center.
- ! Cooperate and coordinate to improve elk habitat quality and effectiveness on National Forest lands.
- ! Work with Washington Department of Natural Resources to improve elk habitat quality and effectiveness on state lands.
- ! Improve elk habitat quality and effectiveness on private lands with willing cooperators.
- ! Secure more elk habitat.

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 Yakima herd are as follows:

<b><u>Priority</u></b>	<b><u>1<sup>st</sup> year cost</u></b>	<b><u>5 year cost</u></b>
1. Winter elk feeding	\$246,000	\$1,206,000
2. Herd population/composition surveys	\$14,000	\$70,000
3. Improve collection of hunter harvest and effort information.	\$26,000	\$130,000
4. Address landowner/elk conflicts.	\$90,160	\$453,820
5. Elk fence construction.	\$200,000	\$540,000
6. Habitat preservation program.	\$200,000	\$1,000,000
7. Road management	\$16,000	\$80,000
8. Elk habitat improvement	\$40,000	\$200,000
9. Elk/Livestock/Vegetation Study	\$35,000	\$70,000
<b>TOTAL</b>	<b>\$867,160</b>	<b>\$3,749,820</b>

# **YAKIMA ELK HERD PLAN**

## **Introduction**

The Yakima Elk Herd Plan is a step-down planning document under the umbrella of the Washington State Management Plan for Elk (Washington Department of Fish and Wildlife 1997) and the Environmental Impact Statement for Elk Management (Washington Department of Fish and Wildlife 1996). For management and administrative purposes the State has been divided into Game Management Units (GMUs). A group of GMUs is described as a Population Management Unit (PMU). The Yakima 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 GMUs. The Yakima Elk Herd is in PMU 33 (GMUs 336, 340, 342, 346), PMU 34 (GMUs 371, 372, 382), PMU 35 (GMUs 352, 356, 360), and PMU 36 (GMUs 364, 368) (Appendix A). The Yakima Elk Herd is made up of a core population residing on the east-facing slopes of the Cascade Mountain Range. This Cascade Slope sub-herd exhibits a typical seasonal migration from high elevation summer ranges to lower elevation wintering grounds and includes PMUs 33, 35 and 36.

The Rattlesnake Hills Elk Sub-herd (PMU 34) is east of the Yakima River and west of the Columbia River (Appendix A). Elk use in PMU 34 is centered on the Fitzner/Eberhardt Arid Lands Ecological Reserve and Yakima Training Center Yakima Training Center. Arid Lands Ecology Reserve is closed to public access and the army controls Yakima Training Center. There are small bands of elk scattered throughout the remainder of PMU 34.

The Yakima Elk Herd Plan is a five-year planning document subject to annual review and amendment. The Washington Department of Fish and Wildlife (WDFW) recognizes the sovereign status of federally recognized treaty tribes. This document recognizes the responsibility of Washington Department of Fish and Wildlife and Yakama Indian Nation and the Confederated Tribes of the Umatilla Indian Reservation 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 U. S. Forest Service, Bureau of Land Management, U. S. Department of Energy, U. S. Fish and Wildlife Service, Yakima Training Center, and Washington Department of Natural Resources.

## **Area Description**

### **Location**

The Yakima Elk Herd encompasses that portion of Kittitas County south of I-90, all of Yakima County except the Yakama Indian Reservation, and Benton County north of the Yakima River (Appendix A). GMUs that comprise the Yakima Herd area include 336 (Taneum), 340 (Manastash), 342 (Umtanum), 346 (Little Naches), 352 (Nile), 356 (Bumping), 360 (Bethel), 364 (Rimrock), 368 (Cowiche), 371 (Alkali), and 372 (Kiona) north of the Yakima River.

The Rattlesnake Hills Elk Sub-herd consists of that portion of PMU 34 north of the Yakima River (GMU 371 and 372 north of the Yakima River), (Appendix A). The area is within the Columbia Basin shrub-steppe plant communities.



## Ownership

Land within the Cascade Slope Sub-herd is of mixed ownership (Table 1). The federal government (mostly U.S. Forest Service) and state own approximately 57 percent and 21 percent of the elk range. Industrial timber and other private holdings make up 15 percent and 8 percent of the ownership within the normal elk range.

The Rattlesnake Elk Sub-herd area landownership is primarily private. Two large blocks of federal ownership are located on the Yakima Training Center administered by the US Department of the Army and the Hanford Site owned by U. S. Department of Energy. There are also scattered holdings of State owned lands administered by Department of Natural Resources and Washington Department of Fish and Wildlife. Some alternate sections of Bureau of Land Management administered lands are found on Rattlesnake Hills.

Table 1. Land Ownership (in acres) Above the Elk Fence and Within the Boundaries of the Casacade Slope Sub-herd of the Yakima Elk Herd

<b>PMU</b>	<b>Federal Wilderness</b>	<b>Federal non-Wilderness</b>	<b>State</b>	<b>Industrial Timber Company</b>	<b>Other Private</b>	<b>Total</b>
<b>33</b>	36,539	179,962	144,838	112,804	43,731	517,874
<b>35</b>	166,228	114,673	27,738	6,676	3,791	319,106
<b>36</b>	38,129	71,310	52,194	38,105	35,025	234,763
<b>Total</b>	240,896	365,945	224,770	157,585	82,547	1,071,743

## Topography

The Cascade Slope Sub-herd area varies in elevation from 213m (700 feet) on the Yakima River to over 2,134m (7,000 feet) at the Cascade crest. Physiographically, the area is part of the Southern Washington Cascades and the Columbia Basin Provinces as described in Franklin and Dyrness (1973). Major watersheds drain to the east from the Cascade crest joining together to form the Yakima River and ultimately joining the Columbia River.

The most significant topographical feature within the Rattlesnake Hills Elk Sub-herd area is Rattlesnake Mountain that rises to an elevation of 1,074 m (3,524 feet). The lowest point is on the Columbia River at 81m (267 feet) above sea level. The area is covered by Columbia River Basalt, a layering of lava beds laid down approximately 20 millions years ago. The area was also heavily glaciated during the Pleistocene ice ages. Flooding caused by successive ice dams giving way have laid down huge sand and gravel deposits throughout the area.

There are several ridges lying in a east-west direction including the Saddle Mountains, Umtanum Ridge, Yakima Ridge, and Rattlesnake Hills. The most prominent of these is Rattlesnake Hills with Rattlesnake Mountain on the eastern extension of the range. The Columbia River forms the eastern and southern boundaries of the area and the Yakima River bisects the sub-herd area in

approximately two equal halves.

## Vegetation

The east facing slopes of the Cascade Range is 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 (*Pseudotsuga menziesii*), 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 understory component of the forest cover types varies greatly with precipitation, aspect, elevation, and canopy cover. Under sparse canopy cover, the understory 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 (*Spiraea spp.*) in the shrub component. At higher elevations additional shrubs include barberry (*Berberis spp.*), currant (*Ribes spp.*), huckleberry (*Vaccinium spp.*), mountain snowberry (*Symphoricarpus albus*), and mountain boxwood (*Paxistima myrsintea*). Forbs commonly found in understory communities include arrowleaf balsamroot (*Balsamorhiza sagittata*), cinquefoil (*Potentilla spp.*), heartleaf arnica (*Arnica cordifolia*), lupine (*Lupinus spp.*), vetch (*Astragalus spp.*), and western yarrow (*Achillea lanulosa*). Pinegrass (*Calamagrostis rubescens*) and elk sedge (*Carex geyeri*) are the major forage plants of the grass/sedge component.

The remaining area supports shrub-steppe plant community's 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 and Kentucky bluegrass) and forbes (e.g. knapweeds) often are dominant on disturbed areas. On shallow soils, low growing shrubs, such as stiff sagebrush and a variety of buckwheat (*Eriogonum spp.*), and Sandberg bluegrass (*Poa sandbergii*), 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

Human influence on the Yakima herd is high. A fence limits the movement of elk into many of the lower elevation deep soil sites that are used mostly for agriculture/residential purposes. Elk are fed during the winter at 9 sites (Appendix C). Timber and livestock management has influenced much of the landscape occupied by elk. Recreational use also has an impact on the herd. Hunting accounts for an estimated 90 percent of the annual mortality. Non-hunting

recreation may heavily influence elk movements in localized areas and contribute to mortality. Elk shed-antler hunting has become a major concern in the spring.

### **Other Ungulates**

Mule deer (*Odocoileus hemionus sp.*) use the entire range of the Yakima elk herd area. Mountain goats (*Oreamnos americanus*) occupy portions of the high-elevation rugged terrain in GMUs 336, 340, 346, 356 and 364. California bighorn sheep (*Ovis canadensis californiana*) occur primarily in GMUs 342 and 360. Domestic livestock, primarily cattle and sheep, are common throughout much of the area.

## **Distribution**

### **Historic Distribution**

The Yakima Elk Herd is a reintroduced herd resulting from an initial transplant of 50 Rocky Mountain elk (*Cervus elaphus nelsoni*) from Gardiner, Montana in 1912 and an additional 7 elk from Montana purchased from Manitou Park in Spokane, Washington in 1916. These animals were released on the Steves Ranch on the Naches River (Pautzke et al. 1939). They noted that, “There were no elk native to Yakima County at the time of these plantings, nor is there definite evidence that elk ever occupied that area in recent times.” Based on recent archeological records from the Columbia Basin the evidence suggests that elk were present and utilized by the early inhabitants (Dixon et al. 1996 and McCorquodale 1985). Elk were possibly extirpated from the region by the late 1880's (McCorquodale 1985).

### **Current Distribution**

West of the Yakima River, elk are present throughout the herd area above the fence (Appendix C). Animals occasionally go through and around the fence, but generally do not travel far from the barrier. Yakima elk display distinct seasonal migrations. Major wintering concentrations occur in GMUs 340, 342, 352, 360, and 368. Elk usually concentrated on winter-spring range from mid-November to March.

The Rattlesnake Hills sub-herd is currently concentrated in two areas, Yakima Training Center and Arid Lands Ecology Reserve. The elk found in the Yakima Training Center have fluctuated over the years. During severe winter conditions, elk migrate into Yakima Training Center from the north and west. Elk also migrate onto the Yakima Training Center from the Arid Lands Ecology Reserve during the spring and summer. Some elk remain on the Yakima Training Center as yearlong residents.

A second and major concentration of elk is centered on the Arid Lands Ecology Reserve. This population developed as a result of a natural colonization when 7 elk were observed on the Arid Lands Ecology Reserve in 1975 (Rickard et al. 1977). The Arid Lands Ecology Reserve elk concentrate on Arid Lands Ecology Reserve during the winter and spring. Some animals move off during the summer and are a problem on wheat, alfalfa, orchards and vineyards to the north, west and south of the reserve.

### **Proposed Distribution**

No expansion is proposed for the overall distribution of Yakima Elk Herd. The proposed

distribution on the Cascade slope population is to maintain elk entirely west of the Yakima River and above the elk fence (Appendix C). The Washington Department of Fish and Wildlife will encourage a shift of elk use to public lands provided that damage is not an issue and discourage elk use of private lands where specific problems occur. Elk presence below the fence will be discouraged.

Minimal populations of elk will be tolerated on Arid Lands Ecology Reserve and Yakima Training Center. Elk will be suppressed in all other areas of the Rattlesnake Hills sub-herd.

## **Herd Management**

### **Herd History, Current Status, and Management Activities**

#### *Cascade Slope Sub-herd*

##### **Herd History**

The current Yakima elk population developed from the reintroduction of Rocky Mountain elk from Yellowstone National Park in 1912, which significantly contributed to any remnant animals in the area (Bryant and Maser 1982). These animals were released west of Yakima near Cleman Mountain (Houston 1982, Robbins et al. 1982, Morse 1988). The herd built to over 3,000 animals and had spread throughout much of its current range by 1939 (Pautzke et al 1939). Hard winters and accompanying damage problems eventually resulted in intolerance for elk by local landowners. Farmers and ranchers raised concerns over potential damage from elk by the early 1920's. The Yakima Elk Herd has periodically been reduced through significant cow harvest in 1938, 1943, 1949-51, 1966-70, 1973, 1975, 1977, 1982 and 1994.

The County Game Commissions were given authority in 1931 to declare elk “predatory” and have them killed to protect property. In 1933 the Washington State Game Commission was created shifting wildlife management authority to the State. In 1943, the legislature authorized the first damage claim payment and fencing to protect crops. The first damage claim law was passed in 1949 and a population cap of 3000 elk set for the Yakima Elk Herd in 1955. The cap was lifted in 1980.

The Washington State Game Department was established in 1933 and Yakima elk population level became a major issue. The Game Department hired the Washington State College Wildlife Department to study the issue and provide recommendations. The resulting report suggested purchasing land and building fence or reduce the herd to a non-hunttable population. The former was selected. The first parcel of what is now the Oak Creek Wildlife Area was purchased in 1939. During the 1940's, the majority of Oak Creek Wildlife Area was purchased and the first 10 miles of elk fence built. Elk were often herded back into the foothills to prevent damage and/or being shot by irate farmers. Land purchases/exchanges, fence building, and herding have continued through the present.

Private citizens probably fed elk soon after release. Official feeding sites were temporarily developed to save elk during hard winters and reduce damage during the winter of 1942-43. During the severe winter of 1955, 1200 tons of hay was fed to elk (Table 2). “Permanent” elk feeding began in the late 1960's. Today there are 9 permanent feeding sites (Appendix C). During normal winters, an estimated 50-60 percent of the herd is fed alfalfa hay. In winters with

extreme snow depths, up to 90 percent of the Yakima Elk Herd residing on the east Cascade slope may use the feedlots.

Prior to 1996, Washington Department of Fish and Wildlife typically produced enough hay on state wildlife areas (1000-1100 tons) to maintain the feeding sites within the Yakima Herd. Production has declined from 1100 tons in 1996 to 175 tons in 2000 due to land trades, transfers, and conversion from hay production to native vegetation. Hay consumption has varied between 320 and 5100 tons over the last 10 years (Table 2).

Table 2. Amount of Hay Fed at Yakima Elk Feeding Sites

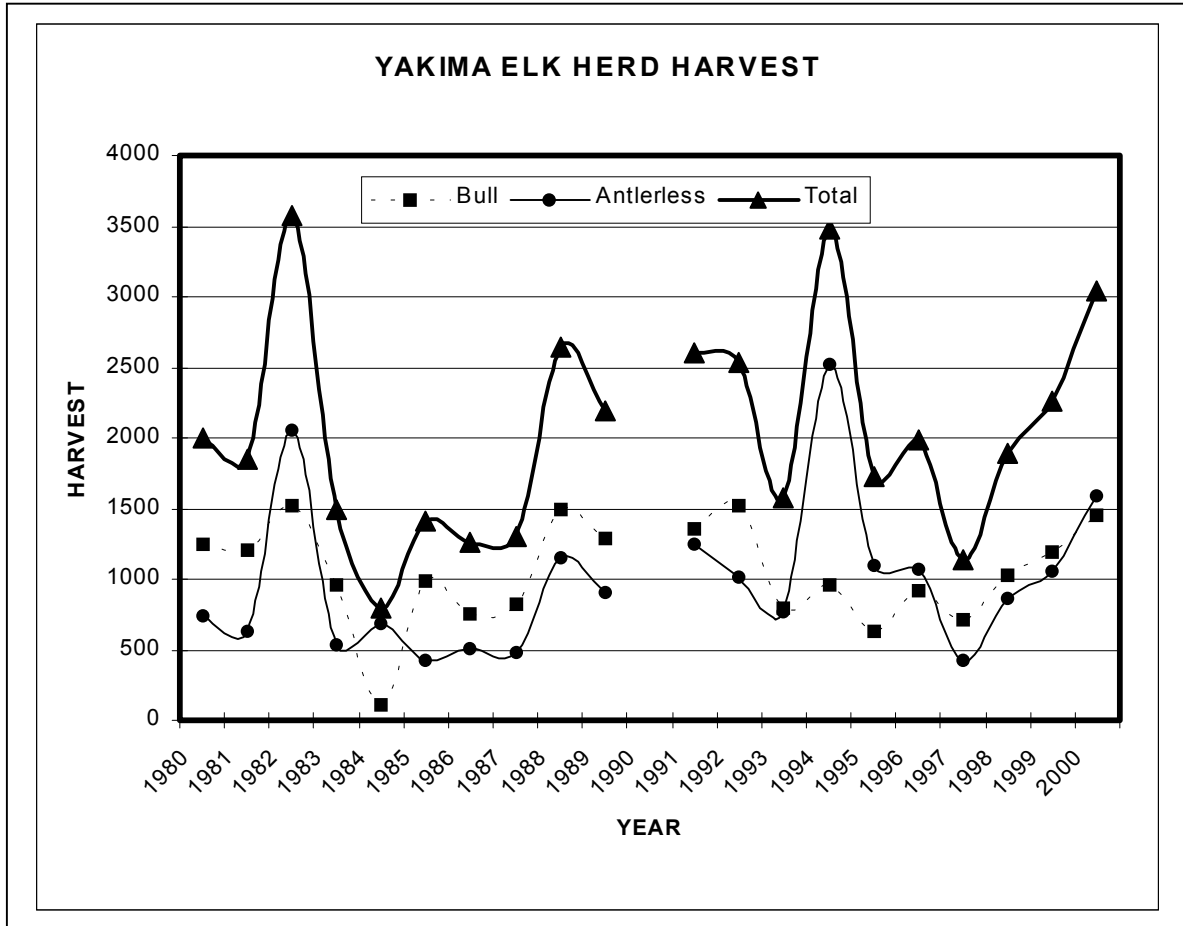
Winter Ending	Tons of Hay	Winter Ending	Tons of Hay	Winter Ending	Tons of Hay
1955	1200	1971	1580	1987	1360
1956	0	1972	508	1988	1160
1957	0	1973	750	1989	403
1958	0	1974	636	1990	400
1959	0	1975	150	1991	610
1960	0	1976	15	1992	2430
1961	400	1977	1035	1993	1670
1962	0	1978	800	1994	320
1963	0	1979	1400	1995	720
1964	820	1980	200	1996	880
1965	1210	1981	1070	1997	5100
1966	0	1982	789	1998	960
1967	700	1983	805	1999	1340
1968	1455	1984	1192	2000	1660
1969	700	1985	1900	2001	1870
1970	600	1986	700		

The County Game Commissions established the first elk-hunting seasons in the Yakima herd in 1927. The elk-hunting season in 1927 and 1928 allowed harvest of “antlered” elk in Yakima County and “any” elk in Kittitas County. Almost 600 elk were harvested during the two seasons. No further antlerless harvest occurred until 1938 when the Oak Creek winter range was open to “any” elk. An estimated 614 antlerless and 512 antlered elk were harvested in Yakima and Kittitas counties in 1938. From 1938 to 1994, general seasons typically remained as any-antlered elk, with select areas having general seasons or permits for antlerless animals. The most liberal seasons occurred from 1949-1951 when 12,630 (9,108 cows) elk were harvested. Herd reduction has typically been followed by greatly reduced harvest. From 1952-54, only 1870 (254 cows) elk were harvested. The cycle of heavy harvest followed by conservative seasons has continued the last 2 decades (Figure 1).

In 1994, the harvest strategy was changed to spike-only bull during general season with branched antlered bull by permit only. The objective was to increase post-season bull ratios, especially adult bulls. The theory was that more and older bulls would equate to earlier, more effective breeding and better herd health (Noyes et al.1996). Reproductive tracts collected from Yakima elk 1987-89 indicate that 82 percent (including yearlings) were pregnant and recruitment high despite the low post-season bull ratios. Zahn (1993) concluded that low post-season bull ratios were not affecting recruitment in the Yakima Elk Herd. Reproductive tract data showed slightly higher

pregnancy rates and earlier conception dates in high bull ratio areas. In the high bull ratio areas, more cows became pregnant in the first half of September, but thereafter dates were similar to low bull ratio areas. Calf recruitment has not improved since implementing spike-only management (Table 3). The increase in adult bulls has probably boosted hunter satisfaction and created a boom in non-consumptive use of elk, particularly shed-antler hunting.

Figure 1. Yakima elk herd harvest trends (1980-2000).



Historically, the Yakima elk herd was primarily monitored using harvest data. From 1990-97 post-season composition (calves/bulls per 100 cows) data was collected via helicopter. During the heavy snow winters of 1992-93 and 1996-97, the population was estimated by adding 10 percent to a total count of all elk on feedlots, survey units, and other known concentrations. In February 1999 (post season 1998), surveys were designed to estimate population using a sightability model developed in Idaho (Unsworth et al. 1994). The 1999 survey was not extensive enough, resulting in a wide variance on the population estimate (Table 4). Confidence in the population estimate has increased since 1999.

**Estimated Population Size**

During the winter of 1992-93 and 1996-97, the post-season population estimate, based on a total count plus a 10 percent expansion factor, was 10,000-11,000 elk. An estimate using the

sightability model (Unsworth et al. 1994) has ranged from 10,460 (February 2001) to 16,786 (February 1999). The 2000 survey (11,848 " 753) is believed to be the most accurate estimate of the population. The 1999 surveys had a wide variance as only 30 percent of the units were sampled and elk had started leaving the feedlots. A light snow pack and inaccurate stratification of units may have resulted in an underestimate of the population in 2001. The population may have been reduced in some PMU's after a high harvest in 2000.

Table 3. Cascade Slope Sub-herd Post Season Composition (bulls and calves/100 cows)

Year	PMU33			PMU35			PMU36			Cascade Sub-herd		
	Bulls	Calves	N	Bulls	Calves	N	Bulls	Calves	N	Bulls	Calves	N
1990	2	50	470	7	46	239	2	34	745	3	40	1454
1991	4	43	373	0	53	87	14	46	195	6	45	655
1992	1	28	1355	No Data			No Data			1	28	1355
1993	6	46	933	9	41	266	6	63	304	7	48	1503
1994	No Data			No Data			No Data			No Data		
1995	5	47	816	6	65	303	3	74	69	5	53	1188
1996	10	32	1348	9	40	903	7	35	234	9	35	2485
1997	8	47	1490	Insufficient Data		48	13	37	1571	10	43	3109
1998	10	27	2540	18	36	2769	8	41	631	14	33	5940
1999	9	35	3833	12	26	2987	12	35	1712	11	33	8532
2000	11	32	4351	17	28	3057	15	34	2152	14	31	9560
2001	15	33	3571	19	44	3261	17	41	2310	17	38	9142

### Herd Composition

Post-hunting season herd composition in the Cascade Slope sub-herd ranged from 1-7 bulls per100 cows prior to spike only management in 1994 (Table 3). The 2001 estimate was 17 bulls per100 cows. The average ratio of calves to cows prior to 1994 was 44 per100. Since reaching bull escapement goals in 1997, the ratio has averaged 35 per 100. In 2000, the calf ratio dropped to 31 per 100, but increased to 38 per 100 in 2001. Prior to 1998, survey effort was not consistent and sample sizes were small, leading to data that might not accurately represent the entire elk population.

### Population and composition by PMU

The elk population in PMU 33 has likely been fluctuating over the last decade. The high bull harvest in the early 1990's indicate a substantial cow population that was probably significantly reduced from 1994-1996 (Appendix D). Harvest data indicates the population may have grown from 1996-1999. The population estimate for PMU 33 in 1999 and 2000 was 5,700 " 1,303 and

5,586 - 769 (Table 4). The difference in the estimated cow population between years was only 26 animals. In 2001, the population estimate declined 1,300 animals. The decrease was probably due to inadequate unit stratification. Fewer elk than normal may have been on the winter range because of a light snow pack in 2001. The actual population is believed to be closer to 5,500 elk.

Table 4. Yakima Elk Herd Post Season Population Estimates 1999 and 2000

Area	Year	Cows	Calves	Bulls	Population Estimate*
PMU 33	1999	3943	1397	360	5700 + 1303
PMU 33	2000	3917	1244	425	5586 + 769
PMU 33	2001	2892	953	441	4286 + 302
PMU 34	1999	410	160	268	838
PMU 34	2000	282	90	287	659
PMU 35	1999	2772	733	328	3833 + 1028
PMU 35	2000	2496	704	434	3634 + 309
PMU 35	2001	2282	929	444	3655 + 134
PMU 36	1999	3735	1326	462	5523 + 2784
PMU 36	2000	1712	580	257	2549 + 325
PMU 36	2001	1598	650	272	2519 + 67
HERD TOTAL**	1999	10860	3616	1418	16786 + 4334
HERD TOTAL	2000	8407	2618	1403	11848 + 753
HERD TOTAL	2001	7277	2681	1261	10460 + 503

\* PMU 34 Summer survey total count and projected estimate.

\*\* Population estimates for PMUs 33,35,36 only.

Calf recruitment in PMU 33 is considered good compared to other areas of Washington, but the data is insufficient to monitor trends. Historically, the sample size of composition surveys was small and the annual variance large (Table 3). Larger samples the last 4 years have not shown any trend in calf recruitment.

PMU 33 reached the objective of 12 bulls per 100 cows in 2001 (Table 4). PMU 33 has the smallest percentage of wilderness (7 percent) and probably the highest road density. Mortality from February calf to February spike bull is approximately 70 percent. February bull recruitment has averaged 4.7 spikes per 100 cows from 1999-2001. The relatively low spike recruitment translates into fewer branched antler bull permits than other PMUs.



Harvest data in PMU 35 indicates an elk population that has been cyclic, with significant reductions in 1982 and 1994. Harvest data indicate the herd has been building since 1994 (Appendix D). The 1998-2000 antlerless harvest was only 57 percent of the estimated February recruitment. The current population estimate is 3,655 (Table 4).

PMU 35 reached bull escapement objectives by 1998 (Table 3). This unit is 52 percent wilderness area and has the lowest overall calf to spike mortality (60 percent). However, low calf recruitment in February 1999 and 2000 has resulted in an average of 5.4 spikes per 100 cows. The good calf crop in 2001 should result in better spike recruitment in 2002.

The historic population trend in PMU 36 has been similar to PMUs 33 and 35, with widely fluctuating harvest, indicating a varying population. The 1999 population estimate for PMU 36 was more than double the 2000 and 2001 estimate (Appendix H). The 1999 estimate was biased as only 3 of the 9 units were selected for survey. Two of the 3 units were near elk feedlots and had high densities of elk. When the data was extrapolated, an overestimate resulted. Recent harvest and survey information indicate the population is approximately 2,500 animals.

Total harvest in PMU 36 in 1999 and 2000 was the highest in history. The increased harvest had largely been due to a muzzleloader damage hunt. Antlerless harvest has been >100 percent of recruitment and should result in a declining population.

The bull ratio in PMU 36 reached the objective of 12:100 in 1997 and increased to 17:100 in 2001 (Table 3). Calf to spike mortality is approximately 65 percent and spike recruitment has averaged 6.4:100 cows. Spike recruitment has been high because of the excellent calf crops the last 5 years.

## **Mortality**

No studies documenting causes or rates of mortality specific to the Cascade slope sub-herd have been conducted. Smith et al. (1994) determined that statewide 59 percent of the adult elk mortality was due to legal hunting, 15 percent to poaching, and 7 percent to wounding loss. Myers et al. (1999) found that predation may also be a significant cause of mortality especially for calves. Elk mortalities also occur on highways and in irrigation canals but the levels are unknown.

## **Harvest**

Elk harvest 1991-00 for the Yakima herd averaged 2,183 (range 1,489-3,454), (Appendix D). The number of bull elk harvested has historically been largely due to the previous years recruitment. Harvest report cards indicate that prior to spike only management, yearling bulls accounted for 70-79 percent of the harvest. For the 3 years following spike only management, yearling bulls accounted for 80-90 percent of harvest. In 1998, after 5 years of spike-only general seasons, yearling bulls accounted for 66 percent of bull harvest, indicating that the number of bull permits may now have a large affect on total harvest. In recent decades, permit numbers *have* mostly driven antlerless harvest. In 1999, the recorded bull and antlerless mortality due to hunting was estimated at 50 percent and 8 percent of the fall population. Post-season calf to spike mortality is estimated to be 60-70 percent.

## **Tribal Harvest**

The Yakama Indian Nation has traditionally exercised their treaty hunting rights within the bounds of the Yakima Elk Herd, particularly PMU 36. Other tribes have also been documented hunting the Yakima herd area. Tribal harvest for the herd is not available, but it is not believed to be significant. The Yakama's typically hunt within their reservation and recent court decisions have limited other tribe's hunting activity to their ceded area.

### ***Rattlesnake Hills Sub-herd - PMU 34***

#### ***Herd history***

The main concentration of elk in PMU 34 is centered on Arid Lands Ecology Reserve. The first elk were documented on the reserve in winter 1972 (Tiller 1993). Intensive elk studies began in 1982 when a few elk were captured and fitted with radio telemetry collars. Pacific Northwest National Laboratory (Pacific Northwest National Laboratory) has been monitoring elk movements and population dynamics using ground and aerial surveys.

The elk apparently maintain permanent residency on the Arid Lands Ecology Reserve until 1986 (McCorquodale et al. 1988). As the population has expanded, elk have shown increased movement onto privately controlled land to the west and south of Arid Lands Ecology Reserve during the summer and early fall. The majority of the herd winters on the Arid Lands Ecology Reserve.

In 1982 the first either sex elk-hunting season was allowed in PMU 34. No hunting has been allowed on Arid Lands Ecology Reserve and access to surrounding lands is limited. Elk mortality was minimal and the herd grew at a rapid rate (Eberhardt et al. 1996). Experiments to control the elk population using immunocontraception in 1993 proved ineffective. The rapidly expanding herd and movement off Arid Lands Ecology Reserve created conflict with surrounding landowners. The modern firearm seasons were liberalized to allow antlerless harvest during 3 different seasons (23 days total) in 1998. The 2000 elk-hunting season was further expanded to 75 total days with any elk or antlerless animals legal.

Population modeling indicated hunting was unlikely to reverse the growth of the herd without access to Arid Lands Ecology Reserve. The herd was expected to exceed 1000 animals in 2000. Local government officials and landowners asked Washington Department of Fish and Wildlife and U. S. Fish and Wildlife Service to reduce the herd. Increased harvest in fall 1999 on surrounding lands and the trapping of 177 elk on Arid Lands Ecology Reserve in late winter 2000 reduced the herd.

In June of 2000, a fire burned 164,000 acres on Arid Lands Ecology Reserve. The fire shifted elk use from Arid Lands Ecology Reserve to surrounding lands, particularly dry land wheat fields (Tiller et al. 2000). While this event resulted in a sharp rise in damage (\$213,075 in 2000 Robert Schafer pers. communication), it also provided a window of opportunity to harvest more elk because of their availability. The modern firearm-hunting season was amended and expanded to 75 days over 3 separate seasons in 2000. The combination of the fire dispersing elk off the reserve and a longer hunting season resulted in a record harvest of 253 elk (Appendix D). Trapping and harvest reduced the estimated herd from 838 in the summer 1998 to approximately 439 elk in March 2001. Drought conditions throughout 2000 and early 2001 slowed the

vegetative growth on Arid Lands Ecology Reserve. Elk showed some movements into dry land wheat fields in 2001. However, it appears recruitment has exceeded harvest in 2001 and the herd is expanding (Table 5).

A smaller number of elk occurs on Yakima Training Center. Little is known about the historic numbers, but Yakima Training Center records indicate only 4 elk were harvested from 1968-69. The Department has noted elk movement on and off Yakima Training Center from the north (Colockum herd), west, and south (Yakima herd). During the winter of 1996-97, heavy snow caused elk to migrate onto Yakima Training Center from the north and west. Damage complaints

Table 5. Rattlesnake Hills Post-Calving (summer) Elk Census Data\*

<b>Year</b>	<b>Cows</b>	<b>Calves</b>	<b>Bulls</b>	<b>Total</b>	<b>Calf/100 cows</b>	<b>Bulls/100 Cows</b>
1983	19	13	8	40	68	42
1984	21	15	19	55	71	90
1985	29	17	25	71	59	86
1986	38	21	30	89	55	79
1987	48	27	19	94	56	40
1988	47	23	25	95	49	53
1989	51	23	28	102	45	55
1990	60	21	34	115	35	57
1991	79	23	31	133	29	39
1992	105	44	41	190	42	39
1993	127	59	52	238	46	41
1994	154	73	64	291	47	42
1995	174	96	76	346	55	44
1996	245	119	91	455	49	37
1997	280	157	154	591	56	55
1998	354	144	214	712	41	60
1999	410	160	268	838	39	65
2000	282	90	287	660	32	102
2001	264	122	174	561	46	66

\*Pacific Northwest National Laboratory data.

from private farms adjacent to the northwest corner of Yakima Training Center started during the summer of 1997. General hunting seasons and hotspot hunts did not reduce the damage complaints. Elk hunting seasons were liberalized on Yakima Training Center and hunters removed 82 elk in 1999 and 41 in 2000. An aerial deer survey of 50 percent of Yakima Training Center conducted in December 2000 noted only 3 elk. Fresh snow during the survey made it apparent that few elk were on Yakima Training Center. It is unknown if harvest removed the majority of elk or if they migrated off.

### **Estimated Population Size**

Minimum summer population counts provided on the Arid Lands Ecology Reserve elk population showed a growth from 40 elk in 1983 to 837 in 1999 (Table 5). The estimated average annual herd growth over the period was ~25 percent. Additional elk on Yakima Training Center brought the estimated population in PMU 34 to ~1000 elk in August of 1999. Harvest, trap-transplant, and potential emigration have reduced the estimated population to 450-500 (440 on Arid Lands Ecology Reserve) elk in February of 2001.

### **Herd composition**

Pacific Northwest National Laboratory collects composition data for the Rattlesnake sub-herd in the summer using aerial and/or ground surveys (Tiller et al. 2000). Data is not directly comparable to the Cascade slope sub-herd because of the difference in the season the data is collected. Calf recruitment on Arid Lands Ecology Reserve has ranged between 29 and 71 calves per 100 cows (Table 5). Limited pregnancy data indicates nearly all the cows (n=40) (including yearlings) prior to 2000 were pregnant (Tiller et al. 2000). Calf recruitment may be related to range conditions that are heavily influenced by annual moisture.

The post-season bull ratio has not dropped below the goal of 12:100. Pre-season bull ratios have ranged between 37 and 102. In January 2001, the observed ratio was 33 bulls per 100 cows.

### **Mortality**

Pacific Northwest National Laboratory has attempted to document all mortalities and model the Arid Lands Ecology Reserve population. Hunting (including crippling loss and poaching) accounts for the majority of adult mortality (Brett Tiller, pers. comm.). Road kills resulting from vehicle collisions on the major highways account for some of the remaining mortality. Cougar have been documented in the area and coyotes have been seen chasing calves, but there are no documented mortalities due to predators. There is a large discrepancy between pregnancy rates and observed calf ratios. There may be significant spring calf mortality, but the cause is not known.

### **Harvest**

Prior to 1980, few elk were documented as being harvested in PMU 34. During the 1980's, the average annual harvest was 9 elk (Appendix D). The expanding herd and liberalized seasons resulted in 183 elk being harvested in 1999. In 2000, 253 elk were reported harvested in PMU 34. The movement of elk off of the Arid Lands Ecology Reserve, due to the fire, contributed significantly to the 2000 harvest.

Washington Department of Fish and Wildlife monitored legal elk harvest through a statewide annual harvest survey of 10 percent of the licensed hunters and report card returns of successful hunters. Yakima Training Center requires all hunters to check in/out and report harvest. Since 1983, Pacific Northwest National Laboratory has compiled elk harvest surrounding Arid Lands Ecology Reserve by questioning hunters, landowners and Department field officers. The Yakima Training Center and Pacific Northwest National Laboratory data is considered to be more accurate than the Washington Department of Fish and Wildlife harvest survey and has been used since 1983 (Appendix D).

### **Tribal Harvest**

The Rattlesnake Hills Elk Sub-herd area encompasses portions of the ceded territory of the

Yakama Indian Nation and The Confederated Tribes of the Umatilla Indian Reservation. Tribes establish their own hunting seasons and regulations for their members on their respective ceded area on open and unclaimed lands. No recent elk hunting activity has been reported by the Umatilla Tribe and only light activity by the Yakama Tribe. Harvest reports are not received from either Tribe.

## **Social and Economic Values**

### **Number of Elk Hunters and Elk Hunter Days**

In the 1990's, an average of 25,844 state authorized hunters spent an estimated 123,743 days afield hunting for Yakima elk (Appendix D). This represents an increase of 3,599 hunters compared to the 1980's average. Hunter numbers declined with the implementation of spike only management in 1994, but rebounded to record numbers in 1999. Based upon 1996 data (U.S. Department of Interior and U.S. Department of Commerce, 1998), Yakima elk herd hunters spend approximately 14.3 million dollars annually in-state (excluding licenses). Approximately 5.5 million is spent on food, gas, lodging etc. and 8.8 million is spent on equipment.

### **Harvest Strategies**

Specific harvest strategy recommendations will be made 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 Washington Department of Fish and Wildlife's regional staff and field personnel meet with tribal representatives periodically to coordinate harvest strategies, share harvest data and discuss other elk management activities such as habitat enhancements.

Elk hunting seasons in the Cascade portion of the Yakima elk herd prior to 1994 generally allowed archery hunters to take any elk; muzzleloader hunters to take any elk until 1983, any elk or bull-only depending on the unit from 1984-94. Modern firearm hunters were restricted to bull only with antlerless elk by permit. These seasons and regulations resulted in low bull escapement. In 1994, the strategy for bull harvest was changed to spike-only with branched antlered bull 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.

Elk hunting seasons for the Rattlesnake Hills sub-herd has allowed either-sex elk hunting seasons since 1983. In 1995, the area was split with Yakima Training Center becoming a separate unit (GMU 371). Elk hunting seasons were liberalized significantly in this area in 1983 to address a growing damage problem. There were 4 separate hunting seasons for any elk or antlerless elk by modern firearm hunters (Appendix E). The harvest strategy and hunt boundary has since varied annually within the sub-herd area.

## **Damage**

### ***Cascade Slope Sub-herd (PMU 33, 35, 36)***

Elk damage to fences and crops is a continuing problem in the Yakima Herd. Elk damage

complaints received by Washington Department of Fish and Wildlife in Yakima County have averaged 104 (72-137) over the last 4 years (Table 6). Enforcement personnel service emergent elk damage complaints by provide scare-away devices, elk herding, issue permits to lethally remove elk, and conduct special “hot spot” hunts. Due to quick response and good landowner relations, the enforcement program has kept the number of formal damage claims to an average of 2 (0-6) per year. The average amount paid by Washington Department of Fish and Wildlife annually is \$4,180 (0-\$30,040). During winters with heavy snowfall, response to elk damage complaints consumes nearly 100 percent of the enforcement staff time within the region. In PMU 33, elk damage complaints are common in the Kittitas Valley (eastern GMU 340). Elk typically move onto irrigated hay (timothy, alfalfa) fields in August as the range dries. If permitted, elk will stay in the area through fall when damage to a new seeding can be significant. In the winter, as snow depth builds, haystack damage can be a problem. Elk access the valley by

Table 6. A Summary of Yakima Elk Herd Damage Complaints and Claims Paid.

Year	Damage Complaints	Applications Requested	Applications Returned	Crop Type	Total Claimed	Total Paid
1991	unk	3	3	Grain, Hay	\$16,115	\$2,250
1992	unk	0	0		0	0
1993	unk	9	6	Hay, Orchard	\$32,025	\$3,793
1994	unk	1	1	Hay	\$2,000	\$445
1995	unk	0	0		0	0
1996	137	1	1	Hay	\$1,153	\$1,100
1997	131	12	4	Orchard, Hay	\$349,740	\$30,040
1998	72	4	1	Orchard	\$10,000	0
1999	97	2	2	Hay	\$6,550	0
2000		3	3	Hay	\$285	\$119
<b>10 Year Avg</b>	109	3.5	2.1	Orchard, Hay, Grain	\$41,787	\$3,775

going through or around the south end of the fence. When the original fence was constructed, the fencing material was placed on the wrong side of the posts, making it easy for elk to push through. The fence is currently being reconstructed.

Elk damage control in the Kittitas Valley is getting more difficult as agriculture lands are converted to residential development. As the area becomes urbanized, hunting and issuing kill permits may not be accepted damage control options. More people and smaller parcels also make herding problematic. There are two elk feeding stations (Joe Watt and Robinson) in the Kittitas Valley that hold elk away from problem areas (Appendix C). Continuing feeding, installing more re-entry gates, maintaining the fence, and allocating helicopter time for herding is needed for this area. Habitat improvement may reduce problems in August.

There is no fence at the south end of the Kittitas Valley to prevent elk movements onto agricultural lands. A permit hunt (Shushuskin) was developed to control damage. This hunt has been moderately successful at controlling winter damage. In 1999, the elk began residing year around in the Shushuskin area. Hunting seasons held in the fall of 1999 were unsuccessful at reducing the summer herd, partially because animals reside in the thick riparian cover or on the opposite side of the river where there is a firearm restriction ordinance in place. These elk left during the winter of 1999-2000, but returned in the summer 2000. In 2000, 165 landowner preference permits were issued in an attempt to control the herd and 65 elk were harvested (R. Schafer, pers. comm.). This herd can become a major problem if not controlled because of the juxtaposition of agriculture, houses, a golf course and riparian vegetation. All potential methods of lethal removal need to be explored.

A major elk damage problem exists in PMU 33 in the Wenas Valley. An elk fence protects the lower valley. Elk are commonly found on the wrong side of the fence, where there are high value orchards and irrigated fields. The problems are numerous and especially severe during dry summers and in winters with deep snow. The Mellote feed site helps to minimize problems in the winter. Public use in the area is high and gates are often left open. Holes have also been cut in the fence. Where the fence crosses roads, standard cattle guards are not adequate to stop elk from crossing onto the wrong side of the fence. During spring, elk migrate up the valley and may concentrate on a few ranches above the fence.

The following recommendations are made as potential solutions to damage problems in the Wenas Valley.

- \$ Patrol and maintain the elk fence on a regular basis.
- \$ Install elk-proof cattle guards and/or scare devices.
- \$ Install more elk re-entry gates.
- \$ Make habitat improvements to help keep elk on the “right” side of the fence.
- \$ Lethal removal of elk chronically found on the wrong side of the fence.
- \$ Reducing the herd size in the area.
- \$ Locking some gates for portions of the year.
- \$ Closing areas to public entry in the spring until the elk have migrated off the winter range.

In PMU 35, the main problem is centered near the Nile community. There are numerous small farms and ranchetts that raise and store hay. The fence protecting the area was originally built in 1943 to keep elk from moving in from the west. The fence is in poor condition and not continuous (Appendix C). Elk are also entering the area from the east. A portion of the herd is resident year round. Some residents intentionally feed and attract elk to the Valley. Solving elk conflicts in the Nile will be difficult. Herding is not successful as elk can go through or around the fence quickly. Hot spot hunts have not solved the problems and are unpopular with some residents. Rebuilding the elk fence may help solve some of the problems. Providing material for private individuals to fence specific problem areas is also recommended. Community involvement is critical to solving the problem. Hunting seasons that meet with local approval need to be crafted annually. Educating and working with residents with haystack protection is important. The Nile feed site keeps large numbers of elk away from problem areas.

In PMU 36, elk damage typically occurs within a few miles of the elk fence. There are high value, irrigated crops along the entire length of the fence. Damage complaints occur in fall and winter. In recent years, elk have been a continual problem in the northeast portion of GMU 368. A hotspot hunt was held in December 2000-January 2001 and a total of 30 elk were removed (R. Schafer, pers. comm.). The main problem in this area is the porous nature of the elk fence. When constructed, the irrigation canal and rock areas were incorrectly assumed to exclude elk. Repairing, filling gaps, and extending the fence are needed. A flight budget to locate and push elk out of cropland would also be helpful. The Sunset, Stinson and West Valley feed sites were all created to keep elk out of agricultural areas during the winter.

### ***Rattlesnake Hills Sub-herd (PMU 34)***

Elk damage complaints in PMU 34 are most common surrounding the Arid Lands Ecology Reserve and in the Badger Pocket area northwest of Yakima Training Center. Elk movements off the Arid Lands Ecology Reserve were uncommon during the 1980's but increased during the 1990's (Tiller et al 2000). Rangeland, hay, grain and orchards border Arid Lands Ecology Reserve on the south and west. Most elk movement and damage occurs during the summer and fall. Complaints increased in the 1990's, but no formal damages were filed until 1999 (wheat damage). Following the fire that engulfed the Arid Lands Ecology Reserve in the summer of 2000, elk damage claims and payment totaled \$213,000.

Elk movement off Arid Lands Ecology Reserve was thought to be density dependent. The mass movement in 2000 was due to fire eliminating most forage. The long-term impact of the fire on elk forage is unknown. The only way to effectively control damage is by reducing the elk population. Staggered hunting openers appear to be more efficient at harvesting elk than one long continuous season.

In the Badger Pocket area elk damage is mainly on irrigated hay and orchard trees. Damage complaints began in 1997. General season and hotspot hunts proved ineffective in alleviating damage. An either-sex general hunting season on Yakima Training Center in 1999 resulted in harvest of a large number of elk, but was labor intensive for Yakima Training Center staff. The hunting season was changed to permit only and either-sex in 2000. The elk population on Yakima Training Center appeared to be greatly reduced after the 2000 season.

### **Rangeland/Elk Conflicts**

In every PMU, there are claims that elk are competing with livestock for available forage. Historically, Washington Department of Fish and Wildlife alleviated some rancher's concerns by allowing grazing on Department owned lands. All grazing agreements on Department lands within the Yakima Elk Herd area have been canceled in recent years because of conflicts with other wildlife species and native plants. This is a significant issue with the ranching community and may have contributed to a bill that was passed by the 2001 Legislature to allow private landowners to claim damage on rangelands (Appendix G).

The main private land conflict in the Cascade sub-herd area occurs during the spring when elk are moving from feedlots and winter range to summer range. In winters with high snow-pack, elk may stay on private range for an extended period. Holding elk on Department owned winter range longer would ease conflicts. Habitat improvement may attract elk to public lands, but human disturbance needs to be greatly reduced.



Elk/livestock conflicts in the Rattlesnake sub-herd are typically near Arid Lands Ecology Reserve and occur during the summer. During dry periods, elk/cattle may compete for available green forage near water. Some ranchers are also concerned about elk utilizing limited water supplies.

U. S. Forest Service officials have expressed concern that elk are damaging vegetation on the summer range. Studies to measure the impact of elk on Forest Service lands as well as individual ranches are needed. Contracting such a study with a neutral party such as a university may be most appropriate.

### **Nonconsumptive Uses**

Wildlife viewing of elk is becoming an increasingly popular human past time. The Interagency Committee for Outdoor Recreation recently completed a public lands inventory project that included a survey of public land uses in the State of Washington. They found that nature activities, which included observing/ photographing wildlife among other things, was ranked number 2 or 3 among 15 other outdoor recreational activities by all age groups of Washington residents (Richmond 2001).

Public viewing of the Yakima herd is highest in the winter, particularly at the Oak Creek and Joe Watt feed lots. The Oak Creek Wildlife Area attracts an estimated 100,000 visitors to view elk in 1999-2000. Since 1994, the increase in the numbers of large bulls has created spring “shed-antler hunting”. The activity has become so popular that concern for harassment of elk has developed. During the summer months, elk viewing is a favorite pastime of hikers, fishers and campers.

The Rattlesnake Hills elk sub-herd lends itself to elk observations because of their large size and living in a treeless environment. The relative abundance of branched-antlered bulls in the Arid Lands Ecology Reserve elk population is an added attraction and presents a unique opportunity to observe them from vantage points along Highway’s 24 and 240.

## **Habitat Management**

### ***Cascade Slope Sub-herd (PMUs 33, 35, 36)***

Acquisition of critical elk wintering areas has enhanced Department’s ability to maintain the current elk herd. Over 75 percent of Yakima’s elk now winter on Department managed land. The only major area where elk are not on Department land is in the Cowiche Unit of PMU 36. The conversion from rangeland to residential development and conflicts with cattle grazing is becoming an issue in GMU 368. Land acquisitions or easements on winter range may be needed to maintain elk population levels in PMU 36.

Habitat enhancements on public lands, particularly Department owned and leased lands, could reduce reliance of elk on winter-feeding. Habitat enhancements may also reduce the use of mid-elevation private range in spring by holding elk on Department Wildlife Areas. Potential enhancements include forage planting, fertilizing, developing water sources, prescribed burning or controlled grazing. Past projects completed with assistance from RMEF and other partners in

the Yakima Elk Herd area are summarized in Appendix F.

Department Wildlife Areas have changed somewhat from a “game,” emphasis to a broader “wildlife” and ecosystem emphasis. Livestock grazing on Department Wildlife Areas in Region 3 within the range of the Yakima elk herd was eliminated in keeping with this new emphasis. Livestock grazing can improve range for big game if managed properly. Designing a grazing program that meets Department management goals and public scrutiny will be difficult. Further, stock fences have been removed or are in disrepair. A full evaluation and participation by affected parties in a Coordinated Resource Management Planning process is needed.

Preserving and improving habitat may not provide intended benefits if human disturbance is high. Human use often displaces elk from public land and reduces habitat effectiveness. The disturbance factor is most critical on winter and spring ranges and is increasing. Disturbance depletes elk energy reserves, potentially increasing mortality and may reduce productivity. Displaced elk can also increase damage and nuisance problems. In recent years, a large increase in shed antler hunting has become a major concern on elk winter/spring range. Critical winter/spring ranges should be closed to all human use from mid November until the elk leave the area the following spring.

Road/area closures are intended to increase habitat effectiveness, improve escapement of bull elk, reduce poaching, and reduce crowding of hunters. Road closures with permanent barriers are more effective at meeting goals than seasonal or sign closures. However, due to budget and public concerns, the Green Dot System is the most common form of road management within the boundaries of the Yakima Elk Herd. There are currently 584 miles of closed roads under this system. All roads under the Green-Dot System are closed unless posted open with a green dot reflector. Open road densities still exceed the department goal of 1 mile per section on much of the area. More roads need to be gated or permanently closed, especially on winter range. Additional road closures may occur under the forest and fish rules protecting riparian systems.

The spread of noxious weeds (knapweed, thistle) is a problem, particularly on elk winter range. Noxious weeds may be reducing forage quality for elk. The Department conducts an annual weed control program on department owned acreage as time and funds allow. Increased effort is needed, particularly in GMUs 340 and 342.

### ***Rattlesnake Hills Sub-herd (PMU 34)***

Fires and overgrazing have resulted in a proliferation of cheat grass in many areas of the Rattlesnake sub-herd. The U.S. Army - Yakima Training Center, U. S. Department of Energy, Washington Department of Fish and Wildlife and some private landowners are attempting to restore native range destroyed by wildfire. The goal of the projects is to restore native vegetation especially the shrub-steppe vegetative community. In the low elevation elk winter habitat, cheat grass is the dominant species that is subject to frequent fire events.

The management goal for the rattlesnake sub-herd is to maintain populations at levels compatible with the native vegetation. No elk habitat enhancement projects are currently justified or proposed in this area.

## Research Needs

1. Research is needed into the various aspects of cattle-elk-range condition within the bounds of the Yakima Elk herd. Building long-term exclosures and contracting a neutral party is recommended.
2. Variations in calf production have lead to concern for the health of the Yakima Elk Herd. Indices to body condition have been developed using information from hunter-harvested animals. Sampling the Yakima herd is recommended.

## Herd Management Goals

The Yakima Elk Herd Plan provides a historical background and current condition of the herd. Other than harvest, there is little data to assess the herd trend over time. 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 Yakima Elk herd are to:

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

## Management Objectives, Problems and Strategies

### Herd Management

<b>Objective # 1</b>
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**Reduce and then maintain the post-season elk population at 9,500 animals for the Cascade slope portion of the Yakima Elk Herd.** Specific objectives for each PMU are as follows:

#### Cascade Slope sub-herd

PMU (GMU's)	Feb. 2000 Estimate				Objective			
	Bull	Cow	Calf	Total	Bull	Cow	Calf	Total
33 (336-346)	440	3900	1250	5590	350	3000	990	4340
35 (352-360)	445	2300	930	3675	300	2000	620	2920
36 (364,368)	280	1610	650	2540	200	1500	540	2240

	Feb. 2000 Estimate				Objective			
Total	1165	7810	2830	11805	850	6500	2156	9500

**Problems**

The Yakama Indian Nation as well as State hunter’s favors maintaining the herd at a high level within habitat constraints. Agricultural interests have indicated they’d prefer a much lower population to reduce damage concerns. Population surveys have only recently improved and may not accurately determine population levels. Calf recruitment has also shown wide variance over the last 5 years and is difficult to predict.

**Strategies**

1. Reduce this herd to address damage and nuisance concerns. Concentrate elk herd reduction in areas with high agricultural conflicts.
2. Continue sampling >70 percent of the units within each Cascade Slope sub-herd PMU. Re-stratify the units using current knowledge of population abundance. Develop models with better confidence in the population estimate.
3. Increase antlerless permits over the next few years to reduce the population and measure population response. Base permits recommendations on previous years recruitment as determined from surveys.

**Objective # 2**

**Reduce and maintain the Arid Lands Ecology Reserve population in the Rattlesnake Hills at a population level that does not result in significant damage to private lands (estimated <350 elk).** Specific population levels and objectives for PMU 34 is as follows:

**Rattlesnake Hills sub-herd**

PMU 34	February 2001 Estimate				Objective			
	Bull	Cow	Calf	Total	Bull	Cow	Calf	Total
	138	228	72	438	<87	<163	<100	<350

**Problems**

PMU 34 (Rattlesnake Hills sub-herd) population objectives have not been finalized by the U. S. Fish and Wildlife Service. The Rattlesnake Hills sub-herd population objective will be based on a population that will stay within the Arid Lands Ecology Reserve and cause minimal damage on neighboring private property. Controlling the elk population may be difficult without hunter access to the Arid Lands Ecology Reserve.

**Strategies:**

1. In PMU 34 (Rattlesnake Hills) maintain liberal hunting seasons to control elk damage. Authorize landowner kill permits and other damage control techniques as needed. Work cooperatively with private landowners to develop elk hunting season strategies that will control elk populations and reduce or eliminate damage problems.

2. If the Arid Lands Ecology Reserve elk population objective of 350 in PMU 34 cannot be accomplished through hunting because elk find refuge within Arid Lands Ecology Reserve Reserve, a contingency plan will be needed to remove animals directly from the Arid Lands Ecology Reserve in cooperation with the U. S. Department of Energy and U. S. Fish and Wildlife Service at their expense.
3. Maintain flexibility with the population objective on Arid Lands Ecology Reserve. If damage persists, consider reducing the elk population below 350.
4. Work cooperatively with the Yakima Training Center to maintain recreational hunting as a viable management tool in controlling elk on the area and eliminate damage problems on adjacent private lands.

### **Objective # 3**

#### **Improve the scientific database for managing the elk population.**

##### ***Problems***

Population/composition surveys and harvest data collection are critical elements in monitoring herd status and making management adjustments. February population surveys have not provided composition data to the desired accuracy at the PMU level. Harvest estimates collected from report cards and the hunter questionnaire has had wide confidence intervals at the PMU level. Tribal harvest is not known.

##### ***Strategies:***

1. Maintain/increase accuracy of post-season aerial herd composition surveys by sampling >70 percent of the survey units within PMUs 33, 35, and 36. This will require approximately 30 hours of helicopter time. A more accurate stratification of units and population estimate will be developed.
2. Conduct pre-season (September) surveys to more accurately determine herd composition. Helicopter surveys in the Cascade Slope sub-herd would require approximately 10 hours.
3. Initiate mandatory reporting system in 2001 for harvest data collection to better assess state recreational harvest.
4. Encourage the Yakama Indian Nation to estimate tribal harvest or elk within bounds of Yakima herd.
5. Maintain coordination and exchange of information on elk surveys conducted by the Pacific Northwest National Laboratory and U. S. Fish and Wildlife Service on the elk population utilizing the Arid Lands Ecology Reserve reserve.

### **Objective # 4**

#### **Manage for a post hunting season bull ratio consistent with the Statewide Plan (>12 bulls/100 cows in combination with overall bull mortality of <50 percent).**

##### ***Problem***

All PMUs have reached the escapement goal of 12 bulls/100 cows at the present time.

**Strategies:**

1. Continue the current spike-only management strategy and increase branch-antlered bull permits to maintain recreational opportunity and achieve bull ratio goals in the Cascade Slope sub-herd.
2. Manage for bull mortality objective once the population objective is reached.

**Objective # 5****Minimize damage caused by elk and improve Washington Department of Fish and Wildlife landowner relations.****Problems**

Elk can cause damage to high value crops and damage fences. The livestock industry is concerned that elk compete with livestock for forage. Removing the specific animals that cause damage is not always possible. Yet significantly reducing the herd could conflict with recreational objectives and may not solve damage issues.

**Strategies:**

1. Continue operation of the winter feeding program to help keep elk out of agricultural and horticultural crops.
2. Develop solutions to elk/livestock conflicts through the Coordinated Resource Management Planning (CRMP) process. Fund studies to determine if elk are impacting and competing with livestock for available rangeland forage.
3. Convert current Washington Department of Fish and Wildlife winter-feeding seasonal positions to full-time. The employees would maintain the elk fence, repair broken stock fence, and herd elk when not feeding.
4. Concentrate herd reduction in GMUs 340, 342, 352,368, 371 and 372.
5. Where it is justified, safe, and socially acceptable, use hot spot, kill permits, or landowner permits to remove elk causing crop damage. Investigate possibility of using tribal hunters to remove damage causing animals.
6. Continue to work with the residents of Nile in developing solutions to elk conflicts in GMU 352.
7. Build new fences where needed to prevent damage to agricultural and horticultural crops.
8. Fund flights to locate and herd elk out of problem areas.
9. Reduce human caused harassment of elk on Washington Department of Fish and Wildlife land with seasonal closures.

**Objective # 6****Maintain an effective and efficient elk winter-feeding program.****Problem**

Without winter-feeding the Cascade Slope population of the Yakima Elk Herd cannot be

sustained at significant levels and damage problems would greatly increase.

***Strategies:***

1. Contract and purchase early to get the best hay prices.
2. Determine if it is economical and feasible to increase hay production on Washington Department of Fish and Wildlife land.
3. Investigate alternate sources for funding winter-feeding including concessions, raffles, privatization, etc. to maintain consistent, reliable funding.
4. Reduce labor cost by using larger bales and automatic feeders.
5. Retain current distribution of feeding sites to address local damage areas and to keep elk dispersed.

**Objective # 7**

**Share elk population data with the Yakama Indian Nation.**

***Problem***

Historically, there has been minimal communication between the Yakama Indian Nation and Washington Department of Fish and Wildlife regarding the Yakima Elk Herd.

***Strategy:***

1. Meet at least annually with tribal biologists to review status of the herd and share management information. Encourage tribal participation in studies and surveys.

**Objective # 8**

**Increase public awareness and viewing opportunities of the elk resource.**

***Problem***

The majority of the public in Washington is unaware of the value or management complexity of the Yakima Elk Herd. Those involved with non-consumptive use may not be aware that their activities may adversely impact the herd, especially during late winter and spring.

***Strategy:***

1. Develop a brochure for the public on where the best elk viewing areas are, elk natural history, the value of elk in the state, and elk management.
2. Develop and enhance additional viewing opportunities, in natural settings and develop a live Internet photacam of elk.
3. Identify specific economic values associated with non-consumptive uses of elk.

**Objective # 9**

**Cooperate with the U. S. Fish and Wildlife Service and U. S. Department of Energy in the management of elk on the Arid Lands Ecology Reserve Reserve; and with the US Army on the Yakima Training Center.**

### ***Problem***

The Arid Lands Ecology Reserve is closed to the general public. The Army controls access to Yakima Training Center. Elk utilizing Arid Lands Ecology Reserve and Yakima Training Center often exhibit daily and seasonal movements outside of these areas to adjacent private lands causing damage or nuisance problems.

### ***Strategies:***

1. Meet Arid Lands Ecology Reserve staff formally at least annually or more frequently as needs dictate to discuss population status, trend, damage issues and determine management needs and actions.
2. Share biological information such as herd composition and population survey data, harvest and other mortalities, general herd health, and habitat conditions.

## **Habitat Management**

### **Objective # 10**

**Improve elk habitat quality and effectiveness on National Forest Lands.**

### ***Problem***

The U. S. Forest Service manages over 50 percent of the land within the Cascade Slope sub-herd planning area. Elk habitat is only one factor in U. S. Forest Service management decisions. There is no analysis of current habitat condition.

### ***Strategies:***

1. The Rocky Mountain Elk Foundation is helping fund an elk habitat analysis project within the Yakima Elk Herd. The information should be used to identify habitat improvement projects.
2. Work with the U. S. Forest Service on their new Fire Management Plan and to encourage use of prescribed burns to enhance elk habitat.
3. Work with the U. S. Forest Service on the new Road Management Plan to reduce road density in critical elk habitat.
4. Monitor and evaluate projects to determine effectiveness.

### **Objective # 11**

**Improve elk habitat quality and effectiveness on state land.**

### ***Problem***

Washington Department of Fish and Wildlife and Department of Natural Resources (Department of Natural Resources) make up 21 percent of the land base within the PMU's 33, 35, and 36, and the majority of the winter range. Department of Natural Resources has multiple use objectives. Washington Department of Fish and Wildlife management considers a wide variety of fish, wildlife and recreational uses.



**Strategies:**

1. Incorporate elk habitat considerations into BPA mitigation projects.
2. Develop partnership projects with Rocky Mountain Elk Foundation and other organizations.
3. Monitor and evaluate projects to determine effectiveness.

**Objective # 12**

**Reduce disturbance of wintering elk.**

**Problem**

On the Cascade Slope area over 75 percent of elk in the Yakima herd winter on lands controlled by the Washington Department of Fish and Wildlife. Recreational use of the areas is increasing, reducing the habitat effectiveness and potentially moving elk off winter range prematurely. The problem has become more pronounced in recent years with large numbers of people looking for shed antlers. Increasing the number of gates and closed areas is probably the most cost effective way of increasing the capacity of the range and reducing damage caused by elk, but is unpopular with some of the public.

**Strategies:**

1. Use authority under RCW 77.12.210 and WAC 232-12-177 to control access and designate closures.
2. Close areas with high densities of elk to all public entry during critical periods.
3. Place gates and closure signs on roads leading into high-density wintering areas.

**Objective # 13**

**Improve elk habitat quality and effectiveness on private lands with willing cooperators.**

**Problem**

Private lands make-up 23 percent of land area within the Cascade Slope sub-herd. Improving elk habitat is frequently not a priority for the private landowner trying to manage a business. Residential development and agricultural expansion is threatening elk range and leading to more elk/human conflicts.

**Strategies:**

1. Continue to develop and encourage habitat improvement partnership projects on private lands. Monitor and evaluate projects to determine effectiveness.
2. Encourage the permanent closure of non-essential roads and gates on other private roads where road densities are high.
3. Work with counties on growth management to mitigate the loss of elk winter range to development.
4. Secure more elk habitat with the highest priority on winter and transition range.

## Spending Priorities

### Priority # 1

#### Winter elk feeding

The feeding program discourages elk from going through or around fences. If the program is not adequately funded, significant damage claims could incur. Winter elk feeding **also** provides significant viewing opportunity. Additional funding for equipment would **improve** efficiency.

**Priority:** High. Without adequate funding for winter-feeding, the Yakima Elk Herd will need to be significantly reduced.

**Time line:** Funds must be available annually in summer to procure quality hay at the best price.

**Cost:** \$238,000/year for feed and labor. An additional \$8000 per year for 2 years will provide automatic feeders that will reduce labor costs. This does not include the cost of replacing trucks used for feeding.

1 <sup>st</sup> year	\$246,000
2 <sup>nd</sup> year	\$246,000
3 <sup>rd</sup> year	\$238,000
4 <sup>th</sup> year	\$238,000
5 <sup>th</sup> year	<u>\$238,000</u>
Total	\$1,206,000

### Priority # 2

#### Herd population/composition surveys

The Washington Department of Fish and Wildlife should seek adequate funding to conduct annual population surveys, with the objective of obtaining precise and accurate data on population and composition. An analysis of post season herd data from the Yakima area in 2000 and 2001 indicated that sampling 70 percent of the units derived a population estimate at the herd level that was  $\pm 5$ -6 percent of the mean. At the PMU level, all population estimates were within the target level of  $\pm 10$  percent. Calves to cow ratios were generally within  $\pm 10$  percent at all levels. Estimates of bull to cow ratios are generally  $> \pm 10$  percent of the mean. Confidence intervals should improve with better stratification over time. However, it is difficult to obtain good estimates of the bull population post season because of sightability bias and the relatively small number and clumped distribution of bulls. Surveys during the rut provide more accurate bull to cow ratios because bulls are with the herds.

Post-season surveys: Post-season aerial surveys will require 30 hours of helicopter time in order to cover  $>70$  percent of the survey zones in each PMU. The current budget of  $\sim$ \$9,000 covers 70 percent of the units within the herd boundary. The estimated annual cost to cover  $>70$  percent of units in each PMU is \$10,000 annually.

Pre-season surveys: Pre-season surveys will provide more accurate estimates of bull to cow ratios. Population models can also be derived using preseason surveys and harvest data. If the models prove accurate, post-season surveys would not be needed, saving more than \$5,000

annually. There is no current budget for pre-season Yakima elk surveys. Estimated need is 12 hours of flight time or about \$4,000.

**Priority:** High - Basic biological data collection is essential for responsible management of the Yakima Elk Herd.

**Time line:** Maintain and conduct annual herd composition and population surveys.

**Costs:** \$14,000 annually. Total for five years \$70,000.

**Priority # 3**

**Improve Collection of Hunter Harvest and Effort Information**

There is a need to improve accuracy of all harvest and hunter effort information for use in management decision-making. Increase the accuracy of state recreational elk harvest data through implementation of mandatory hunter reporting.

**Priority:** High

**Time line:** 2001

**Cost:** \$26,000 estimated annually. Total for five years \$130,000.

**Priority # 4**

**Address Landowner/elk conflicts:** Elk/landowner conflicts and agricultural damage are a major problem in the Yakima area and a continuous threat to this elk population. Maintaining the elk fence, herding, and repairing stock fence broken by elk minimizes conflicts. Install additional re-entry gates, elk proof cattle guards, and flight time for herding would improve landowner relations and reduce damage claims. Two people are currently employed to feed elk during the winter and fix fence in a small area during the spring. This proposal would be to employ two people year round and supply them with materials for fence repair, feeding, and herding.

**Priority:** High

**Time line:** Annually

**Costs:**

Salaries/benefits: Current funding \$25,000 (\$22,000 already covered by winter feed, \$3,000 by enforcement for fence repair in the Kittitas Valley). New funding - \$41,560 for a total of \$66,560.

Materials: for vehicle, re-entry gates, cattle guards and miscellaneous tools and materials. Flight time of about 5 hours fixed winged and 10 hours helicopter (\$23,600 total).

Total:

•	1 <sup>st</sup> year	\$90,160
•	2 <sup>nd</sup> year	\$90,160
•	3 <sup>rd</sup> year	\$90,500
•	4 <sup>th</sup> year	\$91,000
•	5 <sup>th</sup> year	<u>\$92,000</u>
	Total	\$453,820

**Priority # 5**

**Elk fence construction**

The elk fence should be a high priority in the capital budget. The fence should be extended and sections added to prevent elk from entering agricultural land.

**Priority 5.1:** High. Tieton extension, (1.5 miles).

**Time line:** 2002.

**Cost:** \$60,000.

**Priority 5.2:** High. Tampico extension, (5 miles).

**Time Line:** Annual 2002-2006.

**Cost:** \$200,000 total.

**Priority 5.3:** High. Nile Valley cooperative crop and orchard fencing. One mile per year estimated cost \$10,000 annually for material for cooperative fencing projects.

**Time Line:** 2002-2005.

**Costs:** \$40,000.

**Priority 5.4:** High. Nile Valley rebuild. Estimated 6 miles.

**Time Line:** 2002-2006.

**Costs:** \$240,000.

Total Cost:

• 1 <sup>st</sup> year	\$200,000
• 2 <sup>nd</sup> - 4 <sup>th</sup> year	\$300,000
• 5 <sup>th</sup> year	<u>\$40,000</u>
Total	\$540,000

#### **Priority # 6**

#### **Habitat preservation program - (easements and incentives)**

Key areas of elk winter range should be identified and given a high priority in future land acquisitions, leases, easements or incentives for creation or preservation of elk habitat. Funds would also need to be secured for operation and management of these properties.

**Priority 6.1:** High (GMU-368) Secure private lands with valuable winter range.

**Time line:** 2002 as land becomes available.

**Cost:** \$175-\$500/acre. (\$1,242,500 - \$3,550,000) Purchase/Easement Program \$100,000/year.

**Priority 6.2:** Moderate (GMU-342) Secure in-holdings in the Wenas Wildlife Area.

**Time line:** 2002 as lands become available.

**Cost:** \$175 - \$500/acre. (\$525,000 - \$1.5 mil.) \$100,000/year.

1 <sup>st</sup> year	\$ 200,000
Total for 5 years	\$1,000,000

#### **Priority # 7**

## Road management

There are 4 green dot systems within the Yakima elk herd area: L.T. Murray, Clemans Mt./Wenas, Oak Creek, and Ahtanum/Cowiche. A fifth, Little Naches, was recently canceled. All green dot management systems involve cooperators who jointly pay for signs, posts, maps, etc. The Department currently does not fund the costs to maintain the systems. Gating some roads would make some systems more efficient. Improving habitat effectiveness and reducing stress on elk will increase herd health, potentially increasing recruitment and recreational opportunity. Improving habitat effectiveness is more cost efficient than any other habitat project.

**Priority 7.1:** Moderate. Green dot posts and reader boards.

**Time line:** Annual.

**Cost:** \$3,500/year.

**Priority 7.2:** High. Gates to permanently close roads.

**Time line:** Annual.

**Cost:** \$12,500/year.

Total Cost:

- 1<sup>st</sup> year \$16,000  
Total \$80,000

**Priority # 8**

## Elk Habitat Improvements

Habitat improvements may reduce winter-feeding and damage. In recent years, few projects have been implemented. Funding through organizations such, as RMEF often require matching money. This fund would be used to apply for other grants. Projects such as forage enhancement, weed control, fertilizing, controlled livestock grazing and spring development are under consideration.

**Priority:** Moderate

**Time line:** FY 2001-2005

**Cost:** \$40,000 annually, 5 year total \$200,000.

**Priority # 9**

## Elk/Livestock/Vegetation Study

Public land managers and private livestock growers have expressed concerns over the affect of elk on plant communities and competition with livestock. This funding would be used to monitor impacts of livestock and elk grazing on plant communities. Partnership study.

**Priority:** Moderate

**Time line:** FY 2001-2002

**Cost:** \$35,000 annually for two years, total \$70,000.

## **Plan Review and Maintenance**

The Yakima 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 track strategies and their impact on the plan's goals and objectives in order to re-evaluate and modify this plan as needed. Maintain a free exchange of communication between the Washington Department of Fish and Wildlife, Indian Treaty Tribes, and cooperators. An annual review meeting with delegates from Tribes will be arranged by the Department's Region 3 Wildlife Program Manager. Emergent issues can be addressed, as needed either at the technical or policy level.

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#### Personal Communication

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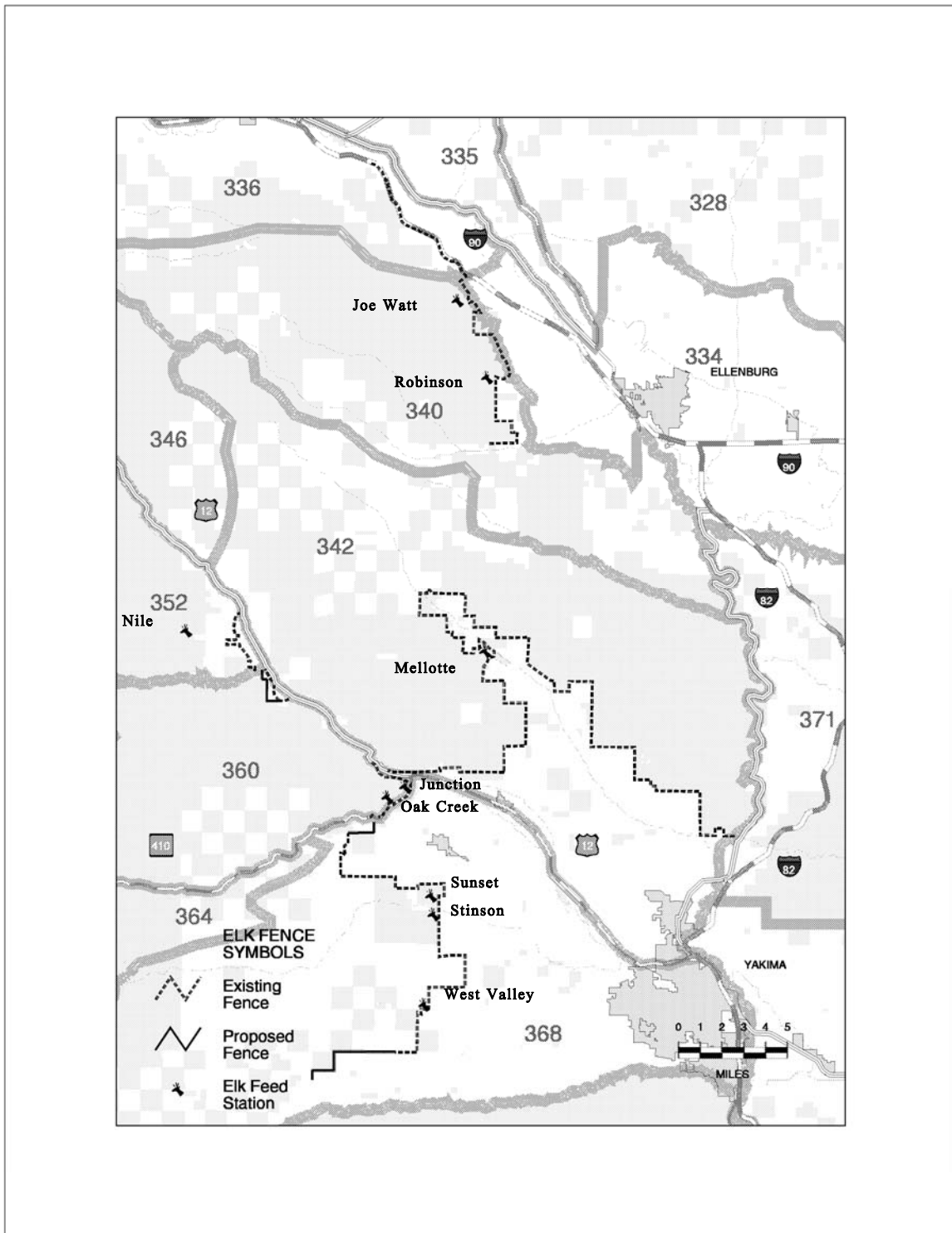
Robert Schafer, Enforcement Captain  
Washington Department of Fish and Wildlife, Region 3





APPENDIX B Yakima ~~█~~ Herd Distribution

APPENDIX C Yakima Elk Fence and Feedlot Locations



APPENDIX D. Elk Harvest and Hunter Trends for the Yakima Herd, 1970-2000.

Year	PMU 33		PMU 34		PMU 35		PMU 36		Herd Total			
	Bull	Antler-less	Bull	Antler-less	Bull	Antler-less	Bull	Antler-less	Bull	Antler-less	# Hunters	Hunter Days
<b>1970-79 AVG</b>	<b>457</b>	<b>462</b>	<b>0</b>	<b>0</b>	<b>480</b>	<b>384</b>	<b>146</b>	<b>157</b>	<b>1,083</b>	<b>1,003</b>	-	-
<b>1980</b>	455	225	0	0	495	385	300	135	1,250	745	-	-
<b>1981</b>	500	240	5	0	445	300	265	95	1,210	635	-	-
<b>1982</b>	785	890	0	0	535	935	205	230	1,525	2,055	-	-
<b>1983</b>	590	205	0	10	245	190	125	140	960	535	-	-
<b>1984</b>	586	223	9	3	278	237	228	216	1,111	682	24,150	120,908
<b>1985</b>	659	258	2	1	215	81	113	61	993	418	26,073	117,326
<b>1986</b>	422	293	10	2	153	100	144	82	754	511	21,774	111,202
<b>1987</b>	522	254	8	13	179	139	107	17	824	482	20,484	101,295
<b>1988</b>	754	689	5	10	517	288	208	132	1,492	1,154	21,750	106,657
<b>1989</b>	640	525	8	3	398	261	240	110	1,294	901	19,241	87,794
<b>1980-89 AVG</b>	<b>591</b>	<b>380</b>	<b>5</b>	<b>4</b>	<b>346</b>	<b>292</b>	<b>194</b>	<b>122</b>	<b>1,141</b>	<b>812</b>	<b>22,245</b>	<b>107,530</b>
<b>1991</b>	729	627	14	0	423	446	186	170	1,351	1,246	27,252	121,444
<b>1992</b>	802	563	8	0	462	308	244	149	1,516	1,020	28,046	124,903
<b>1993</b>	399	461	13	1	184	185	185	119	800	770	27,648	133,264
<b>1994</b>	545	1596	18	15	256	645	140	272	956	2,526	24,214	112,335
<b>1995</b>	338	511	17	3	122	177	148	193	634	1,095	22,120	105,389
<b>1996</b>	475	663	17	2	277	250	151	148	911	1,069	22,225	100,408
<b>1997</b>	293	198	21	13	237	101	177	127	717	426	23,084	95,619
<b>1998</b>	377	500	19	17	286	181	226	183	1,030	864	25,422	111,222
<b>1999</b>	591	428	62	121	286	221	232	241	1,197	1,060	29,257	196,802
<b>2000</b>	600	621	128	125	371	277	380	464	1,456	1,583	29,172	136,049
<b>1991-00 AVG</b>	<b>515</b>	<b>617</b>	<b>32</b>	<b>30</b>	<b>290</b>	<b>279</b>	<b>207</b>	<b>207</b>	<b>1,041</b>	<b>1,142</b>	<b>25,844</b>	<b>123,743</b>

APPENDIX E Hunting Seasons in the Rattlesnake Hills Sub-herd area 1995-2000.

YEAR	GMU and Permit (#s)	DATES	DAYS	REGULATION	METHOD
2000	372, 382	09/01-09/30 10/01-10/13 10/28-11/05 12/09-12/31	30 13 09 23	Antlerless Any elk Any elk Antlerless	Modern Firearm
	371 Alkali A (100)	10/28-11/05	09	Any elk	Modern Firearm Permit
	371 Alkali B (100)	10/07-10/13	07	Any elk	Muzzleloader Permit
	371 Alkali C (50)	09/01-09/14	14	Any elk	Archery Permit
1999	371 Alkali. 372, and 382	09/01 - 14 09/01 - 14	14 14	Spike or antlerless Any elk	Archery
	371	10/30 - 11/07	9	Any elk	Modern Firearm
	372, 382	10/05 - 13	9	Antlerless	Modern Firearm
	372, 382 372, 382	10/30 - 11/07 12/09 - 13	9 5	Any elk Antlerless	Modern Firearm Modern Firearm
1998	371 Alkali 372 Kiona	09/01 - 14 09/01 - 14	14 14	Spike bull or antlerless Any elk	Archery Archery
	371 Alkali 372 Kiona	10/31 - 11/08 10/05 - 13 10/31 - 11/08 12/09 - 13	9 9 9 5	Spike only Antlerless only Any elk Antlerless only	Modern Firearm Modern Firearm Modern Firearm Modern Firearm
	371 Alkali	09/01 - 14	14	Any elk	Archery
	372 Kiona	10/25 - 11/02 11/01 - 15	9 15	Any bull Any elk	Modern Firearm Any Elk Tag
1996	371 Alkali 372 Kiona	09/01 - 14 09/01 - 14	14 14	Spike bull only Either-sex	Archery
	371 Alkali 372 Kiona	11/05 - 15 11/01 - 15	11 15	Male/visible antler Either-sex	Modern Firearm CM,YG,YP,YM tag holder by weapon type
1995	371 Alkali and 372 Kiona	09/01 - 14	14	Either-sex	Archery (YA)
	371, Alkali, and 372 Kiona	11/05 - 15 11/08 - 15	11 9	Male/visible antler	Modern Firearm
	371 and 372	11/05 - 15	11	Either-sex	CM,YB,YC,YM tag holder by weapon type

APPENDIX F. Rocky Mountain Elk Foundation Projects - Yakima Elk Herd

<b>Year</b>	<b>Road Management</b>	<b>RMEF Funding</b>	<b>Cooperator</b>	<b>Project Funding</b>
1990	Oak Creek Wildlife Area Access Management	\$7,100	WDFW	\$13,600
1992	L.T. Murray Road Rehabilitation	\$7,957	WDFW, Plum Cr.	\$18,957
1992	Ahtanum/Cowichee Access Mgmt	\$8,000	DNR	\$12,450
1994	Ahtanum/Cowichee Resource Mgmt Signage	\$0	DNRResources	\$1,000
1996	Wenas Drainage Signage	\$200	Back County Horseman, Mt. Clemen Archers	\$200
1998	Little Naches Green Dot	\$500	WDFW, USFS	\$2,000
1998	Oak Creek Road Closure and Seeding	\$3,000	WDFW	\$6,500
1999	L.T. Murray Access Mgmt.	\$3,500	WDFW, Plum Cr.	\$7,000
	SubTotal	<b>\$30,257</b>		<b>\$61,707</b>
<b>Year</b>	<b>Elk Habitat Improvement</b>	<b>RMEF Funding</b>	<b>Cooperator</b>	<b>Project Funding</b>
1992	Deer Feder Prescribed Burn	\$1,036	DNR	\$1,161
1997	Cowichee Wildlife Area Catch Basin & Seeding	\$6,630	WDFW	\$6,630
1997	L.T. Murray Water Development	\$2,300	WDFW	\$5,450
1998	North Fork Ahtanum Creek Seeding	\$3,000	WDFW	\$6,200
1999	Oak Creek Forage Enhancement	\$5,000	WDFW, Boise Cascade	\$10,500
1999	North Fork Ahtanum Seeding #2	\$3,000	WDFW	\$6,000
1999	Oak Creek/Wenas Seeding	\$2,000	WDFW	\$4,000
	SubTotal	<b>\$22,966</b>		<b>\$39,941</b>
<b>Year</b>	<b>Native Habitat Restoration</b>	<b>RMEF Funding</b>	<b>Cooperator</b>	<b>Project Funding</b>
1994	McCabe Place Habitat Enhancement	\$4,473	WDFW	\$7,473
1998	Wenas Wildlife Mgmt Area Enhancement	\$31,890	WDFW, BPA	\$31,890
1998	McCabe Ranch Habitat Enhancement #2	\$26,174	WDFW	\$26,174
	SubTotal	<b>\$62,537</b>		<b>\$65,537</b>
<b>Year</b>	<b>Elk Studies</b>	<b>RMEF Funding</b>	<b>Cooperator</b>	<b>Project Funding</b>
1992	Satus/Klickitat Elk Study	\$9,000	BIA, WDFW, YIN	\$182,300
1995	Winter Elk Disease Surveillance Year 1	\$2,799	WDFW	\$9,799
1996	Winter Elk Disease Surveillance Year 2	\$0	WDFW	\$7,000
1999	Colockum & Yakima Habitat Assessment	\$20,000	WDFW, USFS	\$40,000
	SubTotal	<b>\$31,799</b>		<b>\$239,099</b>
<b>Year</b>	<b>Information and Education</b>	<b>RMEF Funding</b>	<b>Cooperator</b>	<b>Project Funding</b>
1990	Oak Creek Wildlife Area Information Booth	\$1,500	WDFW	\$3,000
1996	Interpretive Project	\$220	WDFW	\$220
1998	Oak Creek Habitat Interpretive Sign	\$1,800	WDFW, SCI, NW Chap. Citizens for WA Wildlife	\$3,700
1998	Rattlesnake Ridge Education Display	\$1,296	Batelle	\$2,596
	SubTotal	<b>\$4,816</b>		<b>\$9,516</b>
	<b>Total</b>	<b>\$152,375</b>		<b>\$415,800</b>

## APPENDIX G Amendments to Wildlife Damage Rules - HB 1752.

### **RCW 77.36.005**

#### **Findings. (Expires June 30, 2004.)**

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, rangeland suitable for grazing or browsing of domestic livestock, 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 rangeland suitable for grazing or browsing of domestic livestock, 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.

[2001 c 274 § 1; 1996 c 54 § 1.]

#### **NOTES:**

**Expiration date -- 2001 c 274 §§ 1-3:** "The following expire 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 77.36.005**

#### **Findings. (Effective June 30, 2004.)**

The legislature finds that:

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

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

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

[1996 c 54 § 1.]

**RCW 77.36.010**

**Definitions. (Expires June 30, 2004.)**

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "Crop" means (a) a growing or harvested horticultural and/or agricultural product for commercial purposes; or (b) rangeland forage on privately owned land used for grazing or browsing of domestic livestock for at least a portion of the year for commercial purposes. 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.

[2001 c 274 § 2; 1996 c 54 § 2.]

**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 77.36.010**

**Definitions. (Effective June 30, 2004.)**

Unless otherwise specified, the following definitions

**RCW 77.36.020**

**Game damage control -- Special hunt.**

The department shall work closely with landowners and tenants suffering game damage problems to control damage without killing the animals when practical, to increase the harvest of damage-causing animals in hunting seasons, and to kill the animals when no other practical means of damage control is feasible.

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

[1996 c 54 § 3.]

**RCW 77.36.030**

**Trapping or killing wildlife causing damage -- Emergency situations.**



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

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

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

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

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

[1996 c 54 § 4.]

#### **RCW 77.36.040**

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

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

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

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

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

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

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

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

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

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

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

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

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

[1996 c 54 § 5.]

**RCW 77.36.050**

**Claimant refusal -- Excessive claims.**

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

[1996 c 54 § 6.]

**RCW 77.36.060**

**Claim refused -- Posted property.**

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

[1996 c 54 § 7.]

**RCW 77.36.070**

**Limit on total claims from wildlife fund per fiscal year.**

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

[1996 c 54 § 8.]

**RCW 77.36.080**

**Limit on total claims from general fund per fiscal year -- Emergency exceptions. (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, or rangeland forage on privately owned land used for grazing or browsing of domestic livestock for at least a portion of the year. 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.

(3) Of the total funds available each fiscal year under subsection (1) of this section and RCW [77.36.070](#), no more than one-third of this total may be used to pay animal damage claims for rangeland forage on privately owned land.

(4) Of the total funds available each fiscal year under subsection (1) of this section and RCW [77.36.070](#) that remain unspent at the end of the fiscal year, fifty percent shall be utilized as matching grants to enhance habitat for deer and elk on public lands.

[2001 c 274 § 3; 1996 c 54 § 9.]

**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 77.36.080**

**Limit on total claims from general fund per fiscal year -- Emergency exceptions. (*Effective 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 to commercially raised agricultural or horticultural crops by deer or elk. In an emergency, the department may pay as much as may be subsequently appropriated, in addition to the funds authorized under subsection (1) of this section, for claims under RCW [77.36.040](#) and for assessment and compromise of claims. Such money shall be used to pay animal damage claims only if the claim meets the conditions of RCW [77.36.040](#) and the department has expended all funds authorized under RCW [77.36.070](#) or subsection (1) of this section.

[1996 c 54 § 9.]