INDIVIDUAL MANAGEMENT PLANS

The following individual management plans for bighorn populations are essential in the future management of bighorn sheep in Montana. Each individual management plan contains a comprehensive history of the population, habitat and population objectives, and strategies for meeting those objectives. The objectives for each population of bighorns will direct the future management of the species in that area.

KOOTENAI FALLS

(Hunting District 100)

Description: Located in the extreme northwest corner of the state, this 1,414-square-mile hunting district is composed of the Purcell Mountain Range within Montana and is bounded on the north by British Columbia, Canada, on the west by Idaho, and on the south and east by the Kootenai River and Lake Koocanusa, respectively. The terrain is mountainous and heavily timbered, featuring some of the wettest forest habitat types in Montana. Lands administered by the Kootenai National Forest comprise 95% of this hunting district. The remaining 5% of the land base consists of small private holdings located primarily along the major stream corridors (2%), and corporate timberlands, primarily Plum Creek Timber Company (3%). The 172-acre Kootenai Falls Wildlife Management Area (WMA) is situated along the north shore of the Kootenai River in the extreme southern portion of the area, and the 900-acre West Kootenai WMA is situated in the extreme northeast corner of the hunting district adjacent to the Canadian border. Several small roadless areas including Northwest Peaks, Buckhorn Ridge, Grizzly Peak, Roderick Mountain, and Gold Hill exist as scattered islands of unroaded habitat comprising approximately 82,000 acres. Timber management is the dominant land use in the area.

The Kootenai Falls bighorn sheep herd occupies less than 2% of the Purcell Mountains in the extreme southern portion of the range along the Kootenai River canyon near Kootenai Falls. Total habitat occupied is approximately 22 square miles and consists almost entirely of public land managed by the U.S. Forest Service, including the Kootenai Falls WMA administered by FWP. The present sheep population is well established along the Kootenai River escarpments and up small tributaries draining into the river from the north. No long-distance migrations from the Kootenai River corridor to disjunct mountains to the north have been observed. Seasonal distribution patterns are simple elevation movements due to changes in weather and plant phenology. However, in recent years, a small group of sheep has established itself to the south across the Kootenai River into the north end of the Cabinet Mountains, directly across from the parent population. Other small groups of sheep are occasionally observed wandering upstream toward Libby Dam, but appear not to be establishing permanently at this time.

Public Access: The Kootenai Falls bighorn sheep herd occurs on and is surrounded by public land with very few restrictions on public travel. The sheep range is surrounded by roads that are open for public use nearly year-round. The Kootenai Falls WMA, owned and managed by FWP, provides year-round nonmotorized access to the sheep range all along the Kootenai River, and is used by sheep nearly every month of the year. There is a residential subdivision along the Kootenai River at the east end of the sheep range, which does limit public access to national forest lands behind some of the homes.

Bighorn Sheep Population: The Kootenai Falls bighorn sheep population is the result of a 1954-55 introduction of 12 and four sheep, respectively, all originating from Wildhorse Island in Flathead Lake. The initial transplant consisted of five rams and 11 ewes, which continued to increase and establish a viable population that appeared to peak at about 150 to 200 animals by the mid-1980s. The population began showing signs of decline throughout the late 1980s and early 1990s, and eventually experienced a drastic reduction in numbers during the 1994-95 winter. Causative factors for the decline were not identified, but a large wildfire on the sheep range during late summer 1994, with associated fire suppression activities, may have induced stress-related disease agents to reduce the herd by at least 50%. The population showed no signs of recovery over the succeeding five years due to the extremely severe winter of 1996-97 and chronically low lamb recruitment rates. At the same time, the sympatric mule deer population was also declining and the mountain lion population was increasing, which may have plunged the very small sheep population into a "predator trap." At that point, the decision was made to augment the existing population with

Year	Source	Ewes	Lambs	Rams	Total
1954	Wildhorse Island	11		5	16
2000	Thompson Falls	11	5		16
2003	Bonners	1	1		2
2004	Sun River	18	6		24
2008	Wildhorse Island	20	4	14	38

Table 1. Transplant history for Kootenai Falls bighorn sheep herd.

additional sheep from various herds around Montana (Table 1). On March 16, 2000, 16 sheep, consisting of 11 adult ewes, three female lambs and two male lambs were captured from the Thompson Falls herd (Hunting District 121) and released on the Kootenai Falls WMA. Attempts to remove sheep from the Bonner population near Missoula (Hunting District 283) resulted in the capture of one adult ewe and one female lamb, which were released onto the Kootenai Falls WMA on February 12, 2003. During winter 2004, two sheep net-gunning operations conducted on the Sun River area resulted in the capture of 24 bighorns. The first capture episode caught 12 sheep, consisting of seven adult ewes, four female lambs and one male lamb, all of which were transported to and released onto the Kootenai Falls sheep range on January 4, 2004. The second group of sheep, also numbering 12 animals, consisted of 11 adult ewes and one female lamb, all of which were released on the Kootenai Falls WMA on February 23, 2004. The last transplant of sheep onto the Kootenai Falls sheep range occurred on January 15 and 16, 2008. A total of 38 sheep (20 adult ewes, three male lambs, one female lamb, 14 adult rams) were captured on Wildhorse Island in a net-gun operation and released onto the Kootenai Falls sheep range. There was 12 to 15 inches of snow at the release site at the time of the transplant. Snowfall continued for the next six weeks until there was 28 to 34 inches of snow at the release site by the end of February. From mid-January through late March, snow continued to accumulate in the Purcell and Cabinet mountains, creating severe winter conditions for big game animals in the area. There had not been snow of this magnitude on the Kootenai Falls WMA since the winter of 1996-97. Normal snow accumulation on the Kootenai Falls WMA averages about a foot. Due to these severe winter conditions, it is estimated that approximately one-half of the transplanted sheep died due to deep snow accumulation or were predisposed to mountain lion predation. Other big game ungulates also suffered during this winter period as evidenced by low fawn and calf recruitment rates gathered from April 2008 surveys in the area. In spite of the 2008 winter conditions, the observation of 79 sheep on the Kootenai Falls area during April aerial surveys was the highest sample since 1992 (Figure 1 and Table 2). Population parameters from the previous few years (number of adult ewes, lamb:ewe ratios above 35:100, and number of adult rams in the population) are indicative of an increasing population.

Recreation Provided: Recreational opportunities provided by the Kootenai Falls bighorn sheep herd is a matter of longstanding record. This population was the first transplanted herd

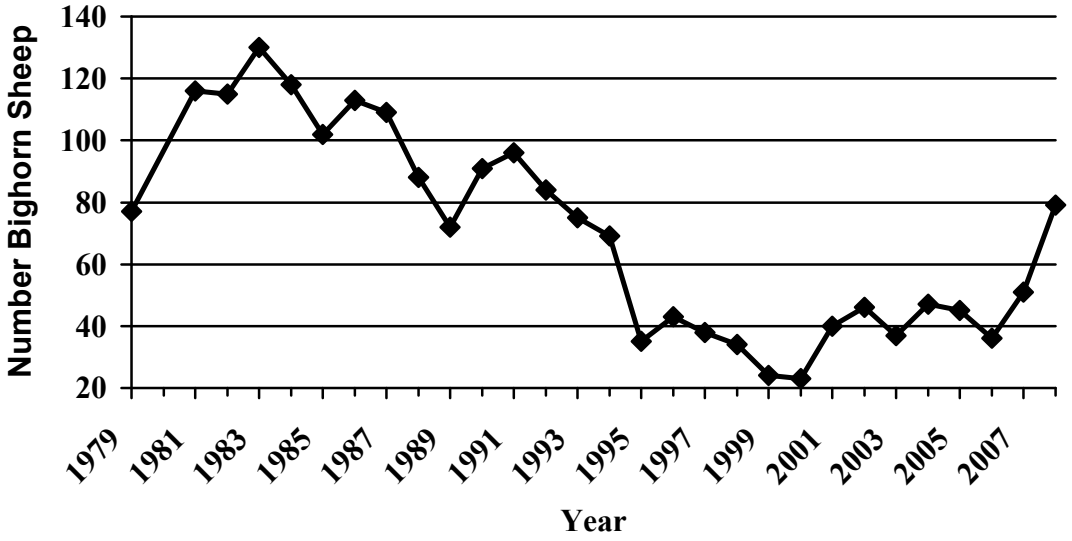

Figure 1. Total number of bighorn sheep observed during aerial trend surveys in the Kootenai Falls poplulation, Hunting District 100, 1979-2008.

Table 2. Classification data from aerial surveys for the Kootenai Falls population, Hunting District 100, 1979-2008.

Year	Ewes	Lambs	Rams	Uncl.	Total	Lambs: 100 Ewes	Rams: 100 Ewes
1979	35	10	20	12	77	29	57
1981	58	24	34	0	116	41	59
1982	56	15	42	2	115	27	75
1983	69	21	40	0	130	30	58
1984	74	23	21	0	118	31	28
1985	62	17	23	0	102	27	37
1986	59	12	33	9	113	20	56
1987	60	10	39	0	109	17	65
1988	56	9	19	4	88	16	34
1989	42	18	12	0	72	43	29
1990	51	14	26	0	91	27	51
1991	62	10	24	0	96	16	39
1992	45	14	25	0	84	31	56
1993	37	11	27	0	75	30	73
1994	31	7	31	0	69	23	100
1995	22	6	7	0	35	27	32
1996	23	1	19	0	43	4	83
1997	27	4	7	0	38	15	26
1998	24	4	6	0	34	17	25
1999	17	0	7	0	24	0	41
2000	11	2	10	0	23	18	91
2001	24	7	8	1	40	29	33
2002	28	8	10	0	46	29	36
2003	25	4	4	4	37	16	16
2004	25	5	17	0	47	20	68
2005	27	10	8	0	45	37	30
2006	22	8	6	0	36	36	27
2007	21	10	20	0	51	48	95
2008	40	8	31	0	79	20	78

to provide hunting recreation in northwest Montana, and it has provided legal hunting of sheep since 1957. Prior to 1975, the Ural-Tweed native population of sheep along the east side of Lake Koocanusa and the Kootenai Falls population were both included in one hunting district. Hunters with a permit could hunt sheep in either herd, although most sheep hunters had shifted to hunting the Kootenai Falls sheep by 1970. The harvest record may include a few rams harvested from the Ural-Tweed population prior to1975 (Table 3). After the population decline during the winter of 1994-95 and the severe winter of 1996-97, hunting of these sheep was suspended from 2000 to 2005, but reestablished with one either-sex permit in 2006. Well over 120 rams have been legally harvested from this herd over the last 35 years. Many of those rams have been entered into the Boone and Crockett records, with some individuals scoring in the low 190s.

Aside from hunting recreation, the Kootenai Falls bighorn sheep provide inestimable viewing pleasure for tourists and local residents in the Libby-Troy area. U.S. Highway 2, along the south side of the Kootenai River, travels the entire length of the sheep range and provides travelers with several pull offs and viewpoints to look for sheep. On the opposite side of the river, where the sheep actually live, the Kootenai Falls WMA and the old Kootenai Falls portage trail traverse several miles of the sheep range and include an access point at the hanging footbridge just below Kootenai Falls. Access to the Kootenai Falls WMA and the trail/road is closed to unauthorized motorized travel from the east end of the sheep range. However, many visitors use the WMA trail/road as a destination

Year	Either Sex Licenses	Ram Harvest	Ewe Licenses	Ewe Harvest
1970	5	1	0	0
1971	5	4	0	0
1972	5	4	0	0
1973	5	1	0	0
1974	5	5	0	0
1975	5	4	0	0
1976	5	5	0	0
1977	5	3	0	0
1978	5	5	10	6
1979	5	5	10	7
1980	5	5	10	6
1981	7	7	12	7
1982	6	5	4	4
1983	8	8	15	11
1984	8	8	15	8
1985	8		15	
1986	5	5	10	8
1987	5	4	10	10
1988	5	4	10	8
1989	5	5	10	8
1990	5	4	10	8
1991	5	5	10	7
1992	5	6	10	5
1993	5	5	5	5
1994	5	5	5	3
1995	5	4	5	2
1996	3	3	0	0
1997	3	3	0	0
1998	1	1	0	0
1999	1	1	0	0
2000-2005	Closed	Closed	Closed	Closed
2006	1	1	0	0
2007	1	1	0	0
2008	2	2	0	0

Table 3. Harvest data for the Kootenai Falls population, Hunting District 100, 1970-2008.

area for hiking/mountain biking/horseback riding to include wildlife viewing, primarily for bighorn sheep. Bighorn sheep are present on the WMA during every month of the year, but are especially prevalent on the WMA-maintained hayfields during spring and early summer months. Special FWP Commission regulations allows public access to this WMA year-round, whereas most WMAs with big game winter range are closed to the public from December 1 through May 15 each year. The WMA has become a very popular area for recreational activities. Increasing public demands on the WMA may require additional restrictions on public use of the area to allow bighorn sheep and other wildlife some solitude during critical portions of the year.

Current Annual Bighorn Sheep Harvest: Because of improving bighorn sheep population trend monitoring data gathered on this herd from aerial surveys conducted each spring, a hunting season with one either-sex permit was reopened in 2006. One six-year-old ram has been harvested from the herd for each of the past two hunting seasons (Table 3). Two either-sex licenses were issued for the 2008 hunting season. Two rams, both scoring the minimum for entry into the Boone and Crockett records, were harvested from this population in 2008.

Additional either-sex licenses and possibly some ewe licenses will be recommended as the population approaches pre-decline numbers in spring aerial surveys.

Accomplishments: The Kootenai Falls bighorn sheep range has been incorporated into the Kootenai National Forest Integrated Land Use Plan as a big game winter range designation specific to bighorn sheep. Project activities such as logging and prescribed burning on national forest lands within the sheep range will be directed at enhancing bighorn sheep habitat. To date, some prescribed burning and helicopter logging have occurred on this sheep range. Habitat enhancement projects are coordinated with FWP. FWP purchased 172 acres of sheep habitat as a three-mile corridor along the north shore of the Kootenai River, which now comprises the Kootenai Falls WMA. Weed management activities, hayfield maintenance and some salvage timber harvest have occurred to improve forage production on this WMA.

Management Challenges: Habitat deterioration through fire suppression continues to be a problem on the Kootenai Falls bighorn sheep range. Compared with sheep habitats in other regions of the state, sheep ranges in northwest Montana are represented by heavily timbered shrub-dominated communities with very little grassland vegetation types available. Historically, wildfire prevailed on the landscape and maintained vegetation communities of ponderosa pine and bunchgrasses over much of the sheep range. With the advent of effective fire suppression by the USFS over the past 50 years, sheep forage such as bunchgrasses and certain shrubs are being replaced by Douglas fir trees through encroachment onto open foraging sites or under the ponderosa pine canopy. This has resulted in gradual habitat deterioration for bighorn sheep. Recent timber harvest and prescribed burning projects on this sheep range have provided some limited habitat enhancement for bighorns.

Disease issues related to contact between bighorns and domestic sheep has only recently become a problem for the Kootenai Falls bighorn sheep as residential development on the Bighorn Terrace Subdivision, immediately upstream from the Kootenai Falls WMA, has brought in hobby farmers with domestic goats. There are no grazing allotments for domestic sheep or other livestock anywhere near the Kootenai Falls herd. However, bighorns from this herd sometimes take excursions off the sheep range, especially during the rut, and may come in contact with domestic sheep on hobby farms scattered throughout the area. Because public use of the Kootenai Falls WMA continues to increase, future restrictions on human activities may be necessary to provide wildlife sanctuary.

Population Monitoring: Since 1979, annual helicopter surveys of the Kootenai Falls bighorn sheep population have been conducted during the spring grass green-up period in early to mid-April (Table 2). The heavily timbered nature of this sheep range provides considerable cover for sheep to avoid observation, and precludes total population counts during these short aerial surveys. A very simple mark-recapture sightability assessment was conducted on these sheep in the mid-1980s. Information from that trial indicated that we were able to see approximately 65-75% of the sheep on this sheep range during spring helicopter surveys. These surveys should continue as the primary population trend monitoring effort for these sheep.

Summary of Public Comment

The general public has been very supportive of this bighorn population and was involved in its recent augmentation. There is local support for maintaining hunter opportunities in relation to this herd.

Management Goal

Manage for a stable sheep population in a healthy condition consistent with available habitat on public land, with emphasis on maintaining some older age class rams in the population.

Habitat Objectives

Encourage improvement of habitat conditions on publicly owned (primarily USFS) winter ranges and other seasonal ranges so that vegetation conditions on these winter ranges provide adequate forage and security for bighorns and other wildlife.

Habitat Management Strategies

FWP will work cooperatively with the USFS to:

1) Increase consideration for sheep habitat productivity and sheep security needs in the planning of timber sales, transportation systems, and habitat enhancement projects within the sheep range.

2) Identify and map sheep winter ranges.

3) Manage limited winter range to accommodate the current sheep population.

4) Encourage the USFS to maintain open foraging areas on the sheep range through reductions in conifer encroachments onto previously open foraging areas.

Game Damage Strategies

Game damage by bighorn sheep is currently not an issue. As more homes are built on the Bighorn Terrace Subdivision, residents may become annoyed with sheep foraging on lawns and ornamental plants. Fencing around homes and plants will be recommended.

Access Strategies

Because most of the Kootenai Falls bighorn sheep range is located on national forest land and the FWP WMA, hunter access is generally not an issue. However, to ensure continued hunter access opportunities, FWP will:

1) Identify important points of access to public lands and provide recommendations for acquisition, maintenance, and development to the appropriate land management authority.

2) Continue to review USFS road management and travel planning efforts and provide input that encourages maintenance of sheep habitat security and current levels of hunter access.

Population Objectives

1) Maintain the number of bighorn sheep observed during early spring aerial surveys within 10% of 125 observed bighorn sheep (112 to 138).

2) Maintain a ram: 100 ewe ratio observed during post-season aerial surveys no greater than 50 rams: 100 ewes.

Population Management Strategies

Strategies to manage bighorn sheep populations are being based, in part, on how bighorn populations respond demographically within five ecological regions across Montana. Bighorn populations and therefore objectives for the various populations and subsequent monitoring programs vary across Montana and depend largely on the environment or ecological region where they occur. Hunting District 100 is located in the Northwest Montane ecological region (see discussion of ecological regions in Chapter 1) which includes much of northwest Montana. This bighorn population is relatively stable, is characterized as having moderate lamb production with good recruitment rates, is slightly below population objective, and has a relatively high ram to ewe ratio. Bighorn numbers are currently being managed to allow an increase in numbers while providing for a conservative harvest of the ram segment. The population objective of 125 (± 10%) observed bighorn sheep was derived by considering the ability of public lands to provide forage for wintering bighorn sheep.

Prescriptive Harvest Management

Ewes: Not applicable at this time.

Rams: Harvest will remain conservative with the number of either-sex licenses recommended equal to approximately 10% of the rams observed during aerial surveys.

URAL-TWEED
(Hunting District 101)

Description: The Koocanusa/Ural-Tweed herd of bighorn sheep (Hunting District 101) is located on the Rexford Ranger District of the Kootenai National Forest in the northwest portion of the Salish Mountains. It contains approximately 35 to 40 square miles of sheep habitat, all of which is managed by the U.S. Forest Service (USFS), with the exception of two small parcels of private land that total less than 100 acres. It is located along the east shore of Lake Koocanusa and is about 20 miles southwest of Eureka, Montana. It extends from approximately Pinkham Creek on the north to Fivemile Creek in the south. The habitat is characterized as being steep, rocky, and primarily forested, with a variety of forest types. Historically, sheep habitat extended to the valley floor along the Kootenai River. However, with the construction of Libby Dam and the creation of Lake Koocanusa in the 1970s, all of the bottomland habitat was lost, including approximately 4,350 acres of bighorn habitat. In addition, the suppression of natural fires for over 50 years allowed for the establishment of dense conifers on sites that had previously been dominated by bunchgrasses. The Bonneville Power Administration (BPA) has coordinated with FWP and the USFS to mitigate for habitat loss through the use of controlled burns and

logging in order to improve remaining habitat for sheep.

Public Access: Most of the access for this herd is provided by MT Highway 37, which parallels the east shore of Lake Koocanusa and runs the entire length of the sheep distribution. Several Forest Service roads also provide additional access; however, because of the terrain, most of the area is difficult to reach, even on foot. A few trails provide additional access to foot or horse travelers. Given the area is wholly managed by the USFS, foot traffic is not limited.

Bighorn Sheep Population: This herd and the Ten Lakes bighorn sheep herd (Hunting District 102) are native to northwest Montana and are of a different genotype than sheep found elsewhere in Montana. This genotype extends from Koocanusa northward to Golden, British Columbia, and is commonly referred to as "Trench" sheep in Canada, due to their presence within the Rocky Mountain Trench. This herd is native and not the result of transplants from other herds. Efforts have been made to augment this population with genetically similar sheep from the Ten Lakes herd and also from Canada. Results from these efforts have been poor, with only two sheep (one adult female and one male lamb) moved thus far. These sheep were part of the Ten Lakes herd and were moved in 2006. Five rams from the National Bison Range were released in this herd in 1963.

Efforts to increase this population and at the same time maintain its genetic integrity have been further compromised by the establishment of a herd of bighorn sheep at Libby Dam. This herd has its origins from a group of sheep that came from Kootenai Falls, which had its origins from sheep from the Sun River area. Sheep from this "splinter" group have been observed several miles north of Libby Dam on both sides of Lake Koocanusa. Rams from this small herd have not yet infiltrated the Ural-Tweed herd; however, it is only a matter of time before they do. While the introduction of new genetics from Kootenai Falls could increase the reproductive vigor for the Ural-Tweed herd, maintaining the genetic integrity of the "Trench" genotype would become a moot point.

The current number of sheep occupying Koocanusa is low, probably consisting of fewer than 30 sheep. In the mid-1960s, approximately 150 to 200 sheep occupied this area. By the late 1970s, the population had declined to only 20 to 25 animals. Bighorn numbers recovered to approximately 150 to 200 sheep by 1990, before beginning a second decline. In 1999, Hunting District 101 was closed to the hunting of all sheep due to drastically reduced populations and has not resumed since.

Efforts to monitor the population are difficult, due to the forested nature of the habitat. For example, during a three-hour helicopter flight of this area on April 28, 2008, to monitor sheep, mule deer, and elk, only two sheep were observed. As an alternative, significant emphasis has been placed on documenting sightings from the public and others who travel MT Highway 37 on a regular basis. This provides valuable information on group size and location. A compilation of sightings for 2007 and helicopter flights for 1995 to 2008 is contained in Tables 1 and 2, respectively.

Extensive efforts to increase the population of sheep along Koocanusa have included habitat manipulation and improvement in the form of burning, helicopter logging, and timber harvesting. To date, over 28,000 acres of habitat have been manipulated along Koocanusa in a direct effort to improve habitat for bighorn sheep and mule deer, at a cost to FWP of over $1.6 million. In addition, efforts were undertaken to reduce losses due to predation by directing lion hunters to this area, issuing season-long permits to lion hunters from 2002 to 2005 that were not subject to quotas. Efforts were also made to augment this herd with sheep from other areas with the Trench genotype. Due to concerns regarding Mad Cow Disease, the U.S. Department of Agriculture (USDA) halted the importation of all bovids from Canada in 2001. Although restrictions have been eased for cattle, it continues for sheep and goats. Two sheep were successfully moved from the Woods Ranch Wildlife Management Area (WMA) to Koocanusa in March 2006. Concerns regarding inbreeding depression while trying to maintain the genetic integrity of this herd continue to be an issue.

Recreation Provided: From 1990 to 1997, three ram: mits annually were issued for this area. In 1998 this was reduced to a single permit, and in 1999 sheep hunting in Hunting District 101 was discontinued. All permits issued for the 1990 to 1998 period (N = 25) were successfully filled. While no longer hunted, many motorists enjoy observing the occasional sheep while traveling between Libby and Eureka.

Current Annual Bighorn Sheep Harvest: None.

Accomplishments: In 1984, a joint project between FWP, the USFS, and the BPA was

1/22/07	Brad Flickinger saw three rams by Peck Gulch; also several ewes and lambs.
1/23/07	Jerry Brown (FWP Biologist) saw four rams on Horse Range (below Libby Dam) and had reports of people seeing sheep in Dunn Creek, Souse Gulch, and on Hornet Ridge.
1/23/07	Ron Hvizdak saw 10 sheep by Tweed Creek last week.
1/24/07	Jim Roberts (Game Warden) saw about 10 sheep by Stone Hill, which included a ½-curl ram.
2/05/07	Jim Roberts saw 13 sheep at 36 MM (Sheep Creek), which included: four rams, nine ewes and zero lambs.
2/27/07	Jay DeShazer saw four ewes, zero lambs by Rocky Gorge; one ewe with collar.
3/01/07	Jay DeShazer saw four rams by McGuire Creek; two were full-curl and two were ¾-curl.
3/05/07	Brad Flickinger saw three ewes by Rocky Gorge; one had collar.
3/05/07	Jerry Brown saw two ewes, one lamb, and one small ram by Allen Gulch; one ewe had collar.
4/09/07	Jim Williams (Eureka) saw two large rams on east side of Libby Dam.
4/18/07	Arlie Burk saw a single ewe by McGuire Creek.
11/05/07	Jay DeShazer saw three rams, three ewes, and two lambs by Allen Gulch; one ram nearly full-curl and two were ½-curl.
11/19/07	Jim Roberts said Bob DeShazer reported seeing two rams (¾-curl) on the west side of Koocanusa by Cliff Point in Gold Creek on the FDR road
11/20/07	Jim Roberts saw three ewes by Allen Gulch, none collared.
11/23/07	Nathan Alberton reported seeing a single ¾-curl ram two miles south of Koocanusa Bridge.
11/26/07	Jim Roberts said that Chuck Barker (Rexford) reported seeing approximately two-dozen sheep near Stone Hill.
12/18/07	Jim Roberts saw a single ¾-curl ram between Fivemile and Tenmile Creeks on Highway 37.

Table 1. Reported bighorn sheep sightings along Koocanusa during 2007.

initiated with the express purpose to improve the habitat along Lake Koocanusa for the betterment of bighorn sheep and mule deer. To date, over 28,000 acres have been treated and re-treated with various silvicultural prescriptions and fire to encourage grass and shrub growth. In 1984, FWP initiated a study of bighorn sheep along Koocanusa to better determine their status, trend, and use of habitat. A total of 54 bighorn sheep were captured and marked between 1984 and 1993. Study results were published (Stansberry 1996).

Efforts at importing sheep from Canada to augment Koocanusa have thus far been unsuccessful. Contacts were first made with British Columbia authorities approximately eight years ago, and a potential source of sheep was identified. However, in 2001, before final preparations could be made, the USDA closed the border to the importation of all bovids. Two sheep (one adult ewe and one male lamb) were transplanted to Koocanusa from the Ten Lakes herd in 2006. The ewe still resides there, though FWP has not verified that she has reproduced. The male lamb was struck and killed by a vehicle in February 2008.

Management Challenges: The primary challenge facing this herd is increasing the population to healthy and huntable levels, while at the same time maintaining the genetic integrity of the Trench genotype. This is especially difficult given the apparent influx of Sun River genes from the south. One option would be to forego concerns about maintaining the Trench genotype and simply augment the herd with sheep from elsewhere in Montana. While this could increase reproductive rates

Table 2. Helicopter flights for bighorn sheep near Koocanusa, Hunting District 101, 1995-2008.

Date	Total	Ewes	Lambs	Rams
4/05/95	29	14	4	11
12/12/96	3	2	0	1
3/27/97	9	8	1	0
5/31/97	21	17	1	3
4/24/98	6	5	0	1
5/20/98	7	5	1	1
8/27/99	0	---	---	---
1/15/00	0	---	---	---
4/24/01	9	8	1	0
2002	No Survey	---	---	---
4/07/03	11	9	2	0
2004	No Survey	---	---	---
4/12/05	9	4	1	4
2006	No Survey	---	---	---
2/03/07	0	---	---	---
4/28/08	2	0	0	2

and herd size, it would also put the Trench genotype in the Ten Lakes herd (Hunting District 102) and populations to the north in Canada at greater risk of genetic contamination. The northern distribution of the Koocanusa herd is within 15 miles of the Ten Lakes herd. It is certainly conceivable that a number of transplanted individuals could splinter off and establish themselves in the Ten Lakes area.

The ultimate solution to building herd numbers in the Koocanusa area and maintaining genetic integrity probably lies in the augmentation of a significant number of sheep from Canada. By doing so, genes from animals infiltrating from the south by Libby Dam would be diluted or "swamped." The USDA can and should be pressured to reexamine its policy prohibiting the importation of goats and sheep (wild and domestic) from Canada, followed by renewed discussions with Canadian wildlife authorities.

While sheep of the Trench genotype can be captured on the Woods Ranch WMA and moved to Koocanusa, that also has special challenges. Given its proximity to the B.C. border and the fact that most sheep on the WMA winter within 1 mile of the border, sheep immediately run across the border to the north when approached by a helicopter. This makes the capture of an adequate number of sheep by the use of net-guns difficult. A similar problem was experienced in 2005 and 2006 when FWP tried to dart sheep from the ground. When spooked, they immediately ran across the border. Since this herd is shared with Canada and currently numbers about 100 animals, care should be taken not to remove too many at any one time for augmentation purposes.

Population Monitoring: Periodic helicopter surveys of this herd should continue, although, given the number of sheep observed, it is very expensive. The compilation of reported sightings by the public and others is probably the most useful at this time. Further consideration should be given to the capture and radio-marking of a number of sheep from the Koocanusa/Ural-Tweed herd to better determine total numbers and distribution.

Summary of Public Comment

Public comments related to the bighorn sheep population and its management in this hunting district have not been solicited, but it is anticipated that support would be high.

Management Goal

Manage for a healthy and productive bighorn sheep population of the Trench genotype with a diverse age structure of rams, at numbers adequate to support the harvest of at least three mature rams annually.

Habitat Objectives

1) Continue cooperative programs with the BPA and other partners and USFS land managers to maintain at least 23,000 acres of quality, occupied bighorn sheep habitat.
2) Encourage continued improvement of habitat conditions so that adequate forage for bighorns and other wildlife is provided during the winter.

3) Create safe movement corridors across MT Highway 37 to link bighorn sheep habitats above and below the highway.

Habitat Management Strategies

1) Continue cooperation with the USFS in identifying areas in need of treatment and implementing those treatments.

2) Cooperate with Montana Department of Highways to identify areas of major sheep use and the locations of most vehicle/sheep collisions. Identify what actions might be taken to reduce the number of sheep killed by vehicles.

Game Damage Strategies

Game damage is not an issue, nor will it be an issue in the foreseeable future.

Access Strategies

Access is not an issue, nor will it be an issue in the foreseeable future.

Population Objectives

1) Increase numbers to a minimum of 150 sheep.

2) Maintain a diverse age structure of the Trench genotype.

Population Management Strategies

1) Hunting of the population is not an issue at this time, nor will it be in the foreseeable future.

2) Augment the Ural-Tweed herd with individuals of the Trench genotype to increase genetic vigor and minimize genetic influx from the Kootenai Falls herd.

3) Consider implementing a bighorn sheep harvest on both sides of Libby Dam to minimize infiltration of Sun River genetics into the Trench genotype.

GALTON RANGE
(Hunting District 102)

Description: The Ten Lakes herd of bighorn sheep (Hunting District 102) is located primarily on the Fortine Ranger District of the Kootenai National Forest. The herd is about six miles northeast of Eureka in the Galton Mountains and is shared with British Columbia. It may be the only hunted sheep herd in the continental United States that is shared with Canada. In Canada, it is referred to as the Phillips Creek herd in honor of a drainage just north of the border. It contains about 30 square miles of sheep habitat in Montana, with an approximately equal-sized area in British Columbia. The northern distribution of this herd in Canada is loosely defined, as individuals occasionally intermingle with another herd to the north.

Most of the habitat in Montana is managed by the U.S. Forest Service (USFS) and occurs within the Ten Lakes Scenic Area. FWP's Woods Ranch Wildlife Management Area (WMA) contains a majority of the herd's winter range within Montana. With the exception of a couple of small, remote mining claims and a few acres in the extreme western portion of the winter range, none of the occupied sheep habitat normally encompasses private land in Montana at this time.

Public Access: Access to this herd is good, with most access provided by driving up Forest Service Road 114 (Grave Creek) to the Ten Lakes Scenic Area. The public also has access to the Woods Ranch WMA from May 15 to November 30. Other approaches include hiking trails up Blacktail Creek and Therriault Pass. A third trail up Indian Creek begins on private land; users must obtain permission.

Bighorn Sheep Population: This herd and the Koocanusa/Ural-Tweed herd are native to northwest Montana and are of a different genotype than sheep found elsewhere in Montana. This genotype extends from Koocanusa northward to Golden, British

Columbia, and is commonly referred to as "Trench" sheep in Canada, due to their presence within the Rocky Mountain Trench. Because this herd is native and not the result of transplants from the Sun River area, like other FWP Region 1 herds, efforts were made from 2004 to 2006 to move several sheep from the Woods Ranch WMA to augment sheep along Koocanusa. Results from these efforts were poor, with only two sheep (one adult female and one male lamb) successfully moved.

Unlike the Ural-Tweed herd near Lake Koocanusa, the Ten Lakes herd is doing fairly well and currently is estimated at about 100 sheep based on actual observation of 61 animals in dense habitat where observation of sheep is difficult. It has shown signs of increased growth in recent years, which includes increasing amounts of use of the Woods Ranch WMA during the winter and spring months.

Some of the earliest reliable work on the Ten Lakes herd was conducted as part of a M.S. thesis through the University of Montana (Johnsen 1993). At that time, the total population occupying both sides of the border was estimated at 82 individuals. While sheep lambing was documented in the Ten Lakes Scenic Area, wintering by bighorn sheep in Montana was not observed.

Monitoring of the herd is difficult because of the forested nature of the habitat and the presence of an international boundary through the center of their distribution. Most monitoring flights have been in conjunction with efforts to monitor other species such as mule deer and black bears. Population trend and summary of all data on helicopter flights is contained in Figure 1 and Table 1, respectively. Nearly all flights occurring December through May were on the Woods Ranch WMA, with the exception of the April 6, 1996 flight. Nearly all flights June through October were in the Ten Lakes Scenic Area, with the exception of the August 30, 1999 flight. Results of ground observations, which were mostly made on the Woods Ranch WMA, are contained in Table 2. Not included in either of these two data sets are reports from the public, which in recent years have numbered as many as 90 animals reportedly observed on the WMA by a single observer.

Recreation Provided: From 1994 to the present, a single either-sex permit has been offered annually to bighorn sheep hunters for Hunting District 102. During this 14-year period, hunters shot nine adult rams. B.C. authorities annually offer two permits for full-curl rams for this same herd, although they average taking less than one per year. Montana hunters have occasionally reported difficulty finding mature rams, primarily because they were probably on the B.C. side of their distribution during the hunting period. However, this seems to have been less of an issue in recent years. The fact that this is the only permit offered for this unique, native herd adds to the enjoyment and appreciation of most hunters.

In addition to hunting, many people enjoy seeing bighorn sheep in the Ten Lakes Scenic Area while hiking, and also when the sheep are on their winter range. During winter, they can be observed with spotting scopes from vantage points on the west side of U.S. Highway 93.

The uniqueness of this population is further exemplified in a book published in 1901 by Ernest Thompson Seton entitled *Lives of the*

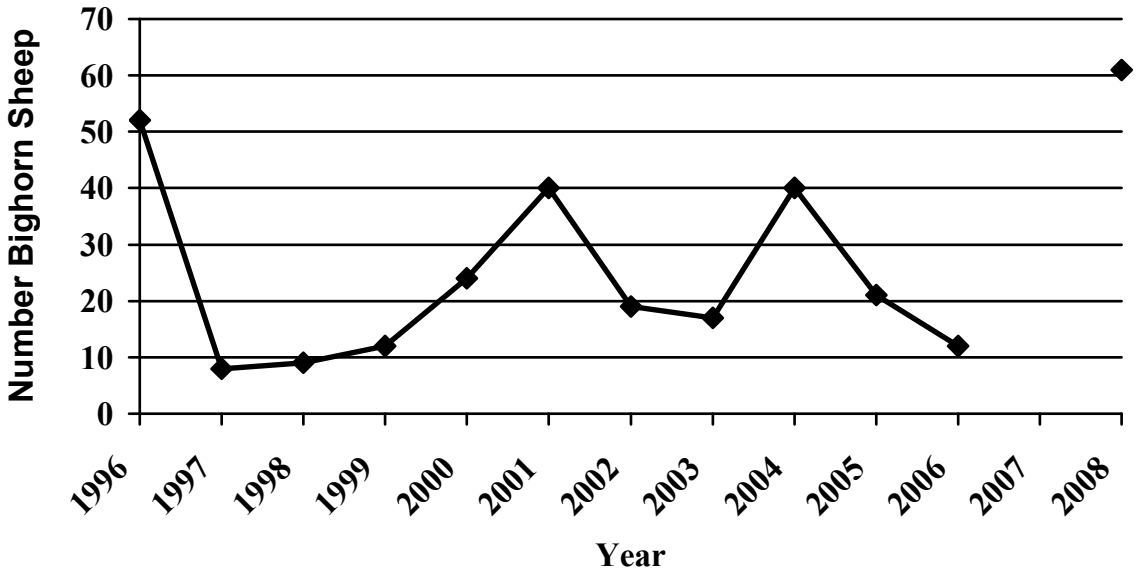

Figure 1. Total number of bighorn sheep observed during aerial trend surveys in the Ten Lakes population, Hunting District 102, 1996-2008.

Date	Total	Ewes	Lambs	Rams	Uncl.	Lambs/100 Ewes
4/6/96	52	28	8	16	0	29
5/1/97	8	7	1	0	0	---
4/23/98	16	12	3	1	0	23
5/20/98	9	8	1	0	0	---
12/18/98	0	0	0	0	0	---
8/30/99	28	16	6	3	3	37
5/5/99	12	8	4	0	0	---
4/8/00	24	18	5	1	0	28
8/31/00	10	6	3	1	0	---
12/19/00	7	3	1	3	0	---
4/24/01	40	26	9	5	0	35
8/30/01	11	9	2	0	0	---
4/17/02	19	14	3	2	0	21
8/30/02	27	17	8	2	0	47
4/21/03	17	---	---	---	17	---
4/22/04	40	---	---	---	40	---
8/31/04	22	14	5	3	0	36
4/11/05	21	---	---	---	21	---
8/27/05	19	7	3	9	0	---
4/20/06	12	8	4	0	0	---
9/08/06	17	4	3	9	0	---
10/03/06	11	7	3	1	0	---
4/28/08	61	36	13	12	0	36

Table 1. Helicopter flights for bighorn sheep in the Ten Lakes population, Hunting District 102, 1996-2008.

Hunted. In a story titled "Krag, the Kootenay Ram," Seton details his extraordinary efforts in hunting a large ram that lived in this area. Krag Peak and Mount Thompson-Seton in this area were named after the author and his subject.

Current Annual Bighorn Sheep Harvest: See above.

Accomplishments: In 1982, the U.S. Army Corp of Engineers acquired the 1,514-acre Woods Ranch as partial mitigation for the construction of Libby Dam and the creation of Lake Koocanusa. Although not used by bighorn sheep at the time of acquisition, it has now become an area of critical importance for wintering bighorns. Managed primarily for the benefit of wintering ungulates and Columbian sharp-tailed grouse, it has an active grazing program that utilizes domestic cattle to improve forage quality under a rest-rotation basis.

In 2007, FWP purchased a 17-acre tract of private land that was essentially an inholding on the western portion of the WMA. It is bordered by the WMA on three sides and contains some of the best escape habitat for bighorn sheep in the area. It was purchased at a cost of $145,000 with money derived from the auction of sheep licenses.

In addition to using grazing to improve habitat, in 2004 FWP coordinated with the Rocky Mountain Elk Foundation and the

Table 2. Ground observations of bighorn sheep in the Ten Lakes population, Hunting District 102, 1997-2008.

Date	Total	Ewes	Lambs	Rams	Uncl.	Lambs/100 Ewes
3/20/97	19	---	---	---	19	---
3/31/98	4	---	---	---	4	---
4/10/98	3	---	---	---	3	---
4/2/99	15	8	6	1	0	---
4/30/99	24	---	---	---	24	---
3/10/00	25	19	6	0	0	32
3/15/00	17	12	4	1	0	33
6/22/00	15	6	6	1	0	---
4/6/02	20	3	3	14	0	---
3/20/03	16	9	3	4	0	---
3/12/04	20	5	1	14	0	---
3/30/04	28	21	5	3	0	24
4/05/05	45	18	8	19	0	44
5/08/07	15	10	4	1	0	40
4/13/07	13	12	1	0	0	8
2/4/08	65	---	---	---	65	---
2/8/08	21	5	2	14	0	---

USFS in burning of approximately 130 acres on the Woods Ranch WMA in an effort to further improve forage conditions for wintering ungulates.

In 2005, FWP contributed $8,600 to cover some of the costs associated with a conservation easement on 719 acres of property owned by Dave and Priscilla French. This easement was through the Montana Land Reliance and protects property that abuts land managed by the USFS directly adjacent to occupied sheep habitat. Protection of this property further reduces the potential of diseases being spread from domestic sheep to wild bighorns.

In 1993, Steve Johnsen published his MS thesis titled "Evaluation of Bighorn Sheep in the Ten Lakes Scenic Area." In it, Johnsen provides detailed information on bighorn habitat use and movements of a population for which very little was known previously. This study was partially funded by FWP.

Management Challenges: The primary challenges facing this herd are maintaining the genetic integrity of the Trench genotype and protecting it from diseases associated with domestic sheep. Conversion of the sheep range along Koocanusa from its current Trench genotype to one with Sun River origins would increase the risk of contamination of the Ten Lakes herd, should transplanted individuals find their way to the northeast. That is why continued efforts should be made to augment the Koocanusa/Ural-Tweed herd with sheep of the Trench genotype from the Woods Ranch WMA and British Columbia.

Several small, private herds of domestic sheep are known to reside quite close to the Ten Lakes herd. One herd of domestic sheep occurred at the base of the winter range just north of the border. B.C. authorities were notified of the situation several years ago, and they visited with the owner about the dangers the sheep presented. Although the owner's initial reaction was negative, the sheep were eventually removed. Two individuals are known to have domestic sheep dangerously close to the Ten Lakes herd in Montana. Both have been briefed on the dangers their sheep present and have been asked to sell their sheep. To date, they have not done so. They have also been asked to immediately report any wild sheep found mingling with their sheep, should it ever occur. (If so, the wild sheep would be immediately destroyed.) Informal plans are also in place to kill any domestic sheep found unattended on public lands that might pose a threat to the Ten Lakes herd.

The fact that this herd is shared with Canada could potentially present some management challenges, primarily in the form of population monitoring, hunting seasons, and transplant efforts from this area to Koocanusa. In recent years, helicopter and airplane flights over the border have come under much more scrutiny by border authorities than they did six years ago. However, wildlife authorities in Cranbrook have provided excellent cooperation, and we frequently share flight data and other items of interest.

Population Monitoring: Current monitoring efforts should continue, which include annual spring flights for sheep and mule deer while sheep are still on the WMA, and also ground observations. The sharing of monitoring information should continue with wildlife authorities in British Columbia. Post-lambing flights in late August and early September were done in conjunction with black bear flights. Due to funding constraints, these have been discontinued.

Summary of Public Comment
Public comments related to the bighorn sheep population and its management in this hunting district have not been solicited, but it is anticipated that support would be high.

Management Goal
Manage for a healthy and productive bighorn sheep population of the Trench genotype with a diverse age structure of rams, at numbers adequate to support the harvest of at least three mature rams annually (combined) for U.S. and Canadian hunters.

Habitat Objectives

1) Continue cooperative programs with USFS land managers and others to maintain at least 20,000 acres of quality, occupied bighorn sheep habitat.

2) Work with domestic sheep and goat owners to eliminate the potential for contact with wild sheep.

3) Maintain a high level of habitat quality on the winter range on the Woods Ranch WMA.

Habitat Management Strategies

1) Cooperation with the USFS in identifying areas in need of treatment and implementing those treatments.

2) Renew discussions with owners of domestic sheep regarding the permanent disposition of their sheep. Initiate discussions with the Montana Wild Sheep Foundation and other organizations regarding cooperative double fencing of domestic sheep to prevent nose-to-nose contact with wild sheep.

3) Continue an aggressive weed control program on the Woods Ranch WMA, the rest-rotation grazing agreement, and the seasonal closure to protect wintering animals.

4) Continue to cooperate with land trust organizations to protect private land that borders USFS lands adjacent to occupied sheep habitat.

Game Damage Strategies
Game damage is not an issue, nor will it be an issue in the foreseeable future.

Access Strategies
Access is not an issue, nor will it be an issue in the foreseeable future.

Population Objectives

1) Increase numbers to a minimum of 150 sheep occupying both sides of the border.

2) Maintain a diverse age structure of the Trench genotype.

Population Management Strategies

1) Relieve population pressures by using the Ten Lakes herd as a source population for augmenting sheep along Koocanusa and initiating a new herd on Teakettle Mountain near Columbia Falls.

2) Continue communications with B.C. authorities in management of this shared herd.

Prescriptive Harvest Management

Ewes: Not applicable at this time.

Rams: Harvest will remain conservative with the number of either-sex licenses recommended equal to approximately 10% of the rams observed during aerial surveys.

NORTH CLARK FORK
(Thompson Falls)
(Hunting District 121)

Description: The Thompson Falls bighorn sheep herd occupies approximately 140 square miles along the Clark Fork River Valley, generally between the towns of Thompson Falls and Plains, Montana. The core sheep range, which occupies about 90 square miles, is located from Weeksville Creek west to the Thompson River, up both sides of the Thompson River north to Liver Ridge, Honeymoon Creek across the West Fork of the Thompson River onto Sundance Ridge, then east of the Thompson River to Big Hole Peak and down Spring Creek back to Weeksville Creek. The habitat generally consists of steep, rugged cliff and timbered forest terrain with scattered openings.

There are occasional small groups of sheep found as far north as Jungle/Fishtrap Creek up the Thompson River and as far west as Graves Creek. Bighorns have recently been observed in the rocky cliffs east of Weeksville Creek.

Approximately 90% of the habitat is located on land managed by the Lolo National Forest. The remaining 10% consists of land owned and managed by FWP as wildlife management areas and individual small private landowners along with a small percentage of Plum Creek Timber Company property.

Bighorn sheep in the Thompson Falls herd have a very limited migration that consists mostly of an elevational migration to higher, timbered habitat during the summer months. This migration typically takes place around the end of April through the middle of May and reverses back to lower winter habitat during October.

Public Access: Roads currently provide reasonable vehicle access to most of the lower elevations within the area inhabited by bighorn sheep. Access to higher-elevation habitat is limited to nonmotorized travel by trails or restricted-access Forest Service roads. Some private landowners restrict access across their lands during hunting season. There are two wildlife management areas, Mount Silcox and Roundhorn, and the Bighorn Sheep Viewing Site, which are managed by FWP and provide public access during the summer and fall seasons.

Bighorn Sheep Population: Sheep were reintroduced into the area in 1959 with transplants of 13 sheep (five rams and eight ewes) from the Sun River herd and six bighorns (one ram and five ewes) from Wildhorse Island. By 1974, the herd had grown to 240 animals. The population continued to grow to an estimated 550 to 600 sheep in the early 1980s. Based on the 2008 survey, the total population is estimated to be around 300 to 325 animals (Figure 1).

Since 1981, spring helicopter classification surveys of bighorn sheep have been conducted

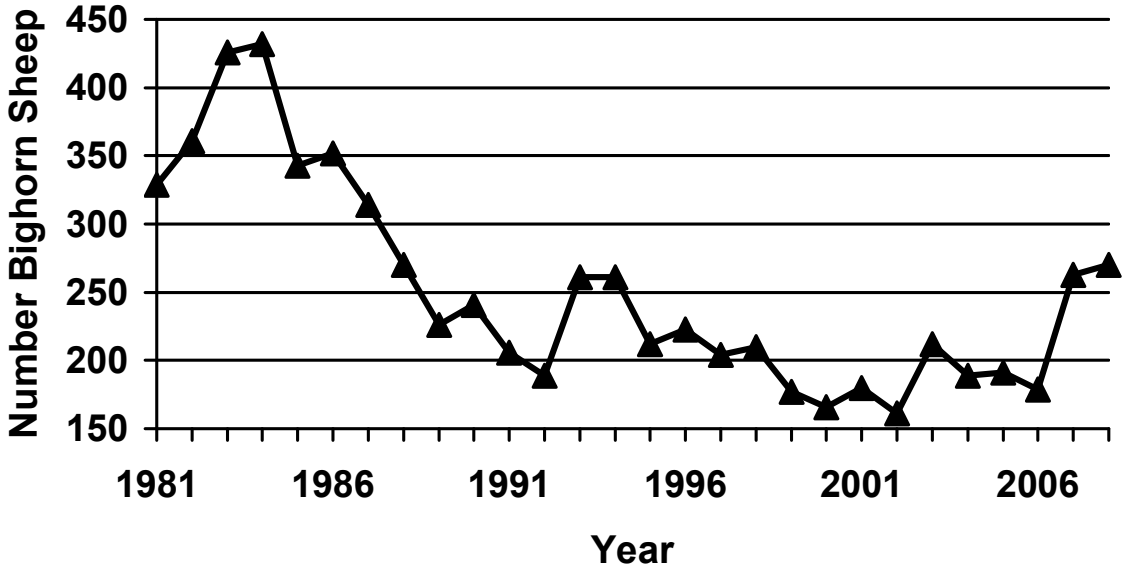

Figure 1. Total number of bighorn sheep observed during aerial trend surveys in the Thompson Falls, Hunting District 121, 1981-2008.

Year	Ewes	Lambs	Rams	Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1981	109	55	75	90	329	50	69
1982	155	79	66	61	361	51	43
1983	114	45	60	207	426	39	53
1984	76	57	99	200	432	75	130
1985	106	55	135	47	343	52	127
1986	145	80	105	22	352	55	72
1987	106	63	97	48	314	59	92
1988	91	53	91	35	270	58	100
1989	110	46	70	0	226	42	64
1990	120	48	63	10	241	40	53
1991	85	32	54	35	206	38	64
1992	110	49	30	0	189	45	27
1993	126	50	50	35	261	40	40
1994	141	52	68	0	261	37	48
1995	117	38	55	2	212	32	47
1996	99	44	56	24	223	44	57
1997	107	36	49	12	204	34	46
1998	117	36	55	2	210	31	47
1999	89	34	54	0	177	38	61
2000	75	28	63	0	166	37	84
2001	83	41	56	0	180	49	68
2002	83	40	38	0	161	48	46
2003	110	62	40	0	212	56	36
2004	99	37	42	0	189	37	42
2005	112	41	36	2	191	37	32
2006	83	32	39	25	179	39	47
2007	106	47	63	47	263	44	59
2008	106	31	80	53	270	29	76

Table 1. Classification surveys for the Thompson Falls population, Hunting District 121, 1981-2008.

in Hunting District 121 (Table 1). The total number of sheep observed has varied from 161 to 432 with lamb: ewe and ram: ewe ratios ranging from 29:100 to 75:100 and 27:100 to 130:100, respectively.

Recreation Provided: The Thompson Falls bighorn sheep herd has provided numerous hunter days for hundreds of sportsmen and women with a unique hunting opportunity. This population has offered legal hunting of sheep since 1968 when five permits for adult rams were issued. A small number of half-curl ram licenses were initiated in 1985 and discontinued in 1991. Ewe-only licenses were introduced in the early 1980s and provided hunters with the opportunity to harvest ewe sheep up to the year 2000 when, because of a declining sheep population, they were eliminated. Table 2 shows the number of licenses issued, success rate, harvest, and hunter days since 1986.

In addition to hunting recreation, the Thompson Falls bighorn sheep herd is one of the most highly watchable herds in the state. With MT Highway 200 running the length of the southern boundary, sheep provide tourists and locals with a tremendous amount of viewing and photography opportunities. The highly popular sheep-viewing site is located about seven to eight miles east of Thompson Falls and provides an ideal area to pull off and view sheep in their natural setting. Also available are

Table 2. Number and types of licenses and resulting harvest for bighorn sheep in the Thompson Falls population, Hunting District 121, 1986-2006.

	Number Licenses		Total	%				Hunter
Year	Ram, 1/2 Curl, Ewe	Hunters	Harvest	Success	Rams	1/2 Curl	Ewes	Days
1986	15,15,60	84	74	88	14	14	46	427
1987	15,15,40	67	55	82	15	11	29	274
1988	15,15,20	47	35	74	14	9	12	341
1989	15,15,20	49	41	84	15	9	17	188
1990	15,5,20	38	34	89	15	4	15	178
1991	14,0,5	19	19	100	14	0	5	150
1992	10,0,8	18	16	89	10	0	6	102
1993	13,0,5	11	11	100	7	0	4	85
1994	7,0,5	27	27	100	7	0	20	142
1995	7,0,20	26	22	85	7	0	15	108
1996	8,0,20	26	24	92	8	0	16	151
1997	8,0,20	23	23	100	8	0	15	133
1998	9,0,15	22	21	95	9	0	12	124
1999	9,0,10	18	17	94	8	0	9	103
2000	9,0,0	9	9	100	9	0	0	99
2001	9,0,0	9	9	100	9	0	0	46
2002	9,0,0	9	9	100	9	0	0	122
2003	9,0,0	9	9	100	9	0	0	119
2004	9,0,0	9	9	100	9	0	0	87
2005	9,0,0	9	9	100	9	0	0	94
2006	10,0,0	10	10	100	10	0	0	91

several displays and informational signs that describe sheep behavior, horn growth, habitat, and nutritional requirements. Two wildlife management areas, Roundhorn and Mount Silcox, and the Bighorn Sheep Viewing Site, are located along the highway and provide visitors an opportunity to hike or mountain bike into sheep habitat and possible additional wildlife viewing areas. These WMAs provide big game winter range and are closed to the public from December 1 through May 15 of each year. Increasing public demands on the WMAs may require additional restrictions on public use of the area to allow bighorn sheep and other wildlife some solitude during critical portions of the year.

Current Annual Bighorn Sheep Harvest: Since 1998, nine or ten either-sex licenses have been issued annually for sheep in the Thompson Falls herd. Additionally, five ewe-only licenses were initiated for the 2008 hunting season. Table 2 shows the harvest record since 1986. The Thompson Falls herd is one of the top hunting districts in the state for producing trophy class rams (Table 3). Hunter success continues to be excellent with 90-100% success for adult rams. The success rate for ewe harvest is expected to be between 75-100%.

Accomplishments: Some small-scale prescribed burning projects on national forest lands within the sheep range have been directed at enhancing bighorn sheep habitat. USFS habitat enhancement projects are coordinated with FWP. Efforts to continue these types of enhancement projects will continue on the Lolo National Forest. FWP has purchased the 1,552-acre Mount Silcox WMA, the 50-acre Sheep Viewing Site, and the 27-acre Roundhorn WMA. All three areas provide critical habitat needs for the Thompson Falls bighorn sheep herd while providing access to adjacent national forest lands. Weed management activities, hayfield maintenance, and some small salvage timber harvest projects have occurred on the three WMAs to improve forage production for bighorn sheep and other wildlife.

		Horn Length		Base Circumference		Harvest
HD	Age	Right	Left	Right	Left	Date
2006						
121	4 1/2	33 1/8	33 1/4	16	16	11/19/2006
	6 1/2	**39 3/4**	**39 7/8**	**15 3/4**	**15 3/4**	**9/25/2006**
	6 1/2	**41**	**39 1/4**	**16 1/8**	**16 1/4**	**10/18/2006**
	6 1/2	33 1/2	34	15 1/4	15 1/4	11/11/2006
	7 1/2	**41 3/4**	**41 1/8**	**15 1/4**	**15 3/8**	**11/4/2006**
	7 1/2	37	36 1/4	14 1/4	14 3/8	11/18/2006
	7 1/2	37	39 1/2	15 1/4	15 1/4	11/2/2006
	8 1/2	38 1/4	38 1/2	15 1/4	15 1/2	11/18/2006
	9 1/2	38	35 1/2	14 1/2	14 3/4	11/17/2006
	9 1/2	**38**	**39**	**16**	**16**	**10/28/2006**
Avg.	7.4					
2007						
121	6 1/2	33 3/4	34 7/8	14 1/2	14 1/2	10/27/2007
	7 1/2	34 3/4	37 1/4	15 1/2	15 1/2	9/15/2007
	7 1/2	**41 1/4**	**40 1/2**	**16**	**16**	**10/25/2007**
	7 1/2	**38**	**38 3/4**	**16 3/8**	**16 1/2**	**11/5/2007**
	7 1/2	37	37 3/8	16	16 3/8	11/6/2007
	7 1/2	**40**	**41**	**16 1/2**	**16 1/2**	**11/13/2007**
	8 1/2	**41 7/8**	**41 1/2**	**15 3/4**	**15 5/8**	**10/31/2007**
	8 1/2	**39 1/2**	**38 1/8**	**15 7/8**	**15 3/4**	**11/15/2007**
	8 1/2	35 3/8	36 3/4	14 3/8	14 3/8	11/17/2007
	8 1/2	37 1/8	39 1/8	15 3/8	15 3/8	11/19/2007
Avg.	7.8					
	Bold = Estimated minimum Boone and Crockett score of at least 180 points.					

Table 3. Horn measurements, age, and harvest dates for bighorn rams, Hunting District 121, 2006-2007.

Management Challenges: Sheep mortalities from vehicles traveling on MT Highway 200 are the number one challenge facing managers responsible for the Thompson Falls sheep herd. Since 1985, a total of 389 sheep have been documented as killed from collisions with either trains or vehicles (Table 4). The largest mortality, 86%, is from vehicles, with most of those occurring on two one-mile-long sections of highway between Weeksville Creek and the Thompson River. These sections are marked with warning signs and yellow flashing lights; in addition, four newly installed reader boards, with a message alerting drivers to potential hazards ahead, have been in use on the two worst sections. Unfortunately, drivers continue to pay little attention to the message and drive inattentive to their surroundings; 2008 was the worst mortality year on record.

Sheep are attracted to the highway in the winter because of a salt-based liquid deicer that is applied to clear the surface of ice and snow and provide better traction during winter travel. During the spring, sheep congregate adjacent to the highway because of the freshly sprouted green vegetation. Sheep can be found on or along the highway from November through May of each year. Scheduled realignment of the highway may provide some relief by increasing the sight distance around existing curves. FWP will continue to work with the Montana Department of Transportation to find a non-salt-based deicer, educate and notify the public of the existing danger, and possibly look into

Table 4. Recorded bighorn sheep mortality by trains and vehicles for the Thompson Falls population, Hunting District 121, 1985-2008.

Year	Ewes	Lambs	Rams	Unknown	Total
1985	2		2		4
1986			1		1
1987	4	1	1		6
1988	1			3	4
1989	4	3		4	11
1990	7	1	5	1	14
1991	16	11	7		34
1992	14	4	6	1	25
1993	14	2	7		23
1994	15	3	6		24
1995	6	4	1		11
1996	8	3	2		13
1997	10	3	5		18
1998	16	4	4		24
1999	7	7	4		18
2000	10	5	5		20
2001	3			1	4
2002	6	2	3	2	13
2003	11	2	2		15
2004	6	2	8	4	20
2005	6	1			7
2006	14	9	4		27
2007	9	2	4		15
2008	21	7	8	2	38
Total	210	76	85	18	389
Avg.	8.8	3.2	3.5		16.2

reducing the speed limit in the sections that receive the most mortality.

Habitat deterioration through fire suppression continues to be a problem on the Thompson Falls bighorn sheep range. Compared with sheep habitats in other regions of the state, sheep ranges in northwest Montana are represented by heavily timbered shrub-dominated communities with very little grassland vegetation types available. Historically, wildfire prevailed on the landscape and maintained fire-based vegetation communities of ponderosa pine and bunchgrasses over much of the sheep range. With the advent of effective fire suppression by the USFS over the past 50 years, sheep forage such as bunchgrasses and certain shrubs are being replaced by Douglas fir trees through encroachment onto open foraging sites or under the ponderosa pine canopy. This has resulted in gradual habitat deterioration for bighorn sheep.

Disease issues related to contact between bighorns and domestic sheep is not an apparent problem for the Thompson Falls bighorn sheep. There are no grazing allotments for domestic sheep or other livestock anywhere near this herd. However, bighorns from the Thompson Falls herd sometimes take excursions off the sheep range, especially during the rut, and may come in contact with domestic sheep or goats on hobby farms scattered throughout the area.

Noxious weed infestation by species such as spotted knapweed, St. John's Wort, leafy spurge, Dalmatian toadflax, and other weeds continue to expand on sheep winter and spring habitat. These weeds are costly to control and continue to choke out native forage for bighorn sheep. Efforts to control these and other noxious weeds

are ongoing on the three properties that FWP has purchased. Methods currently in use include hand-pulling, biological control, and herbicide spraying. Control of noxious weeds on other public and private lands is very limited.

Population Monitoring: Annual helicopter surveys of the Thompson Falls bighorn sheep population have been conducted since 1981. These surveys are completed during the spring grass green-up period in early to mid-April (Table 1). Surveys are done to count and classify ewes, lambs, and rams. Rams are further classified into three categories: yearling rams, sub-adult rams (typically three- to five-year-olds) and adult rams (six years of age and older). The heavily timbered nature of this sheep range provides considerable cover for sheep to avoid observation, and precludes total population counts during these short aerial surveys. A very simple mark-recapture sightability assessment was conducted on a population of sheep north of Thompson Falls in the mid-1980s. Information from that trial indicated that spring helicopter surveys were able to detect approximately 65-75% of the sheep on the range. These surveys should continue as the primary population trend monitoring effort for these sheep.

Summary of Public Comment

Public comments related to the bighorn sheep population and its management in this hunting district indicates a high level of support for FWP's management direction. Both hunters and non-hunters enjoy viewing bighorn sheep in this area.

Management Goal

The Thompson Falls bighorn sheep herd is managed to maintain a limited-entry hunt that offers a relatively large number of permits while maintaining a tradition of producing trophy class rams. The goal is to keep sheep population numbers consistent with available habitat and within the limits of social and landowner tolerance while maintaining a healthy population. Presently this level is at a spring observed population of between 225 to 275 sheep.

Habitat Objectives

Encourage the continued improvement of year-round habitat and control of noxious weeds so that both the quantity and quality of bighorn sheep forage is increased.

Habitat Management Strategies

Continue cooperation with the USFS in identifying areas in need of prescribed burning and noxious weed spraying.

Game Damage Strategies

Game damage complaints related to the Thompson Falls bighorn sheep herd have decreased in the past several years. When game damage complaints occur, department response will be consistent with FWP's program direction including the requirement of reasonable hunting access.

Access Strategies

Continue to improve access across private lands that are currently closed. Access in general is not an issue in this hunting district.

Population Objectives

1) Maintain the number of bighorn sheep observed during spring aerial surveys within 10% of 250 sheep (225 to 275).

2) Maintain spring classification ratios of at least 30 lambs: 100 ewes.

3) Maintain a ram: 100 ewe ratio observed during post-season aerial surveys of at least 50 rams: 100 ewes, with at least 30% of the rams having a ¾-curl.

4) Maintain the average age of 7½ years for rams harvested on either-sex licenses.

Population Management Strategies

Strategies to manage bighorn sheep populations are being based, in part, on how bighorn populations respond demographically within five ecological regions across Montana. Bighorn populations and therefore objectives for the various populations and subsequent monitoring programs vary across Montana and depend largely on the environment or ecological region where they occur. Hunting District 121 is located in the Northwest Montane ecological region (see discussion of ecological regions in Chapter 1), which includes much of northwest Montana. This bighorn population is relatively stable, is characterized as having moderate lamb production with good recruitment rates, is at population objective, and has a moderate ram to ewe ratio. Bighorn numbers are currently being managed to maintain population objectives while providing for a conservative harvest of the ram segment. The population objective of 250

(± 10%) observed bighorn sheep was derived by considering the ability of public lands to provide forage for wintering bighorn sheep.

Prescriptive Harvest Management

Ewes: Bighorn sheep populations are managed where necessary through limited-entry harvest of the female segment. In Hunting District 121, licenses are issued under the following prescriptions (Table 5):

Standard Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 10% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous year's observed lambs.

The Standard Regulation will be recommended if: The total number of bighorns counted on the survey area is within 10% of the population objective and lamb recruitment is between 30 and 40 lambs: 100 ewes.

Restrictive Regulation: Fewer than five ewe licenses would be prescribed.

The Restrictive Regulation will be recommended if: The total number of bighorns counted on the survey area is more than 10% below the population objective and lamb recruitment is less than 30 lambs: 100 ewes.

Liberal Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 15% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment

Table 5. Summary of regulation types under different population criteria for ewe harvest and population management.

NORTHWEST MONTANE	No. Bighorns Counted on Survey Area	Recruitment Lambs: 100 Ewes	Regulation Types	Harvest Rates
Standard Regulation	± 10% of 250	Between 30-40	Limited Entry Ewes	Up to 10% of Ewes
Restrictive Regulation	More than 10% below 250	Less than 30	Fewer than 5 ewe licenses	Less than 5% of ewes
Liberal Regulation	Greater than 10% above 250	Greater than 40	Limited Entry Ewes or translocate if > 25 sheep including rams are available	Up to 15% of Ewes

Table 6. Summary of potential ram harvest under different population parameters and criteria.

NORTHWEST MONTANE	Number of Either-Sex or Legal Ram Licenses Is	When the Herd Has	
		Population Size	Ram: 100 Ewe ratio
Standard Regulation	Up to 20% of the total of sub-adult and adult rams	± 10% of 250	40-60:100
Liberal Regulation	Up to 25% of the total of sub-adult and adult rams	Greater than 10% above 250	> 60:100

of one-half the previous year's observed lambs,

OR if the number of ewes and rams is at least 25 sheep (minimum transplant number) above objective, the surplus could be used for transplanting.

The Liberal Regulation will be recommended if: The total number of bighorns counted on the survey area is greater than 10% above the population objective and lamb recruitment is greater than 40 lambs: 100 ewes.

Rams:

Standard Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 20% of the total number of sub-adult and adult rams observed during spring surveys.

The Standard Regulation will be recommended if the population is within objective (+ 10% of 250), there are 40 to 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged six to seven years old.

Liberal Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 25% of the total number of sub-adult and adult rams observed during spring surveys.

The Liberal Regulation will be recommended if: The population is more than 10% above the objective of 250, there are more than 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged greater than seven years old.

Clark Fork Cut-Off

(St. Regis Cut-Off) (Hunting District 122)

Description: The St. Regis Cut-Off bighorn sheep herd occupies approximately 30 square miles from Sesame Creek in the southwest to Kennedy Creek in the north. The Clark Fork River borders the area to the south and on the east side of the range. The habitat generally consists of steep, rugged cliff and timbered forest terrain with scattered openings. The lower-elevation areas are composed of rock outcrops, open forested slopes with grassy benches, and steep scree slopes.

Approximately 90% of the habitat is located on land managed by the Lolo National Forest. The remaining 10% consists of land owned by small individual private landowners.

Bighorn sheep from the Cut-Off herd have a very limited migration that consists mostly of an elevational migration to higher, timbered habitat during the summer months. This migration typically takes place around the end of April through the middle of May and reverses back to lower winter habitat above the Clark Fork River during October.

Public Access: A large portion of the bighorn sheep habitat is in a roadless area. There are primitive low-standard roads in Dunn's Draw, Patrick Creek, and Fourteen Mile Creek. MT Highway 135 also crosses portions of the southern edge of the area. There is a Forest Service road along the ridge to Pat's Knob in the upper-elevation area of the unit. Access is gained by these roads, a trail in Fourteen Mile Creek, or by crossing the Clark Fork River via boat or canoe.

Bighorn Sheep Population: Sheep were reintroduced into the area in 1979 with a transplant of 41 sheep and a supplemental transplant of five bighorns in 1981, all from Wildhorse Island. By the mid-1990s, the herd had grown to about 140 animals. The population appears to be peaking again in 2008 with an estimated population of 175 to 190 sheep. Since 1981, spring helicopter classification surveys of bighorn sheep have been conducted in Hunting District 122 (Figure 1 and Table 1). The total number of sheep observed has varied from 55 to 141 with lamb: ewe and ram: ewe ratios ranging from 20:100 to 66:100 and 38:100 to 159:100, respectively.

Recreation Provided: The St. Regis Cut-Off bighorn sheep herd has provided numerous hunter days for hundreds of sportsmen and women with a unique hunting opportunity. This population has provided legal hunting of sheep since 1986 when one adult ram license was issued along with 10 ewe-only licenses. Ewe-only licenses have been issued for the past 22 years. Table 2 shows the number of permits issued, success rate, harvest, and hunter days since 1986.

Current Annual Bighorn Sheep Harvest: Since 1995, five or six either-sex licenses have been issued annually for sheep in the Cut-Off herd. Additionally, ewe-only licenses have varied from two to eight the past several years but will be increased to 10 for the 2008 hunting season. Table 2 shows the harvest record since

Figure 1. Total number of bighorn sheep observed during aerial trend surveys in the St. Regis Cut-Off population, Hunting District 122, 1981-2008.

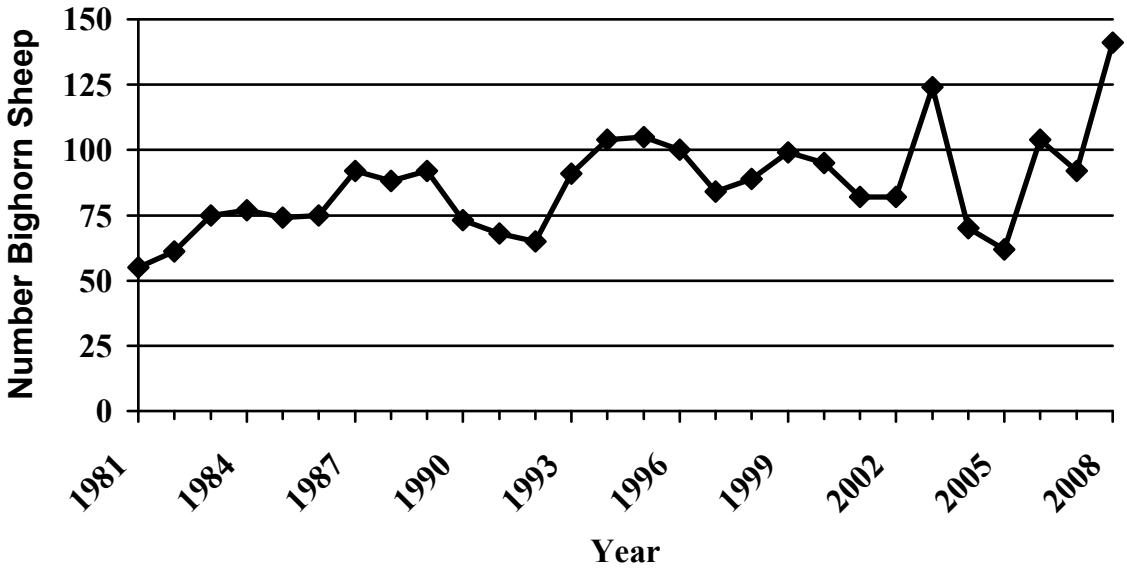

Table 1. Classification data from aerial surveys for the St. Regis Cut-Off population, Hunting District 122, 1981-2008.

Year	Ewes	Lambs	Rams	Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1981	29	13	13	0	55	45	45
1982	33	14	14	0	61	42	42
1983	32	16	12	15	75	50	38
1984	28	15	18	16	77	54	64
1985	37	11	25	1	74	30	68
1986	41	14	20	0	75	34	49
1987	37	24	29	2	92	65	78
1988	29	19	40	0	88	66	138
1989	32	9	51	0	92	28	159
1990	32	10	31	0	73	31	97
1991	38	10	20	0	68	26	53
1992	29	14	22	0	65	48	76
1993	38	18	35	0	91	47	92
1994	51	21	32	0	104	41	63
1995	52	18	35	0	105	35	67
1996	49	18	33	0	100	37	67
1997	48	15	21	0	84	31	44
1998	41	21	27	0	89	51	66
1999	44	19	36	0	99	43	82
2000	44	20	31	0	95	46	71
2001	41	9	32	0	82	22	78
2002	39	14	29	0	82	36	74
2003	56	21	47	0	124	38	84
2004	34	10	26	0	70	29	76
2005	35	7	17	3	62	20	49
2006	44	23	37	0	104	52	84
2007	35	19	37	1	92	54	106
2008	66	22	53	0	141	33	80

Year	Permits Ram/Ewe	Hunters	Total Harvest	% Success	Rams	Ewes	Hunter Days	Hunter Effort
1986	1,10	11	8	73	1	7	59	7.4
1987	2,10	12	12	100	2	10	41	3.4
1988	4,10	14	13	93	4	9	56	4.3
1989	5,10	13	9	69	5	4	88	9.8
1990	6,5	11	10	91	6	4	87	8.7
1991	4,1	5	5	100	4	1	33	6.6
1992	4,1	5	5	100	4	1	90	18
1993	4,1	4	4	100	4	0	63	15.8
1994	4,10	13	12	92	4	8	71	5.9
1995	5,10	15	15	100	5	10	66	4.4
1996	5,10	14	13	93	5	8	118	9.1
1997	5,10	15	13	87	5	8	96	7.4
1998	5,10	15	13	87	5	8	103	7.9
1999	5,10	13	10	77	4	6	109	10.9
2000	5,10	15	12	80	5	7	59	4.9
2001	5,5	10	9	90	5	4	71	7.9
2002	5,2	7	7	100	5	2	91	13
2003	6,8	13	11	85	6	5	159	14.5
2004	6,8	12	9	75	6	3	104	11.6
2005	6,4	9	8	89	6	2	102	12.8
2006	6,4	10	7	70	6	1	90	12.9
2007	6,4	6	6	100	6	0	65	10.8

Table 2. The number and types of licenses and resulting harvest for bighorn sheep in the St. Regis Cut-Off population, Hunting District 122, 1986-2007.

1986. The St. Regis Cut-Off herd is one of the top hunting districts in the state for producing trophy class rams (Table 3). Hunter success continues to be excellent with 90-100% success for adult rams. The success rate for ewe harvest is between 75-100%.

Accomplishments: Some small-scale prescribed burning projects on national forest lands within the sheep range have been directed at enhancing bighorn sheep habitat. U.S. Forest Service (USFS) habitat enhancement projects are coordinated with FWP. These projects remove encroaching conifers and rejuvenate shrub and grass species that provide important forage for sheep. Efforts to continue these types of enhancement projects are important to the overall management of the habitat for FWP and the Lolo National Forest.

Management Challenges: This population experiences some sheep mortality from vehicles traveling on MT Highway 200 as well as some mortality from train collisions. Efforts will be made to try and monitor this mortality and to take steps necessary to reduce this problem if it escalates.

Sheep are attracted to the highway in the winter because of a salt-based liquid deicer that is applied to clear the surface of ice and snow and provide better traction during winter travel. During the spring, sheep congregate adjacent to the highway because of the freshly sprouted green vegetation. Sheep can be found on or along the highway from November through May of each year. FWP will continue to work with the Montana Department of Transportation to find a non-salt-based deicer, educate and notify the public of the existing danger, and possibly look into reducing the speed limit in the sections that receive the most mortality.

Habitat deterioration through fire suppression continues to be a problem on the St. Regis Cut-Off bighorn sheep range. Compared with sheep habitats in other regions of the state, sheep ranges in northwest Montana are represented by heavily timbered shrub-dominated communities with very little grassland vegetation types available. Historically, wildfire prevailed on the landscape and maintained fire-based vegetation communities of ponderosa pine and bunchgrasses over much of the sheep range.

Table 3. Horn measurements, age, and harvest dates for bighorn rams in Hunting District 122, 2005-2007.

		Horn Length		Base Circumference		Harvest Date
HD	Age	Right	Left	Right	Left	
2005						
122	**5 1/2**	**39**	**39**	**16 1/2**	**17**	**11/12/2005**
	5 1/2	34	35 1/4	17 1/4	16 7/8	11/24/2005
	7 1/2	**40**	**39**	**16 1/2**	**16 1/2**	**10/13/2005**
	7 1/2	38 1/4	34 5/8	15 5/8	15 3/4	11/11/2005
	7 1/2	35	34	16 1/2	16 1/2	11/12/2005
	7 1/2	35 1/4	35 1/8	16 1/4	16 3/8	11/16/2005
Avg.	6.8					
2006						
122	6 1/2	37 3/8	36 1/8	15 3/4	15 5/8	10/29/2006
	6 1/2	**37 3/4**	**38 1/2**	**17**	**17**	**11/6/2006**
	6 1/2	36 1/2	35	15	15	11/18/2006
	7 1/2	**39**	**37 1/2**	**16 5/8**	**16 1/2**	**11/10/2006**
	8 1/2	**42 1/2**	**41 1/4**	**16 1/4**	**16 3/8**	**11/1/2006**
	10 1/2	36 1/4	36 3/8	15 1/4	15 1/2	11/19/2006
Avg.	7.7					
2007						
122	**5 1/2**	**35 7/8**	**40 3/8**	**16 5/8**	**16 5/8**	**11/2/2007**
	6 1/2	35 5/8	34 1/8	15 1/4	15 3/8	10/30/2007
	6 1/2	33 7/8	35	16	16 1/2	11/11/2007
	6 1/2	36 3/8	34 7/8	15 7/8	16 1/2	11/14/2007
	7 1/2	**41 3/8**	**40 3/8**	**15 1/8**	**14 7/8**	**10/30/2007**
	8 1/2	**41 1/8**	**40**	**16 1/4**	**16 1/4**	**11/1/2007**
Avg.	6.8					
	Bold = Estimated minimum Boone and Crockett score of at least 180 points.					

Table 4. Summary of regulation types under different population criteria for ewe harvest and population management.

NORTHWEST MONTANE	No. Bighorns Counted on Survey Area	Recruitment Lambs: 100 Ewes	Regulation Types	Harvest Rates
Standard Regulation	± 10% of 115	Between 30-40	Limited Entry Ewes	Up to 10% of Ewes
Restrictive Regulation	More than 10% below 115	Less than 30	Fewer than 5 ewe licenses	Less than 5% of ewes
Liberal Regulation	Greater than 10% above 115	Greater than 40	Limited Entry Ewes or translocate if > 25 sheep including rams are available	Up to 15% of Ewes

NORTHWEST MONTANE	Number of Either-Sex or Legal Ram Licenses Is	When the Herd Has	
		Population Size	Ram: 100 Ewe ratio
Standard Regulation	Up to 20% of the total number of sub-adult and adult rams	± 10% of 115	40-60:100
Liberal Regulation	Up to 25 % of the total number of sub-adult and adult rams	Greater than 10% above 115	> 60:100

Table 5. Summary of potential ram harvest under different population parameters and criteria.

With the advent of effective fire suppression by the USFS over the past 50 years, sheep forage such as bunchgrasses and certain shrubs are being replaced by Douglas fir trees through encroachment onto open foraging sites or under the ponderosa pine canopy. This has resulted in gradual habitat deterioration for bighorn sheep.

Disease issues related to contact between bighorns and domestic sheep is not an apparent problem for the Cut-Off bighorn sheep. There are no grazing allotments for domestic sheep or other livestock on adjacent national forest lands. However, bighorns from the Cut-Off population sometimes take excursions off the sheep range, especially during the rut, and may come in contact with domestic sheep or goats on hobby farms scattered throughout the area. A recently discovered band of domestic sheep and goats located immediately next to occupied winter range poses a very real and serious disease threat to this herd. FWP will continue to work with the private landowner and attempt to rectify this situation.

Noxious weed infestation by species such as spotted knapweed, St. John's Wort, leafy spurge, Dalmatian toadflax, and other weeds continue to expand on sheep winter and spring habitat. These weeds are costly and difficult to control and continue to choke out native forage used by bighorn sheep. Efforts to control these and other noxious weeds will be discussed with area land managers, but the outcome is not promising because of the difficult terrain and cost involved. Control of noxious weeds on other public and private lands is very limited.

Population Monitoring: Annual helicopter surveys of the St. Regis Cut-Off bighorn sheep population have been conducted since 1981. These surveys are completed during the spring grass green-up period in early to mid-April (Table 1). Surveys are done to count and classify ewes, lambs, and rams. Rams are further classified into three categories: yearling rams, sub-adult rams (typically three to five-year-olds), and adult rams (six years of age and older). The heavily timbered nature of this sheep range provides considerable cover for sheep to avoid observation, and precludes total population counts during these short aerial surveys. A very simple mark-recapture sightability assessment was conducted on a population of sheep around Libby in the mid-1980s. Information from that trial indicated that spring helicopter surveys were able to detect approximately 65-75% of the sheep on the range. These surveys should continue as the primary population trend monitoring effort for these sheep.

Summary of Public Comment

Public comments related to the bighorn sheep population and its management in this hunting district indicates a high level of support for FWP's management direction. Both hunters and non-hunters enjoy viewing bighorn sheep in this area.

Management Goal

The St. Regis Cut-off bighorn sheep herd is managed to maintain a limited-entry hunt that offers a relatively large number of permits while maintaining a tradition of producing trophy class rams. The goal is to keep sheep population numbers consistent with available habitat and within the limits of social and landowner tolerance while maintaining a healthy population. Presently this level is at a spring observed population of between 100 to 125 sheep.

Habitat Objectives

Encourage the continued improvement of year-round habitat and control of noxious weeds so that both the quantity and quality of bighorn sheep forage is increased.

Habitat Management Strategies

Continue cooperation with the USFS in identifying areas in need of prescribed burning and noxious weed spraying.

Game Damage Strategies

Game damage complaints related to the St. Regis Cut-off bighorn sheep herd have been few. When game damage complaints occur, department response will be consistent with FWP's program direction including the requirement of reasonable hunting access.

Access Strategies

Continue to improve access across private lands that are currently closed. Access in general is not an issue in this hunting district.

Population Objectives

1) Maintain the number of bighorn sheep observed during spring aerial surveys within 10% of 115 sheep (103 to 127).

2) Maintain spring classification ratios of at least 30 lambs: 100 ewes.

3) Maintain a ram: 100 ewe ratio observed during post-season aerial surveys of at least 60 rams: 100 ewes, with at least 30% of the rams having a ¾-curl.

4) Maintain the average age of 7½ for rams harvested on either-sex licenses.

Population Management Strategies

Strategies to manage bighorn sheep populations are being based, in part, on how bighorn populations respond demographically within five ecological regions across Montana. Bighorn populations and therefore objectives for the various populations and subsequent monitoring programs vary across Montana and depend largely on the environment or ecological region where they occur. Hunting District 122 is located in the Northwest Montane ecological region (see discussion of ecological regions in Chapter 1) which includes much of northwest Montana. This bighorn population is relatively stable, is characterized as having moderate lamb production with good recruitment rates, is at population objective, and has a relatively high ram to ewe ratio. Bighorn numbers are currently being managed to maintain population objectives while providing for a conservative harvest of the ram segment. The population objective of 115 (± 10%) observed bighorn sheep was derived by considering the ability of public lands to provide forage for wintering bighorn sheep.

Prescriptive Harvest Management

Ewes: Bighorn sheep populations are managed where necessary through limited-entry harvest of the female segment. In Hunting District 122 licenses are issued under the following prescriptions (Table 4):

Standard Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 10% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous year's observed lambs.

The Standard Regulation will be recommended if: The total number of bighorns counted on the survey area is within 10% of the population objective and lamb recruitment is between 30 and 40 lambs: 100 ewes.

Restrictive Regulation: Fewer than five ewe licenses would be prescribed.

The Restrictive Regulation will be recommended if: The total number of bighorns counted on the survey area is more than 10% below the population objective and lamb recruitment is less than 30 lambs: 100 ewes.

Liberal Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 15% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous year's observed lambs,

OR if the number of ewes and rams is at least 25 sheep (minimum transplant number) above objective, the surplus could be used for transplanting.

The Liberal Regulation will be recommended if: The total number of bighorns counted on the survey area is greater than 10% above the population objective and lamb recruitment is greater than 40 lambs: 100 ewes.

Rams:

Standard Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 20% of the total number of sub-adult and adult rams observed during spring surveys.

The Standard Regulation will be recommended if: The population was within objective (+ 10% of 115), there were 40 to 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged 6 to 7 years old.

Liberal Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 25% of the total number of sub-adult and adult rams observed during spring surveys.

The Liberal Regulation will be recommended if: The population was more than 10% above the objective of 115, there were more than 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged greater than seven years old.

CABINET MOUNTAINS

(Berray Mountain)

(Hunting District 123)

Description: Bighorn sheep were introduced into this Bull River herd in two separate transplants in 1969 and 1975. The first transplant, in January 1969, consisted of 23 sheep (four rams and 19 ewes) from Wildhorse Island. The second transplant, in March 1975, added 33 sheep from the combined herds of the Sun River (three rams and 28 ewes) and two young rams from Wildhorse Island. The release site for both transplants was on Berray Mountain.

Since this introduction, bighorn sheep have increased and dispersed into the higher elevations and cirque basins of the Cabinet Mountains Wilderness Area for summer range, and established wintering areas on Berray Mountain and along the Middle Fork of the Bull River.

The Berray Mountain bighorn sheep herd occupies approximately 50 square miles of habitat. The summer habitat consists of very rugged and steep terrain with large, rocky outcrops and rugged cliffs in the Ibex, Bighorn, Chippewa, Leigh, Snowshoe, and Cherry Creeks areas of the Cabinet Mountains Wilderness. The lower-elevation winter range is composed of rock outcrops and open forested slopes with grassy benches, and steep scree slopes.

The entire bighorn habitat is located on land managed by the Kootenai National Forest.

Bighorn sheep from the Berray Mountain herd have a limited migration that consists mostly of an elevational migration to summer habitat in the Cabinet Mountains Wilderness. This migration typically takes place around the end of April through the middle of May and reverses back to lower winter habitat on Berray Mountain or lower slopes along the Middle Fork of the Bull River during October.

Public Access: A large portion of the bighorn sheep habitat is located in roadless or designated wilderness areas. MT Highway 56 borders the south and west sides along Berray Mountain. Forest Service roads in the East Fork and South Fork of the Bull River area provide access to trailheads that lead into the Cabinet Mountains Wilderness. Trails into the wilderness are limited and very rugged. Rigorous and sudden-changing weather conditions can limit hunting opportunities in the wilderness area.

Bighorn Sheep Population: Sheep were first introduced into the area in 1969 with a transplant of 23 sheep from Wildhorse Island, with a supplemental transplant of 33 bighorns in 1975. The population peaked in the early to mid-1990s at around 150 sheep. The population decreased dramatically from effects of the extreme winter of 1996 to 97 to around 90 animals. Since then the population has stabilized at around 100 to 110 bighorns bighorns based on 75 to 105 animals actually observed. Spring helicopter classification surveys have been conducted since 1979 on the Berray Mountain bighorn sheep herd in Hunting District 123 (Figure 1). The total number of sheep observed has varied from 20 to 129 with lamb: ewe and ram: ewe ratios ranging from 20:100 to 72:100 and 13:100 to 120:100, respectively (Table 1).

Recreation Provided: The Berray Mountain bighorn sheep herd has provided numerous hunter days for hundreds of sportsmen and women with a unique wilderness hunting experience that is both demanding and challenging. This population has provided legal hunting of sheep since 1977 when three adult rams licenses were issued. Ewe-only licenses have been issued since 1983. Table 2 shows the number of licenses issued, success rate, harvest, and hunter days since 1977.

Figure 1. Total number of bighorn sheep observed during aerial trend surveys in the Cabinet Mountains population, Hunting District 123, 1979-2008.

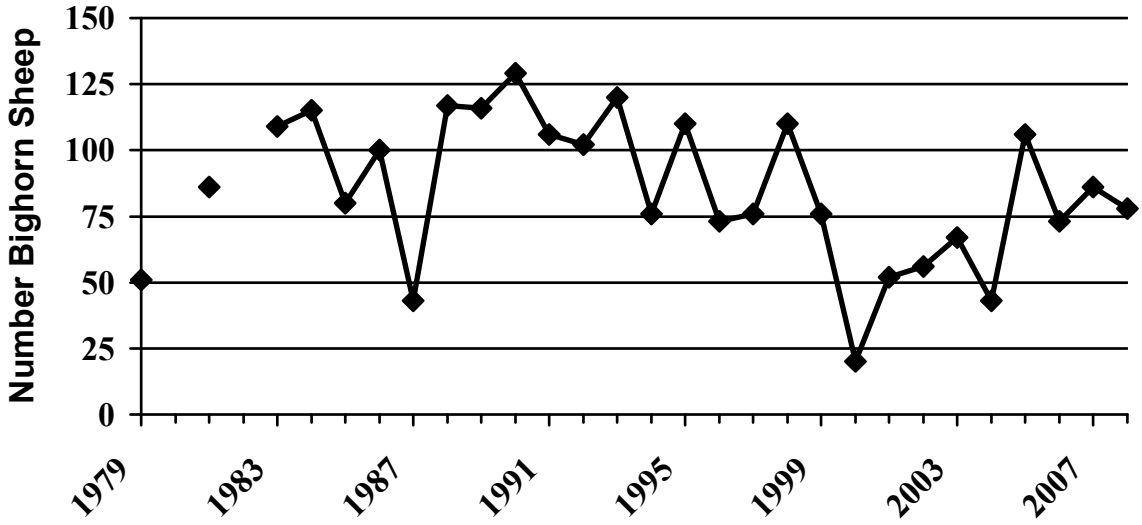

Table 1. Classification data from area surveys for the Cabinet Mountains population, Hunting District 123, 1979-2008.

Year	Ewes	Lambs	Rams	Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1979	14	8	16	13	51	57	114
1980	No Survey						
1981	40	19	27	0	86	48	68
1982	No Survey						
1983	36	15	21	37	109	42	58
1984	40	21	33	21	115	53	83
1985	45	10	25	0	80	22	56
1986	43	26	24	7	100	60	56
1987	15	7	18	3	43	47	120
1988	45	23	46	3	117	51	102
1989	47	34	31	4	116	72	66
1990	68	26	35	0	129	38	51
1991	49	21	36	0	106	43	73
1992	45	18	39	0	102	40	87
1993	64	25	31	0	120	39	48
1994	51	29	26	2	108	57	51
1995	38	24	40	18	120	63	105
1996	37	12	27	0	76	32	73
1997	68	18	24	0	110	27	35
1998	38	23	23	0	73	32	61
1999	43	25	8	0	76	58	19
2000	15	3	2	0	20	20	13
2001	25	11	13	3	52	44	52
2002	26	10	20	0	56	39	77
2003	38	14	15	0	67	37	40
2004	19	9	15	0	43	47	79
2005	57	24	20	5	106	42	35
2006	44	18	11	0	73	41	25
2007	50	17	19	0	86	34	38
2008	53	15	10	0	78	28	19

Year	Number Licenses Ram/Ewe	Hunters	Total Harvest	% Success	Rams	Ewes	Hunter Days	Hunter Effort
1977	3,0	3	2	67	2	0	unk.	n/a
1978	3,0	3	3	100	3	0	unk.	n/a
1979	3,0	3	2	67	2	0	unk.	n/a
1980	3,0	3	2	67	2	0	unk.	n/a
1981	3,0	3	3	100	3	0	unk.	n/a
1982	2,0	2	2	100	2	0	unk.	n/a
1983	5,8	10	7	70	4	3	unk.	n/a
1984	5,8	8	7	88	5	2	unk.	n/a
1985	5,10	13	12	92	5	7	unk.	n/a
1986	5,20	25	15	60	4	11	106	7.1
1987	5,5	9	9	100	5	4	58	6.4
1988	5,5	9	9	100	5	4	36	4
1989	8,5*	12	9	75	6	3	117	13
1990	8,10	18	12	67	6	6	99	8.3
1991	8,10	17	12	71	6	6	99	8.3
1992	8,10	18	15	83	8	7	74	4.9
1993	8,10	17	13	76	8	5	100	7.7
1994	8,10	15	14	93	8	6	79	5.6
1995	8,10	14	11	79	7	4	114	10.4
1996	8,10	16	6	38	4	2	107	17.8
1997	6,10	16	11	69	3	8	210	19.1
1998	4,7	11	4	36	3	1	82	20.5
1999	4,7	9	4	44	3	1	39	9.8
2000	4,1	5	4	80	3	1	40	10.0
2001	4,1	4	3	75	3	0	64	21.3
2002	4,1	5	4	80	3	1	69	17.3
2003	4,1	4	4	100	4	0	41	10.3
2004	4,1	4	3	75	3	0	50	16.7
2005	4,1	5	5	100	4	1	35	7.0
2006	4,0	4	4	100	4	0	60	15.0
2007	4,1	5	4	80	3	1	87	21.8
* wilderness only either-sex permits initiated.								

Table 2. Number and types of licenses and resulting harvest for bighorn sheep in the Cabinet Mountains population, Hunting District 123, 1977-2007.

Current Annual Bighorn Sheep Harvest: Since 1998, four either-sex licenses have been issued annually for sheep in the Berray Mountain herd. Additionally, one ewe-only license has been issued since 2000. Table 2 shows the harvest record since 1977. The Berray Mountain herd does not typically produce trophy class rams, but if you harvest a ram in this area you will have earned it. It is maybe the most difficult place in Montana to harvest a ram. Hunter success is good with 75-100% success on adult rams. The success rate for ewe harvest is between 50-80%.

Accomplishments: Some small-scale prescribed burning projects on Berray Mountain conducted by the Kootenai National Forest have been completed to enhance bighorn sheep habitat. U.S. Forest Service (USFS) habitat enhancement projects are coordinated with FWP. These projects remove encroaching conifers and rejuvenate shrub and grass species that provide important forage for sheep. Efforts to continue these types of enhancement projects are important to the overall management of the habitat for FWP and the Kootenai National Forest.

Management Challenges: This population experiences some sheep mortality from vehicles traveling on MT Highway 56. Efforts will be made to try and monitor this mortality and to take steps necessary to reduce this problem if it escalates.

Sheep are attracted to the highway in the winter because of a salt-based liquid deicer that is applied to clear the surface of ice and snow and provide better traction during winter travel. During the spring, sheep congregate adjacent to the highway because of the freshly sprouted green vegetation. Sheep can be found on or along the highway from November through May of each year. FWP will continue to work with the Montana Department of Transportation to find a non-salt-based deicer, educate and notify the public of the existing danger, and possibly look into reducing the speed limit in the sections that receive the most mortality.

Habitat deterioration through fire suppression continues to be a problem on the Berray Mountain bighorn sheep range. Compared with sheep habitats in other regions of the state, sheep ranges in northwest Montana are represented by heavily timbered shrub-dominated communities with very little grassland vegetation types available. Historically, wildfire prevailed on the landscape and maintained fire-based vegetation communities of ponderosa pine and bunchgrasses over much of the sheep range. With the advent of effective fire suppression by the USFS over the past 50 years, sheep forage such as bunchgrasses and certain shrubs are being replaced by Douglas fir trees through encroachment onto open foraging sites or under the ponderosa pine canopy. This has resulted in gradual habitat deterioration for bighorn sheep.

Disease issues related to contact between bighorns and domestic sheep is not an apparent problem for the Berray Mountain bighorn sheep. There are no grazing allotments for domestic sheep or other livestock anywhere near this herd. However, bighorns from this herd sometimes take excursions off the sheep range, especially during the rut, and may come in contact with domestic sheep or goats on hobby farms scattered throughout the area.

Noxious weed infestation by species such as spotted knapweed, St. John's Wort, leafy spurge, Dalmatian toadflax, and other weeds continue to expand on sheep winter and spring habitat. These weeds are costly and difficult to control and continue to choke out native forage used by bighorn sheep. Efforts to control these and other noxious weeds will be discussed with area land managers, but the outcome is not promising because of the difficult terrain and cost involved. Control of noxious weeds on other public and private lands is very limited.

Because bighorn rams use heavy timber as cover, it is becoming increasingly more difficult to locate and classify rams during the annual spring survey. Recent sightings of large ram bands along with ewe and lamb groups during late June mountain goat surveys in the Cabinet Mountains Wilderness may provide an opportunity to improve the counting and classifying of the Berray Mountain sheep herd.

Population Monitoring: Annual helicopter surveys of the Berray Mountain bighorn

Table 3. Horn measurements, age, and harvest dates for bighorn rams in Hunting District 123, 2006-2007.

HD	Age	Horn Length		Base Circumference		Harvest Date
		Right	Left	Right	Left	
2005						
123	6 1/2	34 1/2	34	17	17	9/19/2005
	6 1/2	35 1/4	36 1/8	16 5/8	16 3/4	9/20/2005
	7 1/2	39	37	15	15 1/4	11/15/2005
	12 1/2	**44**	**43 3/4**	**15 1/2**	**15 1/2**	**10/21/2005**
Avg.	8.3					
2006						
123	4 1/2	34 1/2	34 1/8	15 1/2	15 3/4	9/15/2006
	5 1/2	35 1/4	36 3/8	15 1/2	15 3/8	9/28/2006
	5 1/2	33	33 1/4	15 3/8	15 1/2	11/24/2006
	6 1/2	33 3/4	32	15	15 1/2	11/18/2006
Avg.	5.5					
2007						
123	5 1/2	34 7/8	35 1/2	14 1/4	14 1/2	11/24/2007
	6 1/2	38	36 1/2	15 1/2	15 1/2	11/24/2007
	7 1/2	38 5/8	33 1/4	14 5/8	14 5/8	11/23/2007
Avg.	6.5					
Bold = Estimated Boone and Crockett score of a minimum of 180 points.						

sheep population have been conducted since 1979. These surveys are completed during the spring grass green-up period in early to mid-April (Table 1). Surveys are done to count and classify ewes, lambs, and rams. Rams are further classified into three categories: yearling rams, sub-adult rams (typically three- to five-year-olds), and adult rams (six years of age and older). The heavily timbered nature of this sheep range provides considerable cover for sheep to avoid observation, and precludes total population counts during these short aerial surveys. A very simple mark-recapture sightability assessment was conducted on a population of sheep around Libby in the mid-1980s. Information from that trial indicated that spring helicopter surveys were able to detect approximately 65-75% of the sheep on the range. These surveys should continue as the primary population trend monitoring effort, but consideration should be made to move the surveys to late June to improve the counting and classifying of this sheep herd.

Summary of Public Comment

Public comments related to the bighorn sheep population and its management in this hunting district indicates a high level of support for FWP's management direction. Both hunters and non-hunters enjoy viewing bighorn sheep in this area.

Management Goal

The Berray Mountain bighorn sheep herd is managed to maintain a limited-entry hunt that offers a rugged, demanding, and challenging hunting experience in the remote Cabinet Mountains Wilderness. The goal is to keep sheep population numbers consistent with available habitat and within the limits of social and landowner tolerance while maintaining a healthy population. Presently this level is at a spring observed population of between 90 to 120 sheep.

Habitat Objectives

Encourage the continued improvement of year-round habitat and control of noxious weeds so that both the quantity and quality of bighorn sheep forage is increased.

Habitat Management Strategies

Continue cooperation with the USFS in identifying areas in need of prescribed burning and noxious weed spraying.

Game Damage Strategies

Game damage complaints related to the Berray Mountain bighorn sheep herd have been few. When game damage complaints occur, department response will be consistent with FWP's program direction including the requirement of reasonable hunting access.

Access Strategies

Continue to improve access across private lands that are currently closed. Access in general is not an issue in this hunting district.

Population Objectives

1) Maintain the number of bighorn sheep observed during spring aerial surveys within 10% of 105 sheep (95 to 115).

2) Maintain spring classification ratios of at least 30 lambs: 100 ewes.

3) Maintain a ram: 100 ewe ratio observed during post-season aerial surveys of at least 50 rams: 100 ewes, with at least 30% of the rams having a ¾-curl.

4) Maintain the average age of 6½ years for rams harvested on either-sex licenses.

Population Management Strategies

Strategies to manage bighorn sheep populations are being based, in part, on how bighorn populations respond demographically within five ecological regions across Montana. Bighorn populations and therefore objectives for the various populations and subsequent monitoring programs vary across Montana and depend largely on the environment or ecological region where they occur. Hunting District 123 is located in the Northwest Montane Ecological Region (see discussion of ecological regions in Chapter 1), which includes much of northwest Montana. This bighorn population is relatively stable, is characterized as having moderate lamb production, is slightly below population objective, and has a moderate ram to ewe ratio. Bighorn numbers are currently being managed to allow an increase in numbers while providing for a conservative harvest of the ram segment. The population objective of 105 (± 10%) observed bighorn sheep was derived by considering the ability of public lands to provide forage for wintering bighorn sheep.

Prescriptive Harvest Management

Ewes: Bighorn sheep populations are managed where necessary through limited-entry harvest of the female segment. In Hunting District 123, licenses are issued under the following prescriptions (Table 4):

Standard Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 10% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous year's observed lambs.

The Standard Regulation will be recommended if: The total number of bighorns counted on the survey area is within 10% of the population objective and lamb recruitment is between 30 and 40 lambs: 100 ewes.

Restrictive Regulation: Fewer than five ewe licenses would be prescribed.

The Restrictive Regulation will be recommended if: The total number of bighorns counted on the survey area is more than 10% below the population objective and lamb recruitment is less than 30 lambs: 100 ewes.

Liberal Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 15% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous year's observed lambs,

The Liberal Regulation will be recommended if: The total number of bighorns counted on the survey area is greater than 10% above the population objective and lamb recruitment is greater than 40 lambs: 100 Ewes.

Rams:

Standard Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 20% of the total number of rams observed during spring surveys.

The Standard Regulation will be recommended if: The population is within objective (+ 10% of 105), there are 40 to 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged six to seven years old.

Liberal Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 25% of the total number of rams observed during spring surveys.

The Liberal Regulation will be recommended if: The population is more than 10% above the objective of 105, there were more than 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged greater than seven years old.

Table 4. Summary of regulation types under different population criteria for ewe harvest and population management.

NORTHWEST MONTANE	No. Bighorns Counted on Survey Area	Recruitment Lambs: 100 Ewes	Regulation Types	Harvest Rates
Standard Regulation	± 10% of 105	Between 30-40	Limited Entry Ewes	Up to 10% of Ewes
Restrictive Regulation	More than 10% below 105	Less than 30	Fewer than 5 ewe licenses	Less than 10% of ewes
Liberal Regulation	Greater than 10% above 105	Greater than 40	Limited Entry Ewes or translocate if > 25 sheep including rams are available	Up to 15% of Ewes

NORTHWEST MONTANE	Number of Either-Sex or Legal Ram Licenses Is	When the Herd Has	
		Population Size	Ram: 100 Ewe ratio
Standard Regulation	Up to 20% of the total rams	± 10% of 105	40-60:100
Liberal Regulation	Up to 25 % of the total rams	Greater than 10% above 105	> 60:100

Table 5. Summary of potential ram harvest under different population parameters and criteria.

PARADISE
(Hunting District 124)

Description: The Paradise bighorn sheep herd occupies approximately 20 square miles from Knowles Creek on the east to Henry Creek on the west. The Clark Fork River borders the area to the south of the range. An additional 25 to 30 square miles of habitat is located on the Flathead Indian Reservation from the reservation boundary at Little Money Creek east to Perma. The Confederated Salish and Kootenai Tribes (CSKT) manage the bighorn sheep residing in this area.

The habitat generally consists of steep, rugged cliff and timbered forest terrain with scattered openings. The lower-elevation areas are composed of rock outcrops, open forested slopes with grassy benches, and steep scree slopes. Approximately 60% of the habitat is located on land managed by either the Lolo National Forest or the Montana Department of Natural Resources and Conservation (DNRC). The remaining 40% consists of large parcels of land owned by timber companies and smaller pieces owned by individual private landowners.

Bighorn sheep from the Paradise herd have a very limited migration that consists mostly of an elevational migration to higher timbered habitat during the summer months. This migration typically takes place around the end of April through the middle of May and reverses back to lower winter habitat above the Clark Fork River during October.

Public Access: There are two maintained Forest Service roads that provide some vehicle access to this district. The Henry Peak road is located on the west portion of the range and is open to motorized traffic through October 14 of each year, at which time the road closes to all but nonmotorized traffic. The second road is located in upper Knowles Creek and is accessed through the Flathead Reservation. Access to areas west of the town of Paradise can be difficult since most private landowners residing along MT Highway 200 restrict access, and areas east of Paradise are constrained by private land and the Clark Fork River. There is a FWP-owned fishing access site at Robertson Creek, across from Knowles Creek. This site provides boat or canoe access to cross the Clark Fork River, which allows access to the lower reaches of Knowles Creek. However, you must travel about one mile downstream to gain access to land administered by the Lolo National Forest.

Bighorn Sheep Population: The bighorn sheep in Hunting District 124 are the result of a 1979 transplant of 14 Wildhorse Island sheep, nine ewes and five rams, by the CSKT into the Little Money Creek drainage on the Flathead Reservation. By 1994, this jointly managed herd had grown to an estimated population of 640 animals. This population was systematically decreased through a combination trapping and ewe harvest but appears to have peaked again in 2007 with an estimated population of 670 sheep. Since 1989, spring helicopter classification surveys of bighorn sheep have been conducted in Hunting District 124 (Figure 1 and Table 1). The total number of sheep observed in the population, which includes sheep observed on the Flathead Reservation, is shown in Figure 2 and Table 2. The overall observed population has varied from 93 to 501 sheep while those within Hunting District 124 have varied from 64 to 263 sheep. The lamb: ewe and ram: ewe ratios range from 11:100 to 67:100 and 46:100 to 144:100, respectively.

Recreation Provided: The Paradise bighorn sheep herd has provided numerous hunter days for hundreds of sportsmen and women with a unique hunting opportunity. This population has provided legal hunting of sheep since 1992 when four adult ram permits and five ewe-only

Figure 1. Total number of bighorn sheep observed during aerial trend surveys in the Paradise population, Hunting District 124, 1989-2008.

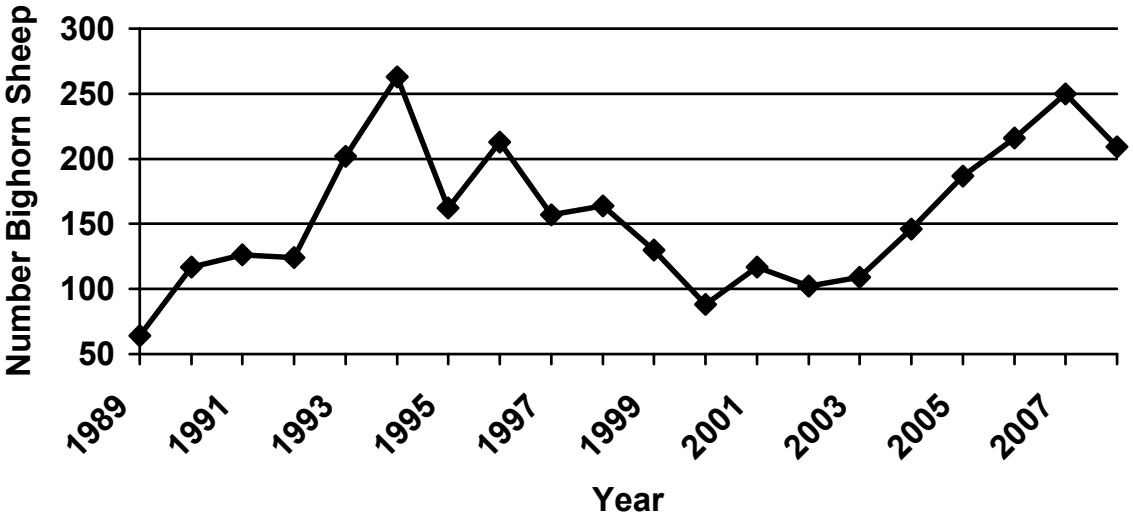

Table 1. Classification data from aerial surveys for the Paradise population not including the Flathead Reservation, Hunting District 124, 1989-2008.

Year	Ewes	Lambs	Rams	Uncl.	Total	Lambs: 100 Ewes	Rams: 100 Ewes
1989	27	10	27	0	64	37	100
1990	47	12	58	0	117	26	123
1991	60	18	48	0	126	30	80
1992	60	29	35	0	124	48	58
1993	86	37	79	0	202	43	92
1994	97	42	119	5	263	43	123
1995	33	22	107	0	162	67	324
1996	73	35	105	0	213	48	144
1997	52	15	90	0	157	29	173
1998	70	25	69	0	164	36	99
1999	62	25	43	0	130	40	69
2000	22	8	58	0	88	36	264
2001	55	31	31	0	117	56	56
2002	34	11	57	0	102	32	168
2003	41	24	44	0	109	59	107
2004	63	17	66	0	146	27	105
2005	96	25	66	0	187	26	69
2006	93	24	96	3	216	26	103
2007	94	31	125	0	250	33	133
2008	108	34	65	2	209	32	60

permits were issued. Ewe-only permits have been issued as many as 60 for the 1994 season but typically are between 5 to 20 permits. Table 3 shows the number of permits issued, success rate, harvest, and hunter days since 1992.

Current Annual Bighorn Sheep Harvest: Ten either-sex permits have been issued annually, since 2005, for sheep in the Paradise herd. Additionally, ewe-only permits have varied from 5 to 20 for the past several years. Table 3 shows the harvest record since 1992. The Paradise herd

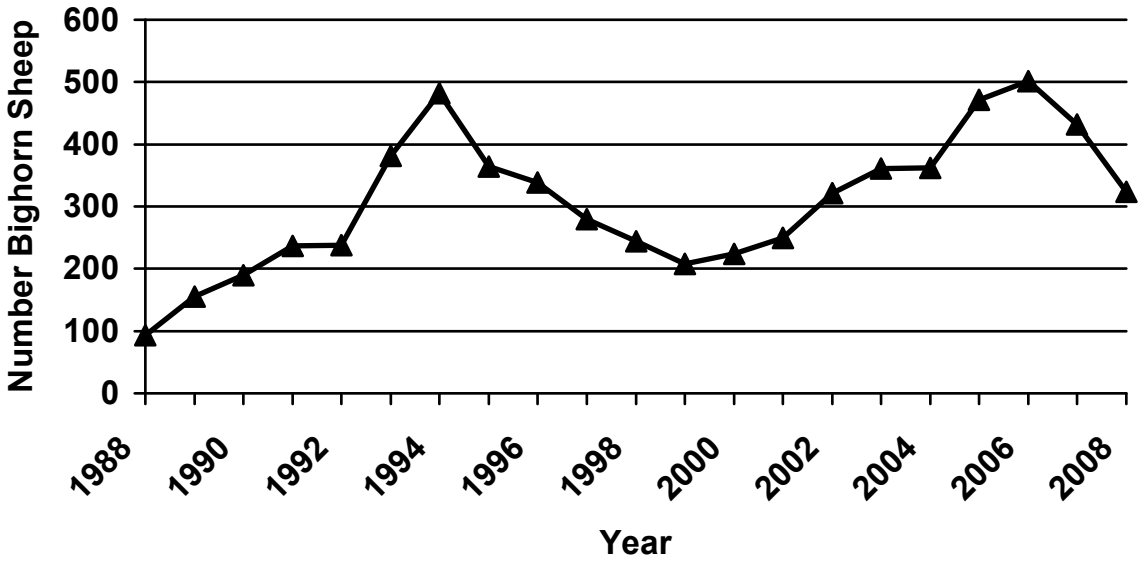

Figure 2. Total number of bighorn sheep observed during aerial trend surveys, Perma to Paradise including the Flathead Reservation, 1988-2008.

Year	Ewes	Lambs	Rams	Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1988	47	5	35	6	93	11	74
1989	87	28	40	0	155	32	46
1990	89	24	77	0	190	27	87
1991	127	45	65	0	237	35	51
1992	104	44	90	0	238	42	87
1993	184	74	123	0	381	40	67
1994	201	91	174	16	482	45	87
1995	133	71	160	0	364	53	120
1996	117	53	169	0	339	45	144
1997	104	37	139	0	280	36	134
1998	113	40	91	0	244	35	81
1999	102	42	64	0	208	41	63
2000	107	32	85	0	224	30	79
2001	121	63	66	0	250	52	55
2002	156	57	98	0	321	37	69
2003	187	75	99	0	361	40	53
2004	189	55	118	0	362	29	62
2005	245	81	145	0	471	33	59
2006	247	83	168	3	501	34	68
2007	176	69	175	12	432	39	99
2008	149	51	122	2	324	34	82

Table 2. Classification surveys for the Perma to Paradise area including the Flathead Reservation, 1988-2008.

is one of the top hunting districts in the state for producing trophy class rams (Table 4). Hunter success continues to be excellent with 90-100% success for adult rams. The success rate for ewe harvest is between 75-100%.

Accomplishments: A forest fire in the fall of 2000 burned approximately 50% of the sheep habitat located on the Lolo National Forest and Confederated Salish and Kootenai lands. This fire replaced habitat enhancement projects scheduled by the Lolo National Forest.

Table 3. The number and types of licenses and resulting harvest for bighorn sheep in the Paradise population, Hunting District 124, 1992-2007.

Year	Number Licenses Ram/Ewe	Hunters	Total Harvest	% Success	Rams	Ewes	Hunter Days	Hunter Effort
1992	4,5	8	8	100	4	4	54	6.8
1993	6,30	31	28	90	6	22	197	7
1994	12,60	68	58	85	12	46	316	5.4
1995	22,10	31	28	90	21	7	241	8.6
1996	22,10	31	28	90	21	7	184	6.6
1997	22,10	32	29	91	22	7	200	6.9
1998	13,10	22	21	96	13	8	172	8.2
1999	6,2	8	6	75	5	1	60	10
2000	6,2	8	8	100	6	2	113	14.1
2001	6,5	11	8	73	6	2	66	8.2
2002	7,5	11	9	82	7	2	67	7.4
2003	7,5	11	10	91	6	4	74	7.4
2004	8,10	17	15	88	8	7	118	7.9
2005	10,20	27	22	81	10	12	193	8.8
2006	10,19	28	27	96	10	17	192	7.1
2007	10,20	25	22	88	10	12	132	6

Habitat enhancement projects, like small prescribed burns, remove encroaching conifers and rejuvenate shrub and grass species that provide important forage for sheep. All U.S. Forest Service (USFS) projects are coordinated with FWP. Efforts to continue these types of enhancement projects are important with the overall management of the habitat for FWP and the Lolo National Forest.

Noxious weeds located in Knowles Creek have been aerial and backpack sprayed on two separate occasions in the past 10 years. Both projects were conducted by the Lolo National Forest and coordinated with FWP. Both parties and funding received from the Montana Chapter of the Foundation for North American Wild Sheep paid for the projects.

Management Challenges: Habitat deterioration through fire suppression continues to be a problem on the Paradise bighorn sheep range. Compared with sheep habitats in other regions of the state, sheep ranges in northwest Montana are represented by heavily timbered shrub-dominated communities with very little grassland vegetation types available. Historically, wildfire prevailed on the landscape and maintained fire-based vegetation communities of ponderosa pine and bunchgrasses over much of the sheep range. With the advent of effective fire suppression by the USFS over the past 50 years, sheep forage such as bunchgrasses and certain shrubs are being replaced by Douglas fir trees through encroachment onto open foraging sites or under the ponderosa pine canopy. This has resulted in gradual habitat deterioration for bighorn sheep.

Disease issues related to contact between bighorns and domestic sheep is not an apparent problem for the Paradise bighorn sheep. There are no grazing allotments for domestic sheep or other livestock anywhere near this herd. However, bighorns from this herd sometimes take excursions off the sheep range, especially during the rut, and may come in contact with domestic sheep or goats on hobby farms scattered throughout the area.

Noxious weed infestation by species such as spotted knapweed, St. John's Wort, leafy spurge, Dalmatian toadflax and other weeds continue to expand on sheep winter and spring habitat. These weeds are costly and difficult to control and continue to choke out native forage used by bighorn sheep. Efforts to control these and other noxious weeds will be discussed with area land managers, but the outcome is not promising because of the difficult terrain and cost involved. Control of noxious weeds on other public and private lands is very limited.

Although this population is managed and coordinated very effectively between biologists from both FWP and CSKT, the department has little control on management decisions made by the Confederated Salish and Kootenai Tribal Council. Decisions by this council on bighorn sheep residing within the reservation could have

HD	Age	Horn Length		Base Circumference		Harvest Date
		Right	Left	Right	Left	
2005						
	3 1/2	27	27 1/2	14	14	11/7/2005
	3 1/2	31 1/4	27 1/8	15	15	11/11/2005
	4 1/2	33 3/8	30 1/2	15 3/8	15 1/2	9/15/2005
	5 1/2	36	33 1/2	16 1/8	16 1/8	11/4/2005
	5 1/2	**35**	**35**	**17 3/4**	**17 1/2**	**11/10/2005**
	6 1/2	**37 1/2**	**38 1/2**	**16**	**16**	**11/5/2005**
	7 1/2	34 1/2	35	14 3/4	14 5/8	10/29/2005
	7 1/2	**38 1/2**	**37 1/2**	**16 1/4**	**16 1/4**	**11/9/2005**
	8 1/2	35 1/4	35	15 7/8	16	9/24/2005
	9 1/2	31	32 3/8	14 1/4	14 1/4	9/29/2005
Avg.	6.2					
2006						
	4 1/2	32 7/8	31 3/8	15 7/8	15 7/8	9/25/2006
	5 1/2	36 7/8	39	15 1/2	15 1/2	10/5/2006
	5 1/2	**37 1/8**	**37**	**17 1/2**	**17 5/8**	**10/23/2006**
	5 1/2	34	34 1/4	16	16	10/28/2006
	6 1/2	35 1/2	34	15 1/4	15 3/4	10/25/2006
	7 1/2	39 3/4	35	14 3/4	14 3/8	10/5/2006
	7 1/2	35 3/4	35 5/8	14 1/4	14 1/4	11/4/2006
	7 1/2	**35 1/2**	**35**	**16 1/2**	**16 1/2**	**11/15/2006**
	7 1/2	37 3/4	36 1/4	15 1/2	15 3/8	11/20/2006
	8 1/2	39	37	14 1/4	14 1/4	10/29/2006
Avg.	6.6					
2007						
	4 1/2	28 1/4	29 3/8	14 1/8	14 1/2	11/11/2007
	5 1/2	**41**	**41 1/4**	**16**	**16**	**9/25/2007**
	5 1/2	35	37	15 3/4	16	10/14/2007
	5 1/2	34 5/8	34	15 1/8	15	10/29/2007
	6 1/2	**39 1/4**	**40 3/4**	**16 1/2**	**16 1/8**	**11/15/2007**
	7 1/2	**38**	**39**	**15 3/8**	**15 1/2**	**10/17/2007**
	7 1/2	**39 1/4**	**37 1/4**	**16**	**15 3/4**	**11/13/2007**
	7 1/2	35 1/8	36 3/8	15 3/8	15 3/8	11/15/2007
	8 1/2	34 1/2	37 1/8	16 1/2	16 1/4	10/27/2007
	9 1/2	34 3/4	35 7/8	14 1/4	14 1/4	11/23/2007
Avg.	6.8					

Bold = Estimated Boone and Crockett score of a minimum of 180 points.

Table 4. Horn measurements, age, and harvest dates for bighorn rams in Hunting District 124, 2005-2007.

far-reaching effects on bighorn sheep managed outside of the reservation boundary by FWP. Efforts to maintain the relationship between biologists and decision makers from both parties are crucial to the overall management of this herd.

Population Monitoring: Annual helicopter surveys, jointly funded by FWP and CSKT, on the Paradise bighorn sheep population have been conducted since 1988. These surveys are completed during the spring grass green-up period in early to mid-April. Surveys are conducted to count and classify ewes, lambs, and rams. Rams are further classified into three categories: yearling rams, sub-adult rams (typically three- five-year-olds), and adult rams (six years of age and older). The heavily timbered nature of this sheep range provides considerable cover for sheep to avoid observation, and precludes total population counts during these short aerial surveys. A very simple mark-recapture sightability assessment was conducted on a population of sheep around

Libby in the mid-1980s. Information from that trial indicated that spring helicopter surveys were able to detect approximately 65-75% of the sheep on the range. These surveys should continue as the primary population trend monitoring effort for these sheep.

Summary of Public Comment

Public comments related to the bighorn sheep population and its management in this hunting district indicates a high level of support for FWP's management direction. Both hunters and non-hunters enjoy viewing bighorn sheep in this area.

Management Goal

The Paradise bighorn sheep herd is managed to maintain a limited-entry hunt that offers a relatively large number of permits while maintaining a tradition of producing trophy class rams. The goal is to keep sheep population numbers consistent with available habitat and within the limits of social and landowner tolerance while maintaining a healthy population. Presently this level is at a spring observed population of between 300 to 350 sheep.

Habitat Objectives

Encourage the continued improvement of year-round habitat and control of noxious weeds so that both the quantity and quality of bighorn sheep forage is increased.

Habitat Management Strategies

Continue cooperation with the USFS in identifying areas in need of prescribed burning and noxious weed spraying.

Game Damage Strategies

Game damage complaints related to the Paradise bighorn sheep herd have been few. When game damage complaints occur, department response will be consistent with FWP's program direction including the requirement of reasonable hunting access.

Access Strategies

Continue to improve access across private lands that are currently closed. Access in general is not an issue in this hunting district.

Population Objectives

1) Maintain the number of bighorn sheep observed during spring aerial surveys within 10% of 325 sheep (292 to 358).

2) Maintain spring classification ratios of at least 30 lambs: 100 ewes.

3) Maintain a ram: 100 ewe ratio observed during post-season aerial surveys of at least 60 rams: 100 ewes.

4) Maintain the average age of 6½ for rams harvested on either-sex licenses.

Population Management Strategies

Strategies to manage bighorn sheep populations are being based, in part, on how bighorn populations respond demographically within five ecological regions across Montana. Bighorn populations and therefore objectives for the various populations and subsequent monitoring programs vary across Montana and depend largely on the environment or ecological region where they occur. Hunting District 124 is located in the Northwest Montane Ecological Region (see discussion of ecological regions in Chapter 1), which includes much of northwest Montana. This bighorn population is above objective, is characterized as having moderate lamb production with good recruitment rates, and has a relatively high ram to ewe ratio. Bighorn numbers are currently being managed to stabilize numbers while providing for a sustainable harvest of the ewe and ram segment. The population objective of 325 (± 10%) observed bighorn sheep was derived by considering the ability of private/public lands to provide forage for wintering bighorn sheep.

Prescriptive Harvest Management

Ewes: Bighorn sheep populations are managed where necessary through limited-entry harvest of the female segment. In Hunting District 124, licenses are issued under the following prescriptions (Table 5):

Standard Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 10% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous years observed lambs.

The Standard Regulation will be recommended if: The total number of bighorns counted on the survey area is within 10% of the population objective and lamb recruitment is between 30 and 40 lambs: 100 ewes.

Restrictive Regulation: Fewer than five ewe licenses would be prescribed.

The Restrictive Regulation will be recommended if: The total number of bighorns counted on the survey area is more than 10% below the population objective and lamb recruitment is less than 30 lambs: 100 ewes.

Liberal Regulation: Limited ewe licenses valid in the entire hunting district during the general season for bighorn sheep in this district. The number of ewe licenses issued would be up to 15% of the number of ewes going into the fall season. The number of ewes going into the fall season would be based on the number of ewes observed during the annual survey, assuming 5% mortality of adults, and adding recruitment of one-half the previous year's observed lambs,

OR if the number of ewes and rams is at least 25 sheep (minimum transplant number) above objective, the surplus could be used for transplanting.

The Liberal Regulation will be recommended if: The total number of bighorns counted on the survey area is greater than 10% above the population objective and lamb recruitment is greater than 40 lambs: 100 ewes.

Rams:

Standard Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 20% of the total number of sub-adult and adult rams observed, outside of the Flathead Reservation, during spring surveys.

The Standard Regulation will be recommended if: The population is within objective (+ 10% of 325), there are 40 to 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged six to seven years old.

NORTHWEST MONTANE	No. Bighorns Counted on Survey Area	Recruitment Lambs: 100 Ewes	Regulation Types	Harvest Rates
Standard Regulation	± 10% of 325	Between 30-40	Limited Entry Ewes	Up to 10% of Ewes
Restrictive Regulation	More than 10% below 325	Less than 30	Fewer than 5 ewe licenses	Less than 5% of ewes
Liberal Regulation	Greater than 10% above 325	Greater than 40	Limited Entry Ewes or translocate if > 25 sheep including rams are available	Up to 15% of Ewes

Table 5. Summary of Regulation types under different population criteria for ewe harvest and population management.

NORTHWEST MONTANE	Number of Either-Sex or Legal Ram Licenses Is	When the Herd Has	
		Population Size	Ram: 100 Ewe ratio
Standard Regulation	Up to 20% of the total number of sub-adult and adult rams	± 10% of 325	40-60:100
Liberal Regulation	Up to 25% of the total number of sub-adult and adult rams	Greater than 10% above 325	> 60:100

Table 6. Summary of potential ram harvest under different population parameters and criteria.

Liberal Regulation: Limited-entry through issuing either-sex licenses with the number of either-sex licenses issued being up to 25% of the total number of sub-adult and adult rams observed, outside of the Flathead Reservation, during spring surveys.

The Liberal Regulation will be recommended if: The population is more than 10% above the objective of 325, there are more than 60 rams: 100 ewes, and the age of rams harvested the previous two years averaged greater than seven years old.

WILDHORSE ISLAND

Description: The Wildhorse Island bighorn sheep herd is located on the 2,200-acre Wildhorse Island in the southwest corner of Flathead Lake approximately 10 miles northwest of Polson. The island lies within the exterior boundary of the Flathead Indian Reservation but is owned by the State of Montana and operated as a state park.

Initial transplants to the island in December 1917 consisted of six bighorn sheep (one adult ram, two ewes, and three lambs [two females]). This initial effort was unsuccessful. Bighorn sheep were successfully introduced to the island in 1939. This transplant was by a private landowner who captured a yearling ewe and a yearling ram and transported them to Wildhorse Island. These sheep were originally thought to have come from the Sun River herd, but recently discovered FWP transplanting records indicate these sheep came from a native herd on the south end of the Mission Mountains, east of Ravalli, in the Jocko River drainage. In 1947, the Montana Fish and Game Department released six additional sheep onto the island. In 1953 it was estimated that about 100 bighorn sheep, at least 200 mule deer, and around 100 horses inhabited Wildhorse Island. The sheep on the island are a non-hunted population.

The island habitat generally consists of rolling grasslands interspersed with ponderosa pine and Douglas fir trees. There are some steep, rugged cliffs that provide escape and lambing habitat, and the northern portion of the island is heavily timbered with conifers. Bighorn sheep from the Wildhorse Island herd are isolated to the island except on the rare occasion when Flathead Lake freezes during the coldest months of winter. This frozen landscape allows sheep to walk from the island to the mainland. Even when conditions are right, this migration is still a very rare event. The last time Flathead Lake froze in the vicinity of Wildhorse Island was in 1988.

Public Access: Wildhorse Island is a state park and is open to the public year-round. Access is via boat with several rustic access points around the island. Limited walking trails are found on the island. Some of the shoreline is privately owned with several cabins located along the perimeter of the island.

Bighorn Sheep Populations: Sheep were introduced onto the island in 1939 with the release of two sheep from the Mission Mountains. Additionally, six sheep from the Sun River were released in 1947 and two rams from the Ural Tweed herd were released in 1987. By 1953, the population had grown to an estimated 100 animals. Forty sheep were relocated from the island in 1954, and there were reports of sheep dying in 1960. Poor habitat conditions were being noted during the 1960s. By the early 1970s, severe habitat deterioration was being reported, which resulted in the planned removal of 100 sheep in the fall/winter of 1978. Since late 1999, the population has steadily increased to more than 140 sheep (Figure 1 and Table 1). A transplanting operation relocated 38 bighorns in January 2008 to help lower the population to the recommended 100 to 120 sheep and augment an existing population in northwest Montana.

Sheep from Wildhorse Island are used as transplant stock to help establish new populations in Montana and other western states.

Recreation Provided: The bighorn sheep located on Wildhorse Island provide a wonderful opportunity to view and photograph bighorns in a beautiful and natural setting. These sheep are accustomed to and comfortable with seeing people, affording and an opportunity for visitors to see these magnificent animals at close range.

Current Annual Bighorn Sheep Harvest: This is a non-hunted bighorn sheep herd.

Accomplishments: Several small-scale thinning projects that reduce the density of 20- to 30-year-old pine tree stands have been completed in the past several years. These thinning projects help to prevent future outbreaks of the western bark beetle. Habitat

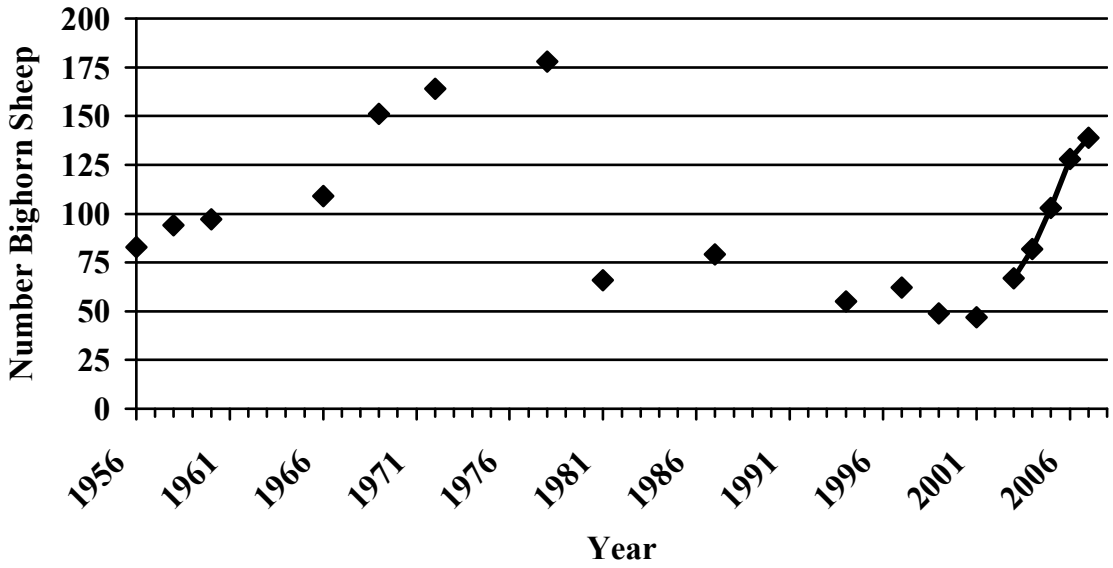

Figure 1. Total number of bighorn sheep observed during trend surveys on Wildhorse Island, 1956-2008

Year	Ewes	Lambs	Rams	Uncl.	Total	Lambs: 100 Ewes	Rams: 100 Ewes
1956			25	58	83	n/a	n/a
1958	19	12	41	22	94	63	216
1960				97	97	n/a	n/a
1966				109	109	n/a	n/a
1969				151	151	n/a	n/a
1972			49	115	164	n/a	n/a
1978	76	25	77	0	178	33	101
1981	19	13	34	0	66	68	179
1987	39	17	23	0	79	44	59
1994	12	6	37	0	55	50	308
1997	13	5	32	0	50	38	246
1997	11	0	51	0	62	0	464
1999	16	4	29	0	49	25	181
1999	15	4	19	0	38	27	127
2001	14	4	29	0	47	29	207
2003	20	5	26	16	67	25	130
2004	29	13	37	3	82	45	128
2005	57	15	31	0	103	26	54
2007	65	20	43	0	128	31	66
2008	62	19	58	0	139	31	94

Table 1. Total number and classification of bighorn sheep on Wildhorse Island, 1956- 2008.

enhancement projects, like small prescribed burns to remove encroaching conifers and rejuvenate shrub and grass species that provide important forage for sheep, may be planned in the future. Efforts to continue these types of enhancement projects are important to the overall management of the habitat for bighorn sheep and other animals on Wildhorse Island.

Management Challenges: Habitat deterioration through fire suppression continues to be a problem on Wildhorse Island. Historically, wildfire prevailed on the landscape and maintained fire-based vegetation communities of ponderosa pine and bunchgrasses over much of the island. With the advent of effective fire suppression, sheep

forage such as bunchgrasses and certain shrubs are being replaced by Douglas fir trees through encroachment onto open foraging sites or under the ponderosa pine canopy. This has resulted in gradual habitat deterioration for bighorn sheep.

Additionally, drought conditions over the past 10 years have contributed to weakened vitality in many stands of ponderosa pine trees, subjecting them to increased risk of western bark beetle infestations.

Disease issues related to contact between bighorns and domestic sheep is not a problem for the Wildhorse Island bighorn sheep herd. There are no domestic grazing allotments allowed on the island.

Noxious weed infestation by species such as spotted knapweed, St. John's Wort, leafy spurge, Dalmatian toadflax and other weeds continue to expand on sheep habitat. These weeds are costly and difficult to control and continue to choke out native forage used by bighorn sheep. Efforts to control these and other noxious weeds will be discussed with area land managers, but the outcome is not promising because of the difficult terrain and cost involved.

Population Monitoring: Helicopter surveys of the Wildhorse Island bighorn sheep population have been conducted since the late 1970s. These surveys are completed during the winter or in early spring during the grass green-up period in early to mid-April. Surveys are done to count and classify ewes, lambs, and rams. Rams are further classified into three categories: yearling rams, sub-adult rams (typically three- to five-year-olds), and adult rams (six years of age and older). Portions of the island are heavily timbered, which provides considerable cover for sheep to avoid observation, and precludes total population counts during these short aerial surveys. These surveys should continue, as time and money allow, as the primary population trend monitoring effort for these sheep.

Summary of Public Comment
Public comments related to the bighorn sheep population and its management on Wildhorse Island indicates a high level of support for FWP's management direction. The public enjoys viewing this highly visible bighorn sheep herd.

Management Goal
The Wildhorse Island bighorn sheep herd is managed to maintain a healthy population of between 100 to 120 animals depending on available forage.

Habitat Objectives
Encourage the continued improvement of year-round habitat and control of noxious weeds so that both the quantity and quality of bighorn sheep forage is increased.

Habitat Management Strategies
Continue cooperation with the Montana Department of Natural Resources and Conservation (DNRC) and the Confederated Salish and Kootenai Tribe (CSKT) in identifying areas in need of prescribed burning, thinning, and noxious weed spraying.

Access Strategies
Access is very good since the island is managed as a state park.

Population Objectives

1) Maintain the number of bighorn sheep observed during post-season aerial surveys within 10% of 110 sheep (99 to 121).

2) Maintain spring classification ratios of at least 25 lambs: 100 ewes.

3) Maintain a ram: 100 ewe ratio observed during post-season aerial surveys of at least 60 rams: 100 ewes.

Population Management Strategies
When the population reaches 130 to 140 bighorns, efforts should be made to trap and relocate excess animals. Wildhorse Island sheep are an excellent source of transplant stock to augment existing populations or to establish new sheep herds in Montana and other western states.

Prescriptive Harvest Management
This is a non-hunted population.