SAND CREEK
Wildlife Management Area

Management Plan
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Idaho Department of Fish and Game
Upper Snake Region
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EXECUTIVE SUMMARY

Key elements of fish and wildlife management in Idaho involve managing land and water – the habitat base for all fish and wildlife species. Providing public access for hunting, fishing, trapping, or simply viewing wildlife is also an integral part of Idaho's wildlife management program.

To provide habitat for fish and wildlife species and public access, the Idaho Department of Fish and Game (Department) has developed a system of Wildlife Management Areas on Department-owned or managed lands throughout the state.

This document is the plan for the Sand Creek Wildlife Management Area (SCWMA) in Fremont County and replaces the previous plan adopted in 1992. The plan supplements the Department's Policy Plan 1990-2005: A Vision For The Future. The plan contains Management Priorities with defined goals, objectives, and strategies and will be used to guide activities on the SCWMA into the future.

This planning effort is being done to ensure long-term protection and management of fish and wildlife resources on Department property within biological limits, economic, social, and manpower constraints.

Data used in this plan were those available through the summer of 1998. It should be viewed as a guideline for land and resource management decisions that will periodically be subject to change, if necessary, as new data regarding fish and wildlife resources, hunters, anglers, nonconsumptive users, and other segments of the public become available.

This plan was developed by incorporating public comments obtained from a series of public meetings; comments received from the public, other agencies, and a variety of organizations as a result of a direct mailing effort; and comments obtained by an internal review by Department employees (Appendix A).

INTRODUCTION AND PHYSICAL DESCRIPTION

The Sand Creek Wildlife Management Area is located in Fremont County. The headquarters is two miles north of Parker and the secondary headquarters is 17 miles north of St. Anthony (Appendix B).

Sand Creek Wildlife Management Area was created in 1947, when Federal Aid to Wildlife Restoration (Pittman-Robertson) funds were used to acquire the Chapman Ranch, 17 miles north of St. Anthony. This 4,763 acre parcel of private land was purchased to perpetuate the small herd of elk that wintered on the property. From this beginning, the primary focus of SCWMA has been to provide winter range in sufficient quantity and quality to support the Sand Creek elk herd during the winter months.

Since 1947, both the elk herd and the size of their winter range have expanded. Most of the present winter range is not owned by the IDFG, but is a mixture of state, federal, and private lands. This situation has made it necessary to develop a cooperative management program involving the various landowners and has been accomplished by subsequent land acquisitions, cooperative agreements and leases with other public land agencies, and use-trade agreements with key private landowners (Appendix C).

Today, the Sand Creek WMA consists of 17,290 acres of IDFG owned land, 1,000 acres of land reserved by the BLM for wildlife use, 11,504 acres of BLM land withdrawn from livestock grazing, 920 acres of IDL lands that are being leased by the Department for wildlife use, and approximately 25,000 acres in use trade agreements with private landowners (Appendices C, D, and E).

The general topography of the area is rolling hills with broken lava reefs and moving sand dunes. The northern boundary of SCWMA lies on the southwest slope of Big Bend Ridge, at an elevation of 6,200 feet. Although not a continuous tract of land, SCWMA extends 20 miles to the southwest into semi-arid range land and includes several large sand dunes in the southern portion. The elevation drops to approximately 5,000 feet at the southwestern corner of the area.

Most of SCWMA is underlaid with basalt lava flows resting on rhyolytic rocks and mantled by sediment of several different types. Alluvial deposits during the Pleistocene and more recent eras consist largely of horizontal clay beds with lesser amounts of silt and sand (Appendix F).

The summers are warm and winters generally long and cold. Snow depths range from two feet on the south end up to six feet or more on Big Bend Ridge to the north. The mean annual temperature is approximately 40° with summer temperatures reaching 100° at times and winter temperatures dipping to -40°. Typically there are only 90 frost free days each year. Annual precipitation varies from eight inches in the south to eighteen inches in the north and is distributed nearly evenly throughout the year with slightly less in July, August, and September.

Most of the SCWMA is sagebrush-grass range land and is interspersed with bitterbrush, chokecherry, shiny-leaf ceanothus, snowberry, and other shrubs. The principal grass species are needle and thread grass, various wheat grasses, bluegrasses, Indian rice grass, fescues and bromes. Some of the forb species include balsam root, goats beard, geranium, buckwheat, prickly pear cactus, and lupine. There are several small stands of juniper along the edges of the sand dunes. This high desert range is one of the most important shrub-grass wildlife ranges in Eastern Idaho. At the north end on Big Bend Ridge, aspen, lodgepole pine, and Douglas fir are the primary tree species. Riparian habitats and aspen groves are found adjacent to the Sand Creek Ponds and along Blue Creek and Sand Creek (Appendix G).

The Sand Creek Wildlife Management Area plays a key role in the perpetuation of wildlife in the upper Snake River Plain. The SCWMA, adjacent public lands, specific private properties, and this cooperative management program are all critical to the continued existence of the Sand Creek elk, deer, and moose herds, as well as sage and sharp-tailed grouse and numerous other wildlife species. Additionally, in recent years, the Sand Creek Ponds, which were created from

the 1950s through the 1970s, have had a significant percentage of the region's annual trumpeter swan production (Appendices H and I).

There are approximately 170 bird species, 30 species of mammals, and 3 species of fish that reside on or use the SCWMA at various times. Several of these species are rare in Idaho and have special designations such as Species of Special Concern, Threatened, or Endangered (Appendix J; Appendix H, Sections 10, 11, & 12).

Current public use includes an estimated 2,500 hunter days, 8,000 angler days, and 5,500 wildlife appreciation visits annually. The SCWMA plays a key role in the Department's Elk, Moose, Deer, Upland Game, Fisheries, and Nongame plans (Appendices K and L).

MISSION STATEMENT

Protect and provide high quality and secure habitat on the Sand Creek Wildlife Management Area for a variety of wildlife species including big game, small game, upland game, nongame, waterfowl, and threatened, endangered, or sensitive species. Provide high quality wildlife-based recreational and nature viewing opportunities for the public that are compatible with SCWMA's wildlife goals.

MANAGEMENT PRIORITIES

Listed in order of priority:

1. Elk Winter Habitat
2. Mule Deer and Moose Winter Habitat
3. Sage and Sharp-tailed Grouse Habitat
4. Waterfowl Habitat
5. Habitat for Nongame and Species With Special Designations
6. Hunting, Fishing, Nature Viewing, and Other Wildlife Based Recreation
7. Wildlife Education

GOALS, OBJECTIVES, AND STRATEGIES

The accomplishment of goals and objectives will be dependent on stated priorities and available funding for projects and personnel.

I. Goal: Provide quality winter habitat for migratory big game on traditional winter ranges and secure year round habitat for resident and migratory wildlife.

A. Objective: Provide winter habitat in sufficient quality and quantity to support the Sand Creek elk herd.

Strategies:

1. Continue cooperative development of critical elk winter range with other agencies, organizations, and private landowners.

2. Monitor and pursue all opportunities to protect critical portions of winter range, migration corridors, and transition range through use trades, easements, acquisition, or other appropriate means.

3. Monitor, evaluate, and document existing use trade agreements annually and make revisions as necessary.

4. Provide technical assistance and make appropriate recommendations on any proposed projects or plans by other agencies, organizations, or private landowners that may affect big game winter range, migration corridors, or transition range.

5. Explore opportunities to improve forage quality or quantity on winter and transition ranges through habitat manipulations, crop plantings, livestock grazing modifications, or other appropriate means. All proposed projects will consider other wildlife uses and the potential effects on other species of wildlife.

6. Provide assistance to the regional wildlife staff in monitoring migrations, winter elk numbers, herd composition, distribution, and movements through winter aerial or ground counts. Identify and map important areas of elk use annually and document results.

7. Develop and implement a plan to monitor elk use of the Sand Creek WMA winter range. Methods may include pellet and vegetation transects, exclosures, photo points, or use of aerial count data.

8. Monitor harvest strategies, elk movements, and harvest and make recommendations to improve use of transition and winter ranges.

9. Recommend, establish, and maintain vehicle closures or restrictions to improve elk security.

B. Objective: Maintain quality winter habitat for the Sand Creek mule deer, white-tailed deer, and moose herds.

Strategies:

1. Provide assistance to the wildlife staff in monitoring deer and moose numbers, herd composition, distribution, and movements on the winter range. Identify and map important areas of winter use annually.

2. Identify opportunities to improve habitat quality through vegetation manipulation projects. Research, design, and implement appropriate projects in cooperation with BLM, IDL, other organizations, and private landowners. All proposed projects will consider the effects on other wildlife species and habitat components.

3. Identify and map migration corridors and monitor migration timing. Document findings annually.

4. Monitor hunting seasons and harvest strategies and make appropriate recommendations annually.

C. Objective: Provide quality and secure year around habitat on the SCWMA for resident and migratory wildlife.

Strategies:

1. Maintain approximately 55 miles of boundary and interior fences to control unauthorized livestock use of SCWMA.

2. Manage vehicle access to provide big game security and habitat protection throughout the year.

3. Provide appropriate food crops in the Sand Creek Pond area for year around use by big game and other wildlife and to delay fall migrations of big game to winter range.

4. Provide a diversity of habitats throughout the SCWMA for a variety of wildlife and plant species.

II. Goal: Increase sage and sharp-tailed grouse production.

A. Objective: Improve and protect sage and sharp-tailed grouse nesting, brood rearing, and winter habitat.

Strategies:

1. Coordinate management activities to comply with the Idaho Sage Grouse Management Plan (1997) and the 1998 Idaho Columbian Sharp-tailed Grouse Conservation Plan (Draft) when it is finalized and approved. In the interim, incorporate the draft habitat guidelines into management activities.

2. Incorporate recommendations from the two recent sage grouse research projects on the Sand Creek sage grouse population into management plans: "Distribution, Movements, and Habitats of Sage Grouse on The Upper Snake River Plain: Changes From 1950s to 1990s" (third draft, March 1998), by Kara Leonard; and "Effects of Fire on Sage Grouse Brood Rearing Habitat on The Upper Snake River Plain", (draft 1998) by Pamela Bell. Incorporate information contained in two publications into management plans: "Sage Grouse Population and Habitat Trends in Southeastern Idaho and Southwestern Montana", by Caroline Crowley and John Connelly, January 1996; and "Trends in Agricultural Lands in Sage Grouse Range in Southeast Idaho and Southwest Montana", by Crowley and Connelly, January 1997.

3. Explore opportunities to improve grouse habitat through habitat manipulations, crop plantings, grazing system modifications, or other means. All habitat projects must comply with grouse management plan guidelines.

4. Monitor and pursue all opportunities to protect critical production and winter habitat through land acquisitions, easements, use trades, allotment management plans, or other appropriate means.

5. Provide technical assistance and make recommendations on any proposed projects or plans submitted by other agencies, organizations, or private landowners that may affect grouse habitat.

6. Review and modify existing use trades to comply with sage and sharp-tailed grouse management plans.

7. Identify and map wintering areas and coordinate with other landowners and agencies to protect winter habitat. Obtain, record, and report Global Positioning System (GPS) locations on all grouse seen on winter big game counts in the area.

B. Objective: Monitor sage and sharp-tailed grouse populations on and adjacent to the SCWMA.

Strategies:

1. Conduct annual lek searches on the SCWMA and adjacent lands. Identify, map, and monitor major lek complexes annually.

2. Conduct and monitor the Red Road and Sand Creek Road sage grouse routes and the Grassy and Sand Creek sharp-tailed grouse routes annually and document the results.

3. Operate hunter check stations, hunter field checks, and provide wing barrels during hunting seasons to collect grouse harvest information. Document the results annually.

III. Goal: Maintain or increase use of SCWMA by nongame and species with special designations.

A. Objective: Provide secure habitat for wildlife with special designations and protect plant species listed as Threatened, Endangered, or Species of Special Concern.

Strategies:

1. Inventory, map, and monitor locations or areas of use by wildlife species listed in special designations. Develop and implement plans to provide optimum protection and habitat security for listed species.

2. Complete a Sensitive Plant survey on SCWMA by 2001. Provide adequate security for listed plant species and incorporate plant locations into weed control plans.

3. Provide and protect nesting areas for trumpeter swans as necessary. Monitor and document nesting results annually (see Appendix A, Issue 1, and Appendix H, Trumpeter Swans.

4. Provide educational opportunities for the public concerning special wildlife and plant species. Conduct tours, provide information, and give presentations to appropriate groups, organizations, and individuals.

5. Provide a diversity of habitats for other nongame species.

6. Design and implement a habitat mapping project to be completed by the year 2000. Coordinate with BLM, Forest Service, and IDL.

7. Design and implement an amphibian and reptile inventory on SCWMA to be completed by 2001.

8. Design and implement a bat survey on the SCWMA to be completed by 2000.

IV. Goal: Increase waterfowl production at the Sand Creek Ponds.

A. Objective: Provide quality nesting cover at the Sand Creek Ponds.

Strategies:

1. Research and document waterfowl nesting areas and nesting success at the Sand Creek Ponds as outlined in the Department's Statewide Waterfowl Management Plan.

2. Research necessary habitat components and develop and implement plans to improve those areas that are presently not being used or receive little nesting use. Agricultural fields that are not used for crop production or elk forage areas will be planted into permanent cover using a seed mixture of

native plant species or acceptable non-native species that provide optimum nesting cover for waterfowl.

3. Where nesting success is low because of predation, develop high quality nesting cover, and implement predator control techniques.

4. Provide artificial nesting structures where appropriate and maintain, monitor, and document annual use.

5. Restrict public use of nesting areas during nesting periods. Sign and routinely patrol nesting areas to minimize disturbance.

6. Census goose production annually and census duck production periodically as required in the Department's Statewide Waterfowl Management Plan.

7. Exclude all livestock grazing in the waterfowl nesting areas around the ponds except when and where livestock grazing can be used to improve nesting cover.

B. Objective: Provide appropriate food crops adjacent to the Sand Creek Ponds for waterfowl use.

Strategies:

1. Provide cereal grains, legumes, or other waterfowl food crops in the pond area.

2. Wildlife use of crops will be evaluated and documented annually.

V. Goal: Maintain quality public recreational opportunities consistent with the SCWMA mission.

A. Objective: Provide hunter access and opportunity.

Strategies:

1. Provide designated routes for motorized access on the WMA.

2. Maintain major roads at a minimum level for vehicle use.

3. Provide and maintain nonmotorized facilities including horse corrals, trails, and primitive camping areas.

4. Maintain contact with neighboring landowners to provide public access on private lands for hunting activities.

B. Objective: Provide access and opportunity for anglers at the Sand Creek Ponds.

Strategies:

1. Maintain the major roads in the pond area for vehicular use.

2. Provide and maintain primitive camping and parking facilities in the pond area.

3. Provide a variety of access developments to serve anglers with disabilities.

C. Objective: Provide opportunities for wildlife viewing, education, and nonconsumptive wildlife use.

Strategies:

1. Construct and maintain a nature trail(s) in the pond area.

2. Provide informational signs in appropriate areas to inform and educate SCWMA users.

3. Consider construction of photo blinds for wildlife viewing and photography.

4. Conduct tours, give presentations, and provide informational brochures about the SCWMA.

5. Monitor SCWMA use by nonconsumptive wildlife user groups.

6. Maintain contact with private landowners to provide access on private lands for wildlife related recreation.

APPENDIX A

MANAGEMENT ISSUES

THE FOLLOWING MANAGEMENT ISSUES ASSOCIATED WITH THE SCWMA HAVE BEEN IDENTIFIED BY THE PUBLIC AND THE DEPARTMENT. GOALS AND OBJECTIVES THAT ADDRESS EACH ISSUE IN THE PLAN ARE IDENTIFIED.

Issue 1: Protection and enhancement of trumpeter swan nest sites should be top priority on Wildlife Management Areas. See Goal III, Objective A; Goal IV, Objective A.
Background: Trumpeter swans are currently listed as a Priority Species under the Species of Special Concern designation in Idaho. In general, trumpeter swans require a large, undisturbed territory for successful nesting, and if their chosen area is infringed upon repeatedly, they will often abandon their nest and eggs completely. Although trumpeter swans have nested on occasion at the Sand Creek Ponds since its creation, they were not successful in producing young to flight stage until public use restrictions were imposed beginning in 1987. Since that time, the Sand Creek Ponds have annually produced a significant percentage of the total Idaho trumpeter swan production.

Issue 2: The Department should maintain or improve landowner/sportsman relations. See Goal I, Objectives A and B; Goal II, Objective A; Goal V, Objectives A and C.
Background: The mixed land ownership patterns in the Sand Creek area necessitate a strong cooperative effort among all landowners. Department personnel have worked closely with adjacent and affected landowners and have established good working relationships in most cases. Personnel at the SCWMA have also worked with sportsmen by providing information and educational presentations and making field contacts.

Issue 3: Sage and sharp-tailed grouse numbers should be increased. See Goal II, Objectives A and B.
Background: Lek, production, and harvest information indicate that sage grouse populations in the area have been declining for many years and are currently at record low numbers. Although sharp-tailed grouse populations were in decline for a number of years, more recently they are increasing in some areas due in large part to habitat provided by the Conservation Reserve Program. Recently completed research on the Red Road sage grouse population has provided information and management recommendations that will be implemented to improve habitat. The Idaho Sage Grouse Management Plan (1997) has recently been completed, signed, and implemented by a number of agencies and organizations as a cooperative means to increase sage grouse numbers. A similar plan for the Columbian Sharp-tailed grouse is presently in draft form and will be implemented when completed.

Issue 4: Fishing in the Sand Creek Ponds should be improved for family fishing. See Goal V, Objective B.
Background: The Sand Creek Ponds have traditionally been a very productive and popular family fishery, particularly in the early season. In recent years, however, success rates have decreased on some ponds, especially in the early season, and others, Ponds 2, 4, and the Swan Pond, have been closed to public entry until July 1 to promote trumpeter swan production. In

addition, fishing pressure has become more constant throughout the season, which may actually result in a higher total number of fish being taken. Fisheries issues are beyond the scope of the SCWMA plan but are instead addressed in the regional Fisheries Plan (See also Issue 5).

Issue 5: The Sand Creek Ponds should not be open to fishing before July 1 and the limit should be lowered to two fish per day to increase fish size and reduce fish stocking. See Goal V, Objective B.
Background: In recent years, fishing pressure on the ponds has become more constant throughout the season which has probably resulted in an overall increase in total numbers of fish taken. This, coupled with drought conditions during the last decade, and aging ponds may be some of the reasons that catch rates and fish size have declined. Ponds with active trumpeter swan nests are closed to public entry until July 1 at the present time. (See also Issue 4 above).

Issue 6: Move the Egin-Hamer Road Closure to the Grassy Road. See Goal I, Objective A.
Background: This issue is beyond the scope of the WMA plan. Since the Egin-Hamer Road crosses BLM lands, implementation and enforcement of the road closure is the responsibility of that agency and management is covered in the Egin-Hamer Final Environmental Impact Statement dated 1987. However, the Department will continue to monitor wintering big game in the area and make appropriate recommendations to the BLM to protect wintering big game and their winter ranges.

The Sands Habitat Management Plan (HMP), which covers most of the desert area from Market Lake to the Targhee Forest, is due to be rewritten in the near future. The BLM is the lead agency in that process and the Egin-Hamer Road will likely be one of the issues to be addressed. Therefore, the Sands HMP revision may be a more appropriate forum to reexamine the Egin-Hamer Road and big game winter range security issues.

Issue 7: Off-road vehicles should be allowed for game retrieval. See Goal I, Objective A.
Background: In general, the use of off-road vehicles has increased considerably in recent years which can cause premature elk movements, habitat damage, reduced security for big game and other wildlife, complaints from other users, and safety concerns. In the case of elk, the effects of motorized vehicle use is the same whether the vehicle is being used for hunting, just riding, or game retrieval. Therefore, allowing game retrieval would likely nullify the positive effects of motorized vehicle restrictions. In addition, the enforcement of a game retrieval-only regulation would be very difficult.

Issue 8: Livestock grazing as a wildlife management tool. See Goal I, Objectives A and C; Goal II, Objective A; Goal IV, Objective A.
Background: Since the Department does not own the most significant big game winter ranges, livestock grazing use-trades have been used as a means of securing winter range for big game in the Sand Creek area. Under these arrangements, livestock grazing is reduced on critical private lands in exchange for livestock use of Department owned lands that are not critical winter range. Livestock grazing on the SCWMA should be consistent with the SCWMA mission, comply with sage and sharp-tailed grouse conservation and management guidelines, comply with interagency cooperative agreements, and ultimately benefit wildlife.

Issue 9: Acquisition and protection of big game winter range. See Goal I, Objectives A and B.
Background: As mentioned in Issue 8, much of the most important big game winter ranges is not in Department ownership. In addition to the development of use trades, the Department has actively pursued opportunities to secure critical properties through purchase, easements, cooperative agreements, or other appropriate means. Technical assistance has also been provided to public land management agencies and private landowners on habitat projects and issues.

Issue 10: Farming and other vegetative manipulations to improve habitat for wildlife. See Goal I, Objectives A, B, and C; Goal II, Objective A; Goal IV, Objectives A and B.
Background: Over the years, the Department has been involved in a variety of vegetation manipulation projects to improve wildlife habitat on Department owned lands and some use trade lands. Included were brush mowing to stimulate leader growth on key shrubs, seeding of grass species and a variety of shrubs, providing hay and grain crops for wildlife use, and the use of controlled burning in some areas. Several methods have been used to accomplish these projects, including Department personnel using Department owned equipment to do the work, contracting certain projects, and sharecrop agreements where a private party does the work for a specified portion of the crop. Future habitat projects must comply with the SCWMA mission, will be accomplished using the most cost effective methods available, and will provide optimum wildlife benefits.

Issue 11: The need to provide a variety of recreational opportunities consistent with the SCWMA mission. See Goal V, Objectives A, B, and C.
Background: Sand Creek WMA has been available for a wide variety of recreational opportunities for both consumptive and nonconsumptive user groups since its inception. Access for hunting, fishing, trapping, camping, and wildlife appreciation has been provided as well as road maintenance, rest room facilities in heavily used areas, and camp sites.

Issue 12: The need to protect and preserve plant and wildlife species that are listed with special management designations. See Goal II, Objectives A and B; Goal III, Objective A.
Background: Sand Creek WMA provides habitat elements for a variety of rare wildlife species that utilize the area. With one exception, rare plant species on SCWMA have not yet been identified. The Department will take the necessary steps to identify and provide adequate protection for wildlife and plant species listed under Threatened, Endangered, and Species of Special Concern designations.

Issue 13: The need to provide suitable and secure habitat for waterfowl production. See Goal IV, Objectives A and B.
Background: The Sand Creek Ponds were created using Federal Aid to Wildlife Restoration (Pittman-Robertson) funds to provide habitat for waterfowl production and secondarily to provide public fishing opportunity. The opening of the general fishing season occurs during the waterfowl production period and conflicts have occurred between anglers and nesting waterfowl. Restrictions have been placed on boats and angler access in some areas to reduce conflicts. The Department will continue to explore opportunities to minimize conflicts.

Issue 14: In order to optimize biodiversity, there is a need to provide a mix of habitats. See Goal I, Objective C; Goal III, Objective A.
Background: SCWMA consists of a variety of habitat types ranging from low precipitation grass-shrub types to higher precipitation coniferous forest. The Department will strive to maintain a variety of habitat types in native vegetation to optimize biodiversity.

APPENDIX B
SAND CREEK WMA MAPS

APPENDIX C

CONSTRAINING AGREEMENTS, PLANS, AND DOCUMENTS

Siddoway Sheep Co. cooperative use-trade agreement, dated June 10, 1969. This agreement includes 19,960 acres of land owned by Siddoway Sheep Co. and 6,493 acres of IDFG owned lands. In general, the agreement allows sheep grazing on IDFG owned lands in exchange for an equivalent reduction in sheep grazing on private lands in the Junipers area which is important elk winter range. This agreement also provides for public hunting on those private lands.

W.E. Enget and Son cooperative use-trade agreement, dated June 10, 1969. This agreement involves 4,540 acres of Enget owned land and 1,360 acres of IDFG owned lands. The IDFG agreed to develop the area for wildlife and sheep and cattle use as outlined in the Resource Management Plan (RMP) for W.E. Enget and Son Ranch prepared by the Yellowstone Soil Conservation District in 1971. The RMP outlines a domestic livestock grazing system that reduces livestock grazing on private lands that are big game winter range in exchange for livestock use of IDFG lands that are not critical winter range.

White Sands Allotment, Emerson Miller cooperative use-trade agreement, dated 1979. Wildlife use of 440 acres of BLM leased land is exchanged for cattle use of 440 acres of IDFG owned land.

Last Chance Allotment, Blair Calloway cooperative use-trade agreement, dated 1982. Wildlife use of 400 acres of BLM land leased to Calloway but not used is exchanged for cattle use of 320 acres of IDFG lands.

Sands Habitat Management Plan cooperative habitat development agreement between BLM, IDL, and IDFG, dated 1978. The Sands HMP covers a total of 431,941 acres of public lands. It provides habitat considerations and management objectives for numerous wildlife species. The primary focus is to provide sufficient winter forage for 2,000 elk.

Idaho Sage Grouse Management Plan 1997. Provides guidelines to identify, protect, and improve sage grouse habitat in Idaho.

1998 Idaho Columbian Sharp-tailed Grouse Conservation Plan (In DRAFT form, 1998). Provides guidelines to identify, protect, and improve Columbian sharp-tailed grouse habitat in Idaho.

Habitat Conservation Assessment and Conservation Strategy for the Townsend's Big-eared Bat, 1995.

Department Farming Policy, April 4, 1996. The current Department policy pertaining to farming Department owned lands.

Species Management Plans. These are Department five year plans covering various wildlife species that utilize the WMA.

1. Elk Management Plan
2. Mule Deer Management Plan
3. Moose Management Plan
4. Upland Game Management Plan
5. Waterfowl Management Plan
6. Nongame and Endangered Wildlife Management Plan
7. Fisheries Management Plan

Henrys Fork Weed Management Area Plan. A cooperative agreement among numerous public entities in three states, signed in 1990. This plan provides guidelines for coordinated management of noxious weeds in the Greater Yellowstone Area.

APPENDIX D

LAND ACQUISITION

Year Purchased	Funds Used	Acres Purchased	Cost	Source
1947	Pittman-Robertson	4,763.08	$64,000.00	Edgar Chapman
1957	Pittman-Robertson	440.00	$3,960.00	Mary B. Parker
1958	Pittman-Robertson	200.00	$1,800.00	Rex E. Cutler
1960	Pittman-Robertson	160.00	$160.00	Fremont County
1961	Pittman-Robertson	10,207.32	$180,000.00	Alan Ricks
1989	Teton Mitigation	920.00	$87,400.00	Reed Mortimer
1989	Teton Mitigation	600.00	$62,000.00	John Pinnock
	Lands Withdrawn from Livestock Grazing			
1951	Withdrawal	1,000.00		BLM
1961	Withdrawal	8,586.54		BLM
1997	Withdrawal	1,918.00		BLM

APPENDIX E

LEASES

Year	Lease #	Acres	Acquired From
1997	G-8886	280	Idaho Dept. of Lands
1990	G-9432	640	Idaho Dept. of Lands

APPENDIX F

SOIL TYPES

Soil Descriptions are from: "Soil Survey of Fremont County, Idaho, Western Part," 1993.

Blacksan-Engett, bedrock substratum-Sandcreek complex, 1 to 6 percent slope

This soil is composed of 40% Blacksan loamy fine sand, 25% Engett fine sand, 20% Sandcreek sand, and 15% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,200 feet. Average annual precipitation is about 16 inches. It has rapid permeability and low available water capacity. It also has a slight hazard of water erosion and a very severe hazard of wind erosion. Dominant vegetation is antelope bitterbrush, basin and mountain big sagebrush, bluebunch wheatgrass, and needle and thread.

Blacksan-Sandcreek-Rock outcrop complex, 1 to 6 percent slope

This soil is composed of 40% Blacksan loamy fine sand, 30% Sandcreek sand, 15% rock outcrop, and 15% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,200 feet. Average annual precipitation is about 16 inches. It has rapid permeability and low available water capacity. It also has slight hazard of water erosion and very severe hazard of wind erosion. Dominant vegetation is antelope bitterbrush, basin and mountain big sagebrush, thickspike, western and bluebunch wheat grasses, and needle and thread.

Bonneville-Crystalbutte complex, 4 to 20 percent slope

This soil is composed of 45% Bonneville gravelly loam, 35% Crystalbutte loam, and 20% contrasting inclusions. It occurs on mountainsides at elevations of approximately 6,200 feet. Average annual precipitation is about 25 inches. It has moderately slow permeability and moderate available water capacity. It also has severe hazard of water erosion. Dominant vegetation is Douglas fir, Idaho fescue, pine reedgrass, mountain snowberry heartleaf arnica, slender and bluebunch wheatgrass, Nevada and Columbia bluegrass, and arrowleaf balsamroot.

Bonneville-Hagenbarth, moist complex, 10 to 50 percent slope

This soil is composed of 45% Bonneville gravelly loam, 35% Hagenbarth loam, and 20% contrasting inclusions. It occurs on canyon sides at elevations of approximately 5,800 feet. Average annual precipitation is about 22 inches. It has moderately slow permeability and high available water capacity. It also has severe to very severe hazard of water erosion. Dominant vegetation is Douglas fir, quaking aspen, Idaho fescue, pine reedgrass, mountain snowberry heartleaf arnica, slender wheatgrass, mountain brome and sticky geranium.

Bootjack silty clay loam, 0 to 1 percent slopes

This soil is composed of 85% Bootjack soil and 15% contrasting inclusions. It occurs on stream terraces and floodplains, at elevations of approximately 6,350 feet. Average annual precipitation is about 25 inches. It has moderately slow permeability and high available water capacity. It also has a slight hazard of water erosion. Dominant vegetation is Kentucky bluegrass, slender wheatgrass, mountain brome, sedge, and clover.

Engett, bedrock substratum-Engett Blacksan complex, 1 to 6 percent slopes

This soil is composed of 35% Engett fine sand, bedrock substratum, 30% Engett fine sand, 20% Blacksan loamy fine sand, and 15% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,200 feet. Average annual precipitation is about 16 inches. It has rapid permeability and low available water capacity. It also has a slight hazard of water erosion and a very severe hazard of wind erosion. Dominant vegetation is needle and thread, antelope bitterbrush, western wheatgrass, basin big sagebrush, and arrowleaf balsamroot.

Hagenbarth-Pinebutte-Katseanes silt loams, 1 to 12 percent slopes

This soil is composed of 30% Hagenbarth soil, 30% Pinebutte soil, 20% Katseanes soil, and 20% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 6,000 feet. Average annual precipitation is about 18 inches. It has slow permeability and very high available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is mountain big sagebrush, Idaho fescue, Columbia needlegrass, Nevada bluegrass, and bluebunch wheatgrass.

Hagenbarth-Vadnais silt loams, 1 to 12 percent slopes

This soil is composed of 55% Hagenbarth soil, 25% Vadnais soil, and 20% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,700 feet. Average annual precipitation is about 20 inches. It has slow permeability and very high available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is mountain big sagebrush, Idaho fescue, Columbia needlegrass, Nevada bluegrass, slender and bluebunch wheatgrasses, and arrowleaf balsamroot.

Hagenbarth, loamy surface-Vadnais-Katseanes loams, 20 to 50 percent slopes

This soil is composed of 30% Hagenbarth soil, 30% Vadnais soil, 15% Katseanes soil, and 25% contrasting inclusions. It occurs on canyons in dissected calderas, at elevations of approximately 5,650 feet. Average annual precipitation is about 18 inches. It has slow permeability and very high available water capacity. It also has a very severe hazard of water erosion. Dominant vegetation is mountain big sagebrush, bluebunch wheatgrass, Idaho fescue, antelope bitterbrush, aspen groves on some of the north and east-facing slopes, and seral ceanothus thickets covering most ridges.

Hagenbarth, moist-Vadnais-Katseanes loams, 2 to 20 percent slopes

This soil is composed of 30% Hagenbarth soil, 30% Vadnais soil, 15% Katseanes soil, and 25% contrasting inclusions. It occurs on canyons in dissected calderas, at elevations of approximately 6,280 feet. Average annual precipitation is about 19 inches. It has slow permeability and high available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is quaking aspen, slender wheatgrass, pine reedgrass, mountain brome, Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, antelope bitterbrush, and seral ceanothus thickets covering most areas.

Jipper fine sandy loam, 1 to 6 percent slopes

This soil is composed of 80% Jipper soil and 20% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,400 feet. Average annual precipitation is about 15 inches. It has moderately rapid permeability and high available water capacity. It also has a slight hazard of water erosion and severe hazard of wind erosion. Dominant vegetation is bluebunch wheatgrass, Letterman needlegrass, and mountain big sagebrush.

Jipper-Nayrib-Stipe complex, 1 to 8 percent slopes

This soil is composed of 50% Jipper fine sandy loam, 20% Nayrib very cobbley fine sandy loam, 20% Stipe fine sandy loam, and 10% contrasting inclusions. It occurs on swales of basalt plains, at elevations of approximately 5,200 feet. Average annual precipitation is about 15 inches. It has moderately rapid permeability and high available water capacity. It also has a slight hazard of water erosion and severe hazard of wind erosion. Dominant vegetation is bluebunch wheatgrass, Idaho fescue, Letterman needlegrass, mountain big sagebrush, and antelope bitterbrush.

Juniperbute fine sand, 2 to 30 percent slopes

This soil is composed of 85% Juniperbute soil and 15% contrasting inclusions. It occurs on stabilized dunes and basalt plains, at elevations of approximately 5,500 feet. Average annual precipitation is about 14 inches. It has very rapid permeability and low available water capacity. It also has a moderate hazard of water erosion and very severe hazard of wind erosion. Dominant vegetation is needle and thread, thickspike wheatgrass, arrowleaf balsamroot, basin big sagebrush, and antelope bitterbrush.

Juniperbute-Rock outcrop complex, 1 to 30 percent slopes

This soil is composed of 60% Juniperbute fine sand, 20% rock outcrop, and 20% contrasting inclusions. It occurs on stabilized dunes and basalt plains, at elevations of approximately 5,650 feet. Average annual precipitation is about 14 inches. It has very rapid permeability and low available water capacity. It also has a moderate hazard of water erosion and very severe hazard of wind erosion. Dominant vegetation is needle and thread, thickspike and western wheatgrasses, arrowleaf balsamroot, basin big sagebrush, and antelope bitterbrush.

Katseanes-Rock outcrop-Vadnais complex, 1 to 12 percent slopes

This soil is composed of 30% Katseanes silt loam, 30% rock outcrop, 25% Vadnais silt loam, and 15% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 6,000 feet. Average annual precipitation is about 22 inches. It has moderately slow permeability and low available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is Idaho fescue, bluebunch wheatgrass, and mountain big sagebrush.

Nayrib-Stipe complex, 1 to 6 percent slopes

This soil is composed of 45% Nayrib very cobbly fine sandy loam, 40% Stipe fine sandy loam, and 15% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,200 feet. Average annual precipitation is about 15 inches. It has moderately rapid permeability and

very low available water capacity. It also has a slight hazard of water erosion and a slight hazard of wind erosion. Dominant vegetation is mountain big sagebrush, bluebunch wheatgrass, needle and thread, arrowleaf balsamroot, and antelope bitterbrush.

Povey-Splitbutte-Rock outcrop complex, 5 to 20 percent slopes

This soil is composed of 50% Povey very gravelly loam, 25% Splitbutte very gravelly loam, 15% rock outcrop, and 10% contrasting inclusions. It occurs on draws and ridgetops on rhyolitic plains, at elevations of approximately 6,300 feet. Average annual precipitation is about 20 inches. It has moderate permeability and moderate available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is bluebunch wheatgrass, Idaho fescue, Columbia needlegrass, arrowleaf balsamroot, and mountain big sagebrush.

Rock outcrop-Vadnais complex, 1 to 12 percent slopes

This soil is composed of 40% rock outcrop, 35% Vadnais silt loam, and 25% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,800 feet. Average annual precipitation is about 18 inches. It has slow permeability and high available water capacity. It also has a moderate hazard of water erosion. Dominant vegetation is Idaho fescue, bluebunch wheatgrass, and mountain big sagebrush.

Sadorus-Vadnais-Katseanes loams, 20 to 50 percent slopes

This soil is composed of 45% Sadorus soil, 20% Vadnais soil, 15% Katseasnes soil, and 20% contrasting inclusions. It occurs on hillsides, shoulder slopes, ridges, and draws on a dissected caldera, at elevations of approximately 5,850 feet. Average annual precipitation is about 18 inches. It has moderately rapid permeability and very low available water capacity. It also has a very severe hazard of water erosion. Dominant vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, arrowleaf balsamroot, and snowbrush ceanothus.

Snowshoe loamy fine sand, 1 to 6 percent slopes

This soil is composed of 80% Snowshoe soil and 20% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 5,400 feet. Average annual precipitation is about 15 inches. It has moderate permeability and high available water capacity. It also has a slight hazard of water erosion and a very severe hazard of wind erosion. Dominant vegetation is needle and thread, thickspike wheatgrass, arrowleaf balsamroot, basin big sagebrush, and antelope bitterbrush.

Splitbutte-Rock outcrop-Povey complex, 20 to 45 percent slopes

This soil is composed of 40% Splitbutte very stony sandy loam, 30% rock outcrop, 20% Povey very stony loam, and 10% contrasting inclusions. It occurs on ridgetops, shoulder slopes, and mountainsides on rhyolite plains, at elevations of approximately 6,100 feet. Average annual precipitation is about 20 inches. It has moderately rapid permeability and low available water capacity. It also has a very severe hazard of water erosion. Dominant vegetation is Idaho fescue, bluebunch wheatgrass, Columbia needle grass, and mountain big sagebrush.

St. Anthony gravelly sandy loam, 0 to 4 percent slopes

This soil is composed of 80% St. Anthony soil and 20% contrasting inclusions. It occurs on stream terraces, at elevations of approximately 5,000 feet. Average annual precipitation is about 14 inches. It has moderately rapid permeability and low available water capacity. It also has a slight hazard of water erosion. Dominant vegetation is not listed.

Vadnais-Hagenbarth-Katseanes silt loams, 1 to 12 percent slopes

This soil is composed of 30% Vadnais soil, 25% Hagenbarth soil, 20% Katseanes soil, and 25% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 6,600 feet. Average annual precipitation is about 22 inches. It has slow permeability and high available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is Idaho fescue, Columbia needlegrass, arrowleaf balsamroot, Nevada bluegrass, slender wheatgrass, and mountain big sagebrush.

Vadnais-Rin-Katseanes loams, 2 to 20 percent slopes

This soil is composed of 35% Vadnais soil, 20% Rin soil, 20% Katseanes soil, and 25% contrasting inclusions. It occurs on side slopes and hillsides in dissected calderas, at elevations of approximately 5,660 feet. Average annual precipitation is about 19 inches. It has slow permeability and high available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is mountain big sagebrush, arrowleaf balsamroot, Idaho fescue, mountain snowberry, slender and bluebunch wheatgrasses, and snowbrush ceanothus.

Vadnais-Rock outcrop-Hagenbarth complex, 1 to 12 percent slopes

This soil is composed of 30% Vadnais silt loam, 20% Rock outcrop, 25% Hagenbarth silt loam, and 15% contrasting inclusions. It occurs on basalt plains, at elevations of approximately 6,600 feet. Average annual precipitation is about 22 inches. It has slow permeability and high available water capacity. It also has a severe hazard of water erosion. Dominant vegetation is Idaho fescue, Nevada bluegrass, slender and bluebunch wheatgrasses, arrowleaf balsamroot, and mountain big sagebrush.

APPENDIX G

HABITAT TYPES

Habitat Type	Acres
Perennial grasslands	960
Tall sagebrush	8,111
Bitterbrush steppe	6,664
Mixed shrub steppe	5,700
Juniper woodlands	640
Aspen	803
Lodgepole pine	30
Douglas fir	125
Willow	40
Streams and marsh	141
Ponds and reservoirs	170
Non-irrigated agricultural lands	570
Barren lands (sand dunes)	4,481

APPENDIX H
WILDLIFE RESOURCES

ELK

Elk have been resident in varying numbers in Fremont County throughout recorded history. However, it is unclear as to how many elk there may have been historically and precisely where their winter ranges were located. Apparently, during early settlement, elk migrated from Yellowstone Park to "traditional wintering grounds on the desert west of Ashton…", Neilson, 1955, and into the "...junipers north of St. Anthony. This area provided winter range for a sizeable elk herd" (IDFG 20th Biennial Report).

Their late migrations and deep snows, however, made them vulnerable to hunting by early settlers and elk access to the traditional wintering grounds on the desert were soon cut off by settlement (Neilson, 1955). As a result, elk disappeared from much of the area and, from the 1860s to the 1930s, elk distribution was confined largely to the area lying east of what is now Highway 20 (Sherwood, 1977).

There has been a general elk season in all or part of Fremont County since 1882, which is the longest series of continuous general elk hunting in the State of Idaho (Sherwood 1977). Most of the hunting was done on the migratory herd which traveled from the southwest corner of Yellowstone National Park in the fall, down Fall River Ridge, looping back through the Teton Basin, and finally ending up in the Jackson Hole area to winter (Sherwood, 1977).

Although sightings of elk west of Highway 20 were rare, a small herd of elk (30 to 40 animals) did reside at the old Bishop Ranch, part of which is now the Sand Creek Wildlife Management Area, and wintered near 5-Monuments, a short distance to the south. Sherwood claims that "this herd is the only verified account of elk wintering in the Fremont County desert prior to the 1940s" (Sherwood, 1977).

Today, the desert west of Highway 20 provides winter range for over 3,000 wintering elk, which makes the Sand Creek elk herd one of Idaho's largest wintering elk herds. Although the precise origin of the present day Sand Creek elk herd is open to debate, several significant events may have contributed to its evolution.

In addition to the small herd wintering at the Bishop Ranch, several releases of elk were made in Fremont County beginning in the 1930s. In 1932, the Railroad Ranch, which is now Harriman State Park, either released or had escape a captive herd of 48 animals that were being raised on the ranch (Harriman State Park Records).

In 1938, the Ashton Rod and Gun Club transplanted 18 elk from Mammoth Hot Springs in Yellowstone National Park to the area just west of the city of Ashton, on the north side of the Henrys Fork River. These elk were fed hay during that first winter. They increased rapidly and within two to three years became a depredation problem. Attempts to drive problem elk from haystacks around the Ashton area were largely unsuccessful and elk were fed hay during several

winters and at several locations. Hunts on these animals in the 1940s may have helped push some of them west toward the desert (Charles Merrick, Ashton rancher, personal communication).

In the late 1940s or early 1950s, the Fremont County Sportsman's Association from St. Anthony also transplanted elk from Mammoth Hot Springs to Fremont County. A release of 6 elk was made near Fogg Butte and a winter release of 6 additional elk was made at the Crooked Road-Red Road junction (Bob Bair, past president of Fremont Co. Sportman's Assoc. and area rancher, personal communication).

Any of these transplanted populations, the Bishop herd, or possibly some combination of all of them, as well as incidental movements of elk from adjacent Yellowstone National Park and Montana, may have played a part in the evolution of the Sand Creek elk herd. In any case, the 5-Monuments herd began to grow and depredation problems on the Chapman Ranch (which was a part of the old Bishop Ranch) began to increase as well. As a result, the Department of Fish and Game purchased the Chapman Ranch in 1947 to manage the area for elk, allow the population to increase, and provide a migration corridor from summer to winter range. The property was renamed the Sand Creek Elk Refuge and it is estimated that approximately 100 elk wintered on the property at that time (IDFG, 25th Biennial Report). It was also estimated that “the maximum number of elk that the Sand Creek area and ranges to the southwest will support under present conditions is believed to be about 700 animals” (Neilson, 1955).

Although elk continued to winter at 5-Monuments, they also began moving toward the west. The first elk (19 animals) were seen at Split Rock in 1947, and elk were also seen west of the Red Road in the Juniper-Big Grassy area by Wesley M. Shaw, conservation officer for the St. Anthony district, for the first time during that winter. During the severe winter of 1948-49, a major winter kill was documented on the 5-Monuments herd, and elk have not wintered in large numbers in that area since. By 1952, however, nearly 1,000 elk were counted on the desert and 582 of those were documented in the Junipers-Big Grassy Ridge area (Sherwood 1977).

In order to monitor elk movements, migration routes, and distances traveled, an elk trap was constructed near the Sand Creek headquarters in 1949 and relocated to its present location in 1952. From 1949 to 1965, a total of 363 elk were trapped, tagged, and released from this trap site. Between 1950 and 1970, 88 tags were turned in by hunters (Neilson, 1956).

It was during the years, 1947-1952, that migration patterns were established that, in general, persist today. Elk that summered in Island Park, Yellowstone Park and the eastern Centennial Mountains gathered on Big Bend Ridge near Sand Creek in the fall and remained in the vicinity until snow and cold temperatures forced them off. They then proceeded south to the 5-Monuments, then north and west past Split Rock, across the Red Road, down the Chokecherry Ridge and on to the Junipers-Big Grassy Ridge (Sherwood 1977).

It was during this same time period that the present Sand Creek winter range was established. The area in the vicinity of the Junipers-Big Grassy Ridge, where elk use was first documented,

remained the core of the elk winter range until recently. Today, some of that elk use has shifted to the north and west.

The arrival of elk on this particular winter range was somewhat of a mixed blessing, since much of the property was privately owned and all of it was grazed by livestock. Most of the land around Big Grassy had been broken out for dry farms in the 1920s and reverted back to brush during the drought of the 1930s. The lands that weren't farmed were grazed primarily by sheep (Sherwood 1977).

Since much of the major winter range was privately owned, as elk numbers increased, so did complaints from landowners and livestock operators. The Fremont County Woolgrowers repeatedly demanded that the Department of Fish and Game reduce elk numbers. Apparently there were some rather heated discussions between landowners and sportsmen at the time about what appropriate elk numbers should be (Sherwood 1977). To address landowner concerns, either sex general elk hunting was implemented in some units and the herd was drastically reduced and kept in check for several years.

In the winter of 1961-62, Larry Hayden-Wing (1979) did the first study of big game distribution on the Junipers-Big Grassy Ridge winter range. At that time, elk were using the same areas that they used upon their initial arrival in the early 1950s (Figure 5). Hayden-Wing also made note of and described habitat partitioning by elk, moose, and mule deer on this same winter range (Figure 6). Each of the three species was using a separate portion of the winter range and did not overlap to any great degree. At the conclusion of his study in 1985, however, Brown noted that moose on some portions of the winter range had been displaced by elk and deer. Brown (1985) attributed the changes, at least in part, to the dramatic increases in both elk and mule deer numbers during the 20 year period while moose numbers remained relatively static.

In order to alleviate some of the concerns about the competition for forage between elk and livestock, the Fish and Game Department made a large land purchase south of the Chapman Ranch in 1961. The primary purpose was to encourage elk to winter on it rather than on private lands in the Junipers area. In spite of various attempts to persuade them otherwise, elk have not used the property to any significant degree as winter range, although some do pass through the area on migration.

A major breakthrough came in 1969, when the Fish and Game Department worked out a use-trade agreement with Siddoway Sheep Company, the owner of much of the critical elk winter range. In general, that agreement allows elk winter use of Siddoway private lands in exchange for spring and summer sheep grazing on Fish and Game lands that are not critical winter range. The agreement is still in effect today.

For the most part, elk remained in the Big Grassy Ridge vicinity during the winters from the early 1950s until the early 1970s. In the early 1970s, however, large numbers of elk began moving farther south to what is known as Little Grassy and, on more severe winters, as far south as Market Lake Wildlife Management Area. Much of the initial movement, at least, was attributed to increased snowmachine use around the elk winter ranges (Sherwood 1977).

The first arrival of elk at Market Lake WMA was in the winter of 1972-73. At that time, 200-300 elk were documented and were fed hay there. There have been four other occasions during the 1970s and 1980s that elk were fed at Market Lake. The highest number was 1,200 animals in 1983-84 (IDFG records). This use pattern continued until 1987, when a major shift in elk distribution began to occur, which will be discussed later.

With the increased interest in the Sand Creek elk herd, the Bureau of Land Management (BLM), in cooperation with the Idaho Department of Lands (IDL) and the Idaho Department of Fish and Game, developed the Sands Habitat Management Plan (HMP), which was signed in 1978. That document provided a forage allocation for 2,000 wintering elk for five months and gives elk priority in many management decisions. The Sands HMP has been a significant step in the development of the elk herd and, although it is still in effect today, it was due to be reviewed and updated five years after being signed. The process to completely revise the document has been discussed but not implemented to date.

In the mean time, the elk herd had been growing and by 1981 had exceeded the goal of 2,000 wintering animals that had been outlined in the Sands HMP. With the exception of 1983-84, the number of wintering elk has been above that mark every year since, with the highest count to date being 3,679 animals counted in 1992-93 (Table 1).

As a result of that growth and a desire by the various land management agencies and the Fish and Game Department to obtain better control of this elk herd, two radio telemetry studies were conducted in the 1980s and a third in the early 1990s. The studies were designed to gather data on seasonal distribution, migration routes, timing of migration, mortality rates, population status of the elk herd, and the effect of logging and road building on the Targhee National Forest on elk summer distribution, migration, and harvest.

The first study was on the female segment of the herd from 1981-1984 and was conducted by Cecil Brown. The second was on the male segment and was done by Rich Winstead and others from 1985-1987. The combined results of the two studies were summarized by George Pauley in 1991.

Among the significant findings as they pertain to winter range are the following:

1. The distribution of the elk herd is shown in Figure 9 (Brown 1985).
2. Major migration routes for fall migrations are shown in Figure 2 (Brown 1985). Note the staging area near Sand Creek and the migration route through 5-Monuments. The use of these same areas was mentioned previously by Sherwood during the early years of the elk herd.
3. Spring migrations are shown in Figure 3 (Brown 1985).
4. An outline of the elk winter range as it existed at the time is given in Figure 6 (Brown 1985).

In addition, there are two aspects of the elk research, harvest strategies and elk winter range distribution, that warrant further explanation.

Harvest Strategies

Soon after the initial research was begun in 1981, it became apparent that both Yellowstone National Park, and to a greater degree, Harriman State Park, had become refuge areas for significant numbers of elk, particularly during the hunting seasons. In order to control the growing population numbers, it became necessary to target antlerless animals in those particular segments of the population at a time when they were not in those refuge areas.

From 1974 to 1982, antlerless controlled hunts had been held prior to the general season in Unit 60. (Unit 60 includes Harriman State Park and is used by nearly all of the Sand Creek elk from Yellowstone National Park during migration). This system promoted heavy harvest of the resident elk, but allowed the refuge elk numbers to grow. As a result of Brown's study, antlerless elk hunts in Unit 60 were delayed until after the general hunt and lasted throughout the migration periods that he described.

The results were that desired harvest levels were not always achieved and depended largely on the weather and how quickly elk moved from the sanctuary areas to the winter range. Of possibly greater significance was the abandonment of the staging area near Sand Creek that had previously been used heavily by migrating elk in the fall, but was now within the hunt boundary. The eventual effect was that elk began moving directly from the refuge areas in the parks to the desert winter range, which was closed to hunting. This movement in many cases, happened in a relatively short time, which not only limited harvest opportunities for hunters, but also forced elk onto the winter range much earlier than they had been arriving in previous years.

In addition, resident elk in units outside the parks also began to show signs of early movements to winter range. Elk began moving from summer range to winter range during the general bull-only season and in some cases, actually moved prior to the general season opening. This phenomenon was attributed to several factors including an accelerated timber harvest program in the Targhee National Forest, which not only reduced cover for elk, but also greatly improved hunter access, high hunter densities, and increased use of ORVs during hunting seasons. In effect, a situation was created in which desired elk harvest was not necessarily attained and elk were arriving on winter range in early October rather than mid-November as described by Brown (Brown 1985).

To address these concerns and to follow management recommendations summarized by Pauley (1991), antlerless harvest was shifted from Unit 60 to the winter range itself beginning in 1990. Although not without problems, this system was designed to reestablish the staging area at Sand Creek, hold elk on transition range longer, achieve desired harvest levels on the various summer population segments of antlerless animals on the winter range, and provide hunting opportunity over a long enough period of time to discourage early movements of elk to the winter range. Some positive effects are beginning to be realized. Early movements to winter range are apparently being curtailed and high hunter success in 1994 did reduce the total number of elk

counted on the winter range (Table 1). Harvest rates, however, remain weather dependant. Due to abnormally mild conditions in 1995, for example, elk did not arrive on winter range until mid-January, 1996. Since this was after the hunting seasons had closed, the result was a low harvest that year.

The second elk research project which focused on bull elk, also produced some interesting information. Data suggested that antlered elk in open hunt units were being heavily harvested during the general any-bull season. Bull elk in Unit 60 in particular, were experiencing a 92% harvest rate every year. Bulls surviving to older age classes were residing in refuge areas such as Yellowstone National Park or Harriman State Park, areas of limited access such as the Centennial Mountains, or in Montana (Pauley 1991).

As a result of this information and a concern over low bull numbers in non-refuge segments of the elk herd, a spikes-only general bull hunt was initiated in 1991 to improve bull escapement. The third Sand Creek elk study was begun to monitor this change in harvest strategy and dramatic results were reported by Hughbanks (1993).

Prior to spikes-only regulations, the total number of bulls counted on the winter range was about 400, with an average annual ratio of 23 bulls per 100 cows. Although that ratio is considered good in most cases, many of the bulls that were counted on winter range, especially older age animals, were coming from refuge areas and likely were not subjected to significant hunting pressure. Consequently, the numbers counted on winter range did not reflect the high mortality on bull elk in open hunt units. After two years of spikes-only hunting however, the total bull count was 1,183, over a three-fold increase, with a bull to cow ratio of 68 per 100. Not only did total bull numbers increase, but the number of older bulls showed a similar trend (Table 1, and Hughbanks 1993).

Beginning in 1993, permits were issued for "any bull" and good hunter success, especially since 1994, has resulted in numerous mature bulls, including trophy sized animals, being harvested. A corresponding reduction in total bull numbers has also been noted (Table 1).

Elk Winter Range Distribution

In summarizing elk use and distribution on the winter range, the Basin subunit (Figure 7, Pauley) received constant, high use in a relatively small area. “The Basin was the core of elk winter range use over the duration of this study (Brown 1985, Winstead 1990), during the early 1960s (Hayden-Wing 1979), and throughout the early history of the herd (Sherwood 1977),” (Pauley 1991). The Basin subunit received 19 percent of the annual elk days use of the entire winter range which is substantially more use than any other unit (Table 2, Pauley 1991). Portions of the Basin unit and adjacent high use elk winter range are in private ownership. The Siddoway Sheep Company owns the most important parcels, but the Saurey and Hillman parcels and adjoining BLM allotments have also had high elk use.

The primary threat to the continued use of this key winter range by elk is the encroachment of agriculture and the associated development. For several years, native range land has been broken

out and converted to farm land in the area between Hamer and Big Grassy Ridge, with potatoes being the principal crop produced. As agricultural expansion has occurred, so has the demand for improved access to those farms.

In the mid-1980s, a proposal to construct an all weather farm-to-market road across elk winter range on public lands resulted in a rather heated debate about the effects of such projects on wintering elk. Much of Brown's research data was used as evidence that the proposed road did indeed go through an elk winter range, and that elk tended to avoid existing well traveled roads such as Highway 33, which is several miles to the south. The famous Egin-Hamer Road controversy focused national attention on the issue and in the end, the road was built but closed during the winter months.

By 1975, agricultural development had reduced the migration corridor used by elk to move from Big Grassy south to Market Lake down to an area three miles wide and, by 1986 that corridor had shrunk to a width of only one quarter of a mile. In 1986, continued agricultural expansion not only crossed the corridor but moved into the "core" of the winter range. It was at this point that a major shift in elk winter distribution occurred.

In 1987, significant numbers of elk began moving west across the farm lands toward Hamer rather than south toward Market Lake. This change in distribution has resulted in increased depredation problems in some areas and has made it necessary to feed elk near Hamer on occasion to reduce depredations and to prevent large numbers of elk from crossing Interstate Highway 15 and moving toward Mud Lake, which is a major hay producing area.

Additional agricultural development on private, or public, properties that are presently in native vegetation and are within the traditional high use elk winter range will only compound the problem. The end result may be a dramatic decrease in elk numbers.

The Future

With the mixed land ownership patterns within the Sand Creek winter range and the increasing demands placed on those lands by a wide variety of interests, the future of the Sand Creek elk herd depends on a strong cooperative management effort from sportsmen, the public in general, public land management agencies, and private landowners.

Insert MAP - Distribution of Big Game on the Juniper Buttes, From Hayden-Wing

Table 1. Summary of elk trend counts, Units 60A and 63, 1959-1996.

Year	Total Elk	Antlered	Antlerless	Calves	Bull:Cow:Calf
1959-60	539[a]	-	-	-	-
1963-64	823[a]	-	-	-	-
1967-68	981[a]	-	-	-	-
1971-72	908[a]	-	-	-	-
1975-76	1,228[a]	-	-	-	-
1978-79	1,484[b]	231	-	-	-
1979-80	1,892[b]	-	-	-	-
1980-81	2,310[b]	304	-	-	-
1981-82	2,327[b]	337	-	-	-
1982-83	2,959[b]	305	-	-	-
1983-84	1,803[b]	-	-	-	-
1984-85	2,553[b]	291	-	-	-
1985-86	2,269[b]	203	-	-	-
1986-87	-	-	-	-	-
1987-88	2,815[b]	348	-	-	-
1988-89	2,441[c]	-	-	-	-
1989-90	2,980[d]	371	1,926	669	19:100:35
1990-91	2,529[d]	409	1,459	542	28:100:37
1991-92	3,049[d]	860	1,529	660	56:100:43
1992-93	3,679[d]	1,183	1,729	767	68:100:44
1993-94	3,212[d]	937	1,609	973	60:100:37
1994-95	2,794[d]	762	1,361	653	56:100:48
1995-96	3,283[d]	967	1,623	693	60:100:43
1996-97	No count conducted				
1997-98	3,674	882	2,093	699	42:100:33

[a] Fixed wing aircraft used to determine elk numbers.
[b] Helicopter used to determine elk numbers.
[c] Fixed wing aircraft and counts at elk emergency feeding sites used to determine elk numbers.
[d] Helicopter and sightability used to determine elk numbers (confidence interval for sightability is 90%)

Insert FIGURE 9 – Distribution of summer subpopulations and harmonic…

Insert FIGURE 2 – Fall migration routes of cow elk on the Sand Creek…

Insert FIGURE 3 – Spring migration routes, calving, and calf rearing…

Insert FIGURE 6 – The Sand Creek winter range in southeast Idaho

Insert FIGURE 7 – Location of winter range units as Sand Creek

Table 2. Annual distribution of elk use on subunits of the Sand Creek winter range in southeastern Idaho, 1981-1987.

		Elk Use[a]						
Subunit	**Area (km^2)**	**'81-82**	**'82-83**	**'83-84**	**'84-85**	**'85-86**	**'86-87**	**Mean**
Elkhorn	150	9	2	4	2	1	19	6
Second Sands	182	2	2	1	4	4	14	5
Chokecherry Ridge	86	25	8	3	4	5	0	7
Big Grassy	45	2	2	18	4	7	1	6
North Juniper	46	11	6	4	8	7	6	7
Basin	31	37	31	13	21	5	6	19
Sand Mountain	35	0	0	4	19	5	7	6
Gerber Butte	57	3	7	13	7	2	23	9
Raumaker Butte	154	0	3	0	3	1	1	1
Sage Junction	37	0	0	3	1	0	0	1
Hawgood	60	0	5	0	1	3	7	3
Little Grassy	95	7	13	12	12	16	9	11
Plano	62	0	3	0	0	0	0	1
South of Hwy 33								
Market Lake	29	0	4	23	11	28	3	11
Butte Canal	39	2	7	1	0	11	3	4
Menan Butte	40	2	7	1	3	5	1	3

[a] Elk use was calculated as an annual percentage of estimated elk days of use reported by Brown (1985), 1981-82 through 1983-84 and Winstead (1990), 1984-85 through 1986-87.

MULE DEER

There were very few mule deer in Fremont County in the 1930s and 1940s, and the season was closed from 1943 to 1947. The area that included the Chapman segment was not opened to deer hunting until 1958. A decline in deer numbers in the early 1970s was attributed, at least in part, to liberal harvest and severe winters, but also occurred in most of the region and throughout the western United States in general.

Prior to 1983, the general deer and general elk seasons were open concurrently, and the annual deer harvest was relatively high. After that date, however, the seasons were separated with the deer season following the elk season, and harvest declined. Most big game hunters in this area hunt primarily for elk, but will take deer if the opportunity is available while deer are distributed on summer range. Most deer harvest occurs during deer migrations onto the desert which on some years takes place after the general season. Consequently, harvest can be variable from year to year.

The wintering herd grew to approximately 2,000 wintering animals throughout most of the 1980s. Most of these animals winter on the Junipers winter range, an area that is relatively small and not capable of supporting large numbers of deer. When the Sands Habitat Management Plan was written in 1978, it was estimated that the Junipers winter range could probably sustain only about 1,200 deer for an extended time period. Consequently, this deer herd is prone to high winter mortality during harsh winters.

The wintering herd grew to approximately 2,000 wintering animals throughout most of the 1980s (Table 3). A severe drought in the summer and fall of 1988, combined with a hard winter that year, resulted in a significant winter kill. Early in the winter, 1,684 deer were counted, and a mortality survey the following spring produced 300 carcasses with only a portion of the winter range being covered.

In the 1990s, the herd has continued to grow. A light harvest in 1993 was accompanied by a record high winter count that year of 2,445 deer. In 1996, the deer hunting season was restructured to precede the general elk season and subsequent light harvest occurred. In December of 1996, a new record high number of 2,925 deer were counted.

To address concerns about low deer numbers in other units, primarily in the Southeast Region, either-sex deer hunting was eliminated in 1997 and replaced with a buck-only general season and antlerless permits. In 1998, those permits were changed to either-sex. The result has been reduced harvest and high winter counts. In January of 1998, 2,790 wintering deer were documented.

Table 3. Sand Creek (Unit 60A) Mule Deer Winter Trend Counts

Year	Total Deer Counted
1982-83	1,443
1983-84	1,337
1984-85	1,983
1985-86	1,549
1988-89	1,684
1993-94	2,445
1995-96	2,297
1996-97	2,925
1997-98	2,790

MOOSE

There is no known record of moose in eastern Idaho prior to 1850. However, there was general hunting from 1893 to 1898, after which the season was closed for the next 48 years. Limited permit hunting was begun again in 1946 and some populations in Fremont County declined. To address that problem and develop management guidelines, an ecological study of moose was conducted by Brent Ritchie from 1976 to 1978. Big Bend Ridge and the Junipers winter ranges were part of that study (Figure 8). Among the findings were that moose in Fremont County:

1. Have home ranges of 7 to 16 square miles,
2. Travel 6 to 23 miles from winter to summer range,
3. Tend to spend several weeks within areas that are 10 acres in size before moving on,
4. Are very productive with a long term bull:cow:calf ratio of 72 bulls and 62 calves per 100 cows, and an observed twinning rate of 12% (a cow with triplets was noted at the Sand Creek Ponds in 1987), and
5. Hunting, both legal and illegal, was the primary mortality factor with climatic factors being secondary. The illegal harvest frequently exceeded the legal harvest.

It was also noted that the Sand Creek desert and the Junipers were unique moose winter range. The winter diet of moose here is different than that of other moose populations reported in the literature. Sand Creek moose may be the only desert wintering moose herd in the world.

In the 1980s, the numbers of wintering moose on or near the SCWMA increased significantly from approximately 150 in 1982 to nearly 400 in 1988 (Table 4). Contributing factors may have been increased shrub production in some areas of the Targhee Forest as a result of an aggressive timber harvest program; the Native American harvest in recent years being directed toward antlered moose rather than either sex; conservative permit levels for hunting seasons; and an increased enforcement effort.

In 1988, 274 moose were counted from Blue Creek to the Junipers during December and an additional 112 on Big Bend Ridge. However, as a result of the severe drought of 1988 and the harsh winter that followed, as many as half of these animals may have been lost to winter mortality in some areas.

Since 1988, moose have increased to record numbers. The most recent aerial survey conducted from January 27-29, 1998 in conjunction with the Sand Creek elk survey indicated that a minimum of 584 moose were wintering in the area. This represents the highest count on record to date.

Table 4. Sand Creek Moose Surveys, 1988-1998.

Year	Moose Counted[a]
1988-89	386
1989-90	192
1990-91	325
1991-92	172
1993-94	360
1994-95	275
1995-96	225
1996-97[b]	323
1997-98	584

[a] Moose surveys are done in conjunction with Sand Creek elk surveys. Consequently, not all moose are counted and numbers represent minimum population levels.

[b] The 1996-97 survey was done in conjunction with the Unit 60-A mule deer census, consequently the area covered was considerably smaller than in previous years.

Insert FIGURE 8 – Distribution of summer sightings for moose…

WHITE-TAILED DEER

White-tailed deer were not reported on SCWMA until the late 1980s. Numbers appear to be increasing particularly at the Sand Creek Ponds. Population surveys have not been conducted to date, consequently, little is known about this population.

ANTELOPE

Antelope use of the SCWMA was sporadic before 1958 when an antelope proof fence was constructed along Interstate 15 between Roberts and Spencer. The migration routes to winter ranges in the Mud Lake area were cut off, and a small group of antelope remained east of the Interstate. The present winter range is marginal, and the herd size has fluctuated with the severity of the winter. The winters of 1983-84, 1988-89, and 1993-94 have kept this herd at very low numbers. Only a few scattered animals are seen on the SCWMA. Permit hunting for antelope has been allowed when animal numbers are adequate.

COLUMBIAN SHARP-TAILED GROUSE

Historically, Columbian sharp-tailed grouse have been found over much of the SCWMA with the largest concentrations on the Rick's segment, Black Knoll, and the Siddoway use-trade areas. A total of 12 leks were located as part of a sharp-tailed grouse study by Tom Parker in 1968-69 (Parker 1970). Some of these are still active and have been monitored annually to obtain trend data.

An intensive lek search in 1986 and 1987 produced locations of 44 active leks of which 15 had 10 or more birds attending. Only four of these leks were in the same locations as those found in 1969, but several were close to old lek sites. Since this survey was conducted during a period of relatively high bird numbers, most of the smaller leks were probably satellite leks that are only active during periods of high populations.

Another study of sharp-tailed grouse in the area was initiated in 1987 and completed in 1990 by Daryl Meints. Among the findings was the location of an important wintering area on the Chapman and Mortimer-Pinnock segments and documentation of a movement from spring to winter range of 20 km which is the longest recorded for Columbian sharp-tailed grouse. Since completion of that study, several leks, most notably in the Big Grassy area have become inactive for reasons that are not known. There has been a considerable amount of agricultural development in the vicinity, however, that may be a factor. The Big Grassy area historically had been one of the highest concentration areas for sharptails. At the same time, other leks being monitored seem to be relatively stable and three new leks were documented in 1995 and 1996.

Populations have apparently been increasing in the area east of the Sand Creek Road where several thousand acres of farm land was enrolled in the CRP program in the late 1980s. Much of this land is due to come out of CRP which may have a significant impact on sharptails in the future.

Due to population declines throughout its range, the Columbian sharp-tailed grouse is presently under petition for listing under the Endangered Species Act. Consequently, a state wide

Conservation Assessment and Strategy is currently being developed for this species and is in draft form. Management guidelines from the Conservation Strategy when it is adopted will be incorporated into the SCWMA management plan. The Draft guidelines will be followed as appropriate in the interim.

There are two lek routes in the area, Grassy and Sand Creek, that have been monitored for a number of years. Both will continue to be monitored.

SAGE GROUSE

Historically, sage grouse have occupied this area for centuries. In the recent past, a large sage grouse population inhabited much of the SCWMA and surrounding areas and was documented in several studies.

"In the 1950s, Pyrah (1954), Stanton (1958), Crawford (1960), and Schlatterer (1960) studied the seasonal habitats, migration patterns, and reproduction of sage grouse populations on the Upper Snake River Plain of southeastern Idaho. These sage grouse undertook relatively long seasonal migrations of 80 to 160 km round trip (Dalke et al. 1963). From leks in the central portion of the area (northwest of St. Anthony), the birds moved north to summer habitat in Shotgun Valley and Camas Meadows, and then southwest to winter areas ranging from Sage Junction to Medicine Lodge (Crawford 1960, Dalke et al. 1960, 1963) (Figure 1). Winter concentrations of birds numbered from 3,000-5,000 in the Rexburg-Sage Junction area, and individual flocks included up to 1,000 birds during periods of severe weather (Dalke et al. 1963)" Leonard (1995).

In general, sage grouse populations throughout the Upper Snake Region have declined to some degree over the past 30 to 40 years as indicated by reduced counts on lek routes and lower hunter success rates in many areas. The Fremont and Clark County areas, however, have shown some dramatic reductions in bird numbers, especially in recent years. The Red Road, Jacoby, and Sand Creek Road routes, in particular, appear to have declined at a higher rate than the region as a whole and since 1993, the lek counts have been the lowest on record (Figure 2).

From 1993 to 1996, for example, the number of leks counted on the Red Road was down from 19 in 1953 to 2, which represents a 90% decline, and the Sand Creek Road lek route was down from 3 leks to 1, a 67% decline. In addition to the annual lek route information, an extensive ground and aerial lek search in the spring of 1994 produced a total of only 11 active leks in the Sand Creek desert. A ground search over much of this same area in 1986 and 1987 yielded 38 active leks at that time. This represents a reduction of approximately 71% in active leks since 1987. Harvest data show similar trends with the 1996 season showing the lowest number of hunters and least sage grouse taken on record.

Concern over declining population numbers prompted two research projects on the Sand Creek population to determine what some of the problems might be. These projects have been recently completed and final documentation should be available in the near future. In addition, an Idaho Sage Grouse Management Plan was completed and signed in 1997 to address habitat issues statewide. Management guidelines from the Sage Grouse Management Plan and from the research projects will be incorporated into the SCWMA management plans and projects.

Insert FIGURE 1 – Sage grouse study area (Leonard 1995)

Insert FIGURE 2 – Red Road Lek Route

WATERFOWL

A variety of waterfowl species utilize the ponds area from spring through fall. An attempt is being made to balance a popular fishery at the Sand Creek Ponds with waterfowl production. With the implementation of boating restrictions in 1988 during the nesting season, protection of nesting areas and construction of islands and nesting platforms, waterfowl production is increasing. Goose production in particular had increased from 80 goslings in the early 1980s to 120-130 goslings in 1996. Most nesting structures are currently being used by waterfowl.

As of 1996, trumpeter swan nesting is occurring on two of the 5 ponds, as well as on a third nest downstream in the Swan Pond, and public entry has been excluded on these ponds until hatching is completed in order to promote swan nesting success.

A waterfowl nesting survey in 1991 indicated that there were 13 species of ducks nesting at the ponds. These were lesser scaup, bufflehead, ring-necked, redhead, ruddy, canvasback, gadwall, mallard, widgeon, shoveler, and cinnamon, green-winged and blue-winged teal. During the 1991 nesting season, it was estimated that approximately 195 ducklings were produced, as well as 121 goslings.

FURBEARERS

Beaver, mink, and muskrat inhabit the riparian area of the SCWMA, particularly at the Sand Creek Ponds. In recent years, an increase in raccoon has been noted and otter are seen on occasion. Trapping is allowed on SCWMA and trappers must register with the SCWMA manager.

RARE, THREATENED, AND ENDANGERED SPECIES

Wildlife Species	State Status	Forest Service	BLM
Bald eagle	E		
Trumpeter Swan	SSC	S	S
Long-billed curlew			S
Great gray owl	SSC	S	S
Burrowing owl			S
Whooping crane	E		
Northern flying squirrel	SSC		
Peregrine falcon	E		
Ferruginous hawk			S
White pelican	SSC		
Common loon	SSC		
Flammulated owl	SSC	S	S
Columbian sharp-tailed grouse	SSC	S	S
Townsend's big-eared bat	SSC	S	S

Plant Species	State Status	Forest Service	BLM
St. Anthony evening primrose			S

TRUMPETER SWANS

The presence of trumpeter swans at the Sand Creek ponds has been documented on several occasions in the past. However, nesting attempts have been very limited, and successful production of cygnets to flight stage has apparently occurred only in recent years. The following is taken from Sand Creek WMA annual project completion reports and is a summary, by year, of trumpeter swan occurrence and nesting on the Sand Creek ponds.

1958: "One pair of swans stayed most of the summer, but they did not nest…"

1968: "A pair of trumpeter swans has been staying on area for several summers - hatched two young - but they did not survive".

1973: "...two trumpeter swans were produced". It is not known from the records if the young survived to flight stage.

1978: "A pair of trumpeter swans nest on the area, but they are not always successful in rearing a brood".

1986: Two pairs of swans were observed in the ponds area prior to fishing season. On May 23, five swans were on Pond 4, but no nest was located. Fishing season opened on May 24, and the swans left the area.

1987: One pair of adult swans was documented on Pond 4, but they did not nest. One pair nested on the Swan Pond in Rick's Pasture. This area was closed to public entry for the first time to protect the swans. On June 7, five cygnets were produced but none survived to flight stage.

1988: The pair of swans on the Swan Pond nested again and the pond was closed to public entry. On June 5, six cygnets were produced and four survived to flight stage. This appears to be the first documented record of cygnets surviving to flight stage on the SCWMA.

1988: The Sand Creek Ponds were closed to "floating devices" until July 1, for the first time, to protect nesting waterfowl.

1989: A pair of swans were in the Swan Pond area, but they did not nest.

1990: The pair of swans on the Swan Pond nested and on June 2, one cygnet was produced. However, it disappeared after two weeks.

1991: The Swan Pond nest was once again successful. Four cygnets were produced on June 8, and three survived to flight stage.

1992: The Swan Pond nest produced two cygnets on June 11, but they survived for only two weeks. A pair on Pond 4 nested for the first time. This is the first documented nesting attempt in the upper pond area (the five man-made ponds) since 1973. The nest was noted on May 13, and

the decision was made to close the pond to public entry until further notice. On June 15, two cygnets hatched and both survived to flight stage. This is also the first documentation of cygnets surviving to flight stage in the upper pond area. Pond 4 was opened to fishing and floating devices on July 1. In 1992, only eleven nests were documented in Idaho, including the two at SCWMA. The two cygnets produced on Pond 4 were two of only eight to survive to flight stage in Idaho that year.

1993: The Pond 4 pair produced four cygnets on June 16, and all of those survived to flight stage. The pond was once again closed to public entry until July 1. Another pair of swans were noted in the area but did not nest.

1994: There were nests on both the Swan Pond and Pond 4. Two cygnets were produced on Pond 4 between June 20 and 24, and both survived to flight stage. None were produced on the Swan Pond. Both areas were closed to public entry until July 1.

1995: A flight to locate nesting swans on May 17 confirmed ground reports that there were swan nests on the Swan Pond, Pond 4, and a new nest on Pond 2. All three areas were closed to public entry until July 1. The nest on Pond 4 produced 3 cygnets between June 17 and 19. The nest on Pond 2 produced two cygnets on June 23, and the Swan Pond nest was unsuccessful. All five survived to flight stage.

1996: The trumpeter swan pairs on Pond 2, Pond 4 and the Swan Pond all began nesting on or about May 15. On June 20, three cygnets were observed on Pond 4. On June 24, one cygnet was observed on the Swan Pond. On June 27, four cygnets were observed on Pond 2. Only one cygnet from Pond 4 survived to flight stage, no cygnets from the other ponds survived.

1997: The swans on Ponds 2 and 4 began nesting on May 20 or 21. The nest on the Swan Pond was confirmed on May 24 but abandoned sometime before June 9. The hatching date for both Pond 2 and 4 nests was June 21 with 3 cygnets on Pond 2 and 1 on Pond 4. No cygnets survived the summer.

1998: The trumpeter swan pairs on Pond 2 and the Swan Pond began nesting between May 24 and May 27. Pond 4 did not have an active nest this year for the first time. The Swan Pond produced 3 cygnets that did not survive. Pond 2 produced 3 cygnets on June 24 and all three survived to flight stage.

TRUMPETER SWAN PRODUCTION SUMMARY

Year	Nest Location	Hatch Date	# Cygnets	# Attaining Flight State
1968	-	-	2	0
1973	-	-	2	Unknown
1987	Swan Pond	June 7	5	0
1988	Swan Pond	June 6	6	4
1989	-	-	-	-
1990	Swan Pond	June 2	1	0
1991	Swan Pond	June 8	4	3
1992	Swan Pond	June 11	2	0
1992	Pond 4	June 15	2	2
1993	Swan Pond	-	-	-
1993	Pond 4	June 16	4	4
1994	Swan Pond	Unsuccessful	0	0
1994	Pond 4	June 20-24	2	2
1995	Swan Pond	Unsuccessful	0	0
1995	Pond 4	June 17-19	3	3
1995	Pond 2	June 23	3	2
1996	Swan Pond	June 24	1	0
1996	Pond 4	June 20	3	1
1996	Pond 2	June 27	4	0
1997	Swan Pond	Unsuccessful	0	0
1997	Pond 4	June 21	1	0
1997	Pond 2	June 21	3	0
1998	Swan Pond		3	0
1998	Pond 4	No nest		
1998	Pond 2	June 23	3	3

NONGAME

Bald Eagles

Bald eagles are frequently seen in the vicinity of the Sand Creek Ponds and along Sand Creek in summer and winter, and occasionally on other portions of the SCWMA. A pair of adults was observed throughout the 1996 spring nesting season at the ponds but a search failed to locate a nest.

Osprey

Osprey platforms were erected at two of the Sand Creek Ponds in 1988. Nesting has been documented since 1992 on one or the other platform or in one of the trees on Pond 1.

Other Nongame Wildlife

There are approximately 160 species of nongame birds and 15 nongame mammals that utilize the SCWMA. (Appendix J).

FISHERIES

Prior to the purchase of the Chapman property, there was very little fishing on what is now SCWMA. The old Blue Creek Reservoir was the only impoundment, and it was dried up every year for irrigation purposes. All of the property was posted to trespassing.

Beginning in the 1950s, work was begun on four additional impoundments with the last one being completed in 1977. These ponds were created primarily for waterfowl production and funding was provided through Pittman-Robertson funds. Fishing has been encouraged, however, and the ponds have become a popular family fishery.

The ponds are stocked annually on several occasions with catchable rainbow trout. Rainbow fingerlings are also planted, and in recent years, cutthroat and brook trout fingerlings have also been planted.

Three formal angler surveys have been completed on the ponds and the results are shown in Tables 5, 6, 7, and 8. Since 1986, only sporadic angler surveys have been completed by SCWMA personnel, but catch rates seem to be declining.

Beginning in 1988, the use of floating devices was restricted on the ponds until July 1 to protect nesting waterfowl, and beginning in 1992, ponds with nesting trumpeter swans have been restricted to public entry until July 1. This has resulted in reduced angler effort in the early part of the season but an increase in July on the ponds that were closed for swan nesting. There is also more consistent fishing pressure throughout the season, particularly from a group of predominately retired people that spend the summer in the Rexburg area and the winters in Arizona.

Table 5. Creel census summary at Sand Creek WMA (by pond), May 24 to September 12, 1986.

Water	Surface area (hectares)	Angler effort (hrs)	Fish harvested CRB[a]	Fish harvested FRB[b]	Brook trout	Total	Trout/ hour	Trout/ hectare	Effort/ hectare
Blue Creek Reservoir	3.2	1,764			1,309	1,309	0.74	404.9	545.7
Pond 1	6.5	1,984	258	462	32	752	0.38	116.0	306.2
Pond 2	7.3	2,182	661	1,521	-	2,182	1.00	278.8	298.8
Pond 3	15.8	1,380	241	363	-	604	0.44	37.0	86.4
Pond 4	31.6	6,289	1,245	1,459	126	2,830	0.45	88.9	200.0
Total	**64.4**	**13,599**	**2,405**	**3,805**	**1,467**	**7,677**	**0.56**	**118.5**	**212.4**

[a] CRB = catchable rainbow trout from hatchery releases.
[b] FRB = fingerling rainbow trout from hatchery releases.

Table 6. Comparison of estimated angler effort, harvest, and catch rates. Sand Creek Wildlife Management Area, 1979, 1981, and 1986.

	Angler effort (hr)			Fish harvested			Catch rate (trout/hr)		
Water	**1979**	**1981**	**1986[a]**	**1979**	**1981**	**1986[a]**	**1979**	**1981**	**1986**
Blue Creek Reservoir	3,915	3,743	1,764	1,857	2,442	1,309	0.47	0.64	0.74
Pond 1	2,154	1,507	1,984	787	727	752	0.37	0.48	0.38
Pond 2	6,178	4,193	2,182	3,068	2,172	2,182	0.50	0.52	1.00
Pond 3	5,494	2,901	1,380	3,119	1,082	604	0.57	0.37	0.44
Pond 4	14,450	9,180	6,289	7,031	3,659	2,830	0.49	0.40	0.45
Total	**32,191**	**21,524**	**13,599**	**15,862**	**10,082**	**7,677**	**0.49**	**0.47**	**0.56**

[a] Effort and harvest after Labor Day estimated using proportion of effort and harvest occurring after Labor Day in 1979 and 1981.

Table 7. Percent return to creel of hatchery fish stocked into Sand Creek Wildlife Management Area ponds, 1986.

	Species		
Water	**Rainbow fingerlings**	**Rainbow catchables**	**Brook trout**
Pond 1	2.3%	5.7%	0.2%
Pond 2	15.0%	31.4%	0.0%
Pond 3	3.6%	12.0%	0.0%
Pond 4	14.4%	27.6%	0.6%

Table 8. Mean length (mm) of fish harvested from the Sand Creek Wildlife Management Area ponds, 1986.

	Species		
Water	**Rainbow fingerlings**	**Rainbow catchables**	**Brook trout**
Pond 1	275	271	248
Pond 2	283	255	-
Pond 3	248	263	263
Pond 4	276	274	270
Blue Creek Reservoir	-	-	220

APPENDIX I

CAPITAL IMPROVEMENTS AND DEVELOPMENTS

Approximately 700 acres of SCWMA have been farmed at some time. Presently, about 165 acres have been flooded to make ponds and another 450 acres have been planted into permanent cover. The remaining 80 acres are currently being farmed to produce food crops for wildlife.

Over 1,100 acres of grass and legumes have been planted on the Siddoway lands by use-trade agreement and approximately 1,000 acres of decadent bitterbrush stands have been roto-mowed on the SCWMA and adjacent public lands to stimulate regrowth. Prescribed burning has been done in some areas to rejuvenate decadent brush stands.

Five earth-filled dikes were built beginning in the 1950s and completed in 1977 on the Chapman Segment to store spring and stream water for waterfowl production and public fishing. The total length of the dikes is 12,760 feet and dikes average six feet in height. The total pond area is 165 acres and the ponds store 836 acre-feet of water. In the early 1990s, facilities for anglers with disabilities were constructed on Ponds 1 and 4 and include boat ramps, paths, fishing docks, and restroom facilities.

In 1952, one house, a shop-bunkhouse combination, and a powerhouse building were constructed on the Chapman Segment for the headquarters. In 1968, a new headquarters was built north of Parker and includes a residence, a shop and office, two equipment storage sheds and a grainery. Currently, the Wildlife Technician assigned to the project resides in the Parker residence.

Other developments include approximately 55 miles of boundary and interior fences, several designated campsites near the ponds, and several miles of maintained roadways.

APPENDIX J

WILDLIFE SPECIES INVENTORY

KEY:
Spring (March-May)
Summer (June-August)
Fall (September-November)
Winter (December-February)

1. A-Abundant, a species which is very numerous.
2. C-Common, certain to be seen or heard in suitable habitat.
3. U-Uncommon, present but not certain to be seen.
4. O-Occasional, seen only a few times during the season.
5. R-Rare, seen at intervals of 2 to 5 years.
6. K-Unknown, species abundance unknown.

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
MAMMALS				
Elk	A	U	A	A
Moose	A	U	A	A
Mule deer	A	U	A	A
White-tailed deer	C	C	C	C
Pronghorn antelope	C	C	C	-
Black bear	U	U	U	-
Bobcat	U	U	U	C
Coyote	A	U	A	A
Canada lynx	O	O	O	O
Mink	C	C	C	U
Red fox	A	A	A	A
Weasel	C	C	C	C
Badger	A	A	A	A
Beaver	U	C	C	U
Marmot	A	C	-	-
Muskrat	A	A	A	C
Otter	O	O	O	O
Porcupine	A	C	C	A
Raccoon	C	C	C	C
Striped skunk	A	A	A	U
Black-tailed jackrabbit	U	U	U	U
Cottontail rabbit	U	U	U	U
Pygmy rabbit	U	U	U	U

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Snowshoe rabbit	U	U	U	U
White-tailed jackrabbit	A	C	A	A
Chipmunk	U	A	A	-
Deer mouse	A	A	A	A
Ground squirrel	C	A	-	-
Kangaroo rat	A	A	A	-
Meadow vole	C	C	C	C
Northern flying squirrel	K	K	K	K
Pocket gopher	A	A	A	-
Wood rat	C	C	C	U
Yuma myotis	-	-	O	-
Long-eared myotis	-	-	O	-
Western small-footed myotis	-	-	O	-
Hoary bat	-	-	O	-
Townsend's big-eared bat	U	U	U	U
REPTILES & AMPHIBIANS				
Horned toad	C	C	-	-
Leopard frog	A	A	-	-
Water snake	A	A	-	-
Tiger salamander	K	K	K	K
Blue racer	K	K	K	K
Rubber boa	K	K	-	-
BIRDS				
Common loon	O	-	-	-
Eared grebe	C	C	O	-
Pied-billed grebe	C	C	O	-
Western grebe	O	O	O	-
American white pelican	O	-	-	-
Double-crested cormorant	C	C	C	-
American bittern	U	U	U	-
Black-crowned night heron	C	C	C	-
Great blue heron	C	C	C	-
Green-backed heron	U	U	-	-
Sandhill crane	A	A	A	-
Snowy egret	O	O	-	-
White-faced ibis	O	O	-	-
American wigeon	A	A	A	-
Barrow's goldeneye	R	R	R	R

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Blue-winged teal	O	O	O	-
Bufflehead	C	C	C	-
Canada goose	A	A	A	C
Canvasback	R	R	R	-
Cinnamon teal	C	C	C	-
Common goldeneye	O	O	O	R
Common merganser	O	O	O	-
Gadwall	A	A	A	-
Green-winged teal	C	C	C	-
Lessor scaup	C	C	C	-
Mallard	A	A	A	C
Northern pintail	O	O	O	-
Northern shoveler	O	O	O	-
Redhead	C	O	O	-
Ring-necked duck	A	A	A	-
Ruddy duck	O	O	O	-
Snow goose	R	-	-	-
Tundra swan	O	-	-	O
Trumpeter swan	C	C	C	C
Wood duck	R	R	R	-
Red-breasted merganser	O	O	-	-
American coot	C	C	C	-
Sora rail	U	U	U	-
Virginia rail	U	U	U	-
American avocet	O	O	-	-
Killdeer	A	A	A	-
Common snipe	C	C	C	-
Long-billed curlew	O	O	-	-
Marbled godwit	O	O	-	-
Short-billed dowitcher	O	O	-	-
Solitary sandpiper	O	O	-	-
Spotted sandpiper	O	O	-	-
Willet	O	O	-	-
Wilson’s phalarope	O	O	-	-
California gull	O	O	-	-
Franklin’s gull	O	-	-	-
Ring-billed gull	O	O	-	-
Common tern	O	O	-	-
Forster’s tern	O	O	-	-
American kestrel	A	A	A	-
Bald eagle	O	O	O	O
Cooper’s hawk	O	O	O	-

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Ferruginous hawk	O	O	O	-
Golden eagle	C	C	C	-
Northern goshawk	U	U	U	-
Northern harrier	A	A	A	-
Osprey	C	C	C	-
Peregrine falcon	R	R	R	-
Prairie falcon	O	O	O	-
Red-tailed hawk	C	C	C	-
Rough-legged hawk	O	O	O	-
Sharp-shinned hawk	O	O	O	-
Swainson's hawk	O	A	A	-
Turkey vulture	C	C	C	-
Blue grouse	U	U	U	U
Gray partridge	U	U	U	U
Ring-necked pheasant	O	U	O	-
Ruffed grouse	C	C	C	C
Sage grouse	A	A	A	U
Sharp-tailed grouse	C	C	C	U
Mourning dove	A	A	A	-
Rock dove	O	O	O	O
Burrowing owl	O	O	-	-
Flammulated owl	U	U	U	U
Great gray owl	U	U	U	-
Great horned owl	O	O	O	O
Northern pygmy-owl	U	U	U	U
Northern saw-whet owl	U	U	U	U
Short-eared owl	O	O	-	-
Western screech owl	U	U	U	U
Common nighthawk	-	A	-	-
Common poorwill	U	U	-	-
Calliope hummingbird	O	O	-	-
Rufous hummingbird	O	O	-	-
Belted kingfisher	C	C	C	C
Downy woodpecker	C	C	-	-
Hairy woodpecker	C	C	C	C
Lewis' woodpecker	C	C	-	-
Northern flicker	A	A	A	-
Williamson's sapsucker	C	C	C	-
Red-naped sapsucker	O	O	-	-
Dusky flycatcher	O	O	-	-
Olive-sided flycatcher	-	C	C	-
Say's phoebe	O	O	-	-

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Willow flycatcher	O	O	-	-
Eastern kingbird	-	C	C	-
Western kingbird	-	C	C	-
Horned lark	C	C	C	-
Barn swallow	C	C	O	-
Cliff swallow	A	A	A	-
Northern rough-winged swallow	O	O	O	-
Tree swallow	C	C	O	-
Violet-green swallow	A	A	O	-
American crow	O	O	O	-
Black-billed magpie	A	A	A	A
Common raven	A	A	A	O
Black-capped chickadee	C	C	C	C
Mountain chickadee	C	C	C	C
Red-breasted nuthatch	C	C	C	C
White-breasted nuthatch	C	C	C	C
House wren	U	U	U	-
Marsh wren	C	C	O	-
American robin	A	A	A	-
Mountain bluebird	A	A	C	-
Sage thrasher	A	A	-	-
Townsend's solitaire	O	O	-	-
Golden-crowned kinglet	U	U	U	-
Ruby-crowned kinglet	U	U	U	-
Loggerhead shrike	-	-	A	A
Northern shrike	O	O	-	-
American dipper	O	O	O	-
Cedar waxwing	O	O	O	O
Common yellowthroat	O	O	O	-
European starling	A	A	A	-
MacGillivary's warbler	O	O	O	-
Solitary vireo	O	O	-	-
Wilson's warbler	O	O	O	-
Yellow-rumped warbler	C	C	C	-
Yellow warbler	C	C	C	-
Black-headed grosbeak	O	O	-	-
Brewer's sparrow	C	C	O	-
Chipping sparrow	C	C	O	-
Dark-eyed junco	C	C	C	C
Fox sparrow	O	O	-	-
Green-tailed towhee	O	O	-	-
Lark sparrow	O	O	O	-

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Lazuli bunting	R	R	-	-
Rufous-sided towhee	O	O	-	-
Song sparrow	O	O	-	-
Snow bunting	U	U	-	-
Vesper sparrow	A	A	A	-
White-crowned sparrow	O	O	O	-
Bobolink	O	O	-	-
Brewer's blackbird	A	A	A	-
Brown-headed cowbird	C	C	O	-
Northern oriole	C	C	O	-
Red-winged blackbird	A	A	A	-
Western meadowlark	A	A	A	-
Western tanager	O	O	O	-
Yellow-headed blackbird	A	A	A	-
American goldfinch	A	A	A	-
Cassin's finch	O	O	-	-
Evening grosbeak	O	O	U	-
House finch	A	A	A	A
House sparrow	C	C	C	O
Pine siskin	O	O	O	O
Red crossbill	U	U	U	U
FISH				
Cutthroat trout	C	C	C	C
Eastern brook trout	A	A	A	A
Rainbow trout	A	A	A	A
ACCIDENTALS				
Barn owl				
Eastern bluejay				
Harlequin duck				
Purple martin				
Rosy finch				
Western gull				

APPENDIX K

CONSUMPTIVE USE INVENTORY

This table indicates most common public activities for which SCWMA is used and an estimate of the number of users and user days annually. Estimates are based on information in the 1986-1991 and 1991-1995 Management Plans and the 1991-1996 Work Plan for SCWMA.

Species	Number of Users	User Days	Annual Harvest
Elk	250	750	50
Deer	200	750	50
Moose	15	50	10
Sage grouse	300	450	500
Sharp-tailed grouse	100	275	100
Forest grouse	25	75	100
Canada goose	15	25	10
Mallards	10	20	30
Gadwall	10	20	20
Jackrabbit / marmot	25	135	--
Fishing	3,000	8,000	10,000

APPENDIX L

NON-CONSUMPTIVE USE INVENTORY

This table indicates most common nonconsumptive public activities for which SCWMA is used and an estimate of the number of users and user days annually. Estimates are based on information in the 1986-1991 and 1991-1995 Management plans and the 1991-1996 Work Plan for the SCWMA.

Non-Consumptive Use	Number of Users	User Days
Educational & scientific	200	250
Photography	100	250
Wildlife & nature viewing	500	2,000
Camping	1,000	2,375
Hiking	100	200
Horseback riding	100	400
Mountain biking	25	25
Total	**2,025**	**5,500**

APPENDIX M

WATER RIGHTS

Water Right	Source	Priority Date	Purpose	Amount
Claim A21-2040	Spring	07/30/1910	Domestic	.8 cfs
Claim A21-2153	Blue Creek Reservoir	10/16/1919	Storage	145 AFA
License 21-2039	Blue Creek	07/10/1910	Flow into Blue Creek Reservoir	8 cfs
License 21-2170	Blue Creek	10/16/1919	Flow into Blue Creek Reservoir	5.8 cfs
Claim A21-7151 Pond 1	Blue Creek	05/16/1978	Storage	56 AFA
Claim A21-4008 Pond 2	Blue Creek	04/01/1969	Storage	77 AFA
Claim A21-4007 Pond 3	Blue Creek	10/01/1965	Storage	168 AFA
Claim A21-2159 Pond 4	Blue Creek and Sand Creek	05/13/1960	Storage	150 AFA
Claim A21-4006 Pond 4	Blue Creek and Sand Creek	04/01/1962	Storage	240 AFA
Decreed 21-0014	Sand Creek	04/15/1896	Flow to Storage	1.0 cfs
21-0015 Peter Melling				.2 cfs
Decreed 21-0010 R.D. Smith*	Sand Creek	04/18/1888	Flow to Irrigation	1.7 cfs

*Agreement with landowner to run water through Pond 4 for irrigation.

APPENDIX N

NOXIOUS WEED CONTROL PLAN

The Sand Creek WMA has several known infestations of noxious weed species which are: Canada thistle *Cirsium arvense*, field bindweed *Convolmulus arvensis*, musk thistle *Carduus nutans*, and spotted knapweed *Centaurea maculosa*.

Within the past two years leafy spurge *Euphorbia esula* has been detected in several areas and is being treated both chemically and biologically. Other undetected noxious weeds may also be present on the Sand Creek WMA.

Current noxious weed control efforts target Canada and musk thistles, spotted knapweed, and leafy spurge. Infestations of these weeds are concentrated around the Sand Creek ponds (Canada and musk thistle) and the Sand Creek Parker Headquarters (spotted knapweed). Light infestations of field bindweed occur in some of the agricultural fields near the ponds.

Approximately 120 acres of agricultural land are currently being treated for weed control each year. In addition, the dikes, campgrounds and parking areas are treated, along with any other infestations that are detected.

Past and current control efforts have primarily relied on treating infestations with herbicides (2,4-D most commonly used), hand pulling small infestations, and summer fallowing some agricultural fields. In the spring of 1996, biological control methods were implemented, with the release of spotted knapweed seed head gall flies *Urophora affinis and U. quadrifasciata* around the Sand Creek Parker Headquarters. Summer and fall monitoring of the treated area indicated that the gall flies were successfully infecting knapweed seed heads.

Future noxious weed control efforts will be a combination of chemical, physical, and biological control methods (commonly referred to as integrated pest management). Infestations will be evaluated on an individual basis to determine the best methods of treatment. A greater emphasis will be placed on the use of biological control methods wherever possible to reduce herbicide use and long term control costs.

Monitoring of current noxious weed infestations will continue. Current monitoring involves inspecting infected areas throughout the growing season for response to current and previous year's treatments. Other areas of the Sand Creek WMA are monitored for new infestations of noxious weeds during the course of other activities. Locations of new infestations are recorded and appropriate control measures are implemented.

The staff of the Sand Creek WMA is currently involved in the development and implementation of the Henrys Fork Weed Management Area Plan and the Coordinated Management of Noxious Weeds in the Greater Yellowstone Area Plan.

Annual treatment measures and monitoring results are documented and submitted annually.

APPENDIX O

MONITORING PLAN

A monitoring program is essential in order to provide the information necessary for managers and management agencies to develop sound management plans. It should provide baseline data collected prior to a management program being developed and implemented, and post-application data in order to evaluate the effectiveness of the program. The following is an outline of the current and anticipated monitoring for the SCWMA.

The goals of the SCWMA monitoring program are to:

1. Obtain reliable baseline information on the status of target wildlife species and habitats;

2. Obtain reliable information to evaluate responses of wildlife and habitats to various management practices;

3. Provide a permanent record of information to evaluate long-term trends in species occurrence, production, and distribution and;

4. Document habitat changes over time.

I. Surveys and Monitoring Currently Conducted at SCWMA

A. Big Game

1. Big Game Winter Census

Objective: Obtain population numbers, herd composition, and distribution of wintering elk, mule deer, and moose.
Background: Big game censusing on SCWMA and the surrounding areas is the responsibility of the Regional game manager and is done in accordance with the various big game species management plans. SCWMA personnel will continue to participate and assist in aerial and ground counts as requested.
Frequency: Annually or as requested.

B. Upland Game

1. Lek Routes

Objective: Monitor breeding population levels of sage and sharp-tailed grouse.
Background: There are currently two sage grouse and two sharp-tailed grouse lek routes on or adjacent to the SCWMA. Project personnel will

continue to monitor the Sand Creek Road sage grouse route and the Sand Creek sharp-tailed grouse route. The remaining two routes have been, and will continue to be, monitored by enforcement personnel. Data gathered will be recorded, active leks will be entered into the GPS database, and an annual report will be submitted.
Frequency: Annually.

2. Lek Searches

Objective: Monitor changes in known lek locations for sage and sharp-tailed grouse, locate leks not previously documented, and document potential habitat changes.
Background: Lek locations for both sage and sharp-tailed grouse may change over time and new leks may appear, or leks may be found that were previously unknown. With the apparent declines being seen in both species, lek monitoring will be a high priority.
Frequency: Annually in conjunction with lek routes.

3. Production

Objective: Monitor annual production.
Background: Project personnel will assist the regional game manager at grouse check stations to collect harvest, production, and hunter success data from the SCWMA and vicinity. Hunter field checks will also be conducted and wing barrels will be placed at strategic locations to collect grouse wings. Appropriate reports will be submitted.
Frequency: Annually.

4. Distribution

Objective: Monitor, record, and map locations of sage and sharp-tailed grouse concentration areas.
Background: In the course of performing normal duties on SCWMA, locations of sage and sharp-tailed grouse will be noted and recorded on the GPS data base. Data on winter distribution of sage and sharp-tailed grouse is limited. All grouse that are seen on big game winter flights in the area will be recorded. In addition, ground searches for wintering grouse, especially sharptails, will be considered and expanded if possible.
Frequency: Annually.

C. Waterfowl

1. Goose Production

Objective: Determine the annual production of Canada geese at the Sand Creek Ponds.
Background: Goose brood surveys have been conducted annually for several years to determine production.
Frequency: Annually.

2. Nesting Structure Use Survey

Objective: Monitor use of artificial nesting structures on the Sand Creek Ponds and use of nest boxes for other species.
Background: There are 25 goose nesting platforms, 15 bufflehead duck boxes, and 10 mallard nesting boxes at the Sand Creek Ponds. They are all monitored for use and results are documented. There are also numerous nest boxes or structures for blue birds, bats, swallows, osprey, and kestrels. Monitoring for these have been sporadic.
Frequency: Annually.

3. Trumpeter Swan Production Survey

Objective: Document production of trumpeter swans on SCWMA.
Background: Trumpeter swans have only recently successfully nested at SCWMA and contribute a significant percentage of cygnets to the local population (see Appendix H, Trumpeter Swans). As of 1997, there are three active nests. Monitoring is conducted to determine the number of nests, timing of nesting, nesting success, production of swan pairs, and causes for nest and production failures. Frequent patrolling is also necessary to reduce disturbance from visitors and anglers.
Frequency: Annually.

D. Public Use

1. Angler Survey

Objective: Document angler participation and catch rates at the Sand Creek Ponds.
Background: Formal angler surveys extending for the length of the fishing season have been conducted only on occasion and are generally done by the regional fisheries staff (see Appendix H, Fisheries). However, annual surveys are taken for opening weekend of the season and recently have been taken on the July 1st opening of those ponds with nesting swans.
Frequency: Opening weekend, annually; formal surveys only on occasion as determined by the regional fisheries manager.

E. Wildlife Guzzlers

Objective: Monitor wildlife use.
Background: There are five wildlife guzzlers on public lands adjacent to SCWMA. They are monitored throughout the summer for wildlife use and to insure proper operation.
Frequency: Turned on in June, monitored every two weeks throughout the summer, and turned off in November.

F. Trapping

Objective: Monitor trapping success and species taken.
Background: Trappers are presently required to register with the SCWMA manager prior to trapping activities. An SCWMA annual trapping report is submitted.
Frequency: Annually.

G. Water Flow Measurements

Objective: Monitor water flows and pond storage amounts for water rights documentation.
Background: Water information is gathered regularly while monitoring pond levels.
Frequency: Daily during spring run off and weekly during the summer and fall months.

H. Farming

Objective: Monitor farming activities, crops planted, crop success, use by wildlife, weed control, and crop rotations.
Background: Farming data is documented in the Department's annual farming and sharecropping report.

I. Weed Control

Covered in the Noxious Weed Control Plan, Appendix N.

II. Potential Surveys and Monitoring

A. Habitat Condition, Changes, and Use

1. Habitat Monitoring

Objective: Obtain baseline vegetation data on the various habitat types on SCWMA.
Background: Permanent vegetative transects and photo plots will be established in the various habitat types on the SCWMA using appropriate

methodology. Vegetation transects and data from adjacent BLM and IDL properties will also be incorporated. There are currently numerous 100 meter vegetation transects set up adjacent to the SCWMA as part of a research project which can be incorporated into a monitoring project. Climatic conditions can also be monitored by using the BLM's RAWS weather station located west of the SCWMA. Plans for this project will be completed and the project implemented in 1997.
Frequency: Every three to five years.

2. Habitat Utilization

Objective: Monitor big game use of specific areas.
Background: Permanent pellet and vegetation transects will be established to monitor big game use of specific areas.
Frequency: Annually.

B. Species of Special Concern; Rare, Threatened, and Endangered

Objective: Obtain baseline data on the occurrence of species with special designations.
Background: There are numerous wildlife species and one plant species that are listed under special designations and have been reported on the SCWMA at some point (see Appendix H, Rare, Threatened, and Endangered Species). Data are available for some, such as trumpeter swans and sharp-tailed grouse, but limited for others. A comprehensive plan is being developed to address species in these categories (see Goals, Objectives, and Strategies; Goal III).
Frequency: Will be species dependent but will be ongoing.

C. Other Nongame

Objective: Obtain baseline data for a variety of nongame species to determine presence or absence and relative abundance.
Background: A comprehensive plan will be developed to survey bats, reptiles, amphibians, song birds, and small mammals using appropriate methodologies.
Frequency: Species dependent.

D. Duck Nesting

Objective: Obtain data on habitats used by ducks for nesting and on nesting success. Determine whether or not current management practices and habitats are providing optimum nesting opportunity.
Background: Nesting surveys on SCWMA for ducks have been very limited, consequently nesting data is limited. Several fields that were in crop lands have been planted and left in cover to promote duck nesting. Other fields may be planted to permanent nesting cover in the future (Appendix Q).

Frequency: Every three to five years.

E. Public Use

Objective: Monitor relative amounts and types of use by the public and obtain a clientele list to provide input on management activities.
Background: A wide variety of user groups visit the SCWMA throughout the spring, summer, and fall. Past surveys have generally included only consumptive users. Visitor surveys will include all groups using the area and the Wildlife Management Survey Forms will be used to record data.
Frequency: Ongoing but reported annually.

F. Habitat Manipulation

Objective: Monitor the effects of habitat manipulation projects over time.
Background: Plans that include objectives and monitoring will be completed prior to project implementation. Monitoring will be used to determine whether or not objectives are met.
Frequency: Project dependent.

G. White-tailed Deer

Objective: Obtain baseline data on the SCWMA white-tailed deer population.
Background: White-tailed deer use of the SCWMA has been documented only in recent years and very little is known about this population. A limited radio telemetry project to determine migrations, home ranges, and winter range areas would aid in future management decisions.
Frequency: A one to two year project.

APPENDIX P

FENCING PLAN

There are 55 miles of fence currently maintained on the SCWMA. Approximately 30 miles of this is let-down fence, the rest being permanent. The let-down fence is put up in the spring of each year, prior to livestock entering adjoining private land or public land grazing allotments. The fence is let down each fall as livestock is removed from adjoining private lands and grazing allotments.

Each year approximately 3 miles of fence (permanent and/or let-down) is targeted for replacement. Funding levels will dictate whether the targeted replacements are completed.

Approximately 16 working days are needed to put up and make very minor repairs to the fence. More days are needed when repairs are made to multiple broken wire segments and posts are replaced. Two weeks are also needed to let down the fence each fall. Additional days are required to construct or to supervise the construction of sections of fence targeted for replacement.

The following options will be considered to insure that fencing is properly completed each year:

1. Utilizing workers from the St. Anthony Work Camp to assist with the fencing responsibilities. This option is already being utilized whenever possible.

2. Contracting out the putting up, letting down, and repairs of all let-down fence to the St. Anthony Work Camp or a contractor.

3. Pursuing agreements with neighboring landowners to accept additional fence responsibility.

4. If a sharecrop agreement is developed for the farming activities, consider adding a fencing agreement.

APPENDIX Q

FARMING PLAN

There are approximately 700 acres of farmable land on the SCWMA. Presently, about 165 acres have been flooded to make ponds, 450 acres have been planted to permanent cover, and 80 acres are being farmed.

In the past, farming has been accomplished by the use of sharecrop agreements, whereby a private cooperator performed the farming activities for a portion of the crop. Although this system required minimal participation by SCWMA personnel, it did require that large acreages be farmed in order to be profitable for the cooperator. The Department's share of the crops is typically minimal. It has also been difficult at times to attract interested parties due to the remote location.

Sand Creek WMA personnel have also farmed much of the property using Department equipment. This system requires a great deal of time, considerable funding, and good equipment but all of the crops can be used for wildlife purposes.

In recent years, smaller acreages are being farmed by SCWMA personnel and fields that are not farmed have been planted into permanent nesting cover for waterfowl use. Today, approximately 80 acres are farmed each year. Forty acres are planted in small cereal grain crops (wheat, barley) and forty acres are fallowed.

Farming activities in the future will be structured to provide optimum benefits to wildlife but will depend on funding and personnel levels. The following are options that will be considered in future farming plans and are listed by priority:

1. Plant small acreages of food crops and leave standing for wildlife use.

2. Discontinue farming operations and plant all fields into permanent cover. Continue weed control activities.

3. Seek opportunities to sharecrop or develop use-trade agreements that include farming. Any such agreements must be consistent with the SCWMA mission.

4. Contract farming activities.

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