A Summary of Key Fish and Wildlife Resources of Low Elevation Lands in Teton County, Idaho

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Table of Contents

1.0 Introduction

This report briefly and broadly summarizes key fish and wildlife resources of low elevation lands (generally below the Targhee National Forest boundary) in Teton County, Idaho for the purposes of supporting land use and conservation planning. Figure 1 identifies the project area described in this report. However, this document sometimes considers a wider area of potential effect to better document landscape-scale habitat function. Some of the content here is adapted from earlier summaries of Teton County, Idaho fish and wildlife resources (TRLT, 2006). Rather than attempt to describe the habitat needs of hundreds of fish and wildlife species, we focus on *flagship* species because of their economic importance as fished and hunted species, *Species of Greatest Conservation Need* as designated in the Idaho Comprehensive Wildlife Conservation Strategy (ICWCS) (IDFG 2005), and *keystone* or *umbrella* species or guilds, whose conservation potentially benefits many other species that use similar habitats (Groves 2003). Several species or species groups discussed here fit in to more than one of these categories.

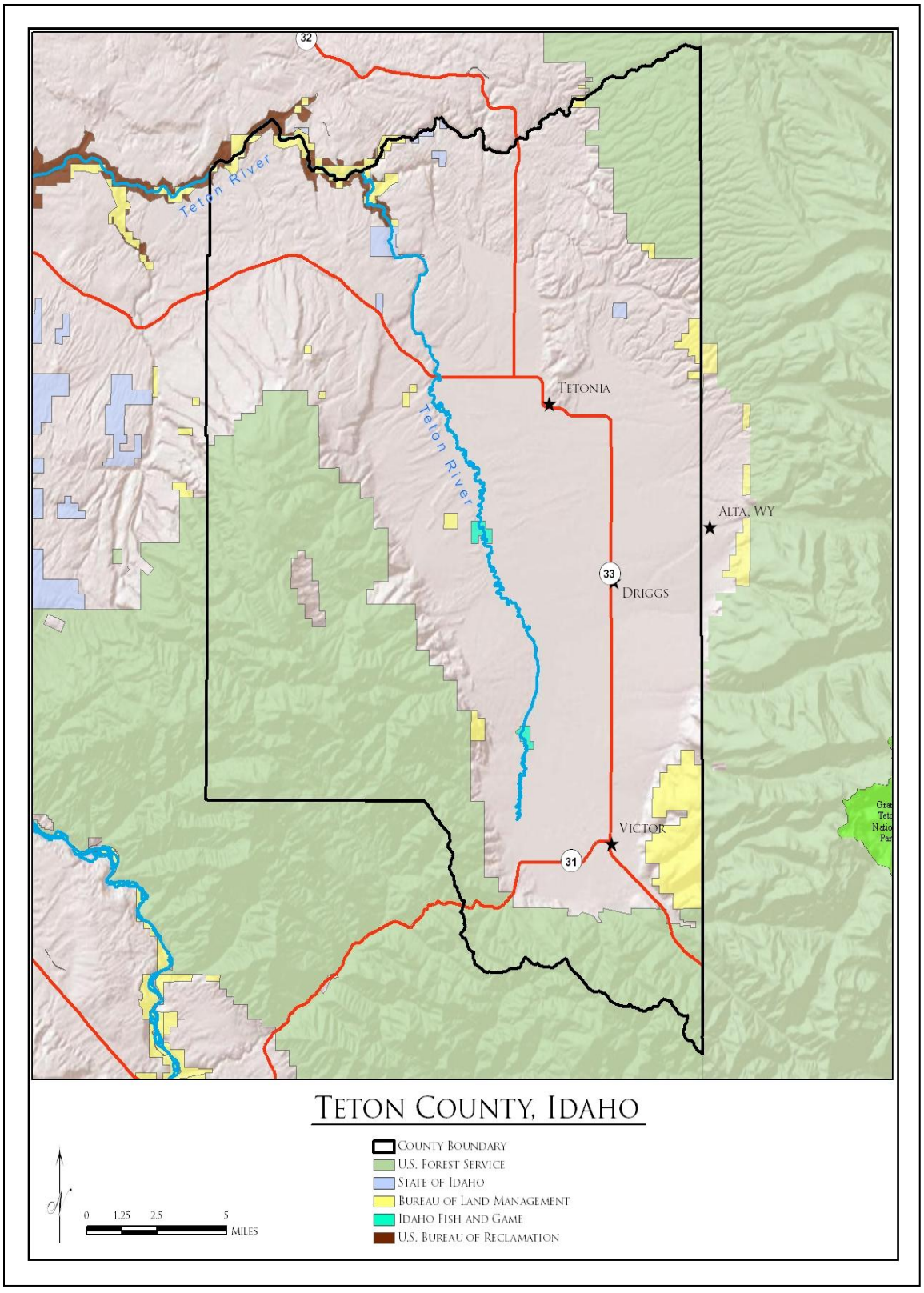
1.1 Significance of Teton County Idaho for Fish and Wildlife

Teton County, Idaho supports fish and wildlife resources of great importance to the cultural and economic well-being of local and regional residents, and provides habitats of continental significance for several high priority species. Much of this habitat occurs on private lands that provide core breeding or wintering habitat, or linkages to seasonal habitats on public lands. For example, Teton County has several big game migration corridors recognized by collaborative conservation planning efforts as significant to the conservation of regional big game populations (Idaho Transportation Department – Region 6, 2005). More recently, telemetry data collected by IDFG indicates the importance of interstate mule deer movements between Teton County Idaho and Grand Teton/Yellowstone National Parks (IDFG 2011). Also, in 2004 the National Audubon Society and IDFG formally designated Teton Basin as a state Important Bird Area (IBA). "The IBA program is a global effort to identify areas that are most important for maintaining bird populations, and it focuses conservation efforts at protecting these sites" (Audubon Society 2006). The Teton River supports a highly prized sport fishery and Bitch Creek on the north boundary of Teton County, with its hydrologic integrity, clean cold water and good in-stream structure is one of several important strongholds for Yellowstone cutthroat trout in the upper Snake River watershed.

In a comprehensive assessment of ecological values throughout the Greater Yellowstone Ecosystem (GYE), the Teton River Basin was ranked as the number one private lands conservation priority "megasite" among 43 such sites within the entire GYE for its combination of ecological irreplaceability and vulnerability (R. Noss et al. 2002). This assessment considered three primary aspects of biological diversity: 1) rare and sensitive plant and animal species and populations; 2) representation of a full spectrum of vegetative, abiotic, and aquatic habitat features; and 3) support for a select group of large, wide ranging focal species such as elk.

Among Teton County's most notable ecological features (habitats which support the greatest diversity of plants and animals) are its prominent wetlands. The National Wetlands Inventory classifies 26,760 acres of Teton County, Idaho (9% of total area) as wetlands (National Wetlands Inventory, U.S. Fish and Wildlife Service, 1993). These wetlands include expansive areas of wet meadows, emergent marshes, sloughs, shrub/scrub willow thickets

Figure 1. Teton County Idaho.



and less extensive but vitally important forested wetlands dominated by aspen and cottonwood. These wetlands are recognized as important habitat for many rare plant and animal species within several state and regional conservation plans. Notable among Teton County's wetland habitats are fens, which have organic soils (peat) and are fed by groundwater. Fens may take thousands of years to form and the U.S. Fish and Wildlife Service considers fen wetlands irreplaceable (USFWS 1999). In addition to regionally significant wetlands, Teton County, Idaho's private lands feature a diverse habitat mix of spring and mountain fed streams, riparian corridors, grazed pasturelands, cultivated farmlands, sage-steppe remnants, montane shrublands, and forested foothills. Figure 2 illustrates the major habitat types of Teton County, Idaho.

2.0 Big Game

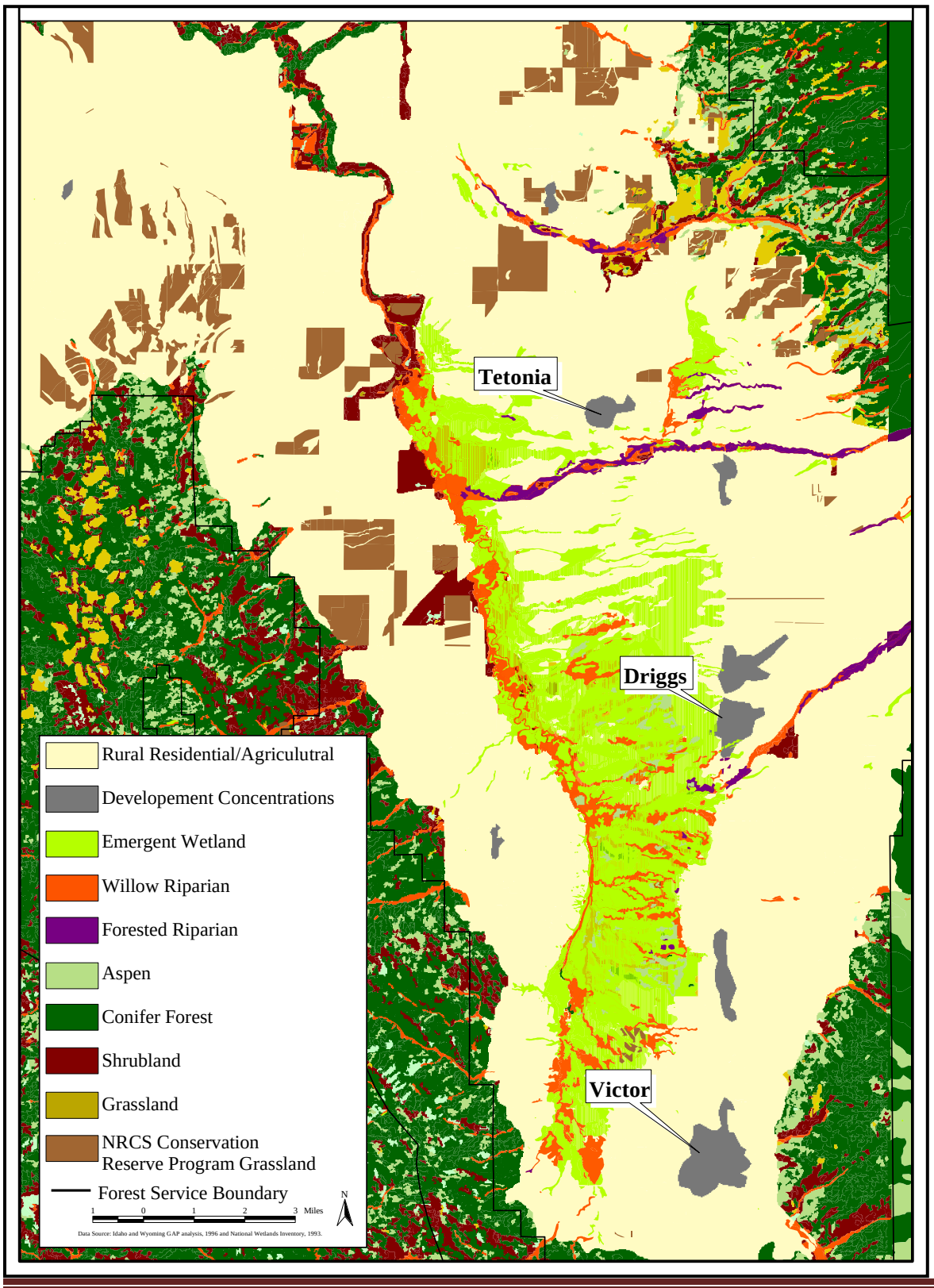
Big game animals that occur in Teton County, Idaho include large carnivores and ungulates (hoofed animals). Gray wolves, black bears and mountain lions are the only large carnivores managed as big game species in Idaho. Grizzly bear, Canada lynx and wolverine are present in Teton County and are protected by state and federal wildlife laws. The most common ungulates in Teton County, Idaho are elk, white-tailed deer, mule deer, and moose. Antelope, although common in Teton Basin prior to settlement, are uncommon today. Bighorn sheep and mountain goats summer at high elevation in the Tetons east of Teton County and in the Snake River and Big Hole mountains on the county borders and may rarely be found on lower elevation private lands. However, for the purpose of this discussion, we consider elk, mule deer and moose as the primary ungulate big game populations in Teton County, Idaho.

2.1 Large Carnivores

Large carnivores periodically utilize private lands in Teton County, Idaho but the main body of habitat for these species is higher-elevation public lands on the margins of the County. However, large carnivore/human interactions are not uncommon in parts of Teton County. In 2009, 2010 and 2011 IDFG staff has had to move or kill mountain lions, black bears and grizzly bears in Teton County because of conflicts with people, property, or human safety concerns.

From a conservation planning and management perspective, the most likely areas for human interaction and conflict with large carnivores in Teton County occur near the Targhee National Forest Boundary. However, it is worth noting that carnivores may also utilize creek corridors that extend from National Forest Lands onto the valley floor. Grizzly bears are documented utilizing valley creek corridors and other private lands in Teton County in 2011 and 2012. Recognizing the potential for human-bear conflicts, Teton County implemented a bear ordinance in 2010 (Teton County Code Title 4 Chapter 7) to minimize the potential for attracting bears into residential areas. Additional useful information and recommendations for avoiding conflicts with grizzlies, black bears, mountain lions and gray wolves are available through the Grizzly Bear Outreach Project website at http://bearinfo.org/.

Figure 2. Major Plant communities of Teton County, Idaho. (Data Sources: USGS ID GAP Analysis and USFWS National Wetlands Inventory)



2.2 Rocky Mountain Elk

Elk were prized by the early Idaho settlers and Native Americans as food and for their fur, teeth, hides, and antlers. Today Rocky Mountain elk are Idaho's premier big game animal and are a vital part of the cultural, socioeconomic and ecological heritage of Idaho (IDFG 1999).

Elk are habitat generalists, but they have certain basic habitat requirements. These include food, water, and hiding cover and security areas (blocks of elk habitat with limited human access). Availability and distribution of these habitat components on *each* seasonal range ultimately determine the distribution and numbers of elk that may be supported (IDFG 1999). In Teton County elk are found through a wide range of elevations from the valley bottom along the Teton River in winter to timberline during summer.

Although elk numbers in North America were greatly reduced a century ago, their populations have increased dramatically throughout most of their range, and are near their highest population levels since euro-American settlement. However, due to their dependence on private lands for seasonal migration and winter range, Noss et al. (2002) consider elk winter range as one of the most threatened natural elements in the Greater Yellowstone Ecosystem.

IDFG monitors elk populations within designated elk management zones. Teton County lies within two elk management zones: 1) the Teton Zone, which is comprised of the north half of Teton County and portions of Fremont County and 2) the Palisades Zone, which covers the Big Hole and Palisades mountain ranges. IDFG aerial surveys estimated 210 elk within the Teton Zone in 2011 and 797 elk in the Palisades Zone in 2009 (Idaho Department of Fish and Game 2011). As of 2011, elk populations were below IDFG's management objective in the Teton Zone and at IDFG's management objective in the Palisades Zone. During the 2009 elk survey, most of the elk in the Palisades Zone wintered in Swan Valley; only 38 of the 797 counted were on winter range in Teton County, primarily along the Teton River. Deep snows prompt wintering elk to concentrate at lower elevations near livestock operations. During severe winters, elk are more likely to come in conflict with people and their property. Therefore, elk populations and objectives are limited in Teton Valley by a lack of suitable winter range.

Unsanctioned winter feeding occurs at several locations in Teton Valley on a regular basis. Observations during the 2000-2001 aerial survey indicated that most elk in this zone were associated with unsanctioned private feeding activities. Observations during the 2005-2006 aerial survey indicate that many elk are still associated with private feeding in this zone but many were more spread out on smaller residential feed sites in the Teton Valley. During the winter of 2007-2008, most elk in the Teton Valley were concentrated at a IDFG sanctioned bait site along the Teton River that was established to prevent elk and cattle interaction on private cattle feedlots (Idaho Department of Fish and Game 2011). Elk counted during the 2011 survey were not associated with private feeding operations.

Habitat challenges to elk conservation and management in the Teton County area are summarized by IDFG (1999),

> *Although extensive logging and roading on national public lands over the [1970s, 1980s and 1990s] has reduced elk habitat effectiveness and elk security, ample summer range remains. True winter range has always been limited*

in the zone due to high elevations and associated deep snows and severe temperatures. A large area of winter range in the western portion of Unit 62 has been converted to farming. Some of this land is now enrolled in the Conservation Reserve Program (CRP). Elk winter range was lost to the construction and subsequent failure of Teton Dam, although the greatest losses associated to that event were to deer habitat. Recently, urban sprawl, particularly in the east portion of Unit 65, has crept up the hillsides and reduced much of what limited winter range existed in that portion of the zone.

For more detail on the history and management of elk in the Teton and Palisades Elk Management Zones please refer to IDFG's Elk Management Plan at: http://fishandgame.idaho.gov/public/wildlife/planElk.pdf (IDFG 2006).

The presence of brucellosis in elk in the Greater Yellowstone area exacerbates elk conservation on private lands in Teton County. Brucellosis is an infectious disease caused by the *Brucella* bacteria. Brucellosis, which can cause female bison, elk, and cattle to abort their calves, is passed to other animals through contact with infected aborted fetuses or afterbirth, or to calves through nursing. Unsanctioned winter feeding increases the risk brucellosis transmission and ultimately increases the prevalence of brucellosis within those herds of elk. The *Idaho Brucellosis Management Plan* lists the following prevention objectives:

1) *Reduce the potential for elk-livestock interaction during periods of high transmission risk through winter range improvement or enhancement; long-term habitat protection; use of physical barriers; hazing; hunting; and trap, test, and removal of seropositive elk on feed grounds.*
2) *Manage wild elk to reduce brucellosis in Idaho wildlife.*
3) *Prevent the reintroduction of brucellosis into the livestock population of Idaho.*
4) *Enhance immunity to brucellosis through vaccination of at-risk and exposed cattle.*
5) *Keep the area of risk to the smallest possible geographical area.*
6) *Monitor Idaho elk herds to document the rate of brucellosis seroprevalence.*

(2006 Idaho Wildlife Brucellosis Work Group Report and Recommendations to the Governor)

Idaho Department of Fish and Game elk/brucellosis management actions, in recent years, have included trapping, testing for exposure to and infection with brucellosis, radio-collaring, translocation of some individuals to establish new winter use areas, and winter habitat improvements. At Rainey Creek in Swan Valley, Idaho brucellosis-infected adult female elk and calves have been destroyed to reduce the potential of brucellosis transmission to cattle. Additional efforts near Victor, Tepee Creek, and Conant Creek have included trapping, testing, and radio-collaring individuals to gain more information on exposure to brucellosis and elk distribution, fencing stackyards and feed areas, and hazing elk to move to traditional winter range (Greater Yellowstone Interagency Brucellosis Committee 2003). Data from the radio-collared individuals suggests that some of the elk wintering at these sites in Idaho spend the summer and fall in Yellowstone and Grand Teton National Parks (Greater Yellowstone Interagency Brucellosis Committee 2003). Elk and cattle interactions are common during severe winters in Teton Basin and often result in elk hazing, kill permits, and depredation hunts to try and move elk away from cattle

feeding operations. In Teton Basin, the threat of Brucellosis transmission from elk to cattle makes it crucial that the few remaining elk winter range areas be protected to minimize the likelihood of Brucellosis transmission to cattle.

Elk winter range and migration routes to and from seasonal ranges are both essential to survival of elk and have implications to the conservation of elk herds wintering on adjacent public lands. Several Teton County, Idaho crucial elk winter range areas and migration routes are considered by IDFG as being of local significance (Idaho Transportation Department – Region 6 2005). Portions of the Teton River corridor, the canyon lands in the northernmost portion of Teton County and the lower montane forest-tall shrubland ecotone all provide crucial winter range for elk.

2.2 Mule Deer

Mule deer are a keystone species due to their value for hunting recreation, cultural heritage, and rural economies. According to the Idaho Mule Deer Management Plan (IDFG 2008), over 91,000 hunters pursued mule deer in 2006, more than for any other wildlife species in Idaho. Mule deer hunting in 2006 was estimated to result in $42 million in direct, trip related expenses including fuel, meals, and lodging in rural towns, and a total economic impact of $100 million. More than 1,000 Idaho jobs are supported directly by mule deer hunting. In 2006, mule deer license and tag sales brought IDFG nearly $6.3 million, almost 20% of total license/tag revenues used for wildlife conservation, monitoring, and management programs.

Throughout their range in western North America, mule deer have declined in population numbers over the past 50 years. The most notable population losses in Idaho have occurred in the southeastern portion of the state. Federal and state land and wildlife management agencies recognize a fundamental need to maintain mule deer habitats. Idaho Department of Fish and Game and partners have initiated *"The Mule Deer Initiative"* (IDFG 2005a) to bring back healthy populations of mule deer throughout Idaho.

Mule deer move between various zones from the forest edges at higher elevations to the valley floor, depending on the season. Particularly in winter, Teton Basin's mule deer prefer southerly exposed shrub dominated slopes that are relatively snow free. Seasonal movements involving migrations from higher elevation summer ranges to lower winter ranges are associated, in part, with decreased temperatures, severe snowstorms, and snow depths that reduce mobility and food supply. Deep winter snow in Teton Valley make much of the area unsuitable as winter range for mule deer, Teton Canyon is the most notable exception.

The Teton River Canyon from the Idaho State Highway 33 crossing at Harrops Bridge downstream to the Madison County line and beyond is one of the most important mule deer winter ranges in eastern Idaho. According to aerial counts (IDFG 2008), Teton Canyon supports 2,000 to 3,000 mule deer and may be particularly important during hard winters. Teton Canyon provides security and isolation from humans because of the steep, rugged, and relatively inaccessible terrain.

IDFG monitors population levels and sex and age ratios to establish reasonable levels of hunter harvest and must reduce hunting opportunity when habitat loss reduces carrying capacity. However, the greatest challenges to mule deer conservation may rest with maintaining suitable habitat.

According to IDFG (2008),

> *Ultimately, healthy wildlife populations depend on adequate amounts of quality habitat. Hunting, disease, weather and predators affect mule deer. But healthy habitat has greater influence over the total abundance of mule deer. Fish and Game has limited authority for habitat management, which is mostly in the hands of federal land managers and private land owners. Only through collaborative working relationships will Fish and Game influence habitat practices that meet mule deer needs.*

For more detail on the ecology and management of mule deer in Idaho please refer to IDFG's Mule Deer Management Plan at: http://fishandgame.idaho.gov/public/wildlife/planMuleDeer.pdf (IDFG 2008).

2.3 Moose

Moose were uncommon in Idaho during the early 1800's. Fur trappers traveling through southern and eastern Idaho failed to mention moose in their accounts. Similarly, few moose were believed to exist in Yellowstone and Jackson Hole areas prior to 1850. Some researchers believe that moose emigrating from Montana may have provided much of the seed stock for Idaho populations.

Idaho's moose populations have increased dramatically since the middle of the 20th century. In 1949 there were reportedly only 500 moose in Idaho, mostly in the Fremont County/Teton County area. Today, there are an estimated 20,000 moose statewide, with strong population numbers in Teton Basin. IDFG manages moose as a big game trophy species.

The Teton River corridor and suitable riparian habitat along its tributaries provide year-round moose habitat and may be especially important in winter. Valuable moose habitat also exists along the lower flanks of Teton, Big Hole and Snake River ranges, often at the interface of public and private lands. Moose may herd in winter along river and creek bottoms where there is an abundance of willow. Snow characteristics, such as depth, density, hardness and the length of persistence of these factors, may affect populations more than predator density. Human hunting and road kills can be major mortality factors in some regions.

No population surveys are conducted specifically for moose in Teton County. A quantitative assessment is difficult because of dispersed low-density populations, large geographic distribution, heavily forested habitats, and limited monitoring resources. However, moose are generally counted incidentally to aerial elk and deer surveys. Two-hundred thirty seven moose were counted during the 2009 Palisades deer survey (Game Management Units 64, 65 west, and 67); 40 of which were in Teton County. Twenty-two moose were counted incidentally to the 2011 Teton elk survey (Units 62 and 65 east). These numbers represent only a minimum population estimate for moose in Teton County since surveys designed to count wintering deer or elk do not capture all suitable moose wintering habitat (IDFG 2011).

3.0 Landbirds

Landbird species and guilds that serve as keystone or umbrella species, useful for conservation and land-use planning, in Teton County, Idaho include Columbian sharp-tailed grouse, songbirds and raptors.

3.1 Columbian Sharp-Tailed Grouse

The Columbian sharp-tailed grouse is listed as a *Species of Greatest Conservation Need* by the *Idaho Comprehensive Wildlife Conservation Strategy* (ICWCS) (IDFG 2005b), as a conservation priority by the *Idaho Partners in Flight Plan* and as a *Sensitive Species* by Region 4 of the U.S. Forest Service and the Bureau of Land Management (BLM). Columbian sharp-tailed grouse inhabit less than 10% of their former range, and approximately 75% of remaining birds occur in Idaho. According to the ICWCS, Teton County, Idaho represents a significant portion of the remaining population of Columbian Sharp-tailed grouse in Idaho. Population declines are attributed to loss, fragmentation and degradation of native grassland and shrub-grassland vegetation types.

Columbian sharp-tailed grouse breeding habitat is composed of large expanses of bunchgrass-dominated grassland and shrub-bunchgrass rangelands. Croplands are also used and are most beneficial if they are located near grassland nesting and brood-rearing habitat. Male Columbian sharp-tailed grouse gather on leks, or dancing grounds, in the spring. Leks are usually located on low knolls, benches, and ridge tops at a slightly higher elevation than surrounding terrain. Lek vegetation is commonly grass or shrub-grass mixture and relatively sparse to allow visibility and movement. An average lek will have 12 males displaying in an area about 100 feet in diameter. Breeding occurs mostly in April, then females nest and lay eggs, usually within approximately 1.2 miles of the lek in small depressions under grass or shrub cover (IDFG 1998). Lek surveys conducted in Teton County by the Idaho Department of Fish and Game (2003 and 2010) revealed a large number of leks on lands enrolled in the Conservation Reserve Program (CRP). The Conservation Reserve Program (CRP) generally involves retiring cropland and seeding it with a mixture of perennial grasses and forbs and may be highly beneficial to sharp-tailed grouse.

Mountain shrub, riparian shrub, or aspen and deciduous shrub patches are crucial winter habitat providing both food and cover for Columbian sharp-tailed grouse. Chokecherry, serviceberry, hawthorn and snowberry fruits are used heavily. In heavy snow years deciduous tree and shrub buds, mainly serviceberry and chokecherry, are important winter foods. Cultivated areas of alfalfa, wheat or barley are utilized somewhat in winter if they are available (IDFG 1998).

3.2 Songbirds

Songbird is a nonscientific term generally used to describe most *Passerine*s or perching birds (species in the sequence from flycatchers to finches in most bird field guides).

Songbirds that breed in the United States and Canada and winter south of the Tropic of Cancer in Mexico, the Caribbean and Central and South America are termed neotropical migrants. Some songbirds such as American robin and song sparrow are short range migrants - meaning some members of the breeding population move to lower latitudes or elevations during winter, while some may remain on their breeding grounds depending on local conditions. Idaho has 243 breeding bird species, 119 (49%) of which are neotropical migrants.

Many neotropical migrant songbirds are experiencing serious population declines and the status of this guild is of special concern to state and federal agencies and conservation groups. Two main problems contributing to the population declines of neotropical migrants and other songbirds are habitat fragmentation and the loss of breeding, migratory, staging and wintering grounds.

The *Idaho Bird Conservation Plan* (Idaho Partners in Flight 2000) categorizes high conservation priority bird species based on their relative vulnerability and also classifies priority bird habitats. Table 1 below summarizes the number of bird species dependent on various habitats in Idaho.

Table 1. The number of species by Idaho PIF habitat (Idaho PIF Bird Conservation Plan 2000).

Idaho Habitat Type	# Species Using Habitat (Breeding, Migration, Winter)	# Species Using Habitat as Primary Breeding Habitat	# High Conservation Priority Species Using Habitat as Primary Habitat
Riparian	114	61	13
Low Elevation Mixed Conifer	83	34	9
Marshes, Wetlands	77	55	11
Sagebrush	49	19	9
High Elevation Mixed Conifer	49	16	2
Grassland	48	16	4
Aspen	34	5	1
Lodgepole Pine	31	1	0
Ponderosa Pine	31	5	2
Juniper, Pinyon, Mountain Mahogany	29	14	6
Cliff/Rock	19	10	3
Mountain Brush	18	3	0
Cedar/Hemlock	15	1	1
Alpine	10	3	1
Totals	**607**	**243**	**62**

Approximately 48% of Idaho's birds depend on riparian and marsh-wetlands. These habitats also shelter 39% of Idaho's conservation priority bird species. Western riparian habitats, particularly

willow stands and cottonwood forests, attract 10 times the number of migratory birds (short range and neotropical migrants) during the breeding season than adjacent uplands and 14 times as many birds during fall migration. Neotropical migrants, in particular, rely heavily on riparian landscapes and ongoing population declines of this group are partially attributed to loss and degradation of riparian habitat. In addition to breeding habitat, riparian areas provide important migration stopover habitat for neotropical migrants. While migratory species seek out their own specialized stopover habitats, most preferred stopover habitats have forest with dense undergrowth. Forests consisting of several layers of vegetation provide more feeding and resting niches, and the dense undergrowth and closed canopy provide cover from predators. Songbird monitoring conducted by Intermountain Aquatics for the West Rim Wildlife Working Group in 2008 found some of the highest local songbird richness in aspen "stringer" habitats on the West Rim in the northwest corner of Teton County (Goodell 2008). These habitats make up less than 10% of the largely cultivated West Rim landscape making them disproportionately important to songbirds and other wildlife. Due to steep topography, northerly aspect and historic land use these habitats support very high vegetative diversity and structural integrity.

Research conducted on the Snake River in Jackson Hole, Wyoming (Smith 2002), suggests that residential development in riparian areas may have numerous negative *landscape-level* effects on breeding bird populations, including an overall decline in species richness and diversity, an increase in avian nest predators, and increase in food generalists (e.g. magpies, robins) at the expense of more vulnerable specialist species (i.e. MacGillivray's warbler, willow flycatcher). Therefore, increased residential development in riparian areas of Teton County has the potential to cause habitat degradation not just on private lands but also on adjacent protected public lands. Neotropical migrants are likely most sensitive to habitat fragmentation from residential development and are most negatively impacted by these effects.

3.3 Raptors

3.31 Bald Eagle

The bald eagle was listed as endangered, and then threatened, under the federal Endangered Species Act (ESA). Their former status as an endangered, then threatened, species was due primarily to population declines from DDT poisoning that was prevalent in the middle decades of the 20th century. In 2007 the bald eagle was de-listed from the ESA, but it is still federally protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Bald eagles in Teton County are primarily associated with the Teton River and the lower reaches of river tributaries for breeding and wintering , although bald eagles are sometimes found foraging far from water. In winter, bald eagles may be found throughout Teton County.

There are 9 known bald eagle breeding areas in Teton County, Idaho (Whitfield 2011). Bald eagles typically nest in the largest available trees near waterways, usually within uneven-aged, multistoried stands with additional large trees suitable for perching. Bald eagles typically build alternate nests within a breeding area that may be used variably from year to year. In Teton County, bald eagle pairs initiate nesting in late February and young of the year eagles generally fledge from the nest in late June to early July (Whitfield 2011).

Bald eagle winter use of Teton County, Idaho from 1995-2003, as observed during the Christmas bird count surveys, has averaged 13 individuals with a high of thirty eagles recorded in 2002

(Audubon 2003). Roughly twice this many wintering bald eagles may be found in the entire county during mid-winter. Snags and large trees are used for roosting, hunting and loafing perches. There are no known traditional roost sites in Teton County, although the Teton River corridor and cottonwood forested tributaries such as South Leigh Creek and Teton Creek comprise the most important roosting habitat for wintering bald eagles in Teton County.

The Greater Yellowstone Bald Eagle Management Plan identifies the following management goal for nesting bald eagles throughout the GYE, including Teton County: *The goal of the Working Group and Management Plan is to maintain bald eagle populations in the Greater Yellowstone at levels with high probabilities of persistence and in sufficient numbers to provide significance to the ecosystem, academic research, and readily accessible enjoyment by the recreational and residential public.* (Greater Yellowstone Bald Eagle Working Group {GYBEWG 1996).

The Bald Eagle Plan identifies several obstacles to achievement of conservation goals in including "unguided and excessive development of private lands". The Bald Eagle Plan describes one potential solution of this problem: "Private conservation organizations (e.g. Jackson Hole Land Trust) and private landowners have greatly facilitated maintenance of bald eagle habitat on private lands. Resource managers should continue to assist these groups wherever possible" (GYBEWG 1996).

3.32 Other Raptors

As top of the food chain predators, raptors, or birds of prey, are excellent indicators of the ecological health of an area. Some raptor species are sensitive to human disturbance. All raptors are protected species. Region 4 of the U.S. Forest Service lists peregrine falcon, northern goshawk and great gray owl as *Sensitive* species and the Bureau of Land Management also classifies peregrines and northern goshawk as *Sensitive* in Idaho. These species along with short-eared owl, Swainson's hawk and merlin are all classified as *Species of Greatest Conservation Need* by the *Idaho Comprehensive Wildlife Conservation Strategy*.

Raptor nesting habitat in Teton County is found in forested foothills, scattered aspen groves, willow thickets, dense meadow and especially along major cottonwood corridors (Darby Creek, Teton Creek, South, Middle and North Leigh Creeks, Badger Creek) that extend from the eastern foothills along stream courses to the Teton River at the valley bottom (Whitfield et al 1996). Over 300 nests initially built by raptors and variably used by 11 species of hawks, owls, eagles, and other birds are documented in Teton Basin. A large but not exhaustive sample of raptor nests in Teton Basin has been monitored for activity since 1994 (Whitfield 2003). Table 2 summarizes nest activity by raptors from 1994-1999 and 2002.

Table 2. Active raptor nests by species in Teton Basin, Idaho 1994-1999 and 2002 (Whitfield 2003).

Species	1994	1995	1996	1997	1998	1999	2002
Osprey	1	1	1	---	1	---	---
Northern Harrier	---	1	---	---	---	---	---
Cooper's Hawk	1	---	---	---	---	---	---
Northern Goshawk	1	---	1	---	---	---	---
Red-tailed Hawk	41	42	40	15	16	52	73
Swainson's Hawk	8	8	2	1	2	6	6
American Kestrel	1	---	---	---	---	---	---
Short-eared Owl	---	---	---	---	---	---	1
Long-eared Owl	---	---	---	---	1	---	---
Great-Horned Owl	13	16	6	11	2	12	10
Great Gray Owl	3	2	5	NM	NM	NM	NM
Annual Activity (All Species)	**70**	**71**	**56**	**28**	**23**	**71**	**92**

Among Teton County's sensitive raptor species, peregrine falcons nest on the eastern and southern peripheries of Teton Valley and in Teton Canyon and commonly hunt in wetlands in the southern portion of Teton County. Swainson's hawk are common (but not abundant) nesters in riparian areas along the Teton River and forested riparian habitats along tributaries, and may also be found in isolated tree stands throughout the County. Northern goshawk are primarily dependent on National Forest Lands around the valley edges, although use of private lands is documented in the Packsaddle Bench Area (Cavallaro 2005a). Short-eared owls, a ground nesting species, are found in marsh and grassland habitat in the lower elevations of Teton Valley. The Eastern Idaho/Northwest Wyoming portion of the Greater Yellowstone Ecosystem features a notably large and productive population of great gray owls (Franklin 1987, 1988; Whitfield 1997). Franklin and several Forest Service biologists who continued Franklin's work reported significant numbers of great gray owls nesting in the foothills surrounding Teton Basin. Franklin (1987) also discovered that unusual numbers of great gray owls were descending to lower elevation habitats in Teton Basin in winters with deep snow at higher elevations. Several Forest Service personnel, most notably L. Becker, former Teton Basin District Biologist, took considerable interest in great gray winter habitats within the area. M. Whitfield et al. documented historic observations in a 1996 report. Twenty to 40 wintering great gray owls were observed in an approximately 10 square kilometer area on lower South Leigh Creek between Idaho State Highway 33 and the Teton River in 1993 and again in 1995. These concentrations in high snow years represent one of the highest recorded winter concentrations of great gray owls in the lower 48 United States. Merlins, mid-sized falcons, are uncommon migrants through Teton County and may be present periodically in winter, particularly around grain storage

areas that attract starlings, collared doves and other prey species.

4.0 Waterbirds

Waterbirds include waterfowl (ducks, geese and swans), shorebirds, marshbirds and colonial nesting species such as gulls and terns. Priority waterbirds in Teton County, Idaho include trumpeter swan, waterfowl, greater sandhill crane, long-billed curlew and colonial nesting species.

4.1 Trumpeter Swan

Trumpeter swans, the largest waterfowl species in the world, were nearly driven extinct in the early 20th century due to commercial hunting. Trumpeter swans are currently listed as a *Sensitive* species by Region 4 of the U.S. Forest Service and the Idaho BLM. They are designated as a *Species of Greatest Conservation Need* in the *Idaho Comprehensive Wildlife Conservation Strategy* and this document identifies Teton County as having habitat of statewide significance. Trumpeter swans are also listed as a conservation priority species in the *North American Waterfowl Management Plan* and the *Idaho Bird Conservation Plan*. There are approximately 5,000 Trumpeter Swans in the Rocky Mountain Population (RMP) of western Canada and the Greater Yellowstone area.

Trumpeter swans of the Rocky Mountain Population are documented winter residents of Teton County, Idaho since at least 1949 (Maj and Shea 1994). Swans typically concentrate on open water sections of the Teton River and lower sections of its spring-fed tributaries during winter. Small groups start arriving in early November and generally begin leaving by the end of March. The open water that remains in areas free from direct human disturbance, especially the reach from Fox Creek to Teton Creek, allows trumpeters to engage in essential winter activities: feeding and resting. Open, isolated terrestrial habitats along the Teton River such as meadows or pastures are also valuable roosting/loafing habitats. Trumpeter swans feed heavily on tubers of sago pondweed, which is a common aquatic plant within some reaches of the Teton River and its tributaries.

The U.S. Fish and Wildlife Service (USFWS) has coordinated summer and winter aerial surveys of RMP swans since the 1970s. These surveys reveal that Teton Valley (a sub-sample of Teton County that does not include the canyon reaches of the Teton River) is a key wintering area for trumpeter swans. The number of trumpeters found along the Teton River in winter is a function of available open-water habitat. Swan use of the River is dynamic and daily numbers vary throughout the winter according to ice conditions. Therefore, data based on a single count during winter is an estimate of minimum documented use. The high count recorded by USFWS aerial counts from 1978 to 2005 in Teton Valley is 470 swans in 1986. The low count (20) was recorded in 1981when the majority of the river was frozen. The 27-year average count along the River within Teton Valley is 186. Christmas bird count data compiled since 1995 in Teton Valley is another index of trumpeter swan use. Since 1995, an average of 128 trumpeter swans per year were counted in a sample area of Teton Valley. The Teton River Canyon typically supports 100-200 wintering swans (R. Cavallaro, IDFG, personal observation).

During 22 of the last 27 years Teton Valley has provided winter refuge for an average minimum of 10% of all trumpeter swans in the Rocky Mountain Population. A more complete estimate of winter swan numbers along the Teton River and its accompanying spring creeks (not just the Teton River in the upper Valley) is from 150 to 450 swans per year (Maj and Shea 1994). During the winter of 2003 a complete count of the Teton River including canyon reaches revealed that over 936 swans, or

approximately 25%, of the RMP was wintering on the Teton River in Teton and Madison Counties.

Summer use (nonbreeding) of Teton Valley by trumpeters is documented twice prior to the 1970s (Maj and Shea 1994). Over the last decade summer use by swans has increased in Teton County. Swans often rely on created marsh/pond habitat on conservation easement properties. The Idaho Department of Fish and Game under the auspices of the Pacific Flyway Council are actively considering Teton County as a potential swan nesting restoration area.

4.2 Other Waterfowl

Waterfowl are an important recreational and economic resource in Teton County, Idaho. Waterfowl utilize the Teton River, its tributaries and associated wetlands and uplands for nesting, brood-rearing, foraging, and as a corridor for migration for both the Pacific and Central Flyways (Bellrose 1980; Jankovsky-Jones 1996). Teton Basin lies along a northern pintail migration route (Thorpe 2003) between central California and the northern plains of the U.S. and Canada. During spring of some years thousands of pintails may rest briefly in Teton Valley on their way north. Mallards migrate along the Teton River and occur in the thousands during spring and fall migration. Mallards, common goldeneye and Barrow's goldeneye are common wintering ducks in Teton Basin (Audubon 2003). Nineteen species of waterfowl are documented as occurring in Teton Basin during the breeding season, including harlequin duck, mallard, northern pintail, wigeon, northern shoveler, gadwall, green-winged teal, blue-winged teal, cinnamon teal, ruddy duck, lesser scaup, canvasback, redhead, ring-necked duck, Barrow's goldeneye, bufflehead, hooded merganser, common merganser and Canada goose (Cavallaro 2001). Many of these waterfowl are considered species of conservation concern by conservation plans and various state and federal agencies.

In 2001 and 2002 biologists conducted waterfowl brood count surveys on 13 selected sites in Teton Valley, Idaho (Cavallaro 2002a and 2003). Surveyors found that marsh habitat and portions of lower tributaries of the Teton River are very productive duck breeding areas, particularly for mallard, American wigeon, green-winged teal and cinnamon teal. Early-nesting duck hens likely depend on riparian areas where shrubs, sedges and other robust grasses and grasslike plants provide early season cover. Later nesting is more widespread throughout the lower elevations of the Valley in marsh, grass and shrub habitats. Crucial habitats for maintaining waterfowl migration, wintering and nesting habitat include the Teton River corridor and associated wetland and riparian habitat, lower (perennial) sections of Teton River tributaries, slough creeks, Foster Slough wetland complex and Spring Creek marsh.

4.3 Greater Sandhill Crane

The greater sandhill crane is classified as a *Species of Greatest Conservation Need* by the *Idaho Comprehensive Wildlife Conservation Strategy* and is designated as a species conservation priority by the *North American Waterbird Conservation Plan* and the *Intermountain West Waterbird Conservation Plan*. The Rocky Mountain Population of greater sandhill cranes number approximately 20,000 birds and nests from northwest Colorado to southwest Montana (Drewien et al. 2005). Teton County, Idaho is an important nesting area for sandhill cranes. Teton Regional Land Trust biologists have documented approximately 40 sandhill crane nests in Teton Valley, all within seasonally or perennially flooded habitat. These nests are a sub-sample of cranes nesting in Teton County and do not represent a complete breeding population estimate. Sandhill cranes typically initiate nesting in April-May within flooded wetlands in Teton County and spend the summer rearing 1-2 colts.

In September cranes from the RMP gather in staging areas to feed and rest prior to undertaking their fall migration to central New Mexico and Mexico. Teton Basin is numerically among the top pre-migration staging area for greater sandhill cranes in the Rocky Mountains. In counts conducted by the USFWS between 1995 and 2005 Teton Basin has averaged 1,489 staging cranes per year (Drewien et. al. 1995-2005). Due to the importance of Teton Valley to staging cranes in the RMP, the Teton Regional Land Trust and cooperating area biologists are monitoring sandhill crane numbers, and documenting habitat utilization during fall migration. Observations indicate that cranes typically concentrate in cut barley during morning and evening hours. During mid-day many cranes disperse to wetland or pasture day-roosts to rest and feed on animal matter. However, some birds remain feeding in cut barley throughout the day. In the late evening cranes retire to roost for the night in isolated wetlands or in shallow areas of the Teton River.

Recently IDFG has taken steps to protect important sandhill crane roosting areas in Teton and Fremont Counties (IDFG Sandhill Crane Hunting Regulations 2011) to mitigate hunting and harassment pressure during fall staging; a partial hunting closure now exists to protect several key roost sites.

The importance of working farms to crane conservation in the Rockies is increasingly apparent to biologists. According to Drewien et al. (1999b):

> *RMP cranes have come to depend on private agricultural lands and associated wetlands in intermountain valleys, and their annual movements have been modified by availability of grain crops. Recently, development has increased in many of these valleys, including Teton Basin, and wildlife habitat is decreasing. Innovative partnerships and incentive programs, including easements and cooperative agreements, are needed to maintain habitats on private lands. Maintaining farms and ranches in important use areas would help secure the future for cranes, waterfowl, and other wildlife dependent on these lands.*

4.4 Long-billed Curlew

The long-billed curlew is designated as a *Species of Greatest Conservation Need* by the *Idaho Comprehensive Wildlife Conservation Strategy*. Long-billed curlews are sensitive to habitat loss on their breeding grounds in the western plains and intermountain region of the United States and Canada and their wintering grounds in California, and Mexico. There is increasing concern among long-billed curlew researchers that exposure to contaminants on wintering grounds may be causing eggshell thinning and subsequently reducing hatchability of eggs (Oring 2006).

Long-billed curlews initiate nesting around the beginning of May in Teton Basin and young curlews hatch sometime around the beginning of June. Long-billed curlews prefer to nest in large expanses of grassland habitat where grass height in May is short. When curlew young hatch in June, their parents move them immediately to dense cover for brooding. Proximity to fresh water is also a long-billed curlew breeding habitat requirement (Oring 2005). Therefore, ideal long-billed curlew habitat is likely large, open, moderately grazed grassland habitat interspersed with healthy wetland and riparian habitat. As a large ground nesting bird that utilizes moderately grazed habitat, long-billed curlews are very sensitive to habitat fragmentation.

A 2012 collaborative effort of IDFG, the Natural Resources Conservation Service and Teton Regional Land Trust to map the most important long-billed curlew breeding habitat in the Upper Snake Region, identifies Teton Valley as one of the two most important breeding sites in the region. The Fosters Slough wetland complex and wet meadow habitats along the Teton River corridor comprise most of the long-billed curlew habitat in Teton County.

5.0 Trout

The Teton River drains 890 square miles from its headwaters in the west slope of the Teton Range, the Snake River Range and Big Hole Mountains to its confluence with the Henry's Fork River near Rexburg, Idaho (IDFG 2001). The Teton is fed by snowmelt and spring-fed discharge with peak flows typically occurring between late May and early June (Koenig 2006). According to USDA Soil Conservation Service (USDA SCS 1992) the Teton River is a major natural resource in Teton County and is of key importance to fish, wildlife, recreation and agriculture.

The Teton River supports a robust fishery comprised of the native Yellowstone cutthroat trout (YCT) and mountain whitefish, nonnative rainbow and brook trout, and hybrid cutthroat trout/rainbow trout. The *Idaho Sport Fishing Economic Report* estimated that anglers spent over $688,000 during fishing trips to the Teton River in 2003. From 1990-1994 approximately 7,500 catchable rainbow trout were stocked in the Teton Valley reach of the Teton River per year (IDFG 2001). Since 1994 the Teton River has been managed as a wild trout fishery with no stocking. The Teton River also supports a diversity of native nongame fish species such as bluehead sucker (an Idaho *Species of Greatest Conservation Need*), mountain sucker, longnose dace, mottled sculpin, and redside shiner.

In February of 2001, the US Fish and Wildlife Service (USFWS) found that a petition to list the Yellowstone cutthroat trout under the Endangered Species Act was not warranted. On February 21, 2006 the US Fish and Wildlife Service announced the results of a review of the status of Yellowstone cutthroat trout for possible listing under the Endangered Species Act. The USFWS determined that listing of Yellowstone cutthroat trout, found in Montana, Wyoming, Idaho, Utah and Nevada remains unwarranted (USFWS 2006). However, YCT are categorized as a *Species of Greatest Conservation Need* by the *Idaho Comprehensive Wildlife Strategy, Sensitive* by the BLM and the USDA Forest Service and YCT declines in the Teton River have raised serious concerns about the persistence of this species in the Teton Valley section of the River.

The current primary objective in the 2007-2012 fisheries management plan for fishery management activities on the Teton River is to protect the genetic integrity and population viability of the native cutthroat trout population (IDFG 2007). Prior to1976 (and the construction and subsequent collapse of the Teton Dam) YCT occurred in highest concentrations below the dam site, followed by the canyon section of the Teton River with the lowest concentrations occurring in the Valley section (57%, 31% and 22% respectively) (IDFG 2001). A 2003 census of YCT in the Teton Valley section of the River revealed a 96% decline to densities of less than 2 fish/ha in one sample site (IDFG 2003). Continued monitoring surveys conducted by IDFG indicate increasing trends for YCT numbers in the upper Valley and lower Teton River and stable numbers in the middle canyon section of the Teton River (High et al. 2011). While the recent upward trend is encouraging, the species continues to face numerous risks to long-term persistence and remains a high conservation priority. Fishing regulations geared to protect cutthroat trout that are currently in place on the Teton River include no harvest or catch-and-release for cutthroat trout, a general six fish limit for

rainbow trout and hybrid cutthroat trout/rainbow to reduce hybridization and competition with cutthroat trout, and a 25 fish daily limit for brook trout to limit competition with cutthroat trout. Other management actions for YCT on the Teton include maintaining fencing of riparian areas to protect habitat conditions.

Bitch Creek, a major tributary of the Teton River at the northern boundary of Teton County, Idaho is still a stronghold for YCT and it has, until recently, had few threats from competition and genetic introgression from nonnative species. Teton and Fox Creeks currently provide the most important spawning and rearing habitat for fluvial YCT in the upper Valley (Koenig 2006). Trail Creek and Six Springs Creek also are used by fluvial spawning cutthroat and these streams as well as South Leigh Creek may also be important to YCT conservation in the Teton River (Koenig 2006).

Principal causes of the decline of YCT include habitat alteration and degradation through human exploitation (Koenig 2006),stocking of nonnative fishes and whirling disease (USFWS 2006; Koenig 2006), and flow alteration (Van Kirk and Jenkins 2005). According to USFWS (2006), angler harvest and stocking of nonnative fish "can be effectively countered by the ongoing current management actions of State and Federal agencies". However, recent research by Van Kirk and Jenkins (2005) suggests that the greatest threat to the future of YCT in Teton Valley may be the conversion of the upper Teton watershed from a runoff-dominated system, which benefits cutthroat, to a system that essentially functions as a large spring creek with little influence from runoff, which favors nonnative competitors.

Reversing the decline of Yellowstone cutthroat trout in Teton Valley is a complex task that will involve landscape scale coordination and management of water resources. However, maintenance of instream and riparian habitat conditions along fluvial tributaries and spring creeks is also important to any future cutthroat recovery as well as protecting existing wild trout populations. The current Idaho Department of Fish and Game (2007) *Fisheries Management Plan* for the Teton River identifies a key objective relevant to land use and conservation planning:

> *Minimize impacts of land use and development on fish habitat and water quality. Work with government agencies, private landowners and developers, and conservation groups to make protection and enhancement of fish habitat and water quality a primary concern in land use decisions. Ensure restoration of habitat or mitigation of habitat loss whenever possible (IDFG 2007).*

6.0 Summary of Fish and Wildlife Occurrence in Teton County, Idaho

Table 3 is a summary of vertebrate fish and wildlife species known or suspected to occur in Teton County Idaho and immediate vicinity based on IDFG data and estimates.

Table 3. Vertebrate Wildlife species and their relevant conservation status known or expected to occur on in Teton County, Idaho.

Common Name	***Scientific Name***	**Federal**	**State**	**Management Plans**
Fish				
Bluehead Sucker	*Catostomus disobolus*		ICWCS	
Brook Trout	*Salvelinus fontinalis*			
Longnose dase	*Rhinichthys cataractae*			
Mottled sculpin	*Cottus bairdi*			
Mountain whitefish	*Prosopium williamsoni*			
Piute sculpin	*Cottus beldingi*			
Rainbow Trout	*Salmo gairdneri*			
Yellowstone cutthroat trout	*Oncorhynchus clarki bouvieri*	BLM(2)	ICWS	
Redside shiner	*Richardsonius balteatus*			
Mountain sucker	*Catostomus platyrhynchus*			
Utah sucker	*Catostomus ardens*			
Amphibians				
Blotched tiger salamander	*Ambystoma tigrinum melanostictum*			
Boreal chorus frog	*Pseudacris triseriata maculata*			
Columbia spotted frog	*Rana pretiosa*	USFS		
Western toad	*Anaxyrus boreas boreas*	BLM(3)		
Reptiles				

Common Name	*Scientific Name*	Federal	State	Management Plans
Gopher snake	*Pituophis catenifer*			
Great Basin rattlesnake	*Crotalis oreganus*			
Racer	*Coluber constrictor*			
Rubber boa	*Charine bottae*			
Sagebrush lizard	*Sceloporus graciosus*			
Short-horned lizard	*Phrynosoma hernandesi*			
Common garter snake	*Thamnophis sirtalis*			
Terrestrial garter snake	*Thamnophis elegans*			
Western painted turtle	*Chrysemys picta*			
Western skink	*Plestiodon skiltonianus*			
Birds				
American Avocet	*Recurvirostra americana*		ICWCS(a)	USSCP(2)
American Bittern	*Botaurus lentiginosus*			IWWCP(M-10)
American Coot	*Fulica americana*			
American Crow	*Corvus brachyrhynchos*			
American Dipper	*Cinclus mexicanus*			PIF(2)
American Golden Plover	*Pluvialis dominica*			USSCP(2)
American Goldfinch	*Carduelis tristis*			
American Kestrel	*Falco sparverius*			
American Redstart	*Setophaga ruticilla*			
American Robin	*Turdus migratorius*			
American Tree Sparrow	*Spizella arborea*			
American Wigeon	*Anas americana*			NAWMP(2)
American White Pelican	*Pelecanus erythrorhynchos*		ICWCS(a)	NAWCP(NA), PIF(2), IWWCP

Common Name	*Scientific Name*	Federal	State	Management Plans
				(H)
Baird's Sandpiper	*Calidris bairdii*			USSCP(2)
Bald Eagle	*Haliaeetus leucocephalus*	LT, BLM(1)	ICWCS	PIF(1)
Barn Swallow	*Hirundu rustica*			
Bank Swallow	*Riparia riparia*			
Barrow's Goldeneye	*Bucephala islandica*			PIF(2)
Belted Kingfisher	*Ceryle alcyon*			
Black Tern	*Chlidonias niger*			IWWCP(H)
Black-backed Woodpecker	*Picoides arcticus*			PIF(2)
Black-billed Magpie	*Pica pica*			
Black-capped Chickadee	*Parus atricapillus*			
Black-crowned Night-Heron	*Nycticorax nycticorax*		ICWCS(a)	NAWCP(C), IWWCP(M-9)
Black-Headed Grosbeak	*Pheucticus melanocephalus*			
Black-necked Stilt	*Himantopus mexicanus*		ICWCS(a)	USSCP(1)
Black Rosy-Finch	*Leucosticte atrata*			PIF(2)
Black Tern	*Childonias niger*	BLM(3)	ICWCS(a)	PIF(2), NAWCP(C)
Black- throated Gray Warbler	*Dendroica nigrescens*			
Blue Grosbeak	*Guiraca caerulea*		ICWCS	
Blue-winged Teal	*Anas discors*			NAWMP(2)
Bobolink	*Dolichonyx oryzivorus*			
Bohemian Waxwing	*Bombycilla garrulus*			
Boreal Owl	*Aegolius funereus*	USFS	ICWCS	PIF(2)
Black-bellied Plover	*Pluvialis squatarola*			USSCP(2)

Common Name	*Scientific Name*	Federal	State	Management Plans
Black Rosy Finch	*Leucosticte atrata*			
Brewer's Blackbird	*Euphagus cyanocephalus*			
Brewer's Sparrow	*Spizella breweri*	BLM(3)	ICWCS	PIF
Broad-Tailed Hummingbird	*Selasphorus platycercus*			
Brown Creeper	*Certhia americana*			
Bullock's Oriole	*Icterus bullockii*			
Burrowing Owl	*Athene cunucularia*		ICWCS(a)	
Bufflehead	*Bucephala albeola*			
California Gull	*Larus californicus*		ICWCS(a)	NAWCP(NA), IWWCP(M-10)
Calliope Hummingbird	*Stellula calliope*	BLM(3)		PIF(1)
Canada Goose	*Branta canadensis*			NAWMP (RMP)(1)
Canvasback	*Aythya valisineria*			NAWMP(2)
Caspian Tern	*Sterna caspia*			PIF(1), NAWCP(C), IWWCP(M-10)
Cassin's Finch	*Carpodacus cassinii*			
Cassin's Vireo	*Vireo cassinii*			PIF(2)
Cattle Egret	*Bubulcus ibis*		ICWCS	
Cedar Waxwing	*Bombycilla cedrorum*			
Chipping Sparrow	*Spizella passerina*			
Cinnamon Teal	*Anas cyanoptera*			NAWMP(2)
Clark's Grebe	*Aechmophorus clarkii*		ICWCS(a)	NAWCP(NA)
Clark's Nutcracker	*Nucifraga columbiana*			PIF(2), IWWCP(M-10)
Cliff Swallow	*Pettrochelidon pyrrhonota*			
Common Goldeneye	*Bucephala clangula*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Common Loon	*Gavia immer*	USFS		PIF(2), IWWCP(H)
Common Nighthawk	*Chordeiles minor*			
Common Merganser	*Mergus merganser*			
Common Poorwill	*Phalaenoptilus nutallii*			
Common Raven	*Corvus corax*			
Common Tern	*Sterna hirundo*			IWWCP(M-10)
Common Yellowthroat	*Geothlypis trichas*			
Cooper's Hawk	*Accipiter cooperii*			
Cordilleran Flycatcher	*Empidonax occidentalis*			
Dark-eyed Junco	*Junco hyemalis*			
Double-crested Cormorant	*Phalacrocorax penicilatus*			
Downy Woodpecker	*Picoides pubescens*			
Dunlin	*Calidris alpina*			USSCP(2)
Dusky Flycatcher	*Empidonax oberholseri*			PIF(2)
Dusky Grouse	*Dendragapus obscurus*			PIF(2)
Eastern Kingbird	*Tyrannus tyrannus*			
Eared Grebe	*Podiceps nigricollis*			NAWCP(C), IWWCP(H-9)
Eurasion Collared Dove	*Streptopelia decaocto*			
Evening Grosbeak	*Cocothraustes vespertinus*			
Ferruginous Hawk	*Buteo regalis*	BLM(3)	ICWCS	PIF(1)
Flammulated Owl	*Otus flammeolus*	USFS, BLM(3)		PIF(1)
Forster's Tern	*Sterna forsteri*			NAWCP(NA), IWWCP(H-10/M-9)
Fox Sparrow	*Passerella iliaca*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Franklin's Gull	*Larus pipixcan*		ICWCS(a)	NAWCP(WH), IWWCP(H)
Gadwall	*Anas strepera*			NAWMP(2)
Golden Eagle	*Aquila chrysaetos*			
Golden-crowned Kinglet	*Regulus satrapa*			
Grasshopper's Sparrow	*Ammmodramus savannarum*		ICWCS(a)	
Gray Jay	*Perisoreus canadensis*			
Gray Partridge	*Perdix perdix*			
Great Blue Heron	*Ardea herodias*			
Great Egret	*Ardea alba*		ICWCS	
Great Gray Owl	*Strix nebulosa*	USFS		PIF(2)
Great Horned Owl	*Bubo virginianus*			
Greater Sage Grouse	*Centrocercus urophasianus*		ICWCS	
Greater Yellowlegs	*Tringa melanoleuca*			USSCP(2)
Green-winged Teal	*Anas crecca*			NAWMP(2)
Green-tailed Towhee	*Pipilo chlorursus*			PIF(2)
Hairy Woodpecker	*Picoides villosus*			
Hammond's Flycatcher	*Empidonax hammondi*	BLM(3)		PIF(1)
Harlequin Duck	*Histrionicus histrionicus*	USFS	ICWCS	NAWMP(1), PIF(2)
Hermit Thrush	*Catharus guttatus*			
Herring Gull	*Larus argentatus*			
Hoary Redpoll	*Carduelis hornemanni*			
Hooded Merganser	*Lophodytes cucullatus*		ICWCS(a)	
Horned Grebe	*Podiceps auritus*			
Horned Lark	*Eremophilia alpestri*			
House Sparrow	*Passer domesticus*			

Common Name	*Scientific Name*	Federal	State	Management Plans
House Wren	*Troglodytes aedon*			
Juniper Titmouse	*Baeolophus bicolor*		ICWCS	
Killdeer	*Charadrius vociferus*			USSCP(2)
Lark Bunting	*Calamospiza melanocorys*			PIF(2)
Lazuli Bunting	*Passerina amoena*			PIF(2)
Least Flycatcher	*Empidonax minimus*			
Least Grebe	*Podiceps nigricollis*			
Least Sandpiper	*Calidris minutilla*			USSCP(2)
Lesser Goldfinch	*Carduelis psaltria*		ICWCS	
Lesser Snow Goose	*Chen caerulescens*			NAWMP(2)
Lesser Scaup	*Aythya affinis*		ICWCS	NAWMP(2)
Lesser Yellowlegs	*Tringa flavipes*			USSCP(2)
Lewis's Woodpecker	*Melanerpes lewis*	BLM(3)	ICWCS	PIF(1)
Lincoln's Sparrow	*Melospiza lincolnii*			
Loggerhead shrike	*Lanius ludovicianus*	BLM(3)		PIF(2)
Long-Billed Curlew	*Numenius americanus*		ICWCS(a)	USSCP(1)
Long-Billed Dowitcher	*Limnodromus scolopaceus*			USSCP(2)
Long-eared Owl	*Asio otus*			
MacGillivray's Warbler	*Oporornis tolmiei*			PIF(2)
Mallard	*Anas platyrhynchos*			NAWMP(1)
Marbled Godwit	*Limosa fedoe*			USSCP(1)
Marsh Wren	*Cistothorus palustris*			
Merlin	*Falco columbarius*		ICWCS	
Mountain Bluebird	*Sialia currucoides*			PIF(2)
Mountain Chickadee	*Poecile gambeli*			PIF(2)
Mourning Dove	*Zenaida macroura*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Northern Flicker	*Colaptes auratus*			
Northern Goshawk	*Accipiter gentilis*	USFS, BLM(3)		PIF(2)
Northern Harrier	*Circus cyaneus*			
Northern Pintail	*Anas acuta*		ICWCS(a)	NAWMP(1)
Northern Pygmy-Owl	*Glaucidium gnoma*			PIF(2)
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*			
Northern Saw-whet Owl	*Aegolius acadicus*			
Northern Shoveler	*Anas clypeata*			NAWMP(2)
Northern Shrike	*Lanius excubitor*			
Northern Waterthrush	*Seiurus noveboracensis*			
Olive-sided Flycatcher	*Contopus borealis*			PIF(2)
Orange-crowned Warbler	*Vermivora celata*			
Osprey	*Pandion haliaetus*			
Pectoral Sandpiper	*Calidris melanotos*			USSCP(2)
Peregrine Falcon	*Falco peregrinus*	USFS, BLM(3)	ICWCS(a)	PIF(1)
Pied-billed Grebe	*Podilymbus podiceps*			
Pine Grosbeak	*Pinicola enucleator*			
Pine siskin	*Carduelis pinus*			
Prairie Falcon	*Falco mexicanus*	BLM(3)		PIF(2)
Red crossbill	*Loxia curvirostra*			PIF(2)
Red-breasted Nuthatch	*Sitta canadensis*			PIF(2)
Redhead	*Aythya americana*			NAWMP(1)
Red-naped Sapsucker	*Sphyrapicus nuchalis*			PIF(2)
Red-necked Grebe	*Podiceps grisegena*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Red-necked Phalarope	*Phalaropus tricolor*			USSCP(2)
Red-tailed Hawk	*Buteo jamaicensis*			
Red–winged Blackbird	*Agelaius phoeniceus*			
Ring-Billed Gull	*Larus delawarensis*			
Ring-Necked Duck	*Aythya collaris*			NAWMP(2)
Ring-necked Pheasant	*Phasianus colchicus*			
Rock Dove	*Columba livia*			
Rock Wren	*Salpinctes obsoletus*			
Ross's Goose	*Chen Rossii*			
Rough-Legged Hawk	*Buteo lagopus*			
Ruby-crowned Kinglet	*Regulus calendula*			
Ruddy Duck	*Oxyura jamaicensis*			NAWMP(2)
Ruffed Grouse	*Bonasa umbellus*			PIF(2)
Rufous Hummingbird	*Selasphorus rufus*			
Sage Grouse	*Centrocercus urophasianus*	USFS	ICWCS(a)	PIF(2)
Sage Sparrow	*Amphispiza belli*	BLM(3)		PIF(2)
Sage Thrasher	*Oreoscoptes montanus*	BLM(3)		PIF(2)
Sanderling	*Calidris alba*			USSCP(2)
Sandhill Crane	*Grus canadensis*		ICWCS	NAWCP(WH), IWWCP(H)
Savannah Sparrow	*Passerculus sandwichensis*			
Say's Phoebe	*Sayornis saya*			
Semipalmated Plover	*Charadrius wilsonia*			USSCP(2)
Semipalmated Sandpiper	*Calidris pusilla*			USSCP(2)
Sharp-shinned Hawk	*Accipiter striatus*			
Sharp-tailed Grouse	*Tympanuchus pasianellus*	USFS, BLM	ICWCS(a)	PIF

Common Name	*Scientific Name*	Federal	State	Management Plans
Short-billed Dowitcher	*Limnodromus griseus*			
Short-eared Owl	*Asio flammeus*		ICWCS	PIF
Snow Bunting	*Plectrophenax nivalis*			
Snow Goose	*Chen caerulescens*			
Snowy Egret	*Egretta thula*		ICWCS(a)	NAWCP(WH), IWWCP(H-9/M-10)
Solitary Sandpiper	*Tringa solitaria*			USSCP(2)
Song Sparrow	*Melospiza melodia*			
Sora	*Porzana carolina*			
Spotted Sandpiper	*Actitis macularia*			USSCP(2)
Stellar's Jay	*Cyanocitta stelleri*			
Stilt Sandpiper	*Calidris himantopus*			USSCP(2)
Swainson's Hawk	*Buteo swainsoni*		ICWCS	PIF(2)
Swainson's Thrush	*Catharus ustulatus*			
Three-toed Woodpecker	*Picoides tridactylus*	USFS	ICWCS	PIF(2)
Townsend's Solitaire	*Myadestes townsendi*			PIF(2)
Tree Swallow	*Tachycineta bicolor*			
Trumpeter Swan	*Cygnus buccinator*	USFS, BLM(3)	ICWCS(a)	NAWMP(1), PIF(1)
Tundra Swan	*Cygnus columbianus*			NAWMP(2)
Turkey Vulture	*Cathartes aura*			
Vesper Sparrow	*Pooecetes gramineus*			
Violet-green Swallow	*Tachycineta thalassina*			
Virginia Rail	*Rallus limicola*			PIF(1)
Virginia's Warbler	*Vermivora virginae*	BLM(4)	ICWCS	PIF(1)
Warbling Vireo	*Vireo gilvus*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Western Flycatcher	*Empidonax difficilis*			
Western Grebe	*Aechmophorous occidendentalis*		ICWCS(a)	NAWCP(NA)
Western Kingbird	*Tyrannus verticalis*			
Western Meadowlark	*Sturnella neglecta*			
Western Sandpiper	*Calidris mauri*			USSCP(2)
Western Tanager	*Piranga ludoviciana*			PIF(2)
Western Wood-Pewee	*Contopus sordidulus*			
Western-Screech Owl	*Otus kennicottii*			
Whimbrel	*Numenius phaeopus*			
White-breasted nuthatch	*Sitta carolinensis*			
White-crowned Sparrow	*Zonotrichia leucophrys*			
White-faced ibis	*Plegadis chihi*	BLM(4)	ICWCS(a)	NAWCP(WH), IWWCP(M)
White-throated Swift	*Aeronautes saxatalis*			
White-winged Crossbill	*Loxia leucoptera*			
Whooping Crane	*Grus americana*			
Wild Turkey	*Meleagris gallopavo*			
Willet	*Catoptrophorus semipalmatus*			USSCP(1), PIF
Williamson's Sapsucker	*Sphyrapicus thyroideus*	BLM(3)		PIF(1)
Willow Flycatcher	*Empidonax traillii*	BLM(3)		
Wilson's Phalarope	*Phalaropus tricolor*		ICWCS(a)	USSCP(2), PIF(1)
Wilson's Warbler	*Wilsonia pusilla*			
Wilson's Snipe	*Gallinago gallinago*			USSCP(2)
Wood Duck	*Aix sponsa*			NAWMP(1)
Yellow-bellied Sapsucker	*Sphyrapicus varius*			
Yellow-billed Cuckoo	*Coccyzus americanus*	C, BLM(1)	ICWCS(a)	PIF(2)

Common Name	*Scientific Name*	Federal	State	Management Plans
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*			
Yellow-rumped Warbler	*Dendroica coronata*			
Yellow Warbler	*Dendroica petechia*			
Mammals				
American Marten	*Martes americana*			
Badger	*Taxidea taxus*			
Beaver	*Castor canadensis*			
Big Brown Bat	*Eptesicus fuscus*			
Bighorn Sheep	*Ovis canadensis*		ICWCS	
Black Bear	*Ursus americanus*			
Black-tailed Jackrabbit	*Lepus californicus*			
Bobcat	*Lynx rufus*			
Bushy-tailed Woodrat	*Neotoma cinerea*			
California Myotis	*Myotis californicus*		ICWCS	
Canada Lynx	*Felis canadensis*	LT	ICWCS	
Canyon Bat	*Parastrellus hesperus*			
Cliff Chipmunk	*Neotamias dorsalis*		ICWCS	
Coyote	*Canis latrans*			
Deer Mouse	*Peromyscus maniculatus*			
Dusky Shrew	*Sorex monticolus*			
Dwarf Shrew	*Sorex nanus*		ICWCS	
Elk	*Cervus canadensis*			
Ermine	*Mustela erminea*			
Fringed Myotis	*Myotis Thysanodes*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Golden-mantled Ground Squirrel	*Spermophilus lateralis*			
Gray wolf	*Canis lupus*	XN, BLM(1)	ICWCS	
Great Basin Pocket Mouse	*Perognathus parvus*			
Grizzly Bear	*Ursus arctos*	LT, BLM(1)	ICWCS	
Heather Vole	*Phenacomys intermedius*			
Hoary Bat	*Lasiurus cinereus*			
Idaho Pocket Gopher	*Thommoys idahoensis*		ICWCS(a)	
Least Chipmunk	*Neotamias minimus*			
Little Brown Bat	*Myotis lucifugus*			
Little Pocket Mouse	*Perognathus longimembris*		ICWCS(a)	
Long-eared Myotis	*Myotis evotis*			
Long-legged Myotis	*Myotis volans*			
Long-tailed Vole	*Microtus longicaudus*			
Long-Tailed Weasel	*Mustela freneta*			
Masked Shrew	*Sorex cinereus*			
Meadow Vole	*Microtus pennsylvanicus*			
Merriam's Shrew	*Sorex merriami*		ICWCS	
Mink	*Mustela vison*			
Montane Vole	*Microtus montanus*			
Moose	*Alces alces*			
Mountain Cottontail	*Sylvilagus nuttallii*			
Mountain Goat	*Oreamnos americanus*			
Mountain Lion	*Puma concolor*			
Mule Deer	*Odocoileus hemionus*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Muskrat	*Ondatra zibethica*			
Northern Flying Squirrel	*Glaucomys volans*			
Northern Grasshopper Mouse	*Onychomys leucogaster*			
Northern Pocket Gopher	*Thomomys talpoides*			
Pallid Bat	*Antrozous pallidus*			
Pika	*Ochotona princeps*			
Pine Squirrel	*Tamiasciurus hudsonicus*			
Porcupine	*Erethizon dorsatum*			
Pronghorn	*Antilocapra americana*			
Raccoon	*Procyon lotor*			
Red Fox	*Vulpes fulva*			
River Otter	*Lontra canadensis*			
Sagebrush Vole	*Lemmiscus curtatis*			
Silver-haired Bat	*Lasionycteris noctivagans*			
Snowshoe Hare	*Lepus americanus*			
Southern red-backed vole	*Clethrionomys spp.*			
Striped Skunk	*Mephitus mephitus*			
Townsend's Big-eared Bat	*Corynorhinus townsendii*	USFS, BLM(3)	ICWCS(a)	
Townsend's Pocket Gopher	*Thomomys townsendii*		ICWCS(a)	
Uinta Chipmunk	*Neotamias umbrinus*			
Uinta Ground Squirrel	*Spermophilus armatus*	BLM(4)		
Vagrant Shrew	*Sorex vagrans*			
Water shrew	*Sorex palustris*			

Common Name	*Scientific Name*	Federal	State	Management Plans
Water vole	*Microtus richardsoni*			
Western Harvest Mouse	*Reithrodontomys megalotis*			
Western jumping mouse	*Zapus princeps*			
Western Small-footed Myotis	*Myotis ciliolabrum*			
Western spotted skunk	*Spilogale gracilis*			
White-tailed deer	*Odocoileus virginianus*			
White-tailed Jackrabbit	*Lepus townsendii*			
Wolverine	*Gulo gulo*	USFS, BLM(3)	ICWCS	
Wyoming Ground Squirrel	*Spermophilus elegans*		ICWCS(a)	
Yellow-bellied Marmot	*Marmota flaviventris*			
Yellow Pine Chipmunk	*Neotamias amoenus*			
Yuma Myotis	*Myotis yumanensis*			

Federal = *US Fish and Wildlife Service – LT=listed Threatened, LE=listed Endangered, C=Candidate for listing, XN=Experimental-non-essential population, Bureau of Land Management(BLM) – Sensitive, listed as Type 1-Threatened, Endangered, Proposed and Candidate Species, Type 2-Rangewide/Globally Imperiled Species, Type 3-Regional/State Imperiled Species, Type 4-Peripheral species, and USDA Forest Service (USFS)– Sensitive*

State = *Idaho Comprehensive Wildlife Conservation Strategy (ICWC) Species of Greatest Conservation Need-(a) =vertebrate species (except fishes) for which the Snake River Basalts represents a significant portion of their range*

Management Plans *= Recognized by other plans or organizations as a high conservation priority including US Shorebird Conservation Plan (USSCP), North American Waterfowl Plan (NAWMP), Idaho Partners in Flight Plan (PIF) listed as conservation priority '1' or '2', Intermountain West Waterbird Conservation Plan (IWWCP) Bird Conservation Regions 9 and 10 listed as draft species priority High 'H' and Moderate 'M' concern and North American Waterbird Plan (NAWCP) listed as conservation priority 'NA' (North America), 'WH' (Western Hemisphere) and 'C' (Cosmopolitan)*

7.0 References

Audubon Society. 2003a. Christmas bird count summary obtained from the National Audubon Society website http://www.audubon2.org/bird/cbc/hr/count_table_display.jsp accessed on October 3, 2003.

Audubon Society. 2006. Important Bird Areas Program obtained from the National Audubon Society website http://www.audubon.org/bird/iba/index

Bellrose, F. 1980. Ducks, Geese and Swans of North America. Wildlife Management Institute, third edition.

Boyd, L. 2001. Buffer Zones and Beyond. Wildlife use of Wetland Buffer Zones and their protection under the Massachusetts Wetland Protection Act. Wetland Conservation Professional program Department of natural Resources Conservation, University of Massachusetts July 2001.

Cavallaro, R. 2001. Report on 2000 Waterfowl Brood Surveys Conducted at Selected Locations in Teton Valley, Idaho**.** Report prepared for: Teton Regional Land Trust by Science Applications International Corporation (SAIC).

Cavallaro, R. 2005a. Personal observation by Robert Cavallaro, Stewardship Director Teton Regional Land Trust of northern goshawk breeding activity on private land in the Packsaddle Bench area. June 2005.

Cavallaro, R. 2005b. Flushing distance field investigations conducted at two constructed wetlands in Teton County, Idaho on April 20, 2005.

Cavallaro, R. 2002. Report on 2002 Waterfowl Brood Surveys Conducted at Selected Locations in Teton Valley, Idaho**.** Report prepared for: Teton Regional Land Trust by Science Applications International Corporation (SAIC).

Drewien, R.C., W.M. Brown, J.D. Varley and D.C. Lockman. 1999b. Seasonal Movements of Sandhill Cranes Radiomarked in Yellowstone National Park and Jackson Hole, Wyoming. Journal of Wildlife Management 63(1):126-136.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 2005. September 2005 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 2004. September 2004 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 2003. September 2003 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 2002. September 2002 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 2001. September 2001 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and P.D. Keywood. 2000. September 2000 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 1999a. September 1999 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R.C., W.M. Brown, J.D. Varley and D.C. Lockman. 1999b. Seasonal Movements of Sandhill Cranes Radiomarked in Yellowstone National Park and Jackson Hole, Wyoming. Journal of Wildlife Management 63(1):126-136.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 1998. September 1998 Survey of the Rocky Mountain Population of the Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R.C. P.P. Thorpe and D.S. Benning. 1997. September 1997 Survey of the Rocky Mountain Population of Greater Sandhill Cranes. Unpublished report, Hornocker Wildlife Institute and U.S. Fish and Wildlife Service.

Drewien, R. C., D.S. Benning and E.L. Boeker. 1996. September 1996 Survey of the Rocky Mountain Population of Greater Sandhill Cranes. Unpublished report, U.S. Fish and Wildlife Service.

Franklin, A.B. 1987. Breeding biology of the great gray owl in southeastern Idaho and northwestern Wyoming. M.S. thesis, Humboldt St. Univ., Arcata, California.

Goodell, J. 2008. Farms to Subdivisions: Pre-development Wildlife Monitoring and Resource Planning in Eastern Idaho. Verbal Presentation. Idaho Chapter of the Wildlife Society Annual Meeting. Boise, ID.

Greater Yellowstone Bald Eagle Working Group (GYBEWG). 1996. Greater Yellowstone bald eagle management plan: 1995 update. Greater Yellowstone Bald Eagle Working Group, Wyoming Game and Fish Department, Lander, Wyoming 82520. 47 pp.

Greater Yellowstone Interagency Brucellosis Committee. 2003. 2003 GYIBC ANNUAL REPORT.
Groves, C.R. 2003. Drafting a Conservation Blueprint. A Practitioner's Guide to Planning for Biodiversity. The Nature Conservancy, Island Press.

Idaho Department of Fish and Game, Montana Department of Fish, Wildlife and Parks, Wyoming Game and Fish Department, Idaho Department of Agriculture, Montana Department of Livestock, Wyoming Livestock Board, U.S.D.A. Forest Service, U.S.D.A. Animal and Plant Health Inspection Service, U.S.D.A. Agricultural Research Service, U.S.D.I. Fish and Wildlife Service, U.S.D.I. National Park Service, U.S.D.I. Bureau of Land Management, U.S.D.I. National Biological Service.

GYBEWG. 2004. Minutes of the Greater Yellowstone Bald Eagle Working Group Meeting 2004. January 27, 2004. Wyoming Game and Fish Department Jackson Regional Office. Minutes compiled by Susan Patla and Bob Oakleaf, WGFD.

Idaho Department of Fish and Game. 2011. Elk. Study I. Job 1. Federal Aid in Wildlife Restoration, Job Progress Report, Project W-170-R-35.

Idaho Department of Fish and Game. 2010. Columbian Sharp-tailed Grouse Lek Survey. Bonneville, Teton, Fremont Counties, Idaho. Prepared by Matt Proett. Cooperative cost share project Bureau of Land Management and Idaho Department of Fish and Game.

Idaho Department of Fish and Game. 2008. Idaho Mule Deer Management Plan 2008-2017. Idaho Dept. of Fish and Game 600 South Walnut Street, Boise, Idaho 83707. March 2008.

Idaho Department of Fish and Game. 2007. Management Plan for the Conservation of Cutthroat Trout in Idaho.

Idaho Department of Fish and Game. 2006. 2006 - 2007 Fishing Seasons and Rules Including Steelhead.

Idaho Department of Fish and Game. 2005a.The Mule Deer Initiative Action Plan, A Roadmap for Success, Draft. Idaho Department of Fish and Game, Boise., 12 pp.

Idaho Department of Fish and Game. 2005b. Idaho Comprehensive Wildlife Strategy September 2005.

Idaho Department of Fish and Game. 2005c. Upper Snake Region 2005 Annual Fisheries Performance Report. In preparation.

Idaho Department of Fish and Game. 2003a. Columbian Sharp-tailed Grouse Lek Survey. Freemont, Teton, Madison Counties, Idaho. Prepared by Eric Anderson and Mat Davis. Cooperative cost share project Safari Club International and Idaho Department of Fish and Game.

Idaho Department of Fish and Game. 2003b. Upper Snake Region 2003 Annual Fisheries Performance Report. In preparation.

Idaho Department of Fish and Game. 1999. Elk Management Plan, Status and Objectives of Idaho's Elk Resources. Idaho Dept. of Fish and Game 600 South Walnut Street, Boise, Idaho

83707.

Idaho Department of Fish and Game. 1998. Idaho Columbian Sharp-Tailed Grouse Conservation Plan 1998 Draft. Idaho Conservation Effort, Idaho Dept. Fish and Game, Boise, Idaho. 32 pp.

Idaho Partners in Flight. 2000. Idaho Bird Conservation Plan. Version 1.0. January 2000.

Idaho Statesman. 2005. Online Edition date May, 5, 2005. Retrieved from http://www.idahostatesman.com/apps/pbcs.dll/article?AID=/20050505/NEWS01/505050348/1001 on May 6, 2006.

Idaho Transportation Department- District 6. 2005. Highway/Wildlife Linkage GIS Layers Final Report June 30, 2005 Prepared by Geodata Services, Inc. Missoula, Montana

Jackson Hole Wildlife Foundation. Nd. How to Create Wildlife Friendly Fencing. www.jhwildlife.org

Jankovsky-Jones, Mabel. 1996. Conservation Strategy for Henry's Fork Basin Wetlands. Conservation Data Center, Idaho Department of Fish and Game, Boise, ID. 76 pp.

Koenig, M.K. (*in press*). Habitat and biotic factors influencing the distribution and recruitment of juvenile cutthroat trout in the Teton River, Idaho. Master's Thesis. Utah State University, Logan, UT.

Maj, M. and Ruth Shea. 1994. Trumpeter Swans of Teton Valley, Idaho. Teton Valley Wildlife Project. 1993 Report, pp14-17.

Marks, J.S. and V.S. Marks. 1987. Habitat selection by Columbian sharp-tailed grouse in west-central Idaho. USDI Bureau of Land Management, Boise District, U.S. Govt. Report 792-057/40, 019, Boise. 115pp.

Moulton, C., R. Sallabanks, E Ammon and J. Bart. 2004. Idaho Bird Inventory and Survey (IBIS). A plan to implement Coordinated Bird Monitoring in Idaho. July 2004 Version 1.0

National Wetlands Inventory, U.S. Fish and Wildlife Service, 1993). Atlas of National Wetlands Inventory maps for Teton County, Idaho. June 1993. NWI 1-93-1.

North American Waterfowl Management Plan.2004. 2004 Strategic Guidance. U.S. Department of the Interior, Fish and Wildlife Service.

Noss et al. 2002. A Biological Conservation Assessment for the Greater Yellowstone Ecosystem Executive Summary. Greater Yellowstone Coalition, Bozeman, MT. 2001.

Oring, L. Proceedings of the Long-billed Curlew Symposium. Shorebird Science in the Western Hemisphere February 27-March 2 2006.

Oring, L. Personal communication between Lewis Oring, PhD, University of Nevada, Reno and Robert Cavallaro, Teton Regional Land Trust on April15, 2005.

Pierce, J.D. and J.M. Peck. 1984. Moose habitat use and selection patterns in north-central Idaho. J. Wildl. Manage. 48:1335-1343.

Ragotzkie, Kim. 2006. Personal communication regarding Idaho Department of Fish and Game elk flight survey results for Teton Valley, Idaho.

Rodgers, J.A. and S.T. Schwikert. 2003. Buffer Zones to Protect Foraging and Loafing Waterbirds from Disturbance by Airboats in Florida. Waterbirds: Volume 26 Issue 4 pages: 437-443.
Smith, C.M.. 2002. The effects of human development on avian communities along the Snake River riparian corridor in Jackson Hole, Wyo., USA. Teton Science School.

Teton Regional Land Trust. 2006. *Wildlife Overlay and Wildlife Conservation Measures for Teton County, Idaho Technical Support Document.*

Thorpe, P. 2003. Personal communication between Phil Thorpe, Flyway Biologist, USFWS, Lakewood, CO. and Robert Cavallaro, Stewardship Director, TRLT. September 1, 2003.
US Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1

U.S. Fish and Wildlife Service (USFWS) 2006. Mountain-Prairie Region Endangered Species Program
http://mountain-prairie.fws.gov/endspp/fish/yct retrieved on May 1, 2006.

USFWS. 2003. Trumpeter Swan Survey of the Rocky Mountain Population Winter 2003. U.S. Fish and Wildlife Service Migratory and State Programs Mountain-Prairie Region Lakewood, Colorado. May 29, 2003.

USFWS, Region 6. 1999. Peatland Mitigation Policy Considerations. Ecological Services, Colorado State Office. Lakewood, Colorado.

USFWS. 1993. Atlas of National Wetland Inventory Maps for Teton County, Idaho. NWI 1-93-1. U.S. Fish and Wildlife Service, Portland, OR, 26 pp.

USFWS. 1997. A System for Mapping Riparian Areas in the Western United States.
United States Shorebird Conservation Plan. 2001. Manomet Center for Conservation Sciences, Manomet, Massachusetts. May 2001. Second Edition.

Van Kirk, R and A. Jenkins. 2005. Hydrologic Alteration in the Upper Teton Watershed and its Implications for Cutthroat Trout Restoration. Project completion report for Friends of the Teton River P.O. Box 768 Driggs, ID 83422. January 10. 2005.

Whitfield, M. 2011. Bald Eagles of Eastern Idaho Greater Yellowstone Ecosystem 2011 Annual

Productivity Report. GYE/Idaho Bald Eagle Research Project. Bureau of land Management, Idaho Falls District, Forest Service, Caribou-Targhee National Forest, Idaho Department of Fish and Game and Northern Rockies Conservation Cooperative.

Whitfield, M., S. Miller, M. Wilson, J. Gardetto, K. Rice, J Rydalch, M. Zimmerman, B. Alford, L. Hanuauska-Brown and J. Naderman. 1994-2005. Annual Bald Eagle Productivity Final Reports, 1994-2005. Idaho Portion of the Greater Yellowstone Ecosystem Zone 18, Bureau of Land Management, Idaho Falls, ID.

Whitfield, M. 2003. Raptor nest monitoring summary for Teton Basin, Idaho. Unpublished data provided by Michael Whitfield, Wildlife Biologist, Executive Director, TRLT.

Whitfield, M.B., M.G. Gaffney, M. Gebhart, C. Riegle, M. Maj and A. Whitfield. 1996. Monitoring of Great Gray Owls-Progress Report 1994-1995. Targhee National Forest and Teton Valley Idaho/Wyoming, 71pp.

Whitfield, M.B. and M. Gaffney. 1997. Great grey owl (Strix nebulosa) breeding habitat use within altered forested landscapes. Pages 498-505 in J.R. Duncan, D.H. Johnson and T.H. Nicholls, editors. Biology and conservation of owls in the northern hemisphere. Second International Symposium. USDA Forest Service General Technical Report, NC-190.