

Idaho Elk Management Plan

2014-2024



Prepared by IDAHO DEPARTMENT OF FISH AND GAME
June 2014

Recommended Citation:


Idaho Department of Fish and Game (IDFG). 2014. Idaho Elk Management Plan 2014-2024.
Idaho Department of Fish and Game, Boise, USA.

Front cover photograph:

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IDAHO DEPARTMENT OF FISH AND GAME

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An Open Letter from Director Virgil Moore to the Citizens of Idaho

Idaho's new 10-year elk management plan is now complete. For a two-year period, dozens of Fish and Game staffers from across the state collaborated with hundreds of Idahoans to craft this plan that will guide elk management for the decade to come.

It was worth the time and effort. After all, elk are prized by all of us. Who doesn't stop to enjoy seeing elk on a hillside? Hunters plan their year around the annual elk hunt with family and friends. Many others are content to snap a photo of a big bull or a cow and calf feeding in a summer meadow.

Idaho's new elk management plan is the foundation for sustaining our herds where they are healthy and rebuilding herds that are struggling. The plan was developed with the help of hunters, landowners, elected officials, land managers and other interested Idahoans. The elk plan establishes specific management goals that Fish and Game -- working with elk hunters and other elk enthusiasts -- will achieve over the next ten years. To accomplish these goals, the plan identifies:

- Elk population objectives for each of Idaho's 28 elk management zones
- Specific factors limiting elk numbers in each management zone
- Strategies and on-the-ground tactics to address these specific factors

If you are an elk hunter, here are a few things the new elk plan provides for you:

- Continued annual general elk hunting seasons so families and friends can hunt together every year
- Elk population management to meet hunter demand
- Use of regulated hunting to aggressively manage predators in areas where they have greater impact on elk population recovery and growth, and use predator control actions when needed

If you are a farmer or a rancher, the new elk plan includes measures to minimize elk-caused crop and property damage. Additionally, the plan includes strategies to lessen wildlife disease impacts on elk and domestic livestock.

Private and public land managers will find the plan includes a pledge from Idaho Fish and Game to continue to commit resources and personnel to improve habitat to support elk.

All Idahoans, and their elected and appointed officials, will find the plan upholds the Idaho Fish and Game mission to preserve, protect, perpetuate and manage elk populations for the benefit of all citizens. The plan was developed with public input using surveys and

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new public involvement techniques such as web-chats, involving over 5,000 people. Based on public input, the plan sets goals to address crop and property damage problems. It reaffirms Fish and Game's commitment to restore elk populations in Idaho's backcountry by managing predators and supporting habitat improvement projects. It also provides hunting opportunity for all Idahoans every year and sets us on a course to successfully manage elk together.

Idaho's elk plan is the product of a great deal of effort by many people. While I am proud of that effort, the key is making the plan a reality. Idaho's elk management plan is a living document. Our agency needs continued public input, support and financial resources for the plan to succeed.

Please take a few minutes to read the Elk Plan Executive Summary and if you have the time, read the elk plan and let us know what you think. What we need most of all is your involvement because Idaho's wildlife belongs to you.



Virgil Moore
Director, Idaho Department of Fish and Game
June 2014

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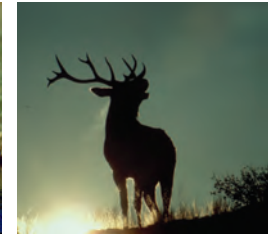


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Acknowledgements

This document is the culmination of contributions from many people with a wide variety of experience and perspectives regarding elk and their management. Many hunters shared their opinions by means of Idaho Department of Fish and Game questionnaires. Others, including hunters and non-hunters, provided input through open house meetings, web-chats, and Department website surveys. Input was also provided by groups or agencies representing agricultural interests, Federal and State land management, outfitters and guides, and Tribal interests. The input and contributions of these people and many others resulted in a document that provides greater benefit to elk and to the people who enjoy and hunt elk in Idaho.

Within the Idaho Department of Fish and Game, those directly involved in developing and surveying the public, analyzing the available elk data, developing goals and objectives, writing and editing the plan, and in all ways taking responsibility for the final plan format are named below, with their job titles as of the time the plan was written. Collectively the planning process and final plan benefitted from input by these staff members, whose training and specialty included wildlife management, wildlife research, veterinary science, law enforcement, social science, and public communication.





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We also acknowledge and thank the following department staff for their contributions to the new elk plan:

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Executive Summary

Rocky Mountain elk are Idaho's premier big game animal. Idaho's diversity of big game species is a hunter's dream. Ten species of big game can be hunted in Idaho, but for most hunters elk are the king of them all. An incredible mixture of elk hunting opportunity is available to the hunter, thanks to Idaho's diverse habitats and a population of about 107,000 elk. The Idaho elk hunter can pursue bulls that vanish like ghosts in the sagebrush deserts, bugle for bulls in aspen draws above dry farms in eastern Idaho, chase herds in the lung-busting climbs of the central Idaho mountains, or stalk the thick-timbered ridges of northern Idaho.

The Idaho Fish and Game Commission and the Idaho Department of Fish and Game (IDFG) have a legal responsibility for conserving, protecting, perpetuating, and managing all of Idaho's wildlife. To fulfill that obligation, IDFG is guided by a strategic plan, The Compass. Adopted in 2005, The Compass broadly describes objectives for 4 major goals: 1) sustain Idaho's fish and wildlife and the habitats upon which they depend; 2) meet the demand for fish and wildlife recreation; 3) improve public understanding of and involvement in fish and wildlife management; and 4) enhance the capability of IDFG to manage fish and wildlife and serve the public.

The Compass, by design, contains no details; it is broad in scope. This elk management plan functions as an "action plan" referenced in The Compass and provides the specific goals, strategies, and performance objectives for elk management. A key criterion to the

planning process is that the current status of hunter preferences and wildlife populations is used to determine goals, strategies, and performance objectives that will drive future management direction.

Idaho's prior elk management plan (1999) addressed the need to manage hunter density and distribution, as well as managing growing elk populations in some parts of the state. One notable change included in that plan was the dual-tag zone management concept (A and B tags) that was implemented to better manage hunter distribution and choice of weapons across the state, largely because of concerns about pressure on adult bulls. This management concept

included the creation of 28 Elk Management Zones (later 29 zones). Although wolves were reintroduced into Idaho in 1995 and 1996, the 1999 Elk Management Plan was relatively silent on the issue.

Ultimately, the plan's A-B tag system led to redistribution of hunters out of congested areas and greater management flexibility, providing a diversity of hunting and harvest opportunities. Since that elk plan was adopted 15 years ago, several new issues have emerged relative to Idaho's elk management. These issues include declining elk populations in Idaho's backcountry, well documented impacts of wolves and other predators on elk, increased numbers of elk in agricultural settings, continued degradation of elk habitat continues because of lack of disturbance and regeneration in conifer



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dominated landscapes, expansion of noxious weeds, and other habitat issues.

This revised plan (2014) is not designed to prescribe specific hunting seasons; rather it is designed to establish goals that IDFG staff, working with elk enthusiasts, will achieve over the next 10 years. Overall, the plan directs IDFG to maintain or increase current elk populations across most of the state. To accomplish the goal, IDFG has identified in the plan:

- Zone-level elk population objectives for each zone
- Specific factor(s) limiting elk numbers in each management zone
- Strategies and performance objectives to address limiting factors

The plan is purposeful and will require public support and additional financial resources for full implementation. The IDFG will work to engage additional partners in elk management, including the governor's office, other elected officials, federal and state agencies, conservation organizations, private landowners, and hunters. Partnerships, combined with a common desire to improve elk management, will go a long way toward achieving the basic intent of the plan revision: "To be responsive to elk hunter desires and expectations, and maintain biologically sustainable elk populations."

Elk Populations Past and Present

Understanding what drives elk populations is important. Ultimately, female survival is the key to elk population trajectory. Of course, cow elk pregnancy and calving rates, and calf survival to reproductive age, are also critical to determining population performance. In a nutshell, elk population trends depend on survival rates of cow elk and calves. In Idaho, elk survival depends primarily on 4 factors: nutrition (habitat), hunter harvest, predation, and weather.

Historically, elk numbers in Idaho were lower than they are today. Accounts from the Lewis and Clark expedition and trappers during the height of the fur trade generally suggest that elk populations were scattered and only locally

abundant in the northern portions of the state. Eastern Idaho elk populations appeared robust in the mid-1800s. Statewide, populations were most likely reduced during the unregulated hunting of the late 1800s and early 1900s. Ungulates, including elk, were heavily utilized for food by miners, trappers, loggers, and other settlers.

Early 1900s

European settlement brought changes to the landscape. Millions of sheep, cattle, and horses were brought into southern Idaho. Black bear, grizzly bear, and mountain lion populations generally received little or no protection, and wolves were functionally extirpated by the early 1900s. Extreme overgrazing combined with fire suppression efforts turned what was primarily perennial grass ranges into shrub fields. Unregulated harvest and conversion of grass dominated ranges to shrub fields likely resulted in fewer elk in southern Idaho.

Similarly, landscape-level changes occurred in northern Idaho during the early 1900s. However, the impact was likely more positive for elk habitat and populations. Extensive wildfires created a mosaic of grass, shrub fields, and forested habitats. Nearly extirpated local elk populations were augmented with elk from Yellowstone National Park following the large wildfires. Timber harvest also contributed to moving large portions of the forested landscape back towards a more early seral condition. Under these conditions elk flourished in northern Idaho.

Mid 1900s

In north-central Idaho, elk populations probably peaked in the 1960s. As the newly created seral habitats aged and succession continued to move towards a climax state, habitat potential declined. Timber management and fire suppression efforts encouraged conifer reestablishment, and reduced shrub quality and grass quantity.

By the 1970s, hunter numbers and access had increased to the point that restrictive seasons were implemented to reduce elk vulnerability to harvest. Either-sex elk hunting seasons throughout most of Idaho were replaced by antlered-only hunts in 1976. Elk populations



responded, and by the late 1980s elk were once again abundant enough to support more liberal antlerless opportunity. Predator populations were likely reduced or suppressed during the mid-1900s, but had some localized effects in remote areas.

Late 1900s

In portions of northern Idaho, the mid-1990s witnessed another downturn in elk numbers. Declining habitat potential in forested habitat, black bear and mountain lion predation, and localized impacts of hard winters (1996 and 1997) all played a role. With protection and harvest restrictions implemented during the 1970-1990s, black bear and mountain lion populations likely stabilized and began to flourish, particularly in backcountry units where hunting access is difficult. Wolves were reintroduced by the U.S. Fish and Wildlife Service (USFWS) into Idaho in 1995; at the same time expanding wolf populations in southern British Columbia and northwestern Montana were pioneering habitat in Idaho. Wolf predation further accelerated elk declines.

In other portions of the state, including much of southern Idaho, elk numbers actually increased during this same timeframe. A change in grazing practices that promoted grass production, farming practices that favored resting farmland, and continued timber cuts that favored early seral habitat stages all enabled southern Idaho elk populations to grow to all-time record highs during the latter half of the 1900s. Currently, elk populations in the southern part of the state are limited more by sociological constraints than by habitat suitability. In total, Idaho's elk population is estimated at approximately 107,000 animals.

Meeting Hunter Expectations

Elk are managed for the benefit of Idahoans, many of them hunters who eagerly look forward to the annual elk hunt. In 2012, IDFG contracted with the University of Idaho to conduct a survey of Idaho elk hunters to better understand their motivation for elk hunting and their elk management preferences. Almost

2,800 elk hunters, representing all 29 Elk Zones, participated in the survey.

Survey answers were evaluated both at statewide and zone levels. For most elk hunters, the social experience of gathering with friends and family was cited as the most important reason for elk hunting. For others, putting meat on the table or harvesting a mature bull was important. Regardless of the reason for hunting, the common attribute that defined a quality elk hunting experience centered on being able to hunt elk every year and seeing harvestable elk.

As a follow-up to the 2012 survey, IDFG sought further input and interaction with the public and organizations to refine overall management direction, gather input on zone objectives and strategies, and further explore interest in hunting multiple zones. Various communication tools used during 2013 included 2 on-line chats, 2 on-line surveys (website), a second mailed survey, public meetings, and open house events.

This revised plan builds on the successes of the previous plan and the current Idaho model: to offer over-the-counter elk tags that provide annual opportunity for family and friends to hunt together, while also providing enhanced opportunity to hunt mature bulls in controlled hunts. This model is well-supported by Idaho residents. The plan also adds some new ideas to increase elk hunter satisfaction by looking into ways to expand hunter opportunity to include hunting in more than 1 general season (over-the-counter) hunt area, and a tool to help hunters identify the type of hunt they are looking for by identifying the type of hunt (friends and family, antlerless, or quality bull opportunities).

Statewide Elk Management Direction

The IDFG has developed statewide objectives based on elk hunter survey results, recent aerial surveys, current elk population status, and the potential for herd growth in some areas.

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Proposed statewide elk management objectives include:

- Continue to offer general-season elk hunting opportunities by managing elk and predator populations, and improving elk habitat
- Enhance mature bull hunting opportunity
- Aid elk hunters in selecting hunting areas that align with their desired hunting experience
- Maintain the A-B elk tag structure, with adjustments to meet the needs and interests of today's hunters
- Implement measures to reduce elk-caused crop and property damage
- Improve public involvement in elk management decision-making
- Reduce the potential for disease to impact elk or livestock
- Increase public knowledge and understanding of elk biology, management, and hunting

Elk Zone Management Direction

The IDFG will continue to manage elk using the zone management system. The zone system allows herd management based on local habitat, weather, and herd movements, while providing a variety of hunting opportunities.

The number of elk that can be supported in any given management zone is influenced by many factors, including weather, habitat quality, predation, hunter harvest, and the need to minimize elk-based crop and property damage (agricultural impacts). One or more of these “limiting” factors can often prevent an elk herd from growing further or limit the ability of wildlife managers to maintain current elk herd numbers.

For each proposed elk zone, IDFG staff identified the limiting factors using flight surveys, elk population trends over 10 or more years, changes to available habitat, reported agricultural impacts (crop and property damage), known or suspected causes of elk mortality, assessments of predator populations and predation impacts, and other data and elk management experience. The severity of each identified limiting factor was classified as low, moderate, or high. Limiting

factors common to most Idaho elk populations are agricultural impacts (crop and property damage), predation, and habitat. Severity of these limiting factors varies across Idaho, and even within zones.

IDFG staff proposed 10-year management direction and population objectives for each elk zone, and objectives and strategies to maintain or improve elk herd performance and provide greater hunter satisfaction. Finally, using public input, IDFG staff further refined the management direction, objectives, and strategies for each zone.

Backcountry zones in north and central Idaho—Backcountry zones have experienced precipitous declines in elk numbers over the last 20 years. In many cases, these zones are limited by both predation and habitat quality, and the ability to improve elk populations in these zones can be severely affected and limited by access, remoteness, and federal land-use restrictions. To recover these populations, a long-term commitment to habitat improvement is required, as is a clear link between this revised elk plan and predation management plans. In most instances, the 10-year management direction established for backcountry zones involves stabilizing an elk population then beginning the slow process of rebuilding the herd. The IDFG will continue to commit resources and personnel to support habitat projects and reduce predator numbers in these zones, and will continue to work with land managers, hunters, and other interested groups to accomplish the long-term goal of increased elk populations in these backcountry areas.

Predation Management

Managing predators to increase elk populations is a complex issue, in part because different segments of society value predators differently, and because previous efforts have met with mixed results. Nonetheless, predator management is desired by many hunters and serves as an important IDFG elk management tool.



Determining whether predation management will benefit elk populations requires a complex analysis of predator and prey population status, nutritional status of prey, cause-specific mortality, logistical considerations, scale of predation management efforts, and social and economic considerations. As a general rule, predation management can result in more elk when the following conditions are met:

- An elk population is not nutritionally limited (i.e., below habitat carrying capacity)
- Predators are a primary source of elk mortality
- Significant numbers of predators can be removed economically
- Predator removal efforts are conducted in the winter and spring, just prior to predator or elk reproductive periods
- Predation management efforts are focused at the appropriate geographic scale

Wolves, mountain lions, and black bears are the primary predators of elk in Idaho. Current predation management efforts emphasize hunting to manage black bears, mountain lions, and wolves. Idaho has some of the most liberal hunting seasons and methods for predators in the lower 48 states. Use of bait and pursuit by hounds is allowed during spring and fall seasons for black bears. Mountain lion may be hunted with hounds, and wolves may be harvested during long hunting seasons and trapping seasons in some areas. Harvest strategies available to impact predator populations include:

- General seasons with harvest quotas
- General seasons without quotas
- Decreased tag prices
- Multiple tags
- Trapping (for wolves only)
- Baiting (for black bears)
- Use of hounds (black bears and mountain lions)

These harvest strategies, alone or in combination, provide tools for wildlife managers to better manage predators in a manner consistent with achieving elk population management objectives. Additionally, predators are removed by U.S.

Department of Agriculture Wildlife Services when human safety or livestock depredations are issues.

In some cases when predators are negatively impacting ungulate populations, managers may recommend tools in addition to regulated harvest strategies. In 2000 the Idaho Fish and Game Commission (Commission) approved the Policy for Avian and Mammalian Predation to guide IDFG's implementation of predator management activities. The policy states *"The Director may implement a Predation Management Plan in those circumstances where wildlife management objectives for prey species cannot be accomplished within two years by habitat manipulation, sportsman harvest, or interagency action designed to benefit the prey species, and where there is evidence that action affecting predators may aid in meeting management objective."* The Management Plan's policy and season frameworks will be used aggressively to reduce the impact of predators on elk where policy criteria are met and predators are limiting elk.

The IDFG staff acknowledged and incorporated zone-specific predation management plans into zone level goals and strategies. Predation management plans are available at: <http://fishandgame.idaho.gov/public/wildlife/?getPage=325>.

The Future

Elk populations and IDFG are facing new and ever changing opportunities and challenges, including: 1) the return of wolves to the landscape; 2) continued declines or instability of elk herds in the backcountry; 3) elk population expansion in southern Idaho, limited by the amount of crop and property damage that can be sustained; 4) habitat loss and modification; 5) declining elk hunter numbers; and 6) increased importance of the social aspects of elk hunting to elk hunters. This revised elk plan is a continued effort by IDFG to address these challenges at the state and elk management zone level, and to provide direction and specific elk management objectives for the next 10 years.

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This revised elk management plan is aligned with The Compass, which is an important administrative step to maintain accountability and responsiveness to Idaho's citizens and elk hunters alike. Many of the strategies outlined in this plan will result in changes in how IDFG staff communicates elk information to hunters, while potentially aligning hunter desires with hunter experiences at the zone level.

Other strategies will bring functional changes as IDFG utilizes new and emerging technology and know-how to track and monitor elk populations. The IDFG will persist in its efforts to stabilize and increase elk populations in backcountry zones, re-affirming a long-term commitment to these zones. The IDFG will cooperatively look for ways to increase hunter satisfaction, while maintaining current hunting opportunities, and work with all Idahoans to manage elk populations for the benefit of all.

The IDFG is committed to establishing collaborative working relationships with all stakeholders. Without this support and

commitment, IDFG will likely not be able to maintain the model of providing annual hunting opportunity for friends and family through general hunting seasons. Ultimately, IDFG has a legal obligation to ensure elk thrive and the needs of elk enthusiasts are met, as well as addressing elk-caused damage to private property. We look forward to actively implementing on-the-ground actions to maintain elk as a premier big game gem on Idaho's landscape.



Introduction

Idaho's diversity and abundance of big game species is rarely rivaled, and Rocky Mountain elk (*Cervus elaphus canadensis*) are considered by many hunters to be the state's premier big game animal. Elk provide an incredible mixture of recreational, aesthetic, social, cultural, economic, and scientific value to people who work or live in, or visit Idaho. Thanks to Idaho's diverse habitats and a population of approximately 107,000 elk, Idaho elk hunters can pursue their quarry in sagebrush (*Artemisia spp.*)-covered deserts, aspen (*Populus spp.*) draws above farm fields, high mountain meadows, or thick timbered ridges. In fact, elk are found in all of the 99 Game Management Units (GMU) within the state, and elk hunting is provided in 98 GMUs.



Because elk are so widespread and abundant, Idaho elk hunters are fortunate to have a diversity of hunting experiences and opportunities available to them. The average hunter density in the majority of Idaho's elk management zones is ≤ 1.5 hunters/mi² (Fig. 1).

Historical Perspective

Historically, elk numbers in Idaho were likely lower than they are today. Accounts from the Lewis and Clark expedition and trappers during the height of the fur trade generally suggest elk populations were scattered and only locally abundant in northern Idaho. Eastern Idaho elk populations appeared robust in the mid-1800s (Evans 1939). Statewide, populations were most likely reduced during the unregulated hunting of the late 1800s and early 1900s. Ungulates, including elk, were heavily utilized for food by miners, trappers, loggers, and other settlers.

Early 1900s

European settlement brought changes to the landscape. Millions of sheep, cattle, and horses were brought into southern Idaho. Black bear (*Ursus americanus*) and mountain lion (*Puma concolor*) populations generally received little or no protection and gray wolves (*Canis lupus*) were functionally extirpated by the early 1900s. In southern and parts of central Idaho, extreme

overgrazing combined with fire suppression efforts turned what was primarily perennial grass ranges into shrubfields. Unregulated harvest and conversion of grass dominated ranges to shrubfields likely resulted in fewer elk in southern Idaho.

Similarly, landscape-level changes occurred in northern Idaho during the early 1900s.

However, the impact was likely more positive for elk habitat and populations. Extensive wildfires created a mosaic of grass, shrubfields, and forested habitats. Nearly extirpated local elk populations were augmented with elk from Yellowstone National Park (YNP) following the large wildfires. Timber harvest also contributed to moving large portions of the forested landscape back towards a more early seral condition. Under these conditions elk flourished in northern Idaho.

Mid 1900s

In north-central Idaho, elk populations probably peaked in the 1960s. As the newly created seral habitats aged and succession continued to move towards a climax state, habitat potential declined. Fire suppression efforts resulted in forest habitat advancing to later seral stages

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and preventing natural regeneration of early seral stages more favorable to elk.

By the 1970s, hunter numbers and access had increased to the point where restrictive seasons were necessary to reduce elk vulnerability to harvest. Either-sex bag limits throughout most of Idaho were replaced by antlered-only bag limits in 1976. Elk populations responded, and by the late 1980s elk were once again abundant enough to support more liberal antlerless opportunity. Predator populations were likely reduced or suppressed during the mid-1900s, but had some localized effects on elk in remote areas.

Late 1900s

In portions of northern Idaho, the mid-1990s witnessed another downward cycle in elk numbers. Declining habitat potential in forested habitat, black bear and mountain lion predation, and the localized impacts of hard winters (1996 and 1997) all played a role. With protection and harvest restrictions implemented during the 1970-1990s, black bear and mountain lion populations likely stabilized and began to flourish, particularly in central mountain areas (commonly referred to as backcountry) where hunting access is difficult. Wolves became re-established in Idaho during the 1990s through USFWS reintroduction, and through wolves from southern Canada and northwest Montana naturally re-occupying historic wolf habitat. Wolf predation on elk has further accelerated declines in elk herds in many parts of northern Idaho.

In other portions of the state, including much of southern Idaho, elk numbers actually increased during this same timeframe. A change in grazing practices that promoted grass production, farming practices that favored resting farmland,

Hunter Density 2009-2011 Average

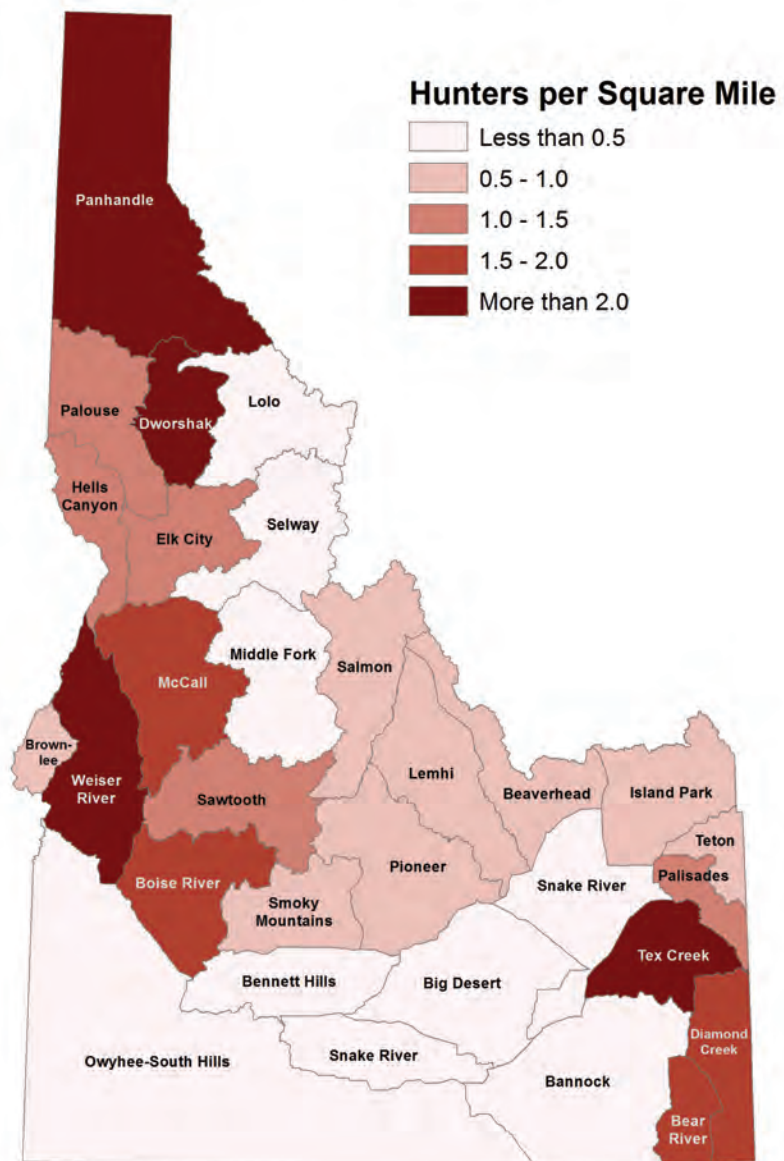


Figure 1. Average hunter density by elk management zone in Idaho, 2009-2011.

and continued timber cuts that favored early seral habitat stages all enabled southern Idaho elk populations to grow to all-time record highs during the latter half of the 1900s.

Today

Elk herds in the southern part of the state are mostly robust and limited more by sociological constraints, such as damage to agricultural crops and property, than by habitat suitability.



Elk herds in the central and northern mountains continue to be suppressed by predators and habitat declines. Elk herds in the prairies and agricultural areas of northern Idaho are mostly robust and population levels are constrained by crop and property damage. In total, Idaho's elk population in early 2013 was estimated at approximately 107,000 animals.

Elk will always be a high priority species relative to their impact on hunting and other recreational opportunity, cultural heritage, and rural economies, and elk management is a priority program for IDFG.

Purpose

Idaho Code 36-103 establishes statewide policy for wildlife, and can be paraphrased as all wildlife will be preserved, protected, and perpetuated; and that wildlife will be managed to provide continuous supplies for hunting, fishing, and trapping. The Commission is charged with administering state wildlife policy through the Director of IDFG.

Idaho Code 67-1903 requires state agencies to develop strategic plans expressing how they will meet core mission requirements. Plans must identify outcome-based goals and performance measures. The current IDFG strategic plan, entitled "The Compass," was implemented in 2005 (IDFG 2005b). The Compass calls for the development of "action plans" that describe programs, projects, and activities necessary to meet strategic plan goals.

The prior Elk Management Plan (IDFG 1999) was adopted in 1999 and preceded The Compass. This Elk Management Plan (2014) tiers off of the IDFG strategic plan and functions as the action plan for elk management in the state. Major issues affecting elk management are identified, setting overall direction for elk management during the next 10 years and providing performance objectives and management strategies for management actions. Although the plan is not regulatory (e.g., statute or rule), it does incorporate Commission policy and provide management direction to IDFG. This plan will

guide IDFG in annual work plan development and program priority, and provide guidance on development of regulatory recommendations. Finally, it will be used in development of IDFG's annual budget request to the legislature.

Public Involvement in Plan Development

Several phases of public outreach have been conducted during the development of the draft Elk Management Plan.

Elk Hunter Opinion Survey, Phase 1, April-June 2012

A comprehensive opinion survey about elk hunting in Idaho was conducted in 2012 under contract to the University of Idaho, by Drs. Nick Sanyal and Ed Krumpke, and Alexandria Middleton at the University of Idaho, Conservation and Social Sciences Department. The survey was mailed to a random sample of 6,200 Idaho elk hunters who purchased general elk tags in 2011. The sample was stratified by elk hunting zones which meant 220 elk hunters were randomly selected in each of 28 elk zones to receive the survey (200 with Idaho addresses, and 20 who live in other states). Hunters could respond to the survey by hardcopy or on-line. A total of 2,786 useable questionnaires were returned and used in the analyses, which was a 48.5% response rate after accounting for undeliverable instruments and refusals. This response was judged to be adequate to produce a statistically representative sample of the population of Idaho elk hunters at $\pm 10\%$ level of accuracy. Results of the survey were presented at the IDFG Commission meeting at Bonners Ferry, Idaho in July 2012. Summary of results and the questionnaire are available on the elk planning website (<http://fishandgame.idaho.gov/elkplanning>) and Appendix A.

The lengthy questionnaire asked many questions to gather information about Idaho elk hunters, such as:

- Current demographics of Idaho elk hunters (who they are)
- Idaho elk hunters' preferences and experiences (what type of experience are

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they looking for, how they would define a quality hunt, what are the top reasons they hunt in Idaho)

- How do they view different types of management options (general seasons, controlled hunts, choose a weapon)
- Satisfaction level with various factors such as season lengths, amount of access, and timing of elk seasons
- How predators impact their elk hunting experience

This study was the first comprehensive investigation of Idaho elk hunters since a similar study was conducted by the University of Idaho almost 25 years ago (1987), and provided an important update to knowledge about elk hunters. This comprehensive survey of elk hunters allowed IDFG staff to quantify current hunter demographics, desires, expectations, and hunting experiences. The following attributes were identified as defining a quality elk hunting experience for most Idaho hunters:

- Being able to hunt every year, and seeing a harvestable elk
- Closely followed by being able to hunt elk with family and friends, harvesting an elk, being able to hunt for mature bulls, and low elk hunter densities

The survey validated that the Idaho model of being able to purchase over-the-counter (OTC) tags that provide yearly opportunity for family and friends to hunt together, in combination with mature bull opportunity in controlled hunt areas, is well supported by Idaho residents. The fact that hunters would like to see more elk while hunting was also noted.

A few of the questions from 2012 survey could be compared to the survey conducted in 1987. When comparing the 2 surveys, a few differences stood out:

- In 2012 77% of people surveyed said they would miss elk hunting in Idaho a great deal if they could not do it, compared to 54% in 1987
- Of respondents in 2012, 43% said hunting elk with family was extremely important, compared to 28% in 1987

- In 2012 the general trend was that harvesting any elk and putting meat on the table was more important, and harvesting a mature bull (6 points on a side) had the same desirability as in 1987; but harvesting a raghorn, spike, or antlerless elk was less desirable than in 1987

Responding to requests for more opportunity for hunters to hunt in more than 1 general zone, we also asked hunters in this survey if they would like to be able to hunt in multiple zones in a year for a single elk. Almost 83% of hunters responded that they were interested in the opportunity to hunt elk in more than 1 general zone. Of these hunters, 60% agreed that they were willing to pay more to do so (\$30 for resident, \$100 for nonresident). This result led to further development of the concept to expand elk hunter opportunity to multiple zones.

Elk Hunter Opinion Survey and Public Outreach, Phase 2, April-May 2013

Based on hunter preferences from the 2012 hunter survey and current elk population status and potential for elk herd growth, IDFG staff developed statewide elk management objectives for the next 10 years. Staff also developed objectives and strategies for each of the elk management zones in Idaho.

During April through May 2013, the IDFG obtained public input on:

- Draft statewide management direction and objectives
- Draft zone objectives, strategies, and limiting factors
- Interest in expanding hunter opportunities (2-zone, C-tag, no change)

Input was sought from individuals as well as notifying sporting groups, agricultural groups and private landowners, and federal land management agencies.

The IDFG sought input and interaction with the public through a variety of communication tools, including:

- On-line chat
- On-line survey (website)



- Second elk hunter survey (mailed)
- Public meetings and open houses

On-line chat was designed to inform and answer questions about the proposed statewide management directions and objectives, as well as specific questions about zone level population objectives, limiting factors, and strategies. The chat served primarily as a tool to kick-off the public comment period and was very successful, with the following highlights:

- Over 1,400 people participated in the two 2-hour sessions
- The first night alone IDFG staff answered almost 500 questions
- Hunters from almost all states were represented, along with a few foreign countries

On-line survey (website) had 3 separate sections for public input: statewide management directions; zone-specific objectives and strategies; and expanding hunter opportunities to include being able to hunt in 2 or more zones (2-zone or C-tag).

Input on statewide and zone management included:

- Over 75% of the respondents favored the proposed statewide elk management objectives as presented
- Most respondents found zone-specific 10-year management direction and proposed strategies favorable or acceptable

There were 1,801 respondents to the zone-specific management direction and proposed strategies and 579 respondents to the statewide management objectives.

The second elk hunter survey (mailed) was a random sample of hunters to determine specific interest in expanding or not expanding hunting opportunity into 2 or more zones. The second elk hunter survey was sent out to 3,187 people and 1,487 responded (47% response rate). The sample was stratified by elk hunting zones which meant 110 elk hunters were randomly selected in each of 27 elk zones to receive the survey (100 with Idaho addresses, and 10 who live in other

states); and also included a sample of those who drew controlled hunts in the Hells Canyon and Owyhee-South Hills zones. Hunters could respond to the survey by hardcopy (Appendix B). The survey was also available to interested people on the IDFG website; this self-selected sample consisted of 1,064 responses.

Key responses of the mailed survey and on-line survey include:

- Sixty-five percent of the mailed survey respondents and 70% of the on-line respondents favored the 2-zone option to expand elk hunter opportunity
- Forty-nine percent of the mailed survey respondents and 54% of the on-line respondents favored the C-tag option to expand elk hunter opportunity
- Only 27% of the mailed survey respondents and 29% of the on-line respondents were in favor of expanding hunting opportunity into 2 or more zones if it might cause these zones to become more restrictive in the future (e.g., tag quotas, shortened seasons)
- Based on the descriptions of the 2 options, 2-zone and C-tag, mailed survey respondents and on-line respondents were more likely to participate in the 2-zone option versus the C-tag or neither option (mailed survey - 57% 2-zone, 17% C-tag, 27% neither option; on-line survey - 60% 2-zone, 21% C-tag, 20% neither option)
- Fifty-seven percent of each survey group indicated we should move forward with these options to hunt in multiple zones; 30% of the mailed survey respondents and 38% of the on-line respondents were not in favor of moving forward with these options to hunt in multiple zones

Public meetings and open houses provided an opportunity for the public to meet one-on-one with IDFG staff and discuss draft plan statewide direction, zone objectives, and expanding hunter opportunity alternatives. Input was collected using the same questions and format that was provided with the on-line website survey.

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Highlights included:

- Fourteen open houses or public meetings held statewide
- Two hundred forty-three people attended the meetings

Public Outreach, Phase 3, August - September 2013

During August and September 2013, IDFG solicited public comment on the draft plan. Comments were collected using the website, hard copy, and by email. The draft elk plan was viewed by 1,203 individuals on the website during the comment period, and 401 of these individuals left comments. Additionally, IDFG received 19 written comments separate from the website; 8 were from governmental agencies and Non-Governmental Organizations (NGOs), 10 from citizens, and one additional citizen letter that was signed by 27 individuals. The general tone of the written comments was support for the plan. Each group stressed the importance of elk management and several mentioned the importance of managing predation to benefit elk in some areas. A few written comments were not in favor of predation management.

Written and on-line comments were categorized into topic categories for more in-depth analysis. Each comment was given multiple topics (if necessary) in order capture the extent of each comment. There were 43 different topics that were assigned to 554 total comments by topic. Of those 43 topics, 19 topics had 5 or more individuals address that specific topic.

The most frequently-mentioned topic in the comments was predation (171 of the comments). The comments were split with 152 supportive of predation management and 19 comments against any predator harvest or control. Primarily, discussion of predation management centered on wolves, but also addressed black bears, mountain lions, and grizzly bears.

The multiple zone tag (“C-tag” or 2-zone) concept was mentioned by 77 of the respondents. The comments were 2 to 1 against the multiple zone tag option. The general apprehensions were that it would increase hunter

crowding, increase statewide elk harvest, and that the multiple zone tag concept was just about raising revenue.

An on-line chat was conducted to kick-off the public comment period and inform and answer questions about the draft plan. There were 186 viewers during the live event with 88 people participating.

After considering all public comments, the draft plan was modified and prepared for consideration by the Commission. The Commission held a public hearing on 15 January 2014 to solicit testimony on the final proposed plan. Minutes of the public hearing can be found at <https://fishandgame.idaho.gov/public/about/commission/selectYear.cfm>. The plan was adopted by the Commission on 16 January 2014.

Public involvement was a critical component in developing this plan, and will continue to be a necessary aspect of elk management throughout implementation.

Relevant IDFG Planning Documents

- **Black Bear Management Plan 1999-2010**
(IDFG 1998)
- **Elk Management Plan**
(IDFG 1999)
- **Policy for Avian and Mammalian Predation Management**
(IDFG 2000)
- **Mountain Lion Management Plan 2002-2010**
(IDFG 2002)
- **Idaho Wolf Conservation and Management Plan**
(Idaho Legislative Wolf Oversight Committee 2002)
- **White-Tailed Deer Management Plan 2004-2015**
(IDFG 2004)
- **Idaho Comprehensive Wildlife Conservation Strategy**
(IDFG 2005a)
- **The Compass, IDFG Strategic Plan**
(IDFG 2005b)
- **Memorandum of Understanding Between IDFG and Idaho State Animal Damage Control Board**
(IDFG and Idaho State Animal Damage Control Board 2005)
- **Mule Deer Management Plan 2008-2017**
(IDFG 2008)
- **Mule Deer Initiative Action Plan 2010**
(IDFG 2010)
- **The Communications Bureau Strategic Plan 2011-2015**

Results from Previous Planning Periods



Management of elk has been a priority since the inception of IDFG. Since the 1980s, IDFG has had 4 formal statewide elk management plans. A key feature of the 1986-1990 plan was establishing a minimum post-season bull:cow ratio of 25:100 for backcountry units and 15:100 for all other units. The elk “sightability” helicopter survey method was implemented as a statewide plan for inventorying elk in most units. This inventory method was state of the art and the envy of management agencies in the West. The IDFG also advocated for logging guidelines that maintained adequate cover for elk and minimized open road densities on the landscape. A comprehensive Elk Rifle Hunting study was initiated that quantified and qualified elk hunting experiences in Idaho.

Emphasis during the 1991-1995 planning period was focused on maintaining or increasing bull elk numbers. General any-weapon seasons were moved out of the breeding season in the majority of GMUs. Spike-only general seasons and branch-antlered permit-only hunts were implemented in eastern Idaho. Hunters were forced to choose

between hunting the 14 central Idaho GMUs with the Mountain zone tag or hunt front country GMUs with the regular elk tag. By the mid-1990s, the number of elk tags sold eclipsed the 100,000 mark.

The impending social conflict and declining bull:cow ratios drove the 1996-2010 Elk Management Plan process (referred to as the 1999 Plan). A new minimum bull:cow ratio of 20:100 was adopted, along with graduated higher bull:cow ratios for “quality” and “high quality” hunting areas. The dual-tag zone management concept was implemented to manage hunter distribution across the state, by incentivizing certain zones and seasons. Although wolves were reintroduced into Idaho in 1995, the 1999 Plan was relatively silent on the issue.

A 20% decline in hunter numbers and significant declines in north-central and central Idaho elk herds precipitated the current elk plan review process.

Elk Management Issues

Hunting Opportunities and Experiences

Idaho elk hunters have various motivations for hunting, including spending time with family and friends, seeing elk in a natural setting, being close to nature, just being outdoors, harvesting an elk, putting meat in the freezer, harvesting a mature bull, and others. In comparison to elk hunters in 1987, today's hunters are older, the social aspects of the hunt are more important, and they are more likely to miss Idaho elk hunting a great deal if they could not participate (Sanyal et al. 2012a).

Elk hunting has strong ties to Idaho's history and culture and today's hunters highly value the opportunity to hunt every year. Hunters also reported that harvesting a mature bull (6 points on a side) or a large bull (>350 Boone & Crockett points) was most desirable of all bull and antlerless opportunity. However, when hunters primary reasons for hunting elk were revealed through a series of questions, a clear majority of hunters found it unacceptable to be restricted to purchasing an elk tag only every other year, or having more controlled hunts that provide larger animals but not being able to hunt elk every year. The current Idaho model is to offer OTC tags that provide yearly opportunity for family and friends to hunt together, in combination with mature bull opportunity in controlled hunt areas. This model is well supported by Idaho residents. The IDFG staff

will continue to work with hunters to increase elk hunter satisfaction by looking into ways to expand hunter opportunity to hunt in more than 1 general season zone per hunting season. Further, IDFG staff will better help hunters match the type of hunt they are looking for with available opportunities (OTC with friends and family, antlerless, or quality bull opportunities) and weapon type.

Annual opportunity

Idaho currently offers liberal general-season hunting opportunities. In 2012, 27 of the state's 29 elk management zones provided some form (i.e., weapon type) of OTC general-season hunting opportunity. The dual-tag zone management concept (A and B tags) was implemented in 1999 to address concerns for numbers of adult bulls and bull age structure and to better manage hunter numbers among GMUs. This



A-B tag system has enabled IDFG to provide ample and diverse hunting opportunities while minimizing hunter crowding and managing hunter distribution. For instance, in 2012 there were 43 total OTC general seasons available among the 27 elk zones that offered OTC opportunity. A-tag hunts typically provide more opportunity for archery or muzzleloader hunters, and may include harvest opportunities for antlerless, either-sex, or antlered animals. B-tag hunts tend to provide more any-weapon opportunities, often for antlered elk only. These hunts have become a staple for maintaining

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Idaho's hunting tradition and continue to provide an opportunity for family and friends to get together for the "annual hunt," while still providing opportunities to hunt with a variety of weapon types and for either antlered or antlerless elk.

Backcountry opportunity

Idaho's north and central backcountry zones were once the epitome of all elk hunting experiences for many residents and nonresidents of Idaho. These zones are characterized as remote, with limited access and comprised mostly of wilderness. Hunters sought out these zones for not only the backcountry experience, but also because of relatively high abundance of elk. Over the last 20 years, some backcountry elk populations declined 34% - 80% based on elk survey data. Since the mid-1990s, cumulative elk populations in the Lolo, Middle Fork, Sawtooth, and Selway zones have declined from over 30,500 elk to just over 14,500 (52% decline), and are still fluctuating. Subsequently, available elk tags have been reduced by as much as 52%. While all of these zones still offer OTC tags, quotas have been established and tags are sold on a first-come, first-served basis.

In many cases, these zones are limited by both predation and habitat quality, and IDFG's ability to improve elk populations in these zones can be severely affected by limited access, landownership, and federal wilderness restrictions. Recovery of these elk populations hinges on long-term commitment to habitat improvement and a clear link between this elk plan and predation management plans. In most instances, the 10-year management direction for backcountry zones directs first stabilizing elk populations, then beginning the process of growing herds. The IDFG will continue to commit resources and personnel to reduce predator numbers and work with federal land managers to improve habitat in these zones, and will continue to work with land managers, hunters, and other interested groups to accomplish the long-term goal of increased elk populations in these backcountry areas.

Other hunting opportunity

Hunter surveys indicate that Idaho hunters strongly value opportunities to harvest mature bulls as well as opportunities to hunt elk annually. The majority of Idaho elk hunters prefer to harvest a mature bull rather than other types of elk. But when presented with the choice of annual antlerless opportunity, every third year righthorn opportunity, or every tenth year mature bull opportunity, the majority of hunters chose to hunt every year. Idaho currently offers over 252 different controlled hunt opportunities of which 50 are antlered or either-sex any-weapon hunts, five are antlered archery hunts, and eight are antlered or either-sex muzzleloader hunts. Depending on variations in herd characteristics, most of these hunts are considered "quality" or "high quality" hunts. In addition, many high-harvest potential opportunities (primarily cow and youth hunts) exist as other controlled hunt "special opportunities." These hunts are provided annually where populations are meeting overall population objectives or to minimize damage to agricultural crops. The challenge Idaho elk hunters have, especially new participants, is wading through the diversity of opportunities that the A-B tag system and controlled hunts have to offer. To better meet the diversity of hunting experiences desired by Idaho elk hunters while maintaining desirable OTC tags in general seasons, IDFG has adopted the following statewide goals:

- Annually maintain 10 "quality" and 10 "high quality" hunting opportunities throughout the state
- Improve efforts to inform hunters about the diversity of hunting opportunities available throughout Idaho

These opportunities are broadly characterized in Table 1 and are based on individual hunts, not by zones.

Expanding elk hunter opportunity to multiple zones

Hunters surveyed in the 2012 survey responded positively to the general concept of expanding hunter opportunity to multiple zones. The concept is that hunters would still only have



Table 1. Characteristics of elk hunting opportunity types in Idaho.

Characteristic	Type of hunting opportunity		
	General	Quality	High quality
Hunter success (%)	≈15	≈35	≈50
6-point bulls (%)	>20	>40	>60
Hunter density (no./mi ²)	1.0 – 7.0	0.18 – 0.99	< 0.18
Opportunity to hunt every year (%)	100	10-20	<10
Bull:100 cows ratio	18-24	25-29	30-35

one tag and be able to harvest only one elk, but it would provide them more flexibility in zones they hunt, with the intent to make it easier to hunt with family and friends. Based on the positive response from hunters in the 2012 survey, IDFG staff developed two options for further consideration by hunters. In each option, only OTC, general-season hunts would be eligible for consideration. The 2-zone option allowed a hunter to purchase an elk tag for a single zone and also purchase the opportunity to hunt with that tag in one additional zone. For example, a person could choose to hunt in the Panhandle Zone near home, but could also choose to hunt the Brownlee Zone. The idea is to extend an individual’s hunting season and add some diversity to where that person hunts. The second option, the “C-tag” option, would create a third type of tag in addition to the current A- and B-tag system. A tentative list of GMUs that were meeting elk management objectives was selected to be part of the C-tag. The C-tag option allowed a person to purchase the C-tag and hunt in any or all of the GMUs on the list during the open season for those areas. The tentative list would include approximately 28 GMUs in 6-8 zones.

A second survey was used to gather information from hunters in 2013 about the two options and associated proposals and details. The majority of the respondents favored the 2-zone option over the C-tag option. A majority of hunters did express concern of moving forward with any option to expand hunter opportunity to multiple zones if it would result in more restrictions to the zone they currently hunt in. Six of 10 hunters did still express interest in moving forward, while 3 of 10 hunters were opposed. Because of uncertainty and concerns expressed by some hunters, IDFG

will further evaluate the effects either option may have on current hunting opportunities before making any recommendations to the Commission. Over the first few years of this plan, IDFG staff will continue to work with hunters to develop ways to expand hunter opportunity to hunt in >1 area.

Potential impact of technology on opportunity

Technological advances create unique challenges for both wildlife managers and conservation officers. Technology such as global positioning units (GPS) and advanced communication devices are common field tools used to obtain and store data, and maintain personal safety. On the other hand, using the aid of technology while hunting often results in questions of what constitutes “fair chase.”

Some examples of technological advances and the impacts include:

- **Trail cameras** - are being put up on water holes and feeding areas making it more effective for hunters to scout an area before and during a hunt as opposed to physically scouting an area themselves. The Montana Fish, Wildlife and Parks Commission was concerned enough about impacts of trail cameras that they made them illegal during hunting seasons.
- **Range finders and high-tech scopes** help hunters judge distance, which, in part, led to the growing popularity of long-range shooting of big game animals. Whereas these tools have enabled practiced shooters to take long-range shots with higher accuracy, they have also encouraged less practiced shooters to take long-range shots that may be unethical. This technology likely also

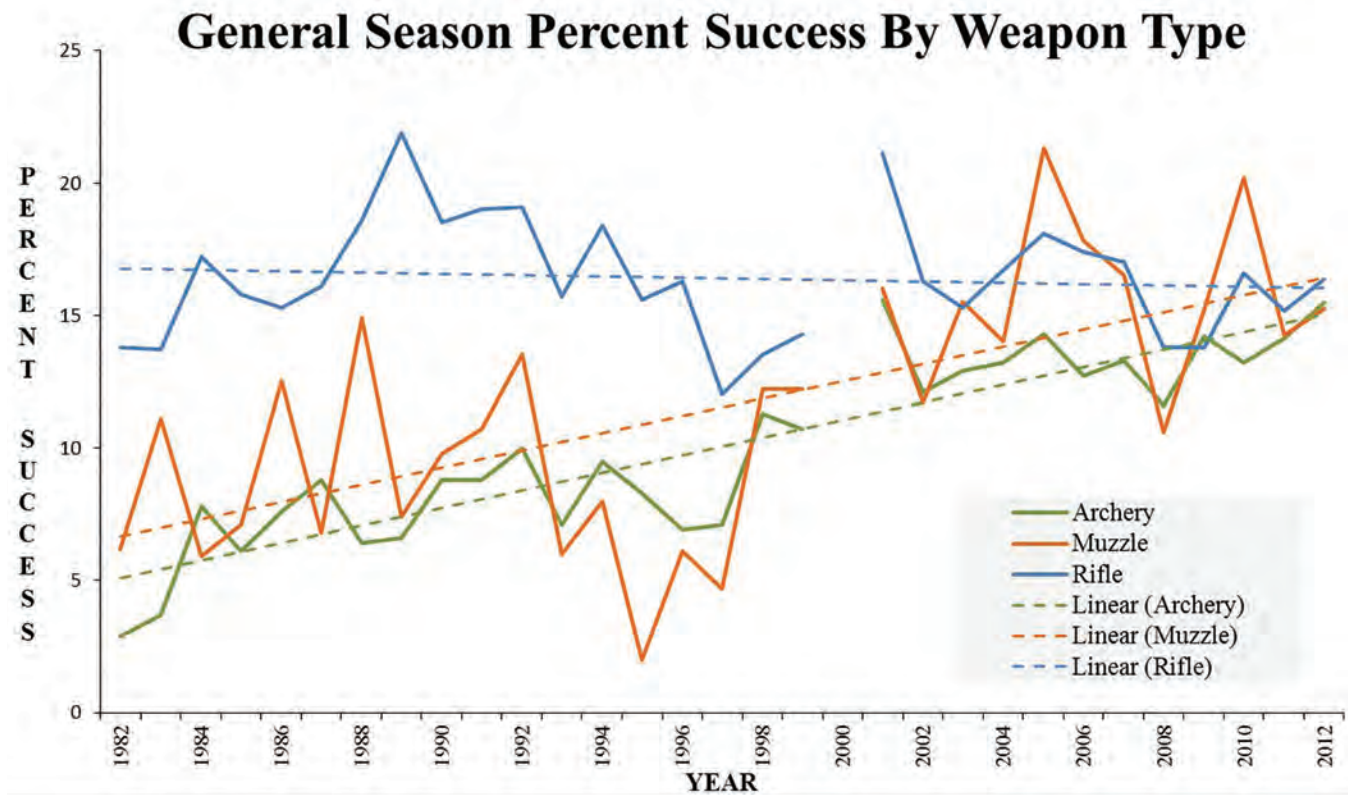


Figure 2. Statewide elk general season percent success by weapon type, 1982-2012.

increases success rates in some habitats, which can lead to reduced opportunity.

- **Two-way radio** communication has made hunting in pairs or groups much easier. A spotter can now put a stalker in the path of the big game animal they are pursuing. This form of communication was a concern for the Montana Fish, Wildlife and Parks Commission and is now prohibited in Montana.
- Technology has made **bows** and **muzzleloaders** shoot faster, farther, and with greater accuracy. Increasing success rates in archery and muzzleloader hunts to nearly equal the rifle harvest success rates in some elk zones of Idaho (Fig. 2), raises the question, “What constitutes a ‘primitive’ weapon?”

Ultimately, decisions on what and how technology should be used in hunting as “fair chase” is a social issue. However, technology can play a role in harvest success. Managing elk harvest by adjusting the technology used to hunt will be important to help manage

harvest in order to maintain populations within objective as well as hunting opportunity. This process will be through the Commission and integrate public input, Commission approval, and legislative action.

Population Monitoring

Population monitoring is the backbone of IDFG’s elk management program. Monitoring provides wildlife managers with information to evaluate management goals and allows informed decision making. Monitoring should include an estimate of population size, as well demographic information such as age and sex ratios. Aerial surveys should be conducted frequently enough to establish population trends and timely enough to enable managers to influence these trends.

Prior to the 1980s, key drainages in a winter range were flown periodically using helicopters to establish a minimum population size and herd composition, and this data was used to infer trend. Because not all animals are observed during aerial surveys (Caughley 1974), IDFG



developed a “sightability model” that corrects for animals missed (Unsworth et al. 1994) during aerial surveys. Since the late 1980s, this sightability technique has been used to monitor elk populations. Using this technique has enabled IDFG to generate population estimates with confidence intervals, collect composition information, establish population trend, and statistically compare surveys.

In 2006, IDFG assembled an elk monitoring team to evaluate the Department’s implementation of the aerial sightability protocol (Berkley and Short 2006). Although the team felt elk monitoring was robust, improvements were suggested. The following recommendations came out of that effort and have since been implemented:

- Create minimum standards for observer experience and refine training
- Restructure elk survey schedules to reflect statewide and regional management priorities and establish a 3-5 year rotation for most zones
- Reallocate aerial survey budgets to reflect annual regional flight needs
- Survey elk on the scale of elk management zone rather than the scale of GMUs
- Survey at high enough intensity to detect a 15% change in population (zone level)

The IDFG currently faces several challenges in its elk monitoring program. The first is increased variability in adult and calf survival in some zones. Historically, most adults and a large percentage of calves observed during aerial surveys in mid- to late-winter survived until June. In the case of calves, these individuals were recruited into the population unless an extreme winter event occurred. Annual adult cow survival rates observed in the Lolo and Sawtooth zones varied between 79% and 96%, and 84% and 92%, from 2009 to 2012. Survival of 6-month-old calves from January to June varied from 9% to 60% in the Lolo Zone, and 30% to 78% in the Sawtooth Zone. The assumption that a large proportion of individuals counted in winter will survive until June is no longer true, due to wolf predation in some zones, and this has caused some populations to become less stable.

The second issue is maintaining a robust elk monitoring program on a limited budget. To date IDFG staff have been relatively successful in balancing increasing helicopter costs, statewide and regional data needs, and employee safety. Since 2008, declining tag sales (particularly nonresident tag sales) have meant declining revenue. Over the past 10 years, helicopter costs have increased 5-6% annually. This situation, in combination with greater instability in some populations, has increased the desire for more frequent data collection and exacerbated the funding issue. Additionally, some concerns have been expressed over decreased helicopter availability.

Another objective of the elk monitoring team is to promote development of alternatives to intensive aerial survey techniques. The IDFG is in the early stages of exploring a technique that is currently being implemented for mule deer (*Odocoileus hemionus*) monitoring in Idaho: an integrated population model (IPM). An IPM combines data from population surveys (population estimate as well as demographic information), harvest surveys, survival monitoring, and other sources into a comprehensive analysis. An IPM can provide estimates of vital rates as well as population estimates on an annual basis. If fully implemented, this approach will likely reduce aerial survey flight time, but may ultimately cost more due to the relatively high expense of survival data.

Predation Management

Predators of elk

Gray wolves, mountain lions, black bears, grizzly bears (*U. arctos horribilis*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and occasionally golden eagles (*Aquila chrysaetos*) prey on elk. Wolves, mountain lions, and black bears occur across most of Idaho, and are the primary predators of elk. Coyotes, bobcats, grizzly bears, and potentially eagles prey on elk calves in the early spring, but current research indicates that these losses are minimal or restricted in distribution in Idaho (Zager et al. 2007b, White

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et al. 2010, Griffin et al. 2011). An ecological system with multiple large predators likely has more impact on elk populations and harvestable surplus than more simple systems (Griffin et al. 2011).

Wolf predation occurs on all age classes of elk and can be a limiting factor on elk populations (Zager et al. 2009, Brodie et al. 2013). Wolf predation rates vary depending upon time of year, weather conditions, prey densities, and other factors. Elk are vulnerable and suffer higher predation rates in late winter due to deep snows and weakened condition (Husseman et al. 2003, Smith et al. 2004, Brodie et al. 2013). Wolves have the greatest impact on elk calves between 6 and 12 months (Zager et al. 2007b, White et al. 2010, Griffin et al. 2011, Pauley and Zager 2010).

Mountain lion predation occurs on all age classes of elk (Zager et al. 2007a, b; White et al. 2010; Griffin et al. 2011). Husseman et al. (2003) determined that mountain lions preyed disproportionately on elk calves and old individuals in Idaho. The type of impact (additive or compensatory) on elk calves by mountain lion predation has been unclear (White et al. 2010) or likely at least partially compensatory (Griffin et al. 2011). Mountain lion predation does not appear to significantly influence adult female survival in most instances (Brodie et al. 2013). Predation on cow elk by mountain lions when combined with wolves can have an additive effect on elk mortality, but total impact to elk survival across large geographic areas appears to be low (<2%, Brodie et al. 2013). As an obligate predator, mountain lions in a single-prey system are not believed to trigger declines or depress prey

populations for extended time periods (Ballard and Van Ballenberghe 1997, Ballard et al. 2001).

Black bears are predators on elk calves <90 days old, and are most effective during the first 2 weeks of an elk's life, when calves are most vulnerable (Schlegel 1986, White et al. 2010, Griffin et al. 2011). Black bear predation on elk calves is additive mortality in some instances (White et al. 2010, Griffin et al. 2011), but other factors can also play a role (e.g., habitat condition which would pre-dispose elk calves to black bear predation [Zager and Beecham 2006, White et al. 2010]). Management actions that reduce black bear densities before elk calving can have a strong positive impact on elk calf survival (White et al. 2010). Where grizzly bear populations and elk overlap in YNP, bear-caused mortality can be additive (Griffin et al. 2011). Grizzly bears are geographically restricted to eastern and northern Idaho and occur at low densities.

What variables should be monitored to determine if elk are limited by predation?

Several variables are important for evaluating predation impacts: how much predation is occurring and whether it is limiting the elk population, what segment of the elk population is being impacted, and what predator(s) are the primary causes of elk mortality. Cow elk pregnancy rates and calving rates, and calf survival to reproductive age is critical to determining population performance. Changes in cow and calf survival, in concert with elk productivity can result in different elk population trajectories (Table 2).

Table 2. Predicted elk population trends (decrease [↓], maintain [■], or increase [↑]) based on adult female (>1 year) survival and over-winter (January-May) calf survival in relation to January-February calf:cow ratios.

	25 Calves: 100 Cows			35 Calves: 100 Cows			45 Calves: 100 Cows		
Over-Winter Calf Survival	0.2	0.5	0.8	0.2	0.5	0.8	0.2	0.5	0.8
Annual Adult Female Survival (3-yr average)									
0.85	↓↓↓	↓↓	↓	↓↓	↓	■	↓↓	■	↑
0.90	↓↓	↓	■	↓	■	↑	↓	↑	↑↑
0.95	↓	■	↑	■	↑	↑↑	■	↑↑	↑↑↑



Predation is a limiting factor on calf survival, and potentially cow survival, in some zones. During 2005-2008, IDFG assessed cow elk survival and causes of mortality in 11 elk management zones. The 11 zones represented a range of habitats, weather regimes, harvest levels, and predator densities found across Idaho. Adult female elk survival ranged from 63% to 97% and the role of predation, and the primary predator(s), varied across the management zones and between years. Predation by wolves had a greater impact on ungulates in northern and some south-central zones, whereas predation by mountain lions was more important in other south-central and southeast zones. Primary causes of mortality included harvest, wolf, mountain lion, unknown predation, and other causes; and rates varied by zone. Mortality of radiocollared cow elk

was attributed to human harvest (0-8%), wolf predation (0-14%), mountain lion predation (0-5%), and other causes (2-7%) (Fig. 3; Zager et al. 2009; IDFG, unpublished data).

The IDFG has investigated neonate (birth through 90 days) and 6-month-old elk calf survival and cause-specific mortality in a few elk management zones over the last 30 years. Survival of neonates and 6-month-old calves (Jan-Jun) ranged from 19% to 100% and 9% to 78%. Predation was the primary proximate cause of mortality among neonates and 6-month-olds, though the suite of predators and the relative importance of each species varied with study area and year (Schlegel 1986; Zager et al. 2009; Pauley and Zager 2010; White et al. 2010; Griffin et al. 2011; IDFG, unpublished data).

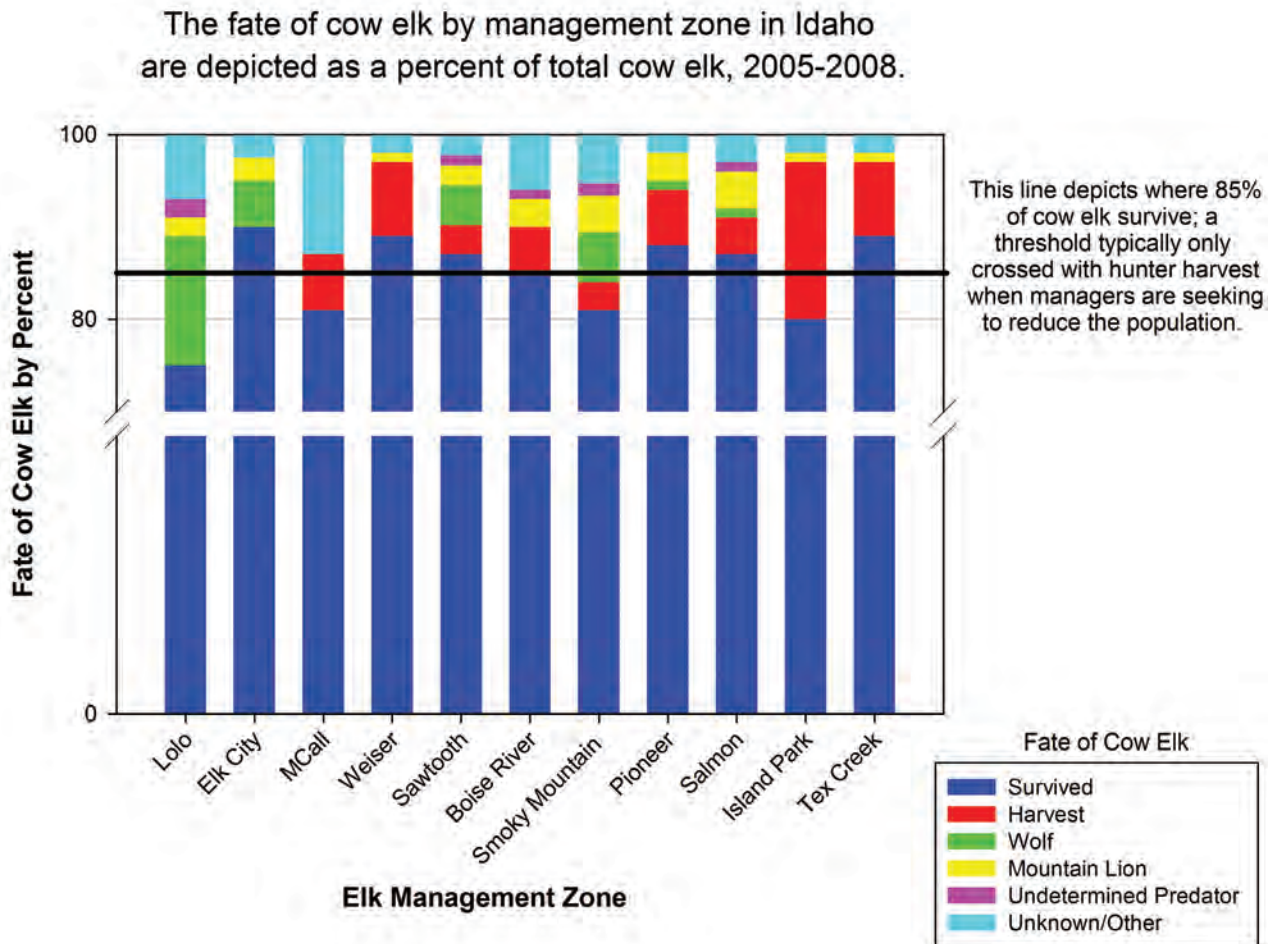


Figure 3. Fate of cow elk (%) in 11 elk management zones, 2005-2008.

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The IDFG is currently investigating wolf predation on elk population dynamics in the Lolo and Sawtooth zones. One goal is to produce models that allow us to predict impacts of wolf predation on elk populations using a set of known factors such as topography, habitat, and alternate prey availability. Such models will reduce the need to capture, radiocollar, and monitor elk and wolves in GMUs before we can make management decisions. Preliminary data indicate that wolves have a significant impact on 6-month-old calves, adult females, and adult males. However, the relative impact varies with wolf density, season, and winter severity (Pauley and Zager 2010; IDFG, unpublished data).

Trends in seasonal or annual composition data (young:adult ratios) for ungulate populations are useful, but not definitive, in identifying impacts of predation (Ballard et al. 2001). However, herd composition can help identify the timing and likely source of offspring mortality. Deaths of healthy neonates relatively soon after birth, revealed by surveys that occur early in the biological year, suggest that predation accounts for low recruitment (Ballard et al. 2001). Combined composition and population estimates also indicate how female reproductive output (additions) compares in magnitude to total mortality (losses). For example, poor nutrition may account for lower birth rate, lower birth weights, and subsequently lower growth rates of prey populations rather than high levels of mortality caused strictly by predation. Likewise, knowledge that a specific predator is “the greatest source of mortality” among all sources (or among all predators) in a particular area, or that mountain lion, wolf, or bear predation is “high” relative to other locations is insufficient by itself to assess the magnitude of predation as a limiting factor.

Annual reproduction or recruitment may still outpace total mortality, resulting in an increasing prey population, and further compounded by situations where most losses to predators may be compensatory with other mortality factors. However, just the opposite may also be true in that combined effects of predation by multiple predators, including humans, or even a single

predator under certain conditions, may be a long-term additive cause of a prey population decline (Barber-Meyer et al. 2008, White et al. 2010, Brodie et al. 2013). Given that the literature provides examples of both, managers responding to declining prey populations should carefully consider all available data and insight to develop strategies to achieve positive outcomes. Focusing solely on predation by 1 species may have very little impact on most declining prey situations unless predation by that species is additive. Predator reductions must be maintained over the long term to be effective in increasing prey populations (National Research Council 1997, White et al. 2010).

Predation management

Predation management is an important tool to aid in management of prey populations. The Commission approved the Policy for Avian and Mammalian Predation to guide IDFG’s implementation of predator management activities (<http://fishandgame.idaho.gov/public/wildlife/?getPage=331>). The policy directs managers to “recognize the role of predators in an ecological and conservation context. The actions by the IDFG must be based on the best available scientific information, and will be evaluated in terms of risk management to all affected wildlife species and habitats.”

Current statewide predation management for predators of elk (wolves, black bears, and mountain lions) emphasizes hunting or trapping seasons for those species. Existing rules and laws provide a regulatory framework to manage big game species, including black bears, mountain lions, and wolves, through hunting. Idaho currently has some of the most liberal hunting seasons and methods in the lower 48 states. Spring and fall seasons for black bears include the use of bait and hounds in most areas. Mountain lion seasons allow the use of hounds, and wolf harvest consists of a long hunting season statewide and a trapping season over a portion of the state. Harvest strategies available to impact predator populations (from least impacting to most aggressive) include:



- Controlled hunts
- General seasons with harvest quotas
- General seasons without quotas
- Decreased tag prices
- Multiple tags
- Trapping (for wolves)

The harvest strategies above, alone or in combination, may allow wildlife managers to achieve desired predator population levels in some areas. Additional predators can be removed by the U.S. Department of Agriculture, Animal Plant Health Inspection Service, Wildlife Services in situations where human safety or depredation on livestock are a concern. Harvest strategies and the removal of predators for human safety or livestock concern are guided by the species plans for black bears (IDFG 1998), mountain lions (IDFG 2002), and wolves (Idaho Legislative Wolf Oversight Committee 2002).

Managers will implement different tools in addition to regulated harvest strategies to reduce predator populations determined to be negatively impacting elk populations. The IDFG Policy for Avian and Mammalian Predation Management states, “The Director may implement a Predation Management Plan in those circumstances where wildlife management objectives for prey species cannot be accomplished within two years by habitat manipulation, sportsman harvest, or interagency action designed to benefit the prey species, and where there is evidence that action affecting predators may aid in meeting management objectives.”

Predation management plans have been or are currently being developed for the Lolo, Selway, Middle Fork, Panhandle, and Sawtooth zones where elk populations are below management objectives. In addition to the harvest strategies listed above for wolves, black bears, and mountain lions, agency control actions were initiated in 2011 with the purpose of reducing wolf abundance in the Lolo zone. The IDFG staff incorporated existing and the potential development of zone-specific predation management plans into zone level goals and

strategies. Predation management plans are available at: <http://fishandgame.idaho.gov/public/wildlife/?getPage=325>.

There are numerous examples of predation management programs initiated to increase prey species (National Research Council 1997). Idaho has conducted several noteworthy studies which have demonstrated increased ungulate survival after predator removal (Schlegel 1986, White et al. 2010, Hurley et al. 2011). Long-term benefits are dependent on continued predator removal and habitat improvement, or on weather events that could not be controlled.

Predator control is often expensive, logistically difficult, requires lots of staff time, and is controversial with some of the public. Therefore, managers must consider the potential benefits, the costs, and the potential effectiveness of the proposed actions on prey populations. It is important that the IDFG develop, test, and utilize appropriate tools to manage for a balance of predators and prey. We also must strive to use the most cost effective methods by using hunters and trappers to the full extent when possible and adaptively and incrementally increasing the number of tools to achieve that balance. Table 3 gives us guidelines on how effective predator management activities will be in relationship to the population parameters for elk. This information should be considered as part of the predation management plans to gauge the potential for effective change and to help determine the suite of tools and information needed to benefit elk populations showing signs of decline.

Information needs

Predator-prey dynamics are complex situations, and using adaptive strategies is a key to developing solutions that make a difference. Adaptive management concepts should be the framework used in any attempt to manage predators and prey so that we can learn and adjust as we manage. Therefore, predation management programs should be designed with control and treatment areas, applied at sufficient spatial and temporal scales, and monitored effectively.

Table 3. Guidelines for determining whether predator management activities can be expected to increase elk numbers (adapted from Ballard et al. 2003).

Increased elk numbers likely	Increased elk numbers unlikely
<ul style="list-style-type: none"> • Elk population below carrying capacity • Predation identified as a major cause of mortality • Predator management efforts can result in a significant decline in predator numbers • Predator management efforts timed just prior to predator or prey reproductive periods • Predator management efforts focused (e.g., generally <400 mi²) 	<ul style="list-style-type: none"> • Elk population near carrying capacity • Predation not identified as a major cause of mortality; or elk in poor or substandard body condition • Predator management efforts unlikely to achieve a significant reduction in predator numbers • Predator management efforts haphazardly scheduled throughout the year • Predator management efforts scattered over a relatively large area or no clear goals and objectives

Agriculture and Elk

Preventing crop and property damage (depredation) is a priority management objective for IDFG, and our response to depredation complaints is directed by Idaho Code 36-1108. Each region’s Landowner-Sportsmen Coordinator has the responsibility to assist landowners in minimizing or eliminating depredations. Typical strategies to reduce depredations include hazing, permanent fencing, depredation hunts, kill permits, continued use agreements, targeted general or controlled hunts, and perpetual easements. However, depredation problems and their solutions are an increasingly complex matter involving not just the ecology and management of the species, but socio-economic problems and human population dynamics as well. Decades of effort to provide permanent solutions to depredation problems have proven successful and, in many areas, chronic problems have been successfully resolved.

Although elk populations have declined in some management zones over the last decade, other zones have been experiencing an influx of animals into the urban-rural interface and agriculture-sagebrush-steppe interface where conflicts occur, and appear to be increasing. Multiple factors may be influencing these conflicts, including, but not limited to, increased growth in agriculture, increasing human populations, habitat suitability, wild fires, changes in landowner support, and predator-prey relationships.

As prices continue to increase for agricultural crops like corn, alfalfa, wheat, and rapeseed, so does the cost of damage caused by elk. These high prices also influence the amount of acres planted into these more profitable crops. Further exacerbating the likelihood of conflict is the fact that many of these crops are highly attractive to elk. All of these factors; increased presence of elk in high conflict areas, increasing crop prices, and the planting of palatable crops; are evident in the history of damage claim payments.

Depredation claim payments for elk-related damage since Fiscal Year (FY) 1993 have ranged from a low of \$31,003 for 13 approved claims in FY1994 to a high of 36 approved claims totaling \$475,946 in FY2008 (median = 16 elk-related claims per year, \$109,698) (Table 4). In FY2008, 44 claims for damages caused by all species combined (deer, pronghorn [*Antilocapra americana*], mountain lions, and black bears, in addition to elk) totaled \$587,186 and exceeded the available budget, and payments to claimants had to be prorated based on available funds. We are committed to working aggressively to reduce elk damage, but in light of these costs, it is worth exploring mitigating measures aimed at increasing landowners’ support for elk. These programs might include payments, tags, or an expanded use of depredation release agreements.

Idaho’s human population has increased 21% since 2000 (Mackun and Wilson 2011). While much of this population growth has occurred



Table 4. Elk-related depredation claims in Idaho by Region, FY1993-FY2013.

Fiscal Year	Panhandle		Clearwater		Southwest		Magic Valley		Southeast		Upper Snake		Salmon		Statewide Total	
	# Claims	\$ Final Claim	# Claims	\$ Final Claim	# Claims	\$ Final Claim	# Claims	\$ Final Claim	# Claims	\$ Final Claim	# Claims	\$ Final Claim	# Claims	\$ Final Claim	# Claims	\$ Final Claim
1993	0	\$0	5	\$11,033	10	\$72,887	1	\$681	4	\$6,726	4	\$8,400	1	\$4,150	25	\$103,876
1994	0	\$0	9	\$22,668	2	\$2,947	0	\$0	1	\$5,113	1	\$275	0	\$0	13	\$31,003
1995	0	\$0	4	\$5,449	9	\$50,035	0	\$0	0	\$0	1	\$2,150	1	\$106	15	\$57,740
1996	0	\$0	4	\$16,653	7	\$16,978	0	\$0	1	\$919	0	\$0	0	\$0	12	\$34,550
1997	1	\$1,890	2	\$4,847	8	\$52,894	0	\$0	7	\$19,266	3	\$9,515	1	\$5,090	22	\$93,502
1998	0	\$0	8	\$50,402	7	\$29,729	0	\$0	1	\$1,126	0	\$0	4	\$5,627	20	\$86,884
1999	0	\$0	1	\$4,151	4	\$31,922	0	\$0	1	\$3,375	3	\$7,363	0	\$0	9	\$46,810
2000	0	\$0	5	\$15,617	9	\$75,103	0	\$0	0	\$0	1	\$2,125	1	\$3,470	16	\$96,315
2001	0	\$0	6	\$56,342	5	\$10,175	0	\$0	2	\$530	0	\$0	3	\$6,788	16	\$73,835
2002	1	\$3,000	3	\$11,136	9	\$45,503	0	\$0	2	\$4,285	1	\$7,582	0	\$0	16	\$71,507
2003	0	\$0	2	\$5,288	5	\$25,233	0	\$0	1	\$2,699	2	\$5,923	1	\$816	11	\$39,958
2004	1	\$275	6	\$19,715	6	\$26,337	0	\$0	0	\$0	2	\$4,439	1	\$1,610	16	\$52,376
2005	1	\$5,107	4	\$5,762	7	\$27,737	0	\$0	2	\$12,111	1	\$1,400	1	\$1,390	16	\$53,506
2006	0	\$0	9	\$40,742	5	\$32,634	0	\$0	0	\$0	2	\$7,000	0	\$0	16	\$80,376
2007	0	\$0	19	\$126,118	4	\$35,874	1	\$2,983	2	\$20,793	1	\$1,750	2	\$6,145	29	\$193,663
2008	1	\$8,009	22	\$400,729	6	\$23,042	1	\$19,314	4	\$19,114	2	\$5,739	0	\$0	36	\$475,946
2009	3	\$8,054	9	\$62,510	10	\$89,114	2	\$35,399	0	\$0	4	\$17,765	1	\$2,106	29	\$214,949
2010	1	\$1,500	13	\$96,265	6	\$33,210	1	\$3,845	1	\$7,276	1	\$4,000	1	\$3,250	24	\$149,347
2011	0	\$0	5	\$30,176	5	\$70,441	4	\$54,213	7	\$27,077	3	\$38,336	1	\$1,868	25	\$222,110
2012	1	\$1,400	1	\$4,483	4	\$18,000	3	\$31,068	4	\$11,210	1	\$4,000	1	\$20,014	15	\$90,174
2013	3	\$4,018	4	\$41,758	5	\$32,886	2	\$93,401	3	\$13,080	2	\$4,815	2	\$18,088	21	\$208,045
Median	-	\$0	5	\$19,715	6	\$32,634	-	\$0	1	\$4,285	1	\$4,439	1	\$1,868	16	\$86,884

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around metropolitan areas, the associated outward expansion of development continues to impact elk habitat. This expansion is, perhaps, most prevalent on elk winter ranges. Human population growth also resulted in subdividing larger ranches into 5-100 acre ranchettes, contributing to increasing elk conflicts and hindering the ability of IDFG to effectively handle depredations. In addition to increases in the number of buildings and human activity in these subdivisions, problems also occur when some landowners provide refuge for elk that may cause damage to property on adjacent lands. This complexity of ownership across an area narrows the range and effectiveness of options available to assist landowners experiencing damage.

Elk Habitat

No single factor impacts wildlife, including elk, more than habitat. As with all wildlife species, elk need adequate amounts of food, water, cover, and space throughout their life to survive. These fundamental requirements change throughout the year as elk use winter, summer, and transitional ranges. Positive or negative impacts to these seasonal habitats impact distribution and abundance of elk, ultimately affecting associated recreational opportunities. Inherently, elk zones sharing the same fundamental habitat type may potentially provide similar benefits to wildlife populations across a large area, while zones with fundamentally different habitat types may display differences in elk productivity. For example, while not proven to be a cause-and-effect relationship, calf:cow ratios vary among ecological sections (Fig. 4).

Natural phenomena that alter elk habitat, such as wildfire and drought, are common throughout

Elk calf:cow ratios statewide by Ecological Section from 1989 to 2012

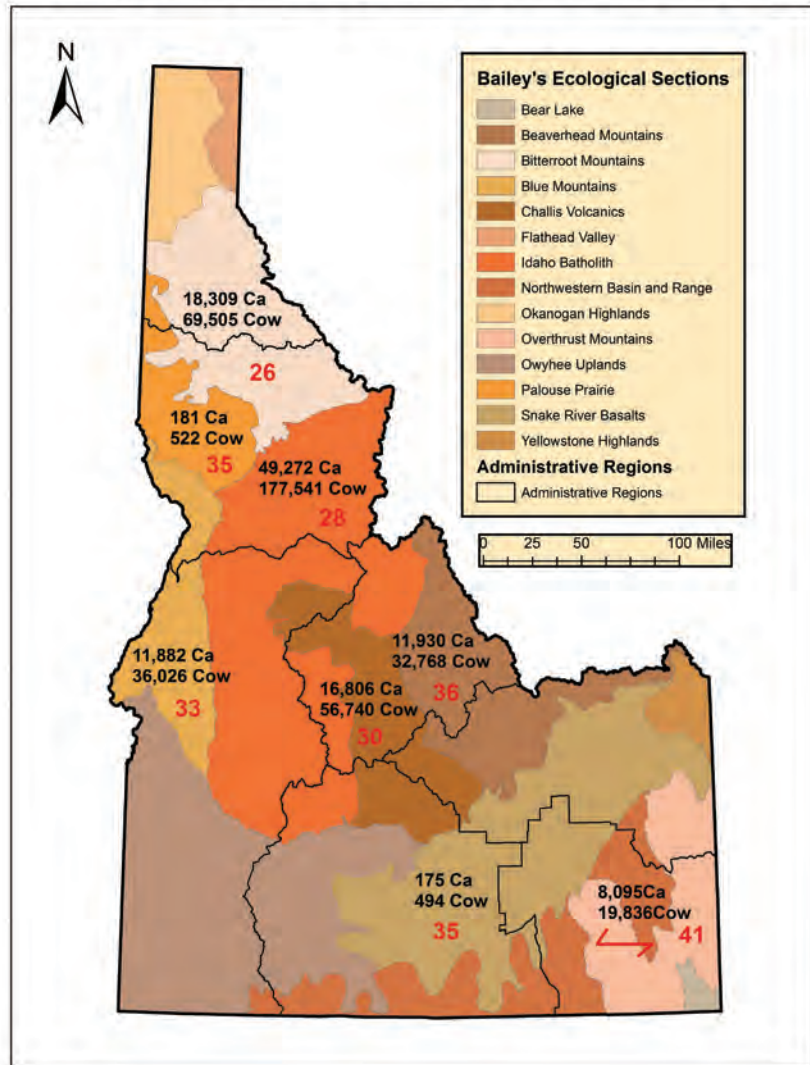


Figure 4. Elk calf:100 cows ratios (number in red is the number of calves per 100 cows) by ecological section, 1989-2012.

the western states and impact a suite of wildlife across the landscape. Human-caused impacts to elk habitats can also influence the ability of a habitat to sustain elk populations throughout the year. In Idaho, six primary habitat issues affecting elk are invasive plants, wildland fires, timber and rangeland management, ecological succession, human development, and energy development.

Invasive plants and noxious weeds

Infestations of invasive plants and noxious weeds have major impacts on ecological conditions that support wildlife. For example, invasive plants and noxious weeds reduce and even replace native or desirable non-native plants and ultimately



reduce wildlife forage, alter thermal and escape cover, change water flow and availability to wildlife, and may reduce territorial space necessary for wildlife survival. This disruptive process ultimately affects the quantity and quality of available habitat and will reduce elk populations. The Bureau of Land Management (BLM) estimates 4,600 acres of native habitats on federal land in the West are lost each day to weed infestation (BLM 2011).

Invasive plants and noxious weeds are plants that are not native to Idaho and cause harm to people or our environment. Most have come from Europe or Asia either accidentally or as ornamentals that have escaped. These plants have an advantage because the insects, diseases, and animals that would normally control them are not found locally. Because these plants have developed specialized mechanisms to survive and have no natural controls in Idaho, they can spread at alarming rates.

To combat invasive plant species, strategies have been developed from information gathered by agency personnel, private landowners, surveys, interviews, and from analyses of existing information. General management priorities on critical elk ranges include: 1) prevent establishment of potential invaders; 2) characterize and eradicate new invaders; 3) reduce spread of weeds by treating transportation corridors and areas of concentrated human activities, such as roads, trails, campgrounds, trailheads, parking lots, gravel pits, and satellite infestations of established invaders; 4) contain locally established invaders; 5) reduce the density or slow the spread of widespread established invaders; 6) require the use of weed-free hay on public lands; 7) inventory and map current noxious weed infestations; 8) monitor sites for effectiveness of control actions; and 9) restore areas to prevent re-establishment of noxious weeds and improve habitat quality of areas currently infested with weeds.

The State of Idaho has adopted Integrated Weed Management (IWM) practices (Idaho Weed Coordinating Committee 2005). The

program is “a holistic systems approach to weed management involving the best management techniques available to limit the impact and spread of targeted plant species.” This strategy regarding invasive plants and noxious weeds leads to the most effective and efficient tools and methods for management.

Wildland fire

Wildfire is a major ecological force that helps maintain historical plant communities. Today, few factors play as critical a role in elk habitat condition and health as wildfire. Historically, wildfires helped maintain a mosaic of plant communities across the landscape. Succession of vegetation post-fire provided excellent forage and cover for elk. However, current wildfire frequencies have departed significantly from historical regimes throughout many of the plant communities occupied by elk (Miller and Rose 1999). In general, current wildfire return intervals are too frequent in low elevation shrub-steppe communities and too infrequent in mid- to upper elevation shrub and aspen-conifer communities to create optimal elk habitat.

For several years following a fire, many preferred elk forage species are enhanced by an increase in available nutrients (Asherin 1973, Leege 1979, DeByle et al. 1989). Fire improves the quality of forage under aspen stands (Gruell and Loope 1974, Canon 1985). Prescribed burning of shrubs in grand fir (*Abies grandis*) and Douglas-fir (*Pseudotsuga menziesii*) forests increased forage by reducing the height of tall shrubs and promoting growth of preferred forage species (Lyon 1971, Leege 1979).

Aspen-conifer communities provide important seasonal cover (security, calving, and thermal) and forage resources for elk in Idaho. Under normal circumstances, aspen-dominated patches are often scattered throughout or on the edge of larger conifer-dominated stands, and conifer encroachment is a natural process within aspen stands. However, aspen is well adapted to fire and other disturbances and aspen-dominated stands were historically maintained through these processes (Jones and DeByle 1985). Historical fire frequencies in aspen-conifer

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communities ranged from 25 to 100 years (midrange 63 years) with a mixed pattern of severity (USDI 2004). Fires are currently much less frequent (≥ 100 years), increasing the potential for landscape-scale events (Tausch et al. 1981, Miller and Rose 1999, USDI 2004). The use of targeted mechanical and prescribed fire treatments in aspen communities subject to conifer encroachment can help improve stand conditions and increase the extent of aspen-dominated communities throughout the range of elk in Idaho.



Shrub-steppe communities are a crucial component of elk winter range in central and southern Idaho. Historically, wildfires in low elevation sagebrush-steppe were small and patchy, resulting in a mosaic of burned, recovering, and unburned lands (Howard 1999). By the mid-1900s, the combination of wildfire suppression and land use resulted in a trend toward monotypic stands of woody plants (such as sagebrush and rabbitbrush [*Chrysothamnus* spp., *Ericameria* spp.]) and the loss of important herbaceous understory vegetation. These factors, combined with the introduction and invasion of exotic annual grasses, have resulted in a current trend toward larger and more frequent wildfires in low elevation sagebrush-steppe communities (USDI 2004). After fires in shrub-steppe communities, annual grasses can out-

compete native shrubs for water, thus preventing re-establishment of the shrub component. The increase in fire frequency has decreased availability of quality forage, negatively altered structure of the plant community, increased patch size, and decreased patch diversity. These changes relate to how elk use these areas for foraging, bedding, security, and breeding. In general, decreased diversity and structure results in fewer areas that can inclusively meet the needs required during the annual cycle of healthy elk herds. Large scale wildfires can also result in vast areas that are unusable to elk and currently cannot be effectively restored.

Timber and rangeland management

Timber harvest can have both positive and negative impacts on elk. Timber harvest and roads associated with logging cause surface disturbance to soils and ground litter, and alter the amount of coarse woody debris on the forest floor. Disturbed soils along roads and in logged areas are prime spots for invasive weeds to colonize. The increase in the number of roads amplifies elk vulnerability due to the increase in human activity. Loss of security cover due to timber harvest causes elk to become more vulnerable to predators and hunters (Christensen et al. 1993). On the other hand, timber harvest can increase nutritional quantity and quality of forage (Collins and Urness 1983). Changes in forage relate to the inverse relationships between forest cover and understory vegetation production (McConnell and Smith 1970). Timber harvest has the greatest potential to benefit elk when few new roads are built or roads are closed once harvest is complete, adequate security cover is preserved, and size of openings are considered (Lyon and Christensen 2002).

Idaho rangelands, especially those of the sagebrush-steppe, provide forage and cover resources for elk. Historically, management of sagebrush-steppe often involved the removal of sagebrush under the premise of increasing grass and forb production. More recent evaluations of this paradigm are concluding that intact sagebrush-steppe maintains higher levels of forage production than areas treated to remove sagebrush (Welch 2005).



Livestock grazing is ubiquitous to Idaho rangelands. Livestock grazing systems are designed to benefit livestock, and if designed and managed properly, can benefit wildlife habitat. Improper grazing management negatively affects wildlife production, plant vigor, water quality, and soil erosion and productivity. Timing of livestock grazing, especially cattle, can impact elk use of rangelands as elk distribution changes in response to cattle presence (Stewart et al. 2002), and elk and cattle are selecting some of the same resources during late summer (Coe et al. 2001). Some studies suggested livestock grazing can have a positive effect on forage conditions (crude protein, digestibility) for elk when timing, intensity, and duration of livestock grazing are controlled, while other studies do not show improvements.

Ecological succession

Elk tend to be most productive in habitats that are in a mosaic of plant successional stages. Evidence suggests this is due to associated vegetation diversity and availability of high quality forage. The challenge is that nature is dynamic and communities do not remain in a single successional state. Thus, ability of a landscape to support elk varies with these changes in habitat.

Elk diets vary seasonally and annually due to nutritional demands, plant phenology, and weather patterns. Elk are considered to be mixed feeders consuming both herbaceous and woody plants (Cook 2002). Elk prefer grass and forbs during the summer because of their digestibility and nutrient content, but may consume a large proportion of shrubs (Cook 2002). High elevation meadows and riparian areas are preferred summer habitats (Adams 1982). Good summer nutrition is important for survival of cow and calf elk over-winter (Cook et al. 2004). When nutrition during summer and autumn is poor, cow elk are likely to breed later than cows in good condition, or not at all (Cook et al. 2001). Woody shrubs are eaten by elk throughout winter. However, if summer habitat conditions do not allow elk to obtain good body condition by autumn, elk on high quality winter range may not survive through winter (Cook 2011). Body

condition of elk in autumn is dependent on quality of summer habitat, not on body condition of the individual in the prior spring (Cook 2011).

Typically, most of the edible biomass in late successional or climax forest systems is out of reach of terrestrial herbivores. In mature coniferous forests of the Rocky Mountains, more than 99% of total above ground vegetation biomass may be tied up in trees (Wallmo 1981). Shrubs and herbaceous plants make up <1% of the total vegetation biomass in these late-seral systems (Gary 1974, Landis and Mogren 1975). Forage supply is inversely related to the amount of tree overstory in forested habitats (Folliott and Clary 1972). However, some xeric forest habitat types maintain forage availability with overstory canopies. Mature forests can also be beneficial to elk when mature stands are associated with mid-seral stands in areas that elk frequent during late summer and early autumn prior to and during early breeding season.

In general, managing habitats in a mosaic of plant successional stages will prove most beneficial to elk. Overall plant diversity and forage is higher in recently disturbed areas. Exceptions to this might be on certain winter ranges where shrubs can take much longer to regenerate. Disturbance is crucial to maintaining high quality elk habitat. Traditionally, different fire cycles and human disturbance, such as logging, resulted in higher elk densities than occur in many areas today. In the short-term, weather patterns can affect elk populations, but landscape-scale habitat changes will impact long-term trends.

Human development

The main issues with human development are habitat loss and habitat fragmentation. Development includes construction associated with residential, commercial, agricultural, energy, infrastructure, and other human activities.

The U.S. Census Bureau reported that Idaho is the fourth fastest growing state in the union. The total human population of Idaho increased 21.1 % between 2000 and 2010. A Geographic Information System-based analysis of human

Idaho Elk Management Plan

population growth in Idaho was recently completed using census data and a projected housing density model was developed by D. Theobald of Colorado State University. This analysis indicated recent human population growth (2000 to 2004) has not been uniformly distributed across the state. Instead, recent growth has occurred primarily in distinct portions of Idaho: greater Boise area, Teton Valley, greater Coeur d'Alene area, Magic Valley-Blaine County, and Bear Lake area. Similarly, projections through 2030 indicate most future human settlement will be clustered in several general areas of the state: greater Coeur d'Alene area, Palouse area, greater Boise area, Magic Valley-Blaine County, and eastern Snake River Plain-Teton Valley areas (Fig. 5).



Several of the growth “hot spots” identified above are also areas where important elk summer and winter habitats occur. As a result, elk populations that have already been adversely affected by past and current development are further threatened by predicted rapid human population expansion and associated development.

Concomitant with human population growth, Idaho has experienced increases in road construction and elk-vehicle collisions. Approximately 640 elk-vehicle collisions were reported in Idaho from 2000-2010 (G. Burak, IDFG, unpublished data). Roads also fragment habitats and migration corridors and can alter elk seasonal migrations, reducing the potential of habitats to support healthy elk populations.

Energy development and mining

Increasing human populations create more demand for energy development and raw materials from mineral extractions. Energy developments common to Idaho include hydro power, wind power, oil and gas development, and their associated transmission lines. Impacts of energy development and mining on elk habitat are expected to increase as development continues into the future.

Exploration, construction, and production phases of energy development and mineral extraction can cause direct loss of habitat (USDI 1999). Wind turbine bases, oil and gas platforms, transmission line corridors, and the roads associated with development replace what was once wildlife habitat. Open pit mining causes habitat loss which may be reclaimed, but these reclaimed sites can have reduced habitat diversity and quality.

Energy development and its infrastructure can lead to disturbance that impedes key habitat functionality by altering wildlife access to or use of habitat and by causing avoidance and stress (Cox et al. 2009). Increased vehicle and human traffic, equipment noise, and noises related to the mining or drilling operation can lead to elk avoiding preferred habitat. The increase in human activity along roads built for energy development and mining can lower elk survival through injury or death due to a vehicle collision, poaching, and harassment from a variety of increasing recreational activities, such as off-highway vehicle (OHV) use (Cox et al. 2009, Dzialak et al. 2011, Webb et al. 2011). Large scale wind-energy projects have potential to displace elk from important seasonal habitats (USFWS 2011). Transmission corridors and associated roads can cause direct mortality and reduce available habitat due to fragmentation (Cox et al. 2009).

Habitat descriptions

Habitat conditions for elk in Idaho can be described in numerous ways and at a variety of scales. We chose to use the Ecological Systems Classifications. This classification system

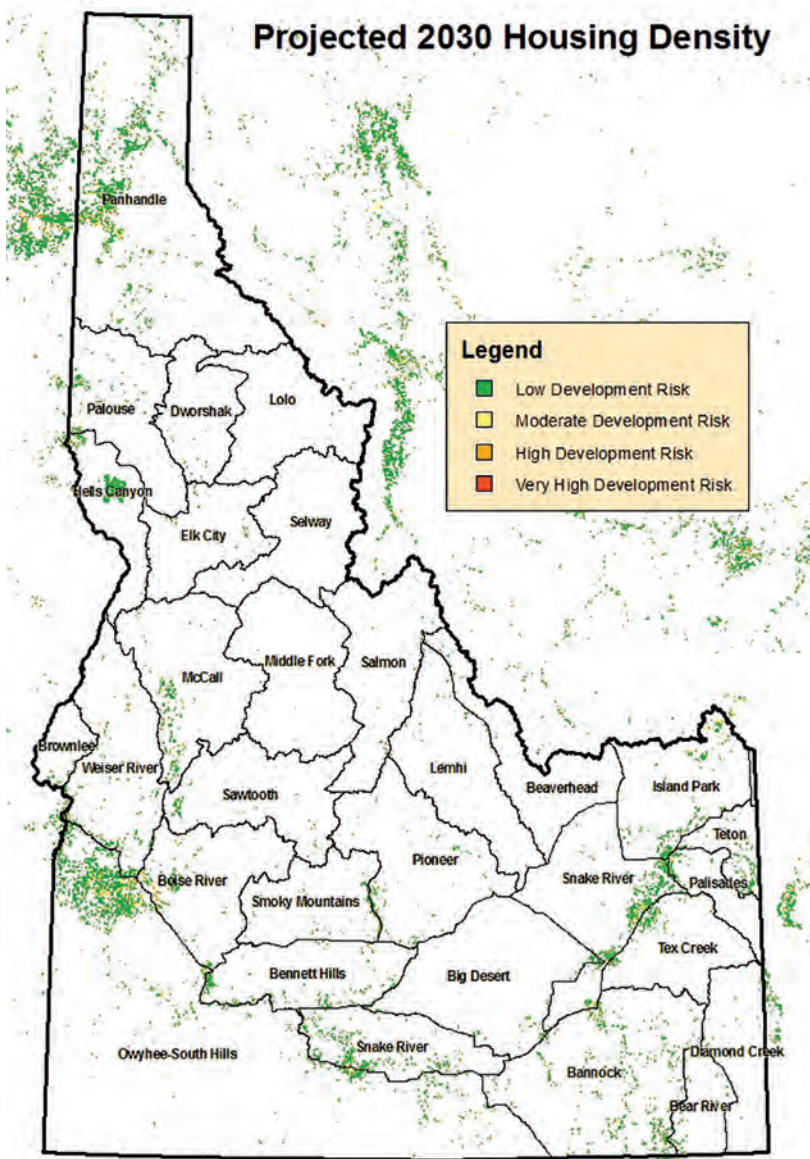


Figure 5. Projected risk of human development through 2030 by elk management zone in Idaho.

Comprehensive Wildlife Conservation Strategy (IDFG 2005a). Idaho is currently developing new habitat descriptions that will be available within the new Idaho State Wildlife Action Plan by 1 October 2015.

Idaho is comprised of 5 ecoregions: the Canadian Rocky Mountains in the northern part of the state, the Middle Rockies–Blue Mountains across the central part of the state, the Columbia Plateau that follows the Snake River across the state, the Utah–Wyoming Rocky Mountains along the southeastern boundary of the state, and the smaller Wyoming Basins in the southeastern corner of the state. These ecoregions are subdivided into 14 ecological sections (Fig. 6): the Okanogan Highlands, Flathead Valley, Bitterroot Mountains, Blue Mountains, Idaho Batholith, Challis Volcanics, Beaverhead Mountains, Palouse Prairie, Owyhee Uplands, Snake River Basalts, Northwestern Basin and Range, Yellowstone Highlands, Overthrust Mountains, and Bear Lake (IDFG 2005a). For a full description of each ecological section and percentage of ecological section in each elk zone, see Appendix 3.

consists of recurring groups of vegetative communities with similar physical environments and influenced by comparable ecological processes (e.g., fire) to describe environments (IDFG 2005a). This system is used throughout the U.S., Canada, and Mexico for describing plant communities within landscapes and is an accepted standard for many land management agencies. The system can be used to describe habitats and for mapping terrestrial communities and ecosystems at multiple scales.

This same classification system, along with finer scale “habitat” descriptions within Idaho, were developed and described within the Idaho

Access and Travel Management

Access and travel management in elk habitat has long been an opportunity and challenge facing wildlife managers. Historically, motorized access into elk habitat was created as roads were built into forested habitats for timber removal. New roads allowed more hunters access into elk habitat and subsequent declining bull:cow ratios in many elk herds led to discussions and research regarding elk vulnerability and habitat security. Conversely, having access to elk hunting areas is an important issue for many elk hunters and wildlife managers. Today, managers are still concerned about access, striving to achieve a balance between having access for hunting

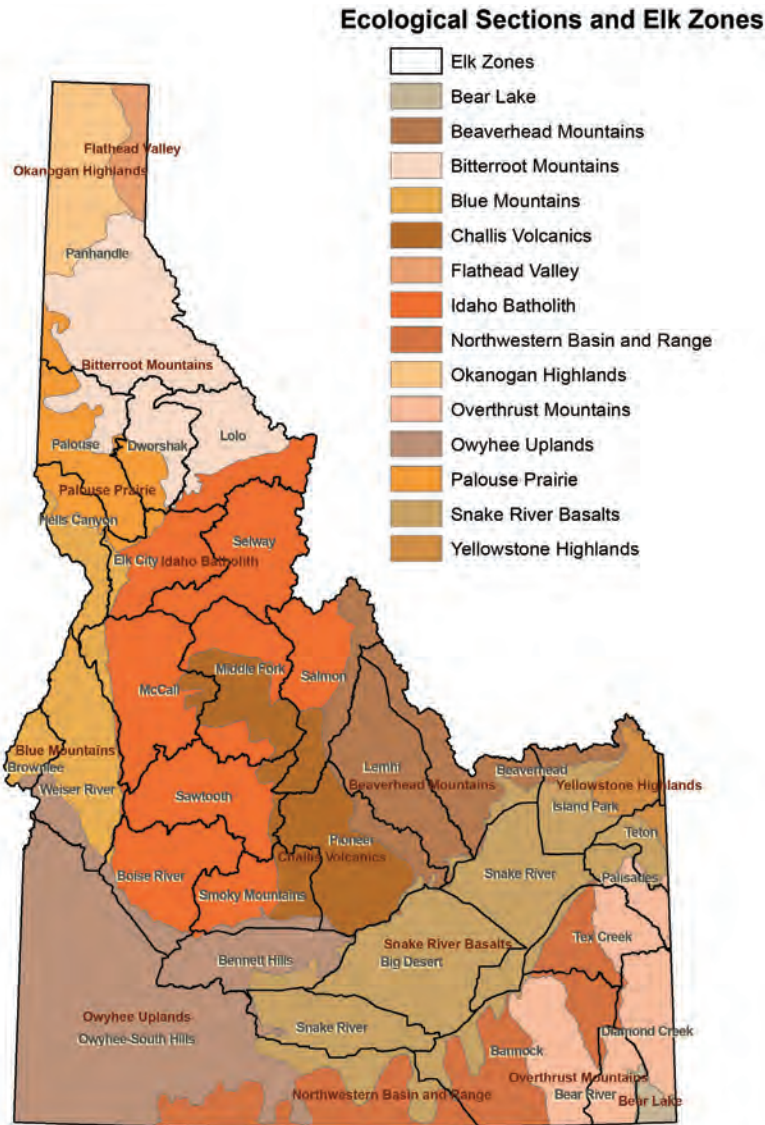


Figure 6. Underlying ecological sections for each elk zone in Idaho.

opportunity and adequate security to maintain bull:cow ratios.

The IDFG manages a very small portion of elk habitat in the state. Approximately 67% of the state is land managed by county, state, or federal agencies, of which 38% is managed by the U.S. Forest Service (USFS) and 22% is managed by the BLM (Fig. 7). Land management agencies have primary responsibility to manage roads, trails, and travel on public land. The IDFG acts in an advisory role to state and federal managers and does not have authority to close roads or trails to recreationists. The IDFG hopes to influence land management decisions to balance the need for providing access for hunting

and recreational opportunities, without negatively impacting elk populations or elk habitat.

Access into elk habitat, which was largely an issue with hunters during hunting season, now occurs year-round as an increasing population seeks motorized and non-motorized outdoor recreation. New OHVs allow recreationists and hunters to access elk habitats that were once secure. Registration of OHVs in Idaho increased substantially from 1991 through 2011 to >134,000 (Fig. 8). Whereas human access into elk habitat has potential to displace and disturb elk, motorized access (whether on roads or trails) generally has the greatest negative effect on elk movements, vulnerability, habitat security, habitat effectiveness, and therefore, elk population levels (Naylor et al. 2009). The issue of roads and motorized travel and effects on elk behavior and management has been widely studied for decades.

Harvest vulnerability

There are several key management considerations regarding access and travel management. Roads open to motorized travel increase hunter access and subsequently increase elk vulnerability to harvest (Leptich and Zager 1991, Unsworth and Kuck 1991). Leptich and Zager (1991) documented higher bull mortality rates (62% mortality) in highly roaded areas compared to areas with few roads (31% mortality) in Idaho. In the highly roaded area, no bull lived past 5 years, whereas bulls lived to >10 years in the area with few roads. In highly roaded areas, there were <10 bulls per 100 cows. Closing roads boosted sex ratios to nearly 20 bulls per 100 cows and ratios in unroaded areas were almost 35 bulls per 100 cows. Unsworth and Kuck (1991) concluded bull elk in roaded habitats were more than twice as likely to be killed during hunting seasons as those in areas with few roads.

Adequate numbers of older age-class bulls are required for elk populations to function properly.

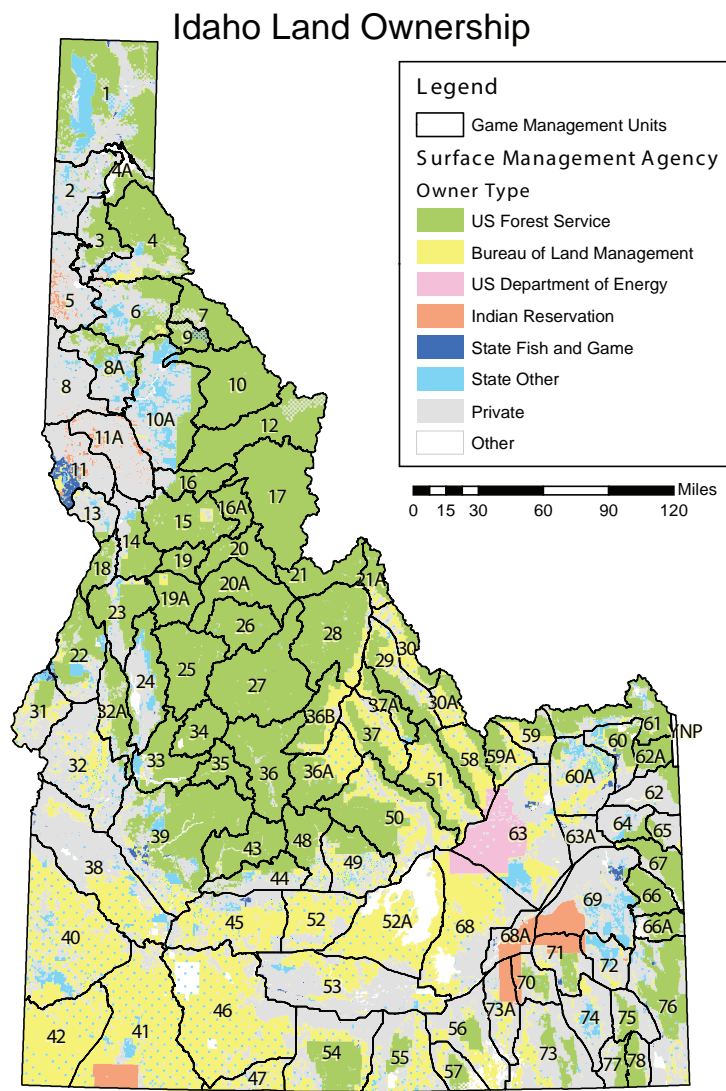


Figure 7. Land ownership patterns in Idaho.

Squibb et al. (1986) documented that heavy hunting pressure interfered with normal breeding by delaying conception dates of elk. Additionally, breeding age of bulls also affects elk productivity in a similar fashion. When older bulls are present in a population, conception dates in cow elk are earlier and more synchronous, resulting in calves being born earlier and over a shorter time period each spring (Noyes et al. 1996). A synchronous birth pulse results in fewer calves taken by predators in the spring. Calves born later in the year will subsequently be smaller entering winter and more susceptible to predation and starvation. Access management is a tool that wildlife managers can use to maintain robust elk populations and maintain public hunting opportunities without restricting seasons (e.g.,

controlled hunts, weapon restrictions, shorter seasons, or seasons during a less desirable time of year).

Seasonal issues

Road and trail closures during critical times of the year, such as during winter or calving seasons, can be beneficial to elk populations. There are issues to consider from recreational use of motorized vehicles by non-hunters or during times of the year outside of hunting seasons. In areas with high road densities, elk exhibit higher levels of stress and increased movement rates (Rowland et al. 2005, Naylor et al. 2009). Naylor et al. (2009) exposed elk to different types of recreational activity. Exposure to all-terrain vehicles (ATV) caused the largest reduction in elk feeding and resting time, and increases in elk movement, followed by mountain biking, hiking, and horseback riding. Limiting human disturbance can eliminate unnecessary energy expenditures of elk during winter when forage quality and quantity is reduced (Parker et al. 1984). To ensure healthy development of an elk fetus, cow elk must minimize energy costs that exceed those required for maintenance (Geist 1978). Calving season closures have been recommended when reduced productivity of elk during calving season was documented after human disturbance

(Shively et al. 2005). The energetic cost of moving away from disturbance associated with roads and trails may be substantial (Cole et al. 1997) and could limit population productivity or reduce an elk's ability to withstand winter by depleting fat reserves (Cook et al. 2004).

Habitat use

Displacement of elk away from roads and trails may cause substantial reductions in habitat utilization and habitat effectiveness. Human disturbance associated with roads and trails negatively influences elk behavior because elk vacate otherwise suitable habitat to avoid human activity (Lyon 1979, 1983; Naylor et al. 2009). Displacement of elk into poorer habitat might be equally or more detrimental than increased

Idaho OHV Registrations 1973-2012

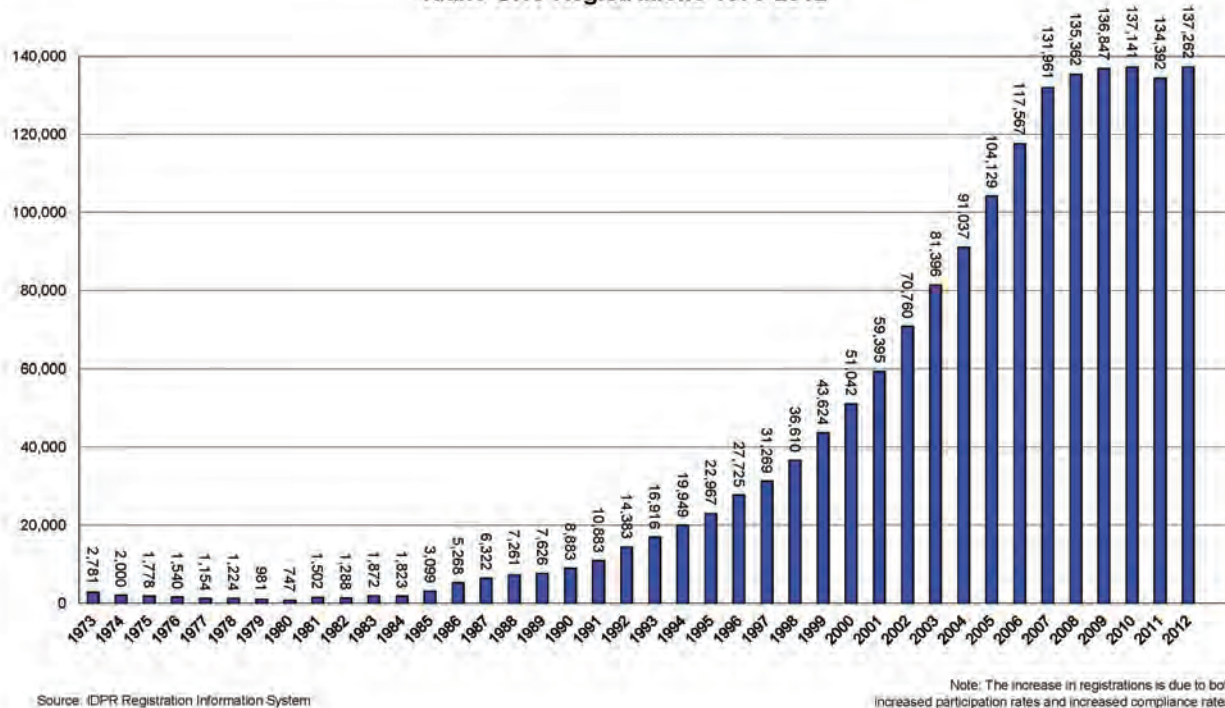


Figure 8. Registration of OHVs in Idaho, 1973-2011.

Data graph provided by the Idaho Department of Parks and Recreation (IDPR). Data source IDPR Registration Information System Database.

energetic costs caused by movements (Hobbs 1989). When elk are displaced into poor-quality habitats, they may be forced to use poorer quality forage and expend more energy on thermoregulation (Cassirer et al. 1992). Water and riparian areas are important to lactating elk (McCorquodale et al. 1989), but in Idaho many roads and trails follow drainages, thus making these important habitats less available to elk. Research has shown quality of summer and autumn ranges largely determines condition of an elk heading into winter, and thus whether that elk can survive winter (Cook et al. 2004). A relatively small difference in forage quality consumed by elk in summer and autumn can have very strong effects on fat accretion, timing of conception, pregnancy rates of lactating cows, calf growth, yearling growth, yearling pregnancy rates, and winter survival rates.

Another issue related to motorized access to roads and trails is displacement of elk onto adjacent private land where hunting is restricted (Wertz et al. 2004, Proffitt et al. 2010). Damage to crops, haystacks, and fences often result, at significant cost. Additionally, agricultural damage

and reduction of rangeland forage meant for domestic livestock reduce landowner support toward elk. Reduced support generally leads to more liberal elk harvest as IDFG reduces the local elk population to address agricultural depredations. By simply limiting motorized access in these areas, elk may remain on public land longer and public hunting opportunities can be maintained or increased (Rowland et al. 2005).

Tools and strategies

Elk hunters generally support road closures as a management tool. However, there are many hunters and user groups who use OHVs and oppose road or trail access restrictions. Over 60% of hunters reported managing access (i.e., closing roads) was easily acceptable or tolerable as an elk management tool (Gratson and Whitman 2000b). Similarly, in a statewide survey of Idaho rifle hunters, only 10% of elk hunters reported closed roads were never acceptable, whereas 67% reported closed roads were always or usually acceptable (McLaughlin et al. 1989). Sanyal et al. (2012a) reported almost



73% of elk hunters found restricting use of OHVs an acceptable method to improve elk hunting in Idaho. Further, Sanyal et al. (2012a) found most elk hunters travel on foot when hunting, about one-third use OHVs or pack animals, and very few hunters use a mountain bike. In a separate survey of southern Idaho resident hunters (survey included mule deer, elk, and upland game hunters), Sanyal et al. (2012b) reported individuals who identified themselves as “primarily a hunter” strongly supported restricting motorized vehicles to established roadways (61%), whereas those who identified themselves as a “hunter and OHV enthusiast” strongly opposed (41%) restricting motorized vehicles to established roadways. Both groups, hunters and hunters-OHV enthusiasts, agreed they were likely to use OHVs to retrieve game, access a hunting area, and to some extent as a social mechanism (Sanyal et al. 2012b).

Reduced disturbance by motorized vehicles, reduced hunter densities in non-motorized areas, and potential for greater success rates provide a greater “quality” hunting experience for many hunters (McLaughlin et al. 1989). In Montana, hunters spent more time walking, saw more elk, and actually had greater success when vehicle travel was restricted (Basile and Lonner 1979). Gratson and Whitman (2000a) saw elk hunter success improve from 14% in heavily roaded areas to 24% in an area with managed access (i.e., closed roads) in north-central Idaho. Closed roads likely increase elk habitat use in those areas and provide quiet access, leading to increased encounter rates between hunters and elk. However, overall harvest in travel-restricted areas tends to be lower because fewer hunters access such areas (hunter densities are lower).

In response to concerns expressed by hunters about increasing deer and elk harvest vulnerability, declining buck and bull ratios, hunter complaints about hunt quality, and to resolve hunter concerns about off-road travel, IDFG implemented a motorized hunting rule (MHR) in 2002 that restricts all motorized vehicle use by hunters to roads capable of travel by full-sized vehicles. The MHR has allowed IDFG to maintain longer seasons with more tags or

permits available to hunters. Currently (2013), the MHR is in effect in 30 GMUs.

Hunters do need a reasonable amount of access to reach hunting areas. Access into the backcountry is a need for hunters, recreationists, livestock producers, and land and wildlife managers. Other desired access for hunters includes public access onto private land for hunting, often through hunter access programs such as *Access Yes!* But “access” does mean different things to different people. Managing expectations and balancing the needs of hunters, other recreationists, and elk populations is paramount for wildlife managers.

Access management will continue to be a challenge for elk management because it involves trade-offs between benefits of increased access versus ecological and economic costs associated with roads (Gucinski et al. 2001). Most hunters want long seasons into easily accessible areas with little hunting pressure and lots of mature animals, but motorized access into elk habitat comes at a cost. When access management is not effective or utilized, IDFG must take other management measures. Without management of hunter numbers through access management (e.g., road and trail closures), elk populations generally have undesirable sex and age structures, increasingly complex and restrictive hunting regulations, and loss of hunting and viewing opportunities for both hunters and non-consumptive users (Leptich and Zager 1991).

Access management for the benefit of elk populations applies to all recreationists, especially motorized-vehicle users, not just elk hunters. The IDFG encourages state and federal land managers to continue to develop comprehensive access management programs that include multiple tools such as timing of use, limitations on use, appropriate density of roads and trails, and complete or seasonal closures of roads and trails to create large blocks of habitat with non-motorized access to benefit elk populations.

Competition Between Elk and Deer

Elk populations have increased in western North America over the last few decades, and many resource managers have questioned the influence of this species on their environment in general and mule deer specifically. Because mule deer (hereafter, deer) populations have generally declined concurrent with elk population increases, resource managers have further questioned the likelihood of a cause-and-effect relationship between these 2 trends, particularly as a result of competition.

Deer and elk undoubtedly interact with each other and components of their environment. However, competition can be difficult to demonstrate in free-ranging wildlife. Impacts must take the form of decreased survival or productivity leading to decreased population growth to be important in population dynamics (Lindzey et al. 1997). Simply observing that elk and deer eat the same forage does not constitute proof of competition.

Energetics

Deer and elk generally select habitats and behave in a manner that allows them to conserve energy. Under some conditions, energetic costs for deer can be higher than those for elk. Elk tend to have a wider “comfort zone” (Beall 1976) than do deer, in part because elk sweat extensively in warm weather, whereas deer primarily pant to dissipate heat (Parker and Robbins 1984). Elk also tend to have an advantage during winter when snow accumulates because the energy cost of moving in deep snow is less than that for deer (Wickstrom et al. 1984). Further, the larger body mass of elk reduces heat loss in winter, allowing elk to conserve energy more efficiently than deer. Because elk are taller than deer, they have a greater reach and can obtain forage from taller plants than deer. Thus, elk can often occupy and use more diverse areas and resources than deer in both summer and winter (Lindzey et al. 1997).

Digestion

Although deer and elk can and do eat the same forages at times, there are physiological

differences that provide elk with apparent advantages over deer. The relatively larger stomachs of elk allow them to digest grass diets of lower nutritive quality and greater lignification more effectively than deer. Therefore elk fare better in grass-dominated systems. Conversely, elk need to forage in areas of relatively high forage production and move more often because of their large size, total energy demands, and tendency to form larger herds.

In general, elk are able to take advantage of preferred deer foods, but rarely do deer extensively use common elk forages. Coupled with higher consumption rates for elk, elk foraging is more likely to influence deer than deer foraging is to influence elk (Lindzey et al. 1997).

Many plants contain secondary compounds that retard digestion by herbivores. Because deer rely on more rapid digestion than do elk, plant compounds that slow digestion may be more detrimental to deer. Tannin levels in shrubs are lower in winter than in other seasons, so elk can compete for shrubs more effectively if deer and elk share restricted winter ranges (Lindzey et al. 1997).

Habitat and diet

Historic ranges of elk and mule deer overlapped in large parts of western North America, and current elk distribution is almost entirely overlapped by mule deer. However, within areas of overlap, deer and elk tend to separate by habitat features. Theoretically, diets of species occupying the same range should differ most during periods of low food availability to minimize interspecific competition (Hardin 1960, Zaret and Rand 1971). Evidence from studies on Starkey Experimental Forest and Range suggests mule deer avoid microhabitats occupied by elk, indicating interference competition occurs between elk and deer (Johnson et al. 2000, Coe et al. 2001). Interference competition may have negative impacts on mule deer if elk exclude deer from limited fawning habitats (e.g., aspen habitats preferred by both species). This exclusion may force maternal females to



use high-risk fawning range, thereby increasing neonatal fawn mortality.

Atwood (2009) reported elk shifted their spatial distributions to winter ranges occupied by mule deer and selected resources similar to mule deer during severe winters in southeast Idaho. In addition, dietary overlap of these species increased during severe winters. Elk density, however, did not result in changes in diet composition or quality in deer. Body condition and survival of deer were also unaffected by elk density. Conversely, year effect was significantly related to body condition and survival of deer; indicating environmental conditions were more important than elk density.

Habitat changes, brought on primarily by humans, affect deer and elk differently. Forested habitat maturation and conversion to grassland vegetation types has favored elk over deer. Loss of habitat for both species often means the 2 species are forced into smaller areas, which likely increases potential for competition. Other human-induced influences on habitat probably place greater pressures on mule deer than elk simply because overlap of these developments with deer habitat is greater (e.g., highways and housing developments in deer winter range).

Parasites

Biting flies, particularly horseflies, may cause greater harassment for elk than deer in some areas. In fact, some have speculated that some elk migrations to higher elevation may be as much related to avoiding horseflies as for searching out higher quality forage. Beyond simple harassment, flies can spread the roundworm *Elaeophora*, which causes elaeophorosis, which can limit elk populations (Kistner et al. 1982). Mule deer are unaffected by the disease and can act as a host for the roundworm. In this situation, mule deer may exclude elk from some areas (Lindzey et al. 1997).

Population dynamics

In both species, survival of young to breeding age (recruitment) is affected by an interaction of summer forage condition and winter severity affecting energy expenditure. In general, deer are

more susceptible to impacts of adverse weather than elk. These differences are borne out in more pronounced mule deer population fluctuations compared to elk. However, deer exhibit higher reproductive potential than elk, breeding more frequently as yearlings and often producing twins. Therefore, deer populations can rebound more quickly after declines if habitat conditions and other factors are favorable.

Elk impacts on other species

Like any herbivore, if elk occur at high densities, they can influence vegetation growth and recruitment, and thus occurrence and density of other wildlife species. In national parks, high density elk populations have been linked to reduced or failed recruitment of aspen (Singer 1996, Baker et al. 1997). Hebblewhite et al. (2005), in an area with >9 elk/km², documented negative impacts on willow (*Salix* spp.) growth, and songbird abundance and diversity, compared to an area with approximately 1 elk/km². In their work, Hebblewhite et al. (2005) attributed changes in biodiversity to a trophic cascade induced by gray wolf predation on elk leading to reduced elk density.

However, managed elk populations outside of parks and other protected areas are unlikely to reach the high densities noted in the unmanaged areas where elk have negatively impacted vegetation. For example, if elk in east-central Idaho were maintained near the upper limit of current objective ranges, overall density would be approximately 1.2 elk/km² (based on total land area). Densities on winter ranges would of course be higher (perhaps 3-4 elk/km²), but still well below levels of un-hunted or lightly hunted populations.

Diseases and Parasites, Game Farms and Commercialization of Elk, and Winter Feeding

Elk are subject to a number of diseases and pathogens. While numerous papers and reports identify pathogens from individual animals or herds from numerous states, no summary of such data for Idaho is known. This document will serve to present known information about

diseases that are considered to pose a risk to elk populations if they are currently present in or introduced to Idaho.

Brucellosis

Brucellosis is a transmissible bacterial disease caused by *Brucella abortus*. In most ruminants, the disease results in abortion or birth of weak calves and arthritis. Brucellosis is a zoonotic disease that can infect humans. The disease was introduced into the U.S. by infected cattle from Europe at the time of settlement. Brucellosis was introduced into the greater Yellowstone area when bison (*Bison bison*) that were being reintroduced into the park were exposed to infected cattle, and from bison it spread to elk (Thorne et al. 1997). The primary concern with brucellosis is transmission of the organism from elk to cattle (Thorne and Morton 1976), and the economic and logistical consequences to domestic livestock producers.

Detection of brucellosis is done by either detection of antibodies in blood samples or culture of the organism from appropriate tissue samples. When animals are infected with brucellosis, antibodies are produced that can be detected using a number of test procedures. Animals with antibodies are called seropositive and classified as either reactors or suspects. Animals from which brucellosis has been cultured are considered infected. Presence of antibodies does not imply infection as animals can recover from infection.

Surveillance by IDFG found the first evidence of infection in elk in Idaho in 1998 in eastern Idaho. A task force was assembled to formulate a plan to deal with the disease in elk and minimize risk of transmission to cattle. Based on epidemiology and DNA, elk appear to have spread the disease to cattle in Idaho on ≥ 2 occasions, resulting in the loss of Idaho's Cattle Brucellosis-Free Status in 2005. In addition, elk are suspected of spreading the disease to 2 other cattle herds in eastern Idaho in 2009 and 2012. Currently, the proportion of seropositive elk is approximately 2.5% in eastern Idaho, but varies across GMUs. In general, the known area with antibody positive

elk includes GMUs 59, 60, 60A, 61, 62, 62A, 64, 65, 66A, 67, and the northern portion of 76.

Management of brucellosis in free-ranging elk is challenging. Although infection with brucellosis can negatively affect reproductive performance in cows through abortions and stillborn calves, and possibly bulls through orchitis (swelling of the testicles), the population impact in Idaho is relatively low given the low seroprevalence (Gross et al. 1998). There is no effective vaccine for elk, and no way to easily vaccinate elk even if an effective vaccine were available. Where possible, IDFG traps, tests, and removes seropositive elk in eastern Idaho, especially at feed sites that are used repeatedly or if elk interact with cattle during the risk period (January-June).

A cooperative brucellosis plan between IDFG and Idaho State Department of Agriculture (ISDA) was developed in 2006 and serves as the basis for management of elk in the brucellosis-affected area. Most of the joint effort between IDFG and ISDA is to minimize likelihood for potentially infected elk to intermingle with cattle in winter by fencing haystacks, hazing elk away from cattle feedlines, fencing cattle feeding areas, and development of alternative wintering areas. In some areas, elk populations and objectives may be at levels where some reduction in elk numbers is needed to reduce elk-cattle interactions in winter. The cooperative brucellosis plan has four primary objectives:

1. Manage elk populations within carrying capacity of available winter habitat and provide for a harvestable surplus.
2. Monitor elk and livestock for exposure to and infection with brucellosis and reduce brucellosis prevalence in elk.
3. Improve habitat to ensure adequate areas of high quality winter and spring range necessary to support a stable and harvestable elk population.
4. Maintain separation between elk and cattle during high risk periods.

The IDFG recommends harvest season frameworks consistent with population objectives. Obtaining adequate harvest of elk



in brucellosis-affected zones can be a difficult challenge due to seasonal elk movements that may not correspond to established elk harvest seasons. Some elk that winter in Region 6 spend the summer in YNP and Grand Teton National Park or in Montana or Wyoming. Some elk do not return to Idaho until late fall or early winter, after or late in the hunting season, which may limit access to these animals by Idaho hunters. Implementing harvest season frameworks that will target these elk herds is a dynamic and adaptive process. The IDFG adjusts season length, season timing, tag numbers, and other variables to modify hunter distribution to address concerns for cattle-elk interactions.

Chronic Wasting Disease (CWD)

This disease is known to occur in wild mule deer, white-tailed deer (*O. virginianus*), elk, and moose (*Alces americanus*) only in North America (U.S. and Canada; Williams 2005). The original endemic area was confined to a small portion of Wyoming, Colorado, and Nebraska. But over time, CWD has been found in free-ranging mule deer, white-tailed deer, elk, and moose in an expanding number of states and Canadian provinces which now includes Illinois, Kansas, Maryland, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, New York, South Dakota, Utah, Texas, Virginia, Wisconsin, West Virginia, Alberta, and Saskatchewan. Further, CWD has been found in captive white-tailed deer and elk in a similar area, including Colorado, Iowa, Michigan, Minnesota, Missouri, Montana, Nebraska, New York, Oklahoma, South Dakota, Wisconsin, Alberta, and Saskatchewan. In addition, CWD has been documented in captive red deer (*Cervus elaphus*) in Minnesota. In the endemic area, approximately 5-15% of mule deer and 1% of elk are infected with CWD (Miller and Williams 2003, Miller and Green 2007). Only New York has been successful in eliminating CWD in wild and captive cervids after the disease was recognized (Major et al. 2007).

CWD is uniformly fatal in all species of cervids in which it has been found (Williams 2005). Clinical signs in affected individuals include chronic progressive emaciation with neurological signs that range from tremors to periods of stupor

and abnormal gait (Williams 2005). Population-level impacts of CWD are unclear (Almberg et al. 2011, Sargeant et al. 2011). While the disease is fatal to affected individuals and prevalence of the disease increases over time, especially in high density cervid populations, the actual morbidity and mortality rate for CWD-affected herds and populations is unclear. Modeling efforts clearly indicate populations of CWD-affected wild cervids decline to near extinction (Cary 2007), but long-term monitoring has not indicated such population trends. However, most states respond to the presence of CWD with intensive culling efforts to reduce wild cervid density and populations, which may affect model predictions for population performance.

The IDFG has conducted CWD surveillance since 1997 using a combination of targeted and general surveillance. Over 9,000 wild deer and elk have been sampled and to date, no free-ranging cervids have been found with CWD. At least three wild deer and elk harvested in Wyoming by Idaho hunters have been positive for CWD. After notification from Wyoming Game and Fish, IDFG notified the hunters to locate all carcass remains. In two cases, no carcass was found and in one case, the carcass was dumped at a landfill.

In captive domestic elk in Idaho, three tracebacks or potential connections to CWD cases or farms in other states have occurred. In 1998, 34 elk were brought to Hamer, Idaho from an elk farm in Montana. They were then moved to Oklahoma and mingled with other elk from Oklahoma, and CWD was diagnosed in the herd in Oklahoma. None of the CWD-positive animals came through Idaho, but the Idaho farm was quarantined for several months. In 2000, an elk raised in Menan, Idaho and sold to an elk farm in Nebraska was found to be CWD positive. On investigation, the elk was likely infected in Nebraska. In 2001, 37 elk were imported from Colorado to a farm near Salmon, Idaho. The Colorado farm was found to have CWD and the animals imported into Idaho had been in contact with infected animals in Colorado prior to importation. All 37 elk were euthanized, sampled, and the owners compensated for their loss. None of the elk were positive for CWD.

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Management of CWD in wild cervids is very challenging (Decker et al. 2007, Langenberg 2007, Wolfe 2007). A number of tactics have been tried in other states, but none were very successful in eradicating the disease once it was found in wild populations. The IDFG adopted a CWD Response Plan in 2002 which was revised in 2010 (<http://fishandgame.idaho.gov/public/wildlife/diseaseChronicWasteActionPlan.pdf>). Response to the initial finding of a CWD-positive cervid is to define a 5-mile zone around the location of the positive animal for further testing of as many wild cervids as possible, as soon as possible, given local conditions. If additional CWD-positive animals are found, the plan calls for a 50% reduction of wild cervids within 5 miles of the positive site. The plan can be expanded in area and could include a total population reduction if needed. In captive domestic cervids, the ISDA CWD response plan is to quarantine and slaughter all clinical and exposed captive animals.

Giant liver fluke (*Fascioloides magna*)

Flukes are trematode parasites found in the liver of white-tailed deer and elk in a patchy distribution in North America (Pybus 2001). The parasite is normally found in white-tailed deer, in which it is well tolerated. In elk, the parasite is tolerated, but can cause morbidity or mortality. In abnormal hosts like moose, other cervid species, and domestic livestock, the parasite usually causes extensive liver damage, resulting in morbidity or mortality. Population-level impacts are unknown, but high infection rates may reduce individual animal fitness and extensive mortality may negatively impact wild cervid populations (Pybus 2001).

The parasite has been documented in deer, elk, and bison in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, Labrador, and Newfoundland, most states in the southeastern U.S., New York, Minnesota, Wisconsin, Michigan, and small areas of Montana, Washington, and Oregon (Pybus 2001). The parasite requires an aquatic snail as an intermediate host. By moving white-tailed deer and elk around the globe, this parasite has

been translocated to Europe and New Zealand (Pybus 2001).

To date, giant liver flukes have been documented in 1 wild elk from the Lochsa area, and in 2 deer from the Clearwater Basin. There are some anecdotal reports of liver flukes in elk and moose from other areas in the state. The parasite is present on several captive cervid farms in Idaho in Regions 4 and 6. Movement of the parasite to wild cervids could happen through contamination of aquatic systems with eggs passed in the feces of infected domestic elk.

There are large numbers of susceptible wild cervid hosts in Idaho, as well as suitable aquatic snails. If an introduction did occur, the parasite would be very difficult to manage without severe damage to aquatic ecosystems.

Meningeal worm (*Parelaphostrongylus tenuis*)

Meningeal worm is a nematode parasite of the meninges of white-tailed deer and occurs over much of the central and eastern parts of North America. To date, meningeal worm has not been documented in Idaho. The parasite causes mortality in most cervid and bovid species that it infects, largely with the exception of white-tailed deer, cattle, and sheep. The parasite is transmitted by a variety of terrestrial snails and slugs, some of which are present in Idaho. The IDFG conducted surveys for meningeal worm in white-tailed deer in Region 1 in 1992 (Foreyt and Compton 1991) and Region 2 in 2002 (M. Drew, IDFG, unpublished data). No evidence of the parasite was found in over 300 animals examined.

Researchers have determined that some elk infected with meningeal worms can tolerate the infection and produce larval worms which can transmit the infection to other animals (Welch et al. 1991, Samuel et al. 1992). Presence of meningeal worm is the primary reason ISDA and IDFG have a prohibition on import of domestic or captive cervids from east of the 100th meridian.

There are 6 species of susceptible cervid and bovid hosts in Idaho (white-tailed deer, mule deer, elk, moose, bighorn sheep [*Ovis*



canadensis], and mountain goat [*Oreamnos americanus*]) and if the parasite were introduced, it could have very severe consequences for wild cervids. In addition, control of the parasite would be very difficult as the intermediate hosts are difficult to control in the environment, and there is no viable treatment for infected cervid hosts.

Bovine Tuberculosis (TB)

Bovine TB is a bacterial disease (*Mycobacterium bovis*) distributed worldwide (Thoen et al. 1992). In most infected animals, the disease causes enlargement of lymph nodes and respiratory infections. Chronic cases can develop that lead to pneumonia or systemic illness. Morbidity and mortality are generally low. The disease has a broad host range, including humans. The disease is transmitted by aerosolization, direct inhalation, or ingestion of contaminated materials. Infected animals can shed *M. bovis* through saliva, nasal secretions, urine, and feces (Whipple and Palmer 2000). Bovine TB can be spread by infectious materials in aerosol form or by contamination of feed or water that may be used by other animals.

In North America, bovine TB was introduced to wild deer and elk from infected cattle (Hunter 1996). In wild cervids in North America, only scattered reports of bovine TB are known (Belli 1962, Friend et al. 1963, Dodd 1984, Clifton-Hadley and Wilesmith 1991). However, in 1994, wild white-tailed deer in Michigan were found to be infected with bovine TB (Schmitt et al. 1997, Kaneene et al. 2002). White-tailed deer in Michigan are the only known wildlife reservoir in the U.S., although bovine TB is also found in elk in Riding Mountain National Park in Manitoba, Canada. Maintenance of the disease in white-tailed deer in Michigan is a function of high deer densities and the accepted practices of winter feeding and baiting deer (Schmitt et al. 1997). There is a 2-4% infection rate in deer, but the disease has also been seen in coyotes, black bear, raccoons (*Procyon lotor*), domestic elk, and cattle (Schmitt et al. 1997). Michigan lost its cattle TB-accredited status because of the disease in white-tailed deer. Bovine TB was a major problem in captive cervids in North America (Miller et al. 1991, Thoen et al. 1992) and

spread from captive elk to free-ranging mule deer (Rhyan et al. 1995, Whipple et al. 1997).

Among challenges for dealing with bovine TB in wildlife is that there is no vaccine or treatment. The only management options are to reduce deer populations, ban winter feeding and baiting, and enforce temporal and spatial separation of deer and livestock. The presence of bovine TB in wild cervids in Idaho would have severe impacts on domestic livestock. The introduction of this disease would require extensive testing and culling of wild cervids in conjunction with testing and culling of domestic livestock.

In Idaho, bovine TB occurred on a fallow deer (*Dama dama*) farm near Hammett in 1992. In 1991-1992, a fallow deer farm in Montana was found to be infected with bovine TB, and 15 fallow deer were imported into Idaho from the infected facility. One of the 15 fallow deer was culture positive for bovine TB and all 15 animals were destroyed.

Epizootic Hemorrhagic Disease (EHD)

The disease is a viral disease of white-tailed deer that is spread by *Culicoides* spp. gnats. This disease is related to bluetongue (BT), a viral disease of domestic sheep which can be carried by cattle.

In Idaho, EHD is known to occur in deer, generally as small outbreaks on an irregular basis. The disease is rare in elk, although, based on serology, elk are exposed to EHD. In the last EHD outbreak in Idaho (2003), no wild elk were found with EHD, but 1 elk farm near Riggins had several mortalities associated with EHD.

In white-tailed deer, EHD is maintained by animals that survive the infection. Gnats spread the virus between deer, especially when deer numbers and density are high and summer temperatures create sufficient gnat breeding habitat around the edges of ponds and seeps.

Management of EHD is generally not feasible; there is no vaccine and no treatment. The only way to stop the disease is to either remove all susceptible hosts or wait for a killing frost to significantly reduce gnats.

Game farms

In Idaho, IDFG generally regulates private possession of wildlife, excluding domestic cervids. In 1999, jurisdiction of domestic cervidae, defined as elk, reindeer (*Rangifer tarandus*), and fallow deer, was transferred to ISDA. The ISDA developed rules for fencing, identification, licensing, fees, and disease testing for importation, all of which have been updated or modified over time. Currently, ISDA and IDFG collaborate on inspection of domestic cervidae farms and facilities with regard to presence of wild cervids. A herd management plan is to be developed for removal of entrapped wild cervids on existing farms and facilities. The Commission is opposed to spending sportsmen's funds on management of domestic cervidae.

The distribution of domestic cervidae farms and facilities in Idaho have changed little since 1999 (Fig. 9). The number of facilities participating in the domestic cervidae program was at its peak between 2006-2010 (78 elk ranches, five fallow deer/reindeer ranches), however the total number of domestic cervidae farms in Idaho has declined by approximately 20% in recent years and currently stands at 57 elk ranches, three fallow deer/reindeer ranches. Total number of animals on domestic cervidae farms has also declined from >6500 animals in 2009 to 4100 in 2013. Annual imports of domestic cervidae range from a high of nearly 800 in 2013 to a low of 222, with no trends being evident over the last 10 years.

Contact between wild and domestic elk

Disease transmission between domestic elk and wild elk is of concern (IDFG Policy, 2007). Several diseases are known to occur in domestic elk, both in Idaho and other locations, but not in free-ranging elk in Idaho. These include giant liver fluke, which has been found on one elk farm in both Regions 4 and 6. However, only a few scattered reports of giant liver fluke are known for free-ranging elk or deer in Idaho. Captive elk with CWD have been found in numerous states and ISDA maintains stringent rules for importation and health certification for imported animals. All elk that die on elk farms in

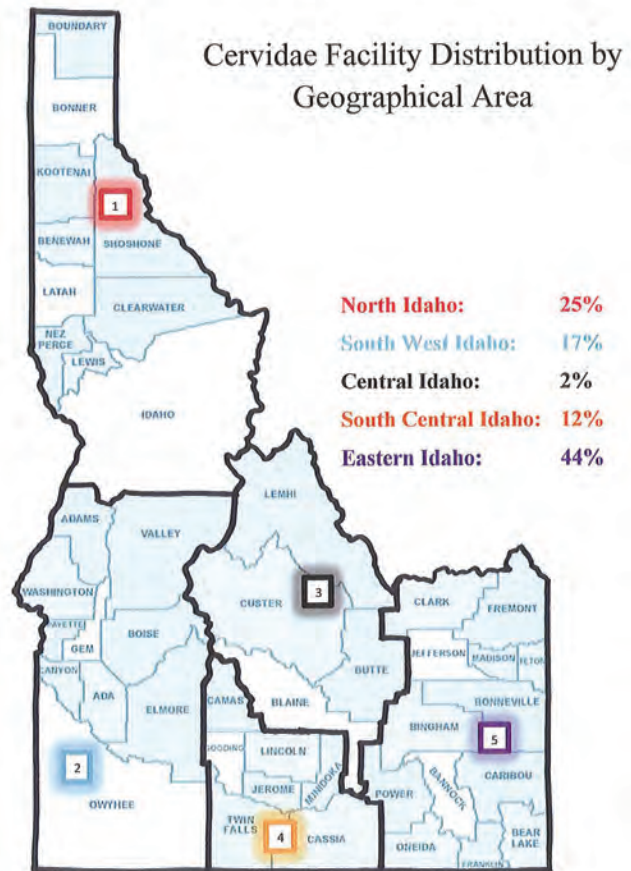


Figure 9. Geographic distribution of domestic cervidae farms in Idaho, 2013.

Figure was provided by the Idaho State Department of Agriculture, Division of Animal Industries.

Idaho are to be tested for CWD. Typically, 1,500 domestic elk are tested annually. No domestic cervids have tested positive for CWD to date. Meningeal worm is present in small numbers of captive elk in eastern and midwestern states and import of domestic elk from east of the 100th meridian is prohibited to minimize potential of introduction of the parasite into Idaho. Domestic elk do escape from and wild elk do ingress onto elk farms, especially “shooter bull” operations. Hunters in Idaho have harvested elk with ear tags indicating a domestic origin. Not all domestic elk from a large escape in 2006 in eastern Idaho were recovered. In general, wild elk that ingress onto a domestic elk farm are lethally removed, but response depends on a risk assessment jointly conducted by the State Wildlife Veterinarian and the State Veterinarian. Risk assessment includes evaluating number of animals involved, extent and time of contact,



record keeping, and previous presence or absence of disease.

Commercialization

The possibility of commercialization of wild elk exists on several levels. Given ingress of wild cervids into domestic elk facilities and the difficulty of removing these animals, it is possible that some wild elk could be incorporated into breeding situations on domestic elk farms or harvested by clients on shooting operations. The possibility exists for harvest of viable semen from wild bull elk and subsequent use in domestic elk breeding operations. In addition, commercializing an iconic and wild animal such as elk could lead to a public perception towards lower value of wild elk. Idaho currently does not prohibit sale of parts, except edible meat, from wildlife harvested or legally recovered in the state, so potential exists for commercial exploitation of elk from the state.

Winter feeding

Winter feeding of big game animals conducted by IDFG follows Commission rules and policy. In general, regional winter feeding advisory committees make recommendations to IDFG about the need to feed wintering deer or elk based on temperature, snow depth, and assessment of animal condition. If feeding is recommended, IDFG will feed animals a diet that is appropriate to the stage of winter, amount of native browse in the diet, and observed body condition of animals to be fed. In general, there are few long-term feeding sites in Idaho. The IDFG maintains a nearly-annual elk feeding operation in the Warm Springs Creek area, west of Ketchum. The intent of this site is to prevent elk from attempting to overwinter within Ketchum, which historically was winter habitat. From the 1930s through early 2000s, IDFG maintained four additional long-term feed sites along the South Fork Boise River. These sites were initiated shortly after elk were translocated to the area in the 1930s, and elk were typically fed there two of every three winters. However, changing elk migration patterns in the area have eliminated the need for the South Fork Boise River sites.

Economics of Elk and Elk Hunting in Idaho

Elk have substantial consumptive (hunting) and non-consumptive (wildlife viewing) values. Of the two, hunting related revenue is easier to quantify: dollars spent on hunting licenses, elk tags, and hunting-related travel expenses are both definable and quantifiable. Elk are considered one of IDFG's flagship species, with >80,000 hunters spending >\$6.1 million annually on tags (20% of IDFG's annual license and tag revenue). While nonresident elk tags represent only 10% of total elk tags, they provide 60% of elk-tag revenue. Additionally, direct hunting expenditures (e.g., fuel, meals, lodging, etc.), based on Cooper et al. (2002), indicate elk hunters contribute >\$70 million annually; much of it in small, rural economies dependent on tourism dollars. Using a typical economic multiplier of 2.5 (Gordon and Mulkey 1978), total estimated economic impact of elk hunting in Idaho exceeded \$175 million.

Wildlife viewing economics are a harder metric to quantify: many nonresident visitors enjoy wildlife viewing, and may even plan their trip with that in mind, but it may not be the sole or even primary focus of their travel. Further, winnowing that intent to view wildlife to dollars spent on a vacation can be even more difficult.

Every 5 years, the USFWS and the U.S. Census Bureau produce both national and state-specific summaries of hunting, fishing, and wildlife-related activities. Though these reports are not species-specific, they are the most comprehensive scientific reviews of economics associated with wildlife-viewing activities. Preliminary results from the 2011 national survey indicate >550,000 people (16 and older) participated in wildlife-viewing activities in Idaho, expending >\$444 million in trip-related costs (USFWS 2012).

In 1986, IDFG worked with the USFS Rocky Mountain Forest and Range Experiment Station to assess economic value of elk hunting in Idaho. This survey assessed hunters' willingness to pay for elk hunting trips to determine a value for elk hunting that is directly comparable to the

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profit of commercial resource-use enterprises like logging, cattle grazing, and mining, etc. In general, hunters were willing to pay more for elk hunting trips on which they saw more elk (Sorg and Nelson 1986). There was some evidence of a “threshold” at which hunters would not be willing to pay more, despite seeing more elk, but the study was unable to determine the 1986 threshold.

A similar study was conducted at Oregon’s Starkey Experimental Forest and Range facility in 1995. Fried et al. (1995) assessed hunters’ willingness to pay for a “virtually guaranteed” chance at harvesting an elk. In general, willingness to pay for such a hunt followed an S-shaped curve; nearly all hunters were willing to pay a relatively small amount for an almost certain harvest, while very few were willing to pay an extremely high amount ($\geq \$1,000$). Hunters exhibited a mean willingness to pay \$287/trip where harvest of an elk was virtually certain. At the time of the study, mean expenditures on a 6-day elk hunting trip in Oregon were \$297 (Fried et al. 1995).

Finally, Cooper et al. (2002) used a survey to estimate hunters’ expenditures on different components (e.g., transportation, food, and lodging) of their 1996 elk hunting trips in Idaho. They found resident hunters spent \$65.18/day, while nonresidents spent \$165.89/day. On average, resident hunting trips lasted 4.24 days, while nonresident hunting trips were 6.96 days. All told, there were 676,358 resident and 118,736 nonresident hunter days in 1996, resulting in a total of \$21.8 million in labor income to the economy of Idaho (Cooper et al. 2002).

Aside from these expenditure data, elk hunting has a significant economic impact on IDFG. For the past several years, revenue from nonresident elk tag sales has declined (Table 5). These revenues represent a significant portion (20%) of IDFG’s overall license and tag revenues, and serve as match for federal funding sources that comprise another significant portion.

Table 5. Summary of nonresident elk tag sales, Idaho, 2008-2012.

Year	Tags sold	Revenue
2008	14,714	\$5,480,965
2009	12,080	\$4,499,800
2010	10,288	\$4,287,524
2011	9,395	\$3,915,366
2012	8,927	\$3,720,327

Finally, the outfitting industry in Idaho provides an important service to elk hunters, especially non-resident hunters, and contributes a vital economic stimulus to the state. Annually, outfitted elk hunters spend more than \$1 million for hunting licenses and elk tags. The Idaho Outfitting and Guides Licensing Board is the agency responsible for regulating the outfitting and guiding industry in Idaho. Currently 128 outfitters are licensed for elk hunting in 84 of the 99 GMUs. In 2011, 2,009 elk hunters in Idaho used the services of an outfitter (S. Knapek, Idaho Outfitters and Guides Licensing Board, personal communication) and the estimated outfitter fees paid by elk hunters exceeded \$10 million (Grant Simonds, Idaho Outfitters and Guides Association, personal communication). Using a typical economic multiplier of 2.5 (Gordon and Mulkey 1978), total estimated economic impact of outfitted elk hunting in Idaho in 2011 exceeded \$24 million.

Compliance with Hunting Regulations

Enforcement strategies formulated to complement the statewide Elk Management Plan are necessary for IDFG to successfully manage healthy elk populations at levels supported by landowners while providing ample recreational opportunity for harvest. Developing laws and regulations easily understood by the hunting public and clearly enforceable by conservation officers is a dynamic, challenging process, not only necessary for management of the resource, but also for addressing issues of public safety, fair chase, and ethical hunting practices. Therefore, a diligent effort in enforcing hunting rules is a necessary strategy for achieving these



goals (IDFG 2005b). Laws and regulations must also be supported by the majority of hunters.

Idaho conservation officers are often coined “the face of the IDFG” because they are often the first personnel to make contact with hunters in the field. Officers spend approximately 50% of their time enforcing fish and game rules and contact >80,000 licensed hunters and anglers per year, issuing an average of 5,000 citations and warnings (IDFG Fish Management Plan 2013-2018). During these interactions with hunters and anglers, officers often identify “problem areas” within their regions, often resulting in development of enforcement action plans. These plans detail the issue(s), test whether the problem is perceived or real, and outline goals to be achieved in a specific time frame, and identify strategies to accomplish the goals. These plans can simply involve more officer presence in an area, multi-officer saturation patrols, plain-clothes officer work, or for more complex enforcement situations, specifically directed investigations. Results of these action plans are evaluated and revisited often (usually annually) to determine if goals are being accomplished and make adjustments necessary to meet goals.

Officers throughout the state have discussed and come up with 4 statewide issues: 1) illegal OHV use; 2) unethical and illegal behavior during cow elk hunts; 3) illegal baiting; and 4) illegal outfitting. For these, enforcement action plans should be created to determine if the issues are real or perceived and which enforcement techniques will work to deter the behavior.

Use of OHVs has skyrocketed since the late 1980s, creating both biological and social consequences in management of big game. In response to biological and social issues, in 2002 IDFG began implementing the MHR in some GMUs limiting use of motorized vehicles to roads capable of travel by a full-sized automobile. This rule was implemented not only to reduce conflicts between motorized and non-motorized hunters, but also to decrease big game vulnerability. Generally, a majority of elk hunters support restricting use of OHVs to improve hunting (Sanyal et al. 2012a). However

the rule is confusing to some, especially when it differs from land management agency travel plans. As one of the primary contacts for hunters in the field, conservation officers will continue to participate and develop programs that help educate and share benefits of the MHR where the rule is implemented.

Cow elk hunts are an important management tool for meeting elk population objectives. However, enforcement issues can arise during these hunts. “Flock shoots,” where groups of hunters repeatedly shoot at multiple animals in a herd, often leave more dead or wounded elk than there are hunters with valid tags. Another common violation is “party hunting,” where an individual transfers their elk tag to another individual who shot an elk, or vice versa. This practice is legal in some states, but not in Idaho. Party hunting is especially prevalent in late season elk hunts when herds are more concentrated on or migrating to winter ranges. These hunts can also encourage “road hunting,” which creates safety issues in and around vehicles. Road hunters are highly visible to the public and activities such as shooting from roads, preventing elk from moving from public land onto private land, and chasing elk with vehicles are not approved of by the public nor lawful. These behaviors are exhibited by only a small portion of hunters, but are often the activities that garner media attention. Officers often attempt to deter this behavior by using Artificially Simulated Animals in areas where problems are occurring. Trespass is another issue that occurs annually and has led to some landowners closing their property to hunting. When hunting is closed on large tracts of private land, crop and property damage from elk often increase, further reducing landowner support for elk.

Baiting to attract and concentrate big game animals to a certain area for hunting is a practice conservation officers are seeing more frequently; however, identifying perpetrators requires extensive personnel time. Baits are often hard to find, and particularly hard to detect when placed on private land. Increasing public awareness and reporting, and innovative techniques and

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sluething to identify and detect illegal baiting, are needed to improve compliance.

Monetary value of elk, especially of large bull elk has substantially increased in the last 20 years, likely leading to increased illegal outfitting. These illegal activities result in lost revenue for licensed outfitters and reduce opportunity for the hunting public. Enforcement efforts for apprehending illegal outfitters is very time intensive and sometimes requires years of investigation for successful prosecution. Detecting and investigating illegal outfitting continue to be a focus of enforcement efforts.

Solid, dynamic law enforcement techniques are critical for effective management of sustainable elk populations, now and in the future. In addition, coordination and integration of IDFG law enforcement efforts with other law enforcement agencies and land managers (i.e., USFS, BLM, city, and county officers) is vital in helping IDFG meet its goals and objectives. Finally, IDFG will continue to adopt and implement regulations to ensure that illegal harvest is minimized and opportunities for legal hunting and viewing are maintained.

Citizen Involvement and Outreach

With approximately 107,000 elk in Idaho, elk rank among the state's most prized wildlife species. Widespread fascination with this majestic animal among a variety of user groups provides an opportunity to share with the public what IDFG is doing for Idaho's wildlife and wildlife management in general. Numerous programs implemented by IDFG on a continual basis are part of the elk management process. Programs include habitat improvement measures, predator control activities, population surveys, and formation of working groups or committees designed to address issues affecting elk in Idaho (Winter Feeding Advisory Committees, Clearwater Basin Collaborative, Western Governors' Wildlife Council, etc.).

Elk enjoy a high level of interest among Idahoans. A critical component of IDFG's elk management efforts involves ensuring all stakeholders are

provided timely and accurate information, and that information is readily available through traditional and innovative communication methods. The IDFG provides a variety of opportunities for public involvement, including public meetings; mail, telephone, and web-based surveys; news media; task groups (e.g., Winter Feeding Advisory Committee); and workshops. The IDFG will continue to embrace newer communication methods such as on-line chats and Twitter. The IDFG envisions developing specific communication outputs: a user-friendly summary of the elk plan, an elk web page, elk information kiosks, elk management surveys, elk information campaigns, and "elk in the schools" programs.

Public elk plan

Upon completion of the new elk management plan, and to better facilitate public awareness and education regarding IDFG elk management efforts, staff will distill the final plan into an easy-to-read and understand document for widespread public consumption. This document will be more than an executive summary, instead providing details regarding elk ecology, management, habitat, hunting, viewing, research efforts, policy, and rationale behind elk management decisions.

The final document should be made available on the web, at regional offices, and distributed widely at shows and other public venues. The plan should be incorporated into course materials for WILD About Elk! (Project WILD) workshops, with consideration given to making the document available (in some form) to Hunter Education participants as well.

Elk web page

IDFG staff will also reshape the current elk planning page on the Department website to an elk management page to serve as a clearinghouse for public information regarding elk. Examples of information to be included on the site include new research, population estimates, and hunting and harvest statistics.



Elk information kiosks

As part of the education and outreach effort, staff will develop and establish several information kiosks by 2018. Kiosks will house information regarding elk ecology, including habitat, migration, predation, and management challenges. In addition, portable information displays will be created and used at county fairs, regional offices, and gatherings of hunting and conservation groups.

Elk management survey

By 2020, IDFG staff will develop and administer an elk management survey to determine if public awareness of elk management has increased from levels identified in the 2012 elk management survey.

Elk information campaign

As part of the new elk management plan, staff will begin crafting and distributing materials to increase understanding and support for Idaho's free-ranging elk herds. Materials will include an annual special issue of the Fish and Game News, devoted specifically to elk and elk management and research, short videos for website and YouTube use, and educational materials regarding the history of hunting and wildlife conservation. In addition, a video will be developed to explain key details of the elk management plan, and will be played when Citizens Against Poaching trailers are set up for display around the state.

Elk in the schools

To further promote understanding and appreciation of elk by Idaho's school children, IDFG staff will complete the following by the end of 2016:

1. Develop a tri-fold brochure on elk ecology for distribution to all hunter education graduates. This brochure will encourage students to visit the newly established elk management plan web page on the IDFG website.
2. Conduct "Project WILD About Elk" workshops for ≥ 50 teachers.
3. Devote 1 issue of the children's newspaper, *Wildlife Express*, to elk and elk management.

Statewide Management Direction

Hunting Objectives • Current Status • Harvest Information

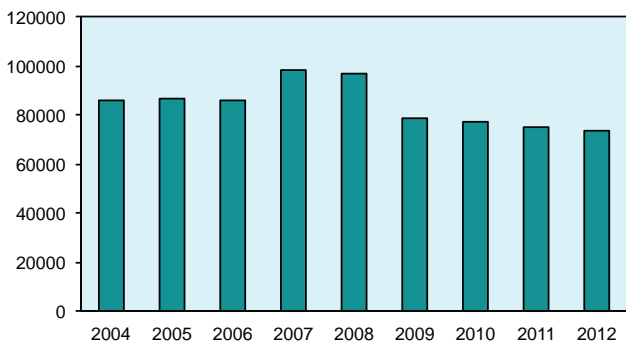
Proposed 10-year Management Direction:

- Continue to offer general-season elk hunting opportunities by managing elk populations, predator populations, and improving elk habitat;
- Enhance mature bull hunting opportunity;
- Aid elk hunters in selecting hunting areas that align with their desired hunting experience;
- Maintain the A-B elk tag structure, with adjustments to meet the needs/interests of today's hunter;
- Implement measures to reduce elk-caused crop and property damage;
- Improve public involvement in elk management decision-making;
- Reduce disease impacts on elk and livestock;
- Increase public knowledge and understanding of elk biology, management, and hunting.

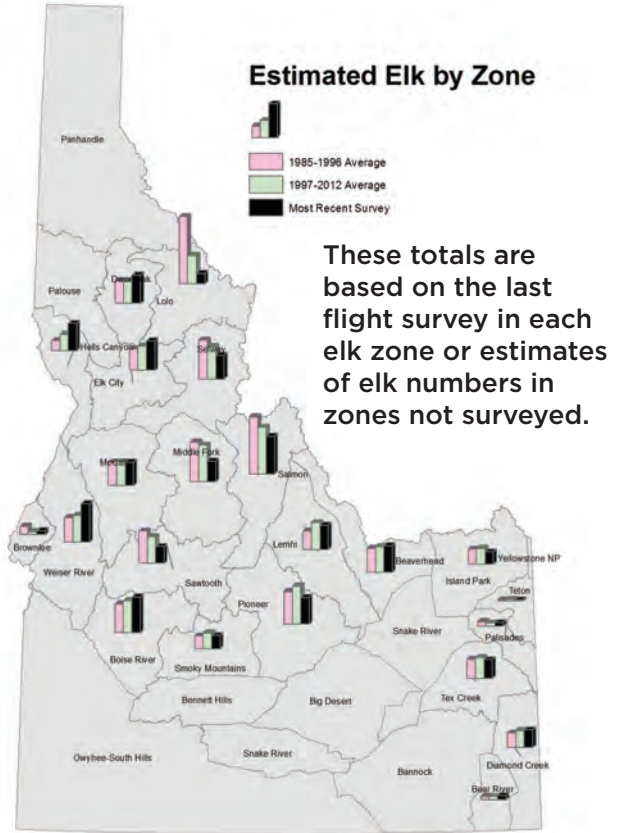
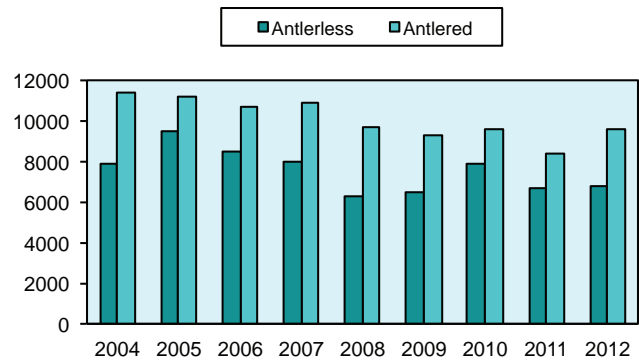
Statewide Elk Population Status

	Cows	Calves	Bulls	Adult Bulls
Totals	70,000	20,500	17,100	9,200
Bulls per 100 Cows			24	13

Statewide Elk Hunter Numbers



Statewide Elk Harvest



Square Miles = 83,542
% Public Land = 67%
Major Land Type = Forest, Rangeland, Agriculture

3-Year Averages
Hunters per square mile = 0.90
Harvest per square mile = 0.20
Success Rate = 22%
%6+ Points = 32%



Statewide elk management direction (Table 6) is tiered down from the IDFG strategic plan (The Compass) and provides higher resolution for management objectives, taking into account stakeholder desires, agency resources, and resource opportunities and challenges. Table 7

assigns performance objectives and strategies to specific management directions. These performance objectives and strategies will form the foundation for future annual work plans, performance evaluations, and budget requests.

Table 6. Strategic plan objectives and corresponding elk management direction.

COMPASS OBJECTIVE	ELK MANAGEMENT DIRECTION
Maintain or improve elk populations to meet the demand for elk hunting	<ul style="list-style-type: none"> • When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health • When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities • Develop an elk monitoring program that includes modeling or monitoring zone population abundance during years between aerial surveys • Develop biological studies to improve population, predator, and habitat management capabilities • Implement proactive measures to minimize or compensate for elk depredations
Provide a diversity of elk hunting opportunities	<ul style="list-style-type: none"> • Assess hunter desires for different types of elk hunting opportunities • Provide annual elk hunting opportunities • Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity
Improve citizen involvement in the decision-making process	<ul style="list-style-type: none"> • Increase open public input regarding elk management by increased use of electronic media • Increase the breadth of participation in elk management decisions by targeting opinions of a random sample of hunters for substantial decisions • Develop and maintain an open public sounding board list at the regional level • Provide timely feedback on decisions to the public
Increase the capacity of habitat to support elk	<ul style="list-style-type: none"> • Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives • Find new ways to efficiently and effectively monitor habitat • Integrate habitat assessment in the development of elk population goals • Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats
Eliminate impacts of wildlife diseases on elk populations, livestock, and humans	<ul style="list-style-type: none"> • Minimize the influence of disease as a limiting factor in elk populations
Increase public knowledge and understanding of elk populations, hunting, and management in Idaho	<ul style="list-style-type: none"> • Increase public understanding of elk ecology and management

Table 7. Compass objective, statewide elk management direction, performance objectives and strategies.

COMPASS OBJECTIVE: Maintain or improve elk populations to meet the demand for elk hunting		
Management Direction	Performance Objective	Strategy
When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health	<p>Maintain or improve calf:cow ratios ≥ 30 calves:100 cows</p> <p>Maintain or improve natural adult cow annual mortality at $<10\%$</p> <p>Maintain or improve over-winter calf survival at $>60\%$</p>	<p>Manage populations below the maximum carrying capacity of the habitat to ensure optimal herd condition and no long-term degradation of habitat</p> <p>Develop antlerless harvest as a management tool to achieve population goals and provide hunting opportunity</p> <p>Utilize an antlerless harvest decision process that considers habitat condition, population reproductive performance, survival, physiological condition, and population objectives</p> <p>Establish long- and short-term numerical population objectives that represent maintenance of, or increase in, current elk populations</p>
When zones are below objectives, aggressively manage elk and predator populations, and work to improve habitat capabilities (See "Compass Objective: Increase the capacity of habitat to support elk" in this table for details)	<p>Increase calf:cow ratios to ≥ 30 calves:100 cows</p> <p>Reduce natural adult cow mortality to $<10\%$</p> <p>Increase over-winter survival of calves to $>60\%$</p>	<p>Establish long- and short-term numerical population objectives that represent maintenance of, or increase in, current elk populations</p> <p>Reduce harvest in 1 or both segments (cow or bull) of the population</p> <p>Use the procedure to cap zone harvest as the first step in reducing harvest, unless the specific situation warrants more drastic action; the cap can be phased over a 3-year period</p> <p>Use the allocation formula of the previous 5-year history of participation by residents, nonresidents, and outfitted nonresidents</p>
		<p>The allocation formula for nonresident hunters can be adjusted if the percentage is $>25\%$; adjustments can be made down to 25% nonresidents</p> <p>In the case of a greater need than capping the zone, a controlled hunt framework can be developed</p> <p>Reduce hunter opportunity equally among weapon types, if specific weapon-type hunts occur</p>
	<p>Increase black bear harvest by 2-fold and increase mountain lion harvest by 1.5-fold for 3-5 years following significant decline in calf:cow ratios and decline in elk populations</p> <p>Harvest $>75\%$ of wolves and then maintain lower wolf numbers annually for 3-5 years in specific focal areas (e.g., zones with low over-winter calf survival)</p>	<p>Implement predator management activities where elk populations are not meeting objectives and predation is identified as a primary limiting factor</p> <p>Direct use of Animal Damage Control funds to manage predators in priority areas</p> <p>Encourage hunter-harvest of predators through news releases, articles, and the website</p>



Management Direction	Performance Objective	Strategy
<p>Develop an elk monitoring program that includes modeling or monitoring zone population parameters during years between aerial sightability surveys</p>	<p>By 2020, develop methods and tools to help staff assess zone population status, over-winter calf survival, adult cow survival, winter calf:cow ratios, body condition, and adult cow age structure</p>	<p>Estimate elk abundance at the zone level every 3-5 years using the aerial sightability model</p> <p>Collect annual biological data on elk populations</p> <p>Use population models to estimate population status and trend in years when sightability surveys are not conducted</p>
<p>Develop biological studies to improve population, predator, and habitat management capabilities</p>	<p>By 2020, develop the ability to reliably predict impact of predators on elk at different elk and predator abundance; and in different landscape scenarios</p> <p>By 2020, better model the link between landscape characteristics to elk population parameters; understanding of how major habitat changes affect elk populations</p>	<p>Determine the effect of predator harvest and season timing on elk survival and production</p> <p>Evaluate effects of wolf abundance on different levels of bull survival and harvest</p> <p>Determine how landscape changes in habitat (e.g., invasive plants, fire frequency, etc.) influence elk population dynamics</p> <p>Continue research on impacts of wolves and other predator populations</p>
<p>Implement proactive measures to minimize or compensate for elk depredations</p>	<p>Increase landowner support of elk in zones where agricultural impacts (crop and property damage) was identified as limiting population growth</p> <p>Evaluate regulatory changes that allow landowners to legally possess animals taken by kill permit</p>	<p>Use landowner tags as a means to increase landowner support of elk where elk are causing damage</p> <p>In zones with elk populations limited because of crop and property damage, evaluate other ways of compensating landowners for elk damage</p> <p>Use the Negotiated Rulemaking Process to revise landowner permit programs that might result in depredation release agreements</p> <p>Work with county commissions on new infrastructure developments in elk habitat to provide information on possible future effects on elk populations and mitigate for new developments</p> <p>Collaborate with federal land managers to assure range conditions provide adequate forage for elk in areas prone to depredations</p> <p>Consider providing additional water developments for elk on public lands to lure elk from chronic depredation areas</p> <p>Use hunting as the primary tool to manage agricultural impacts</p> <p>Whenever possible, create opportunities to allow youth hunters, hunters with disabilities, or veterans to harvest depredating elk</p> <p>Investigate use of easements associated with new development as mitigation for loss of habitat</p>

Idaho Elk Management Plan

Management Direction	Performance Objective	Strategy
	By 2016, conduct a comprehensive review to identify innovative programs and analyze funding requirements and sources for implementing large-scale, permanent, depredation solutions	Explore costs and applicability of innovative long-term techniques such as crop exchanges, land purchases, land exchanges, use of lure crops, improved adjacent range conditions, or conservation easements Coordinate with neighboring states to learn about costs and effectiveness of techniques not typically used in Idaho, such as large-scale fencing of agricultural lands
	By 2015, hire an 8-month technician in each IDFG Region to assist the Landowner-Sportsmen Coordinator with disbursement of depredation supplies, elk hazing, elk removal, and hunter management (where agricultural impacts are a limiting factor)	Regions work with the Wildlife Bureau to identify funding sources for new technicians
	Beginning in 2017, annually identify ≥ 1 landowner or area per zone (limited by agricultural impacts) that may be appropriate for innovative long-term solutions	Meet with concerned landowners regularly to develop and implement action plans Emphasize use of permanent solutions (e.g., stack yards and depredation release agreements)
	Provide educational materials explaining the role of sportsmen in depredation issues and landowner relations by 2015	Be proactive with landowners in areas of high depredation issues or potential depredation issues Inform sportsmen of their role in reducing depredation problems and the importance of maintaining positive relationships with landowners
COMPASS OBJECTIVE: Provide a diversity of elk hunting opportunities		
Management Direction	Performance Objective	Strategy
Assess hunter desires for different types of elk hunting opportunities	Conduct a statewide elk hunter opinion survey by 2020 to gauge hunter opinions and measure satisfaction with elk management and hunting opportunities	Repeat questions asked during 2012 statewide elk hunter survey to determine whether hunter perceptions, desires, or priorities have shifted
	By 2014, further develop options to allow hunters to hunt annually in >1 zone	Establish specific criteria for zone inclusion in an expanded opportunity program Develop the program to ensure that it will not deteriorate elk hunting or the quality of elk hunting experience in any zone Develop strategies and criteria to manage changes in hunter distribution and harvest as the expanded opportunity program evolves Gather hunter feedback through various methods to assess which options or restrictions hunters find acceptable



Management Direction	Performance Objective	Strategy
Provide annual elk hunting opportunities	Maintain $\geq 75,000$ elk hunters and 400,000 elk hunter-days annually Maintain populations at objectives	Continue to offer general season elk hunting opportunities to provide annual hunting Maintain a diversity of weapon-type hunting opportunities Adjust hunting opportunities equally among established weapon types in areas where biological conditions warrant opportunity changes Increase elk hunter satisfaction through expanding hunting opportunities
	Maintain ≥ 14 bulls:100 cows postseason in general season hunt areas	Implement habitat improvements, hunting season changes, motorized hunting rules, or predator management actions to achieve bull management objectives
Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity	By 2015, annually maintain 10 "quality" and 10 "high quality" hunting opportunities throughout the state	Provide ≥ 1 "quality" or "high quality" bull hunting opportunity in each region by 2015
	By 2015, improve efforts to inform hunters about the diversity of hunting opportunities available throughout Idaho	Include hunt-specific descriptive information about what hunters may expect to find for quality and quantity of game, hunter density, and drawing odds in big game regulations by 2014
	Provide special hunting opportunities in each IDFG administrative region annually	Provide high-harvest opportunities (primarily cow and youth hunts) annually where populations are meeting overall population objectives or to minimize the loss of agricultural crops Maintain elk hunting and viewing opportunities on any IDFG-managed lands where elk occur
	Annually provide 2 or more different weapon hunts in general seasons within each IDFG administrative region	Where harvest characteristics allow, increase or decrease hunting opportunities proportionally among established weapon types in areas where biological conditions warrant opportunity changes
COMPASS OBJECTIVE: Improve citizen involvement in the decision-making process		
Management Direction	Performance Objective	Strategy
Increase open public input regarding elk management by increased use of electronic media	Increase open public input regarding elk management by 50% over the next 5 years, inclusive of electronic media	Develop a public input process to be used in addition to our traditional methods; acquire public input as a process, rather than an event Target an input process that is transparent, with clear purpose, goals, structure, and commitment Provide for open input through electronic media and at an open house or other event where input can be obtained person-to-person Invite the public to events through newspapers, direct mail, radio, e-mail, pod-casts, Twitter, and websites Investigate new methods for providing information and obtaining public input

Idaho Elk Management Plan

Management Direction	Performance Objective	Strategy
Increase the breadth of participation in elk management decisions by targeting opinions of a random sample of hunters for substantial decisions	Increase the breadth of participation by annually targeting the opinions of a 5% random sample of hunters for substantial decisions	Provide for more inclusive planning by designing the input process along 2 lines - random surveys and open input Design random surveys as a prominent tool in decision-making
Develop and maintain an open public sounding board list at the regional level	Develop a public sounding board list of ≥50 individuals at the regional level	Communicate regularly with sounding board list members (as a group and individually) through electronic media both to provide information, and to receive early input processes
Provide timely feedback on decisions to the public	Deliver feedback and results to the public within 10 business days after a decision is made	Summarize input and provide immediate, direct feedback to the public Communicate results concisely and distribute through a variety of communication tools Cooperate with NGOs to help deliver information back to interested public
COMPASS OBJECTIVE: Increase the capacity of habitat to support elk		
Management Direction	Performance Objective	Strategy
Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives	Develop a statewide GIS elk habitat database by September 2015	Identify seasonal elk habitats and elk habitat where development, human growth, and other issues may lead to degradation or loss of elk habitat within the next 20 years Incorporate into GIS and enhance the map of seasonal elk habitats to include elk habitat statewide
	Develop resources and information to restore and enhance elk habitat on public and private lands in Idaho Develop a prioritized list of properties and projects for protection, restoration, or enhancement of elk habitat in each region and update annually; develop and begin to prioritize list in 2014 Develop a database to annually track acres protected, restored, or enhanced statewide by 2016	Once developed, use the statewide map of seasonal elk habitat to assist prioritization of properties and projects for habitat protection, restoration, and enhancement Work with conservation organizations, elected officials, federal land managers, and private landowners to provide long-term conservation measures to enhance and protect important elk habitat As opportunities arise, acquire interest in property, such as conservation easements and fee title acquisitions, where IDFG management can provide exceptional benefits to elk and associated recreation
	Annually coordinate with public land agencies and county governments to remain involved in habitat restoration following weed control and wildfire rehabilitation efforts	Work with land management agencies to identify key elk habitats and provide expertise and support efforts to secure funding for plantings, seedings, and noxious weed control efforts following wildfires or prescribed burn projects



Management Direction	Performance Objective	Strategy
	<p>By September 2014, use the maps of seasonal elk habitats to identify ≥ 3 high priority elk habitat or migration corridor areas in each zone limited by habitat</p> <p>By March 2015, use the maps of high priority elk areas needing habitat enhancements to strategize with public and private land managers regarding elk habitat projects</p> <p>Annually recommend or promote projects to public and private landowners that would treat or improve >10,000 acres of high priority elk habitat or migration corridor areas in each zone limited by habitat</p>	<p>Develop habitat projects that improve elk habitat at a landscape level</p> <p>Work with public land managers to minimize impacts of development on elk habitat</p> <p>Promote well-designed forest management projects that closely resemble natural disturbance for elk habitat</p>
<p>Find new ways to efficiently and effectively monitor habitat</p>	<p>Convene a team of biologists to evaluate elk habitat monitoring needs, monitoring design, and funding needs. Submit recommendations to the Wildlife Bureau Chief by the end of 2014</p> <p>By 2017, evaluate satellite imagery as a cost-effective and reliable habitat monitoring tool</p>	<p>Develop and maintain tools to help with elk management decisions and elk habitat monitoring efforts</p>
<p>Integrate habitat assessment in the development of elk population goals</p>	<p>Convene a team of biologists by 2015 to evaluate needs for incorporating current or potential elk habitat into the development of elk population goals</p> <p>Once needs are assessed, formulate a plan for incorporating current or potential elk habitat into the development of elk population goals by 2017</p>	<p>Develop habitat information and a process for incorporating current or potential elk habitat into the development of elk population goals</p>

Idaho Elk Management Plan

Management Direction	Performance Objective	Strategy
<p>Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats</p>	<p>Develop a written and approved technical assistance strategy for land-use actions which affect elk habitat by 2015</p>	<p>Use the Idaho Elk Management Plan as the basis for technical review and comment on land-use proposals that affect elk</p> <p>Encourage federal land management agencies to maintain overall motorized route densities that are within the 0.7-1.7 mi/mi² “moderate” range as well as large areas that are within the “low” range (<0.7 mi/mi²) as described in Wisdom et al. (2000)</p>
	<p>Annually coordinate with and provide technical assistance to federal land management agencies and county planning and zoning commissions to stay up-to-date on projects or developments that may affect elk habitat and to ensure elk management issues are considered in land-use planning decisions</p> <p>Provide technical assistance that identifies methods to avoid and minimize adverse impacts to elk habitat from land- and water-use projects; seek mitigation for adverse impacts to elk</p> <p>Fulfill all elk habitat data requests regarding elk habitat information maintained by IDFG</p>	<p>Build partnerships and share data with land management agencies and private landowners that are responsible for management of elk habitat</p> <p>Distribute layers from the elk habitat and elk use databases, along with habitat improvement recommendations, to land management agencies, cities, and counties for use in land-use policies and planning</p> <p>Continue IDFG involvement in long-term, landscape-scale planning efforts, including federal agency land-use plans, and actively pursue opportunities for IDFG involvement on interdisciplinary teams to benefit elk</p> <p>Continue IDFG involvement in short-term, site-specific, project review and implementation</p> <p>Promote federal, state, and county land-use projects and practices that improve elk habitat</p> <p>Participate in planning and zoning commission meetings when development proposals that may impact elk habitat are expected</p> <p>Continue to provide technical assistance to USFS, BLM, Idaho Department of Lands (IDL), private landowners, and county commissions to promote and enhance elk habitat</p> <p>Provide expertise on prioritizing critical elk habitats for weed control and restoration</p>
	<p>By 2015, become a member of Interdisciplinary Teams, Burn Plan Teams, and other planning teams</p> <p>By 2015, for each zone where habitat is the most limiting factor, submit additional specific recommendations to Federal land managers regarding range management in areas where elk range needs improvement</p>	<p>Ensure that wildfire rehabilitation efforts include vegetation that provides quality elk habitat</p> <p>Become a Cooperating Agency or complete other agreements to formalize our role with each U.S. National Forest and BLM District to facilitate participation on forest plan revisions, travel plans, and resource management plans and to promote elk habitat projects at a landscape level</p> <p>Collaborate with Federal land managers to assure range conditions provide adequate forage for elk</p>
	<p>Complete development of a highway corridor-linkage database by 2016</p> <p>Identify priority locations for reducing highway mortalities in each IDFG region by 2016</p>	<p>Continue the partnership with the Idaho Transportation Department (ITD) and Federal Highway Administration to reduce elk highway mortality</p> <p>Identify and implement strategies to protect important elk linkage corridors</p> <p>Encourage county use of the highway corridor-linkage database in making land-use decisions</p>



COMPASS OBJECTIVE: Eliminate the impacts of wildlife diseases on elk populations, livestock, and humans		
Management Direction	Performance Objective	Strategy
Minimize the influence of disease as a limiting factor in elk populations	Annually conduct surveillance for exposure to and infection with diseases of concern for elk	Collect samples from sufficient numbers of elk to detect the presence of diseases including brucellosis and CWD using hunters, agency personnel, or the general public Investigate unusual occurrences of morbidity or mortality in elk Manage elk populations to reduce disease risk
	Annually sample elk statewide to detect CWD at 1% prevalence	Collect samples from hunter-killed animals at check stations, taxidermists, or butcher shops for CWD testing Implement the Emergency CWD Response Plan upon detection
	Annually sample 300 elk in eastern Idaho to detect changes in brucellosis seroprevalence	Collect samples from hunter-killed or agency-handled elk to detect changes in brucellosis seroprevalence Implement the Brucellosis Management Plan with emphasis on maintaining separation between elk and cattle during high risk periods
COMPASS OBJECTIVE: Increase public knowledge and understanding of elk populations, hunting, and management in Idaho		
Management Direction	Performance Objective	Strategy
Increase public understanding of the value of elk and their ecology and management	Using the final elk plan as a guide, write a user-friendly elk management document for the general public; complete by June 2014	Final document will be available at regional offices, at events, and on our website
	Maintain Elk Management webpage after plan is completed to provide the public a “one-stop shop” to review data, and submit for posting suitable elk-related stories and elk news (including habitat projects to benefit elk); update twice a year Use chat rooms and YouTube videos to communicate with public about the past elk hunting season and proposed hunting seasons statewide starting 2015	Develop and post information describing available elk hunting experiences and opportunities Encourage use of IDFG website to acquire information about elk management Possibly partner with the Rocky Mountain Elk Foundation for habitat news
	Identify locations and establish 2-4 kiosks in the field discussing interaction of habitat, predation, and other factors and elk ecology by 2018	Improve awareness of elk ecology and management for hunters and non-hunters
	Conduct a survey to evaluate public understanding of elk management by 2020	Use results to target future educational efforts regarding elk management

Idaho Elk Management Plan

Management Direction	Performance Objective	Strategy
	<p>By 2017, develop educational materials to illustrate the role and history of hunting in society and conservation</p> <p>Issue a special Elk Edition of Fish and Game News each year</p> <p>By December 2014, develop short video vignettes for webpage that explain what elk management is, what we measure, and how to get involved</p>	<p>Develop a long-term strategic elk information campaign; begin crafting and distributing materials related to this effort via all practical outlets available, including electronic media, nature centers, museum exhibits, fair displays, office lobbies</p> <p>Work with NGOs interested in common education messages and goals to promote the information</p>
	<p>Develop information about elk ecology, viewing locations, and elk management by 2016</p> <p>Deliver a <i>Wild about Elk</i> program to 50 teachers by 2016</p> <p>Devote 1 issue of the children's newspaper, <i>Wildlife Express</i>, to elk and elk management</p>	<p>Improve understanding of elk among Idaho's school children</p> <p>Continue to deliver "<i>Wild about Elk</i>" program annually</p> <p>Distribute information in schools, hunter education classes, fair booths, hunter conventions, and workshops</p>



Elk Management Zones

Statewide direction and guidance for elk is shown in Tables 6 and 7. However, at the zone level, elk management strategies and priorities may be different because of variation in population dynamics, agricultural considerations, habitat condition, hunter characteristics, and social attitudes. The elk plan revision will provide future zone population management direction based on hunter preferences and current status of elk populations. The IDFG has drafted elk management zone objectives for the next 10 years based on hunter survey findings, recent aerial survey results, current elk population status, and biological potential for herd growth when considering primary limiting factors. As part of IDFG's evaluation, staff considered what factors such as weather, predation, and habitat might limit the ability to maintain or increase elk numbers in each zone. The IDFG also evaluates harvest and hunter trends both at the statewide level and at the zone level. As part of

the evaluation process, IDFG developed maps depicting what staff considered to be the most common limiting factors for elk populations. Common limiting factors are Agricultural Impacts (crop and property damage; Fig. 10), Predation (Fig. 11), and Habitat (Fig. 12).

The preceding tables provide specific priorities, performance objectives, and strategies to be implemented at the zone level. Proposals to manage herd populations are based on elk movement and other biological data, similar habitats, and similar management priorities. With 15 years of experience and a deeper understanding of elk zone management, IDFG is proposing to split 1 elk zone into 2 zones, dissolve 1 elk zone and place the GMUs into adjacent zones, and combine 2 zones. The net result will be a total of 28 elk management zones (Fig. 13), as compared to the current 29 zones.



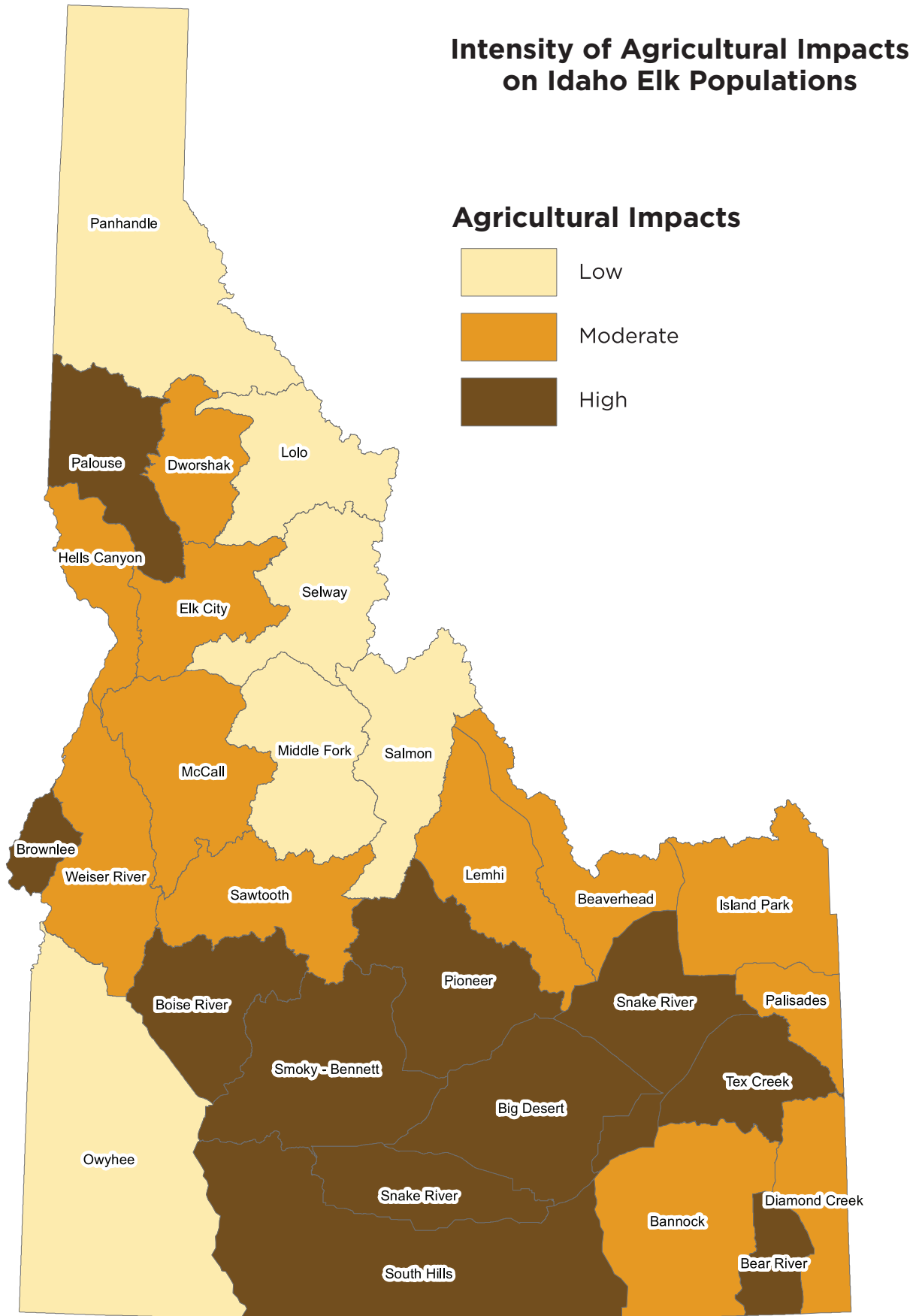


Figure 10. Elk population growth is limited because of damage to crops and property (Agricultural Impacts) in some zones.



Intensity of Predation Limitations on Idaho Elk Populations

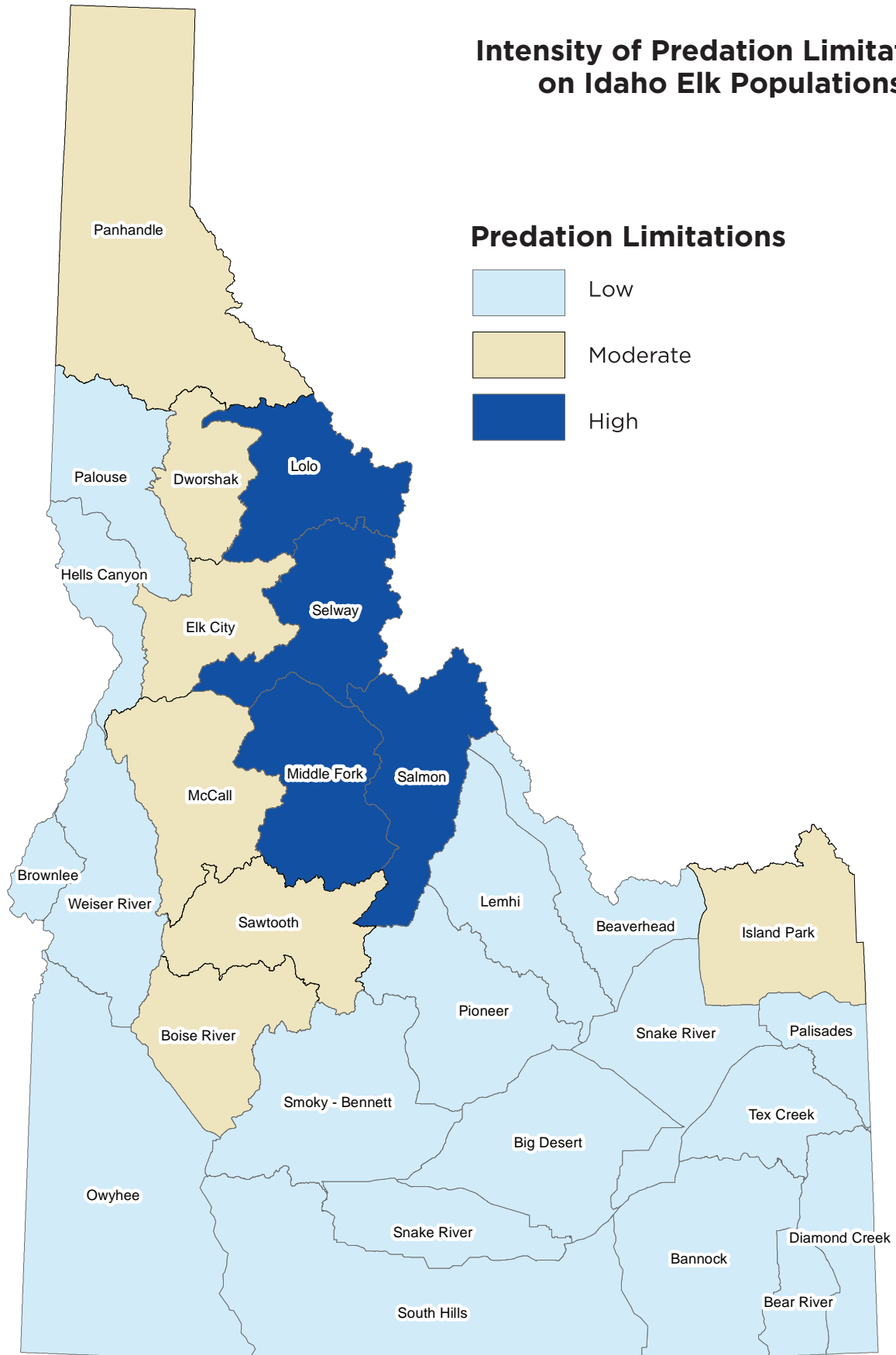


Figure 11. Severity of predation and potential ability to limit elk populations varies across the state.

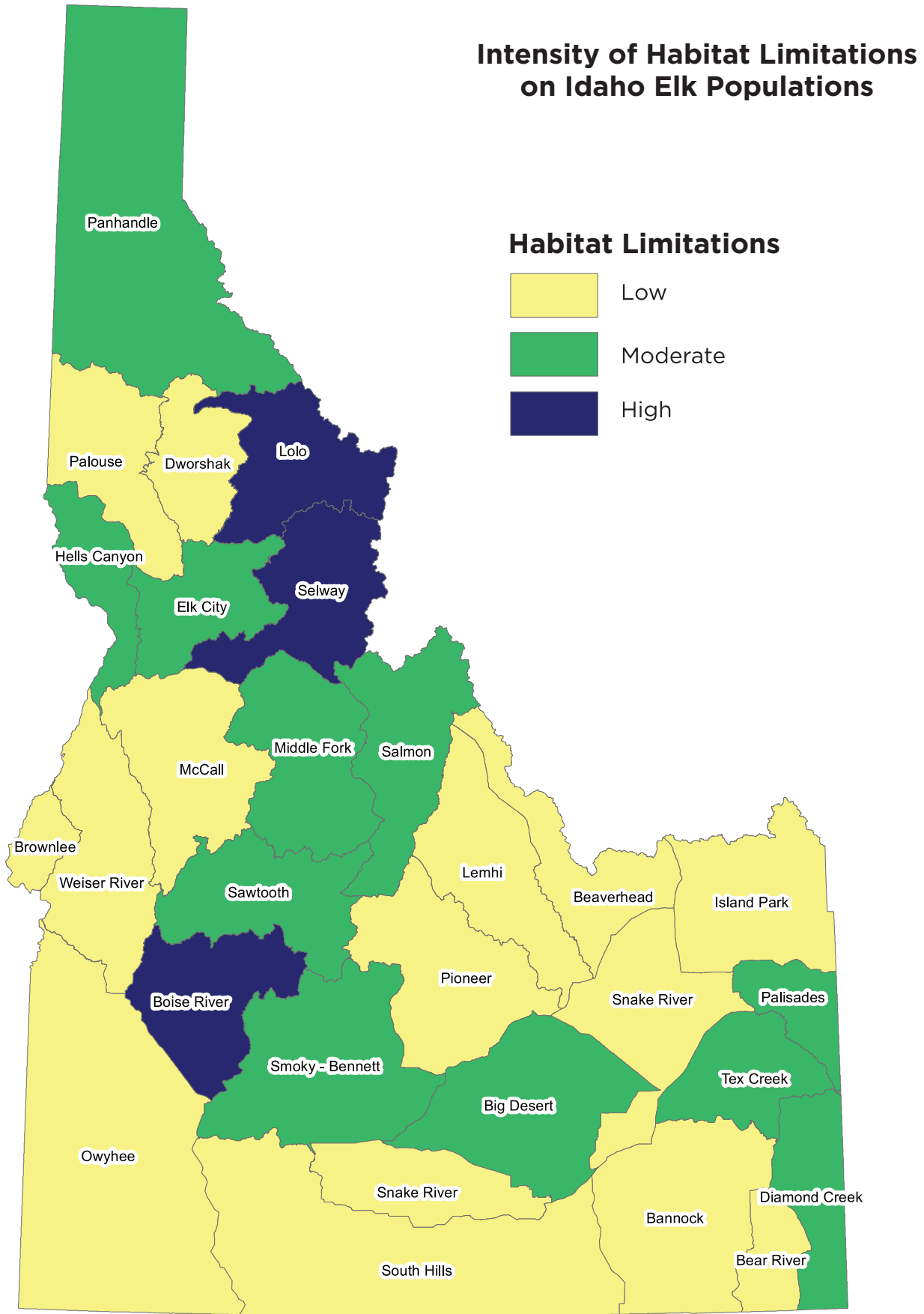


Figure 12. Elk are limited by habitat to varying degrees across zones.

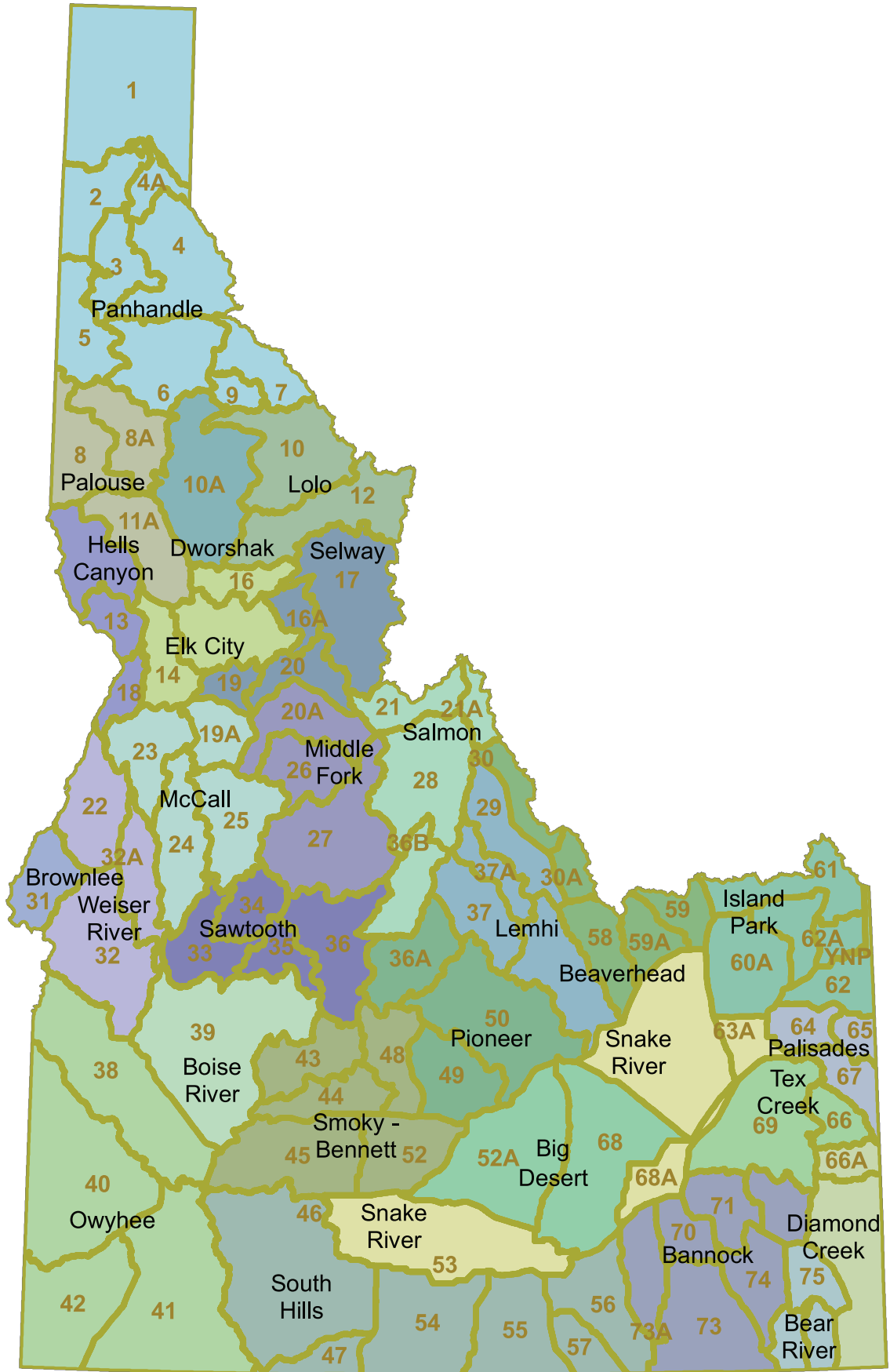
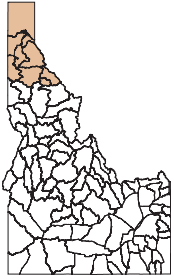


Figure 13. Elk Management Zones for the 2014 Elk Management Plan.



Panhandle Zone

Game Management Units 1, 2, 3, 4, 4A, 5, 6, 7, 9

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Provide general either-sex hunting opportunity where sustainable.

Ten-year population goals for Panhandle Zone units were developed through review of past and current population trends as well as the actual range of change possible due to biological constraints.

Unit 1: Elk harvest has increased 60% over the past 10 years. Calf ratios have remained around 30 calves per 100 calves in recent years, indicating a stable, if not increasing elk population. The 10-year goal is to retain a stable to increasing elk population.

Unit 2, 5: Elk harvest and agricultural depredations have been increasing in Units 2 and 5 over the past 10 years indicating increasing elk populations. Calf ratios in Unit 5 have been above 30 except for the year after the severe winter of 2008-09. The 10-year goal is to stabilize or decrease elk populations depending on the intensity of landowner conflicts.

Unit 3, 4, 4A: Unit 4 is part of the Coeur d'Alene Bellwether Area, which is surveyed every few years to monitor changes in population size. The elk population size in Unit 4 more than doubled between 1998 and 2009. We found that calf ratios declined in the past few years in Unit 4; however the total number of elk seen during the surveys in 2012 and 2013 was slightly higher than the previous 10 year average. The calf ratios in Unit 3 have averaged 33 calves per 100 cows from 2010-2013 and did not drop below 20 even after severe winters. Our data indicates that Units 3, 4, and 4A elk populations have remained relatively stable in recent years and the goal is to keep them at or above current population levels.

Unit 6, 7, 9: Most of Unit 7 and the eastern part of Unit 6 are part of the St. Joe Bellwether Area, which is surveyed every few years. The elk population in this area almost doubled between 1998 and 2006, but has since declined dramatically. The 2012 survey showed about one third as many elk as estimated in 2006. IDFG would like to see the elk population in Units 6, 7, and 9 eventually increase by more than the 40% listed in our 10-year goals. However, given the very low calf ratios currently in this population (10-15 calves/100 cows), it is unrealistic to increase elk populations by more than 40% in a 10 year period.

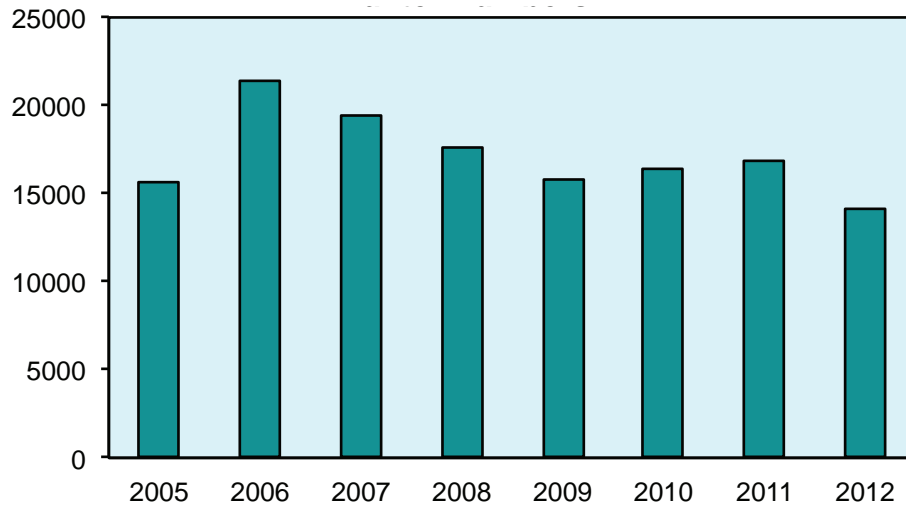




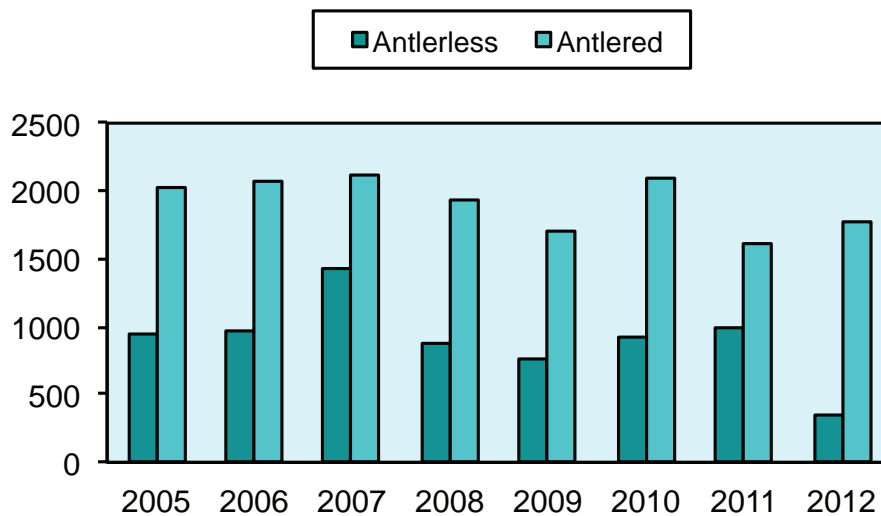
Panhandle Zone 10-Year Population Objectives

Units	Population Trend		2023 Growth Objective
	Current Status	Objectives	
Unit 1	Little change to Increasing	Stable to increase	Up to 25% more elk
Unit 2, 5	Increasing	Stabilize to decrease depending on human population growth/agricultural and depredation issues	Within 10% of existing levels
Unit 3,4,4A	Little Change	Stablize	Up to 20% more elk
Unit 6, 7, 9	Decreasing	Increase	Up to 40% more elk

Panhandle Zone Elk Hunter Numbers



Panhandle Zone Elk Harvest



Square Miles =	7,779	3-Year Averages	
% Public Land =	58%	Hunters per square mile =	2.03
Major Land Type =	Forest	Harvest per square mile =	0.33
		Success Rate =	16%
		%6+ Points =	25%

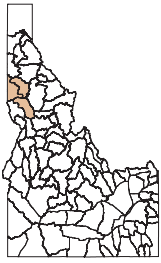
Panhandle Zone - moderately limited by predation and habitat

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Increase lion and bear harvest by 20% over the 2011-13 3-year average in GMUs where lion and bear predation is a prominent limiting factor Maintain the rate of human-caused mortality at 32% or greater for wolves where wolf predation is a prominent limiting factor	Where predation is a prominent limiting factor, manage lions, wolves, and black bears near the low densities indicated within those respective species management plans, and manipulate habitat to improve elk escape response through improved body condition and removal of barriers to escape
	Develop a Panhandle Zone Predation Management Plan by November 2013	In crucial situations, reduce densities of lions, wolves, and bears below levels indicated within those respective species management plans, and implement measures for extra-season reduction of predator numbers through predator control actions as determined through a Panhandle Zone Predation Management Plan
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Develop a map of area priorities for elk habitat improvement projects on public ownerships by May 2014. Conduct an interagency meeting by September 2014 to explain use of the map to focus habitat management efforts Develop a map of area priorities for elk habitat improvement projects on private corporate ownerships by May 2015. Conduct ≥3 meetings with private corporate landowners by September 2015 to explain the project map to promote habitat management efforts alongside	Continue IDFG involvement in all aspects of long-term, landscape-level projects that affect elk habitat on public lands within the Panhandle Zone With an emphasis on summer and transitional range, promote timber harvest, controlled burns, and wildland fire use on public and private corporate lands and focus management efforts in areas that would most benefit elk habitat
Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives	Within the next 10 years, restore 10,000 acres of elk summer or transitional range to early successional habitat including: - 5,000 acres of vegetation treatments through controlled burning and forest stand treatments in the greater Snow Peak area within and cooperatively with St. Joe Ranger District - 1,000 acres of vegetation treatments in the Beaver Creek drainage within and cooperatively with the Coeur d'Alene Ranger District	Encourage and support USFS, BLM and IDL on all vegetation management projects that benefit elk habitat Encourage, engage, and support larger landowners and private timber companies on vegetation management projects that benefit elk habitat as opportunities allow Conduct prescribed fire, thinning, variable retention, clearcuts, and noxious weed control projects Allow wildland fires to burn where and when possible In post-treatment burned areas, reseed with a desirable grass/forb mix and possible fertilization



Panhandle Zone

Management Direction	Performance Objective	Strategy
<p>Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity</p>	<p>Increase elk populations up to 40% in GMUs 6, 7, and 9</p> <p>Stabilize or increase elk populations up to 25% in GMU 1</p> <p>Stabilize elk populations with up to 20% more elk in GMUs 3, 4, and 4A</p> <p>Stabilize or decrease elk populations to within 10% of existing levels in GMUs 2 and 5</p>	<p>Provide general either-sex hunting opportunity where sustainable</p>
<p>Develop an elk monitoring program that includes modeling or monitoring zone population abundance during the years between aerial surveys</p>	<p>Estimate population growth in all GMUs with cow harvest by 2017</p>	<p>Implement mandatory check for harvested cow elk to acquire data necessary to estimate population growth rate. A voluntary check will be implemented beginning in 2013</p> <p>Radiocollar 10-20 cow elk annually to estimate survival, which will be used to model population growth</p> <p>Examine methods available to estimate population growth in elk populations with bull harvest only</p>



Palouse Zone

Game Management Units 8, 8A, 11A

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain bull elk population within proposed objectives;
- Decrease cow elk population within proposed objectives.

The Palouse Zone elk herd is highly productive and has shown substantial growth over the past decade. Habitat conditions are favorable to elk due to timber harvest and high quality agricultural crops.

Elk population growth in the Palouse Zone is limited by social tolerance and agricultural impacts. Addressing these impacts will require the continuation of long elk hunting seasons to maintain dispersed pressure on elk in agricultural areas. Developing mutually acceptable approaches between Fish and Game staff and area landowners to deal with elk depredation problems will also be emphasized.

Proposed Zone Population Objectives

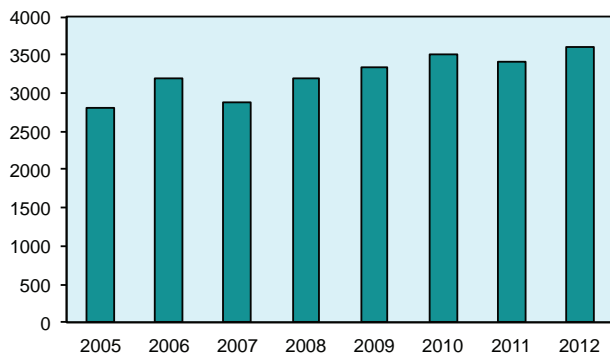
Objective		
Cows	Bulls	Adult Bulls
1125-1725	115-415	

Palouse Zone Population Surveys

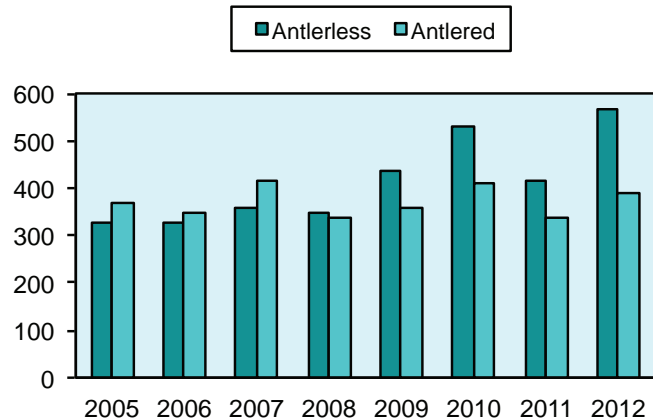
Survey 1 - 2004				Survey 2 - 2009			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
1814	148	706	2668	2153	411	676	3240
	8*	39*			19*	31*	
*per 100 cows							

Elk population objectives represent an increase in cow numbers over the previous elk plan but are lower than current levels. The priority management goal for the zone is to maintain high harvest rates and to address social tolerance issues.

Palouse Zone Elk Hunter Numbers



Palouse Zone Elk Harvest



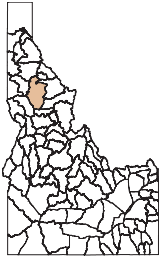
Square Miles = 2,323
% Public Land = 14%
Major Land Type = Agriculture

3-Year Averages
Hunters per square mile = 1.51
Harvest per square mile = 0.38
Success Rate = 25%
%6+ Points = 21%



Palouse Zone - is highly limited by agricultural impacts

Management Direction	Performance Objective	Strategy
<p>Implement proactive measures to reduce and minimize elk depredations</p>	<p>Each year, secure 1-2 licensed crop adjusters to aid in measuring big game damage</p> <p>Annually review previous year's depredation complaints to identify potential permanent stack yard and fencing opportunities</p>	<p>Secure professionally-licensed crop adjusters to accurately measure big game damage</p>
<p>Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives</p>	<p>Develop a map of area priorities for elk habitat improvement projects on public ownerships by September 2014</p> <p>Conduct an interagency meeting by March 2015 to explain use of the map to focus habitat management efforts. Involve private landowners if needed</p>	<p>Convene a regional team who will use the statewide map of seasonal elk habitat to develop and prioritize properties and projects for protection, restoration, and enhancement of elk habitat</p> <p>Work with conservation organizations, elected officials, and private landowners to provide long-term conservation measures of important elk habitat</p>



Dworshak Zone

Game Management Unit 10A

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

The Dworshak Zone is characterized by mixed land ownership, high road densities and correspondingly high bull elk vulnerability. High open road densities, and corresponding heavy ORV use, provide unique and popular hunting opportunities in the Clearwater Region. In recognition of these factors, this zone will continue to be managed primarily for a high level of hunter opportunity and moderate bull elk quality as has been generally accepted in the past by hunters in the zone.

The Dworshak elk population is moderately limited by predation and agricultural impacts. High road densities also contribute to high predator harvest in this zone. Agricultural impacts are relatively minor on a zone-wide scale and are being addressed through existing depredation strategies.

Proposed Zone Population Objectives

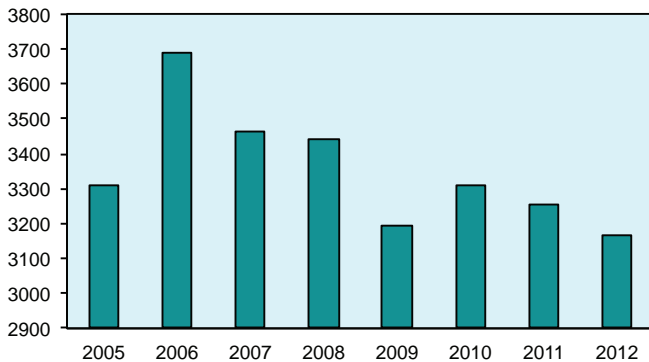
Objective		
Cows	Bulls	Adult Bulls
2900-4300	600-900	350-500

Dworshak Zone Population Surveys

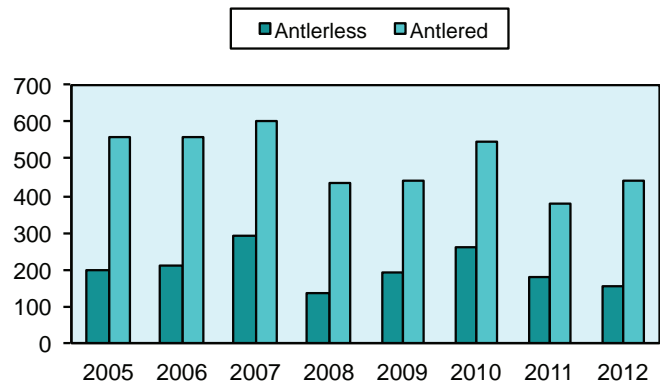
Survey 1 - 2007				Survey 2 - 2011			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
3236	477	848	4561	4280	315	850	5445
	15*	26*			7*	20*	
*per 100 cows							

Elk population objectives for this zone include reduced goals for bull elk in recognition of high bull elk vulnerability and general acceptance of relatively high hunter densities.

Dworshak Zone Elk Hunter Numbers



Dworshak Zone Elk Harvest



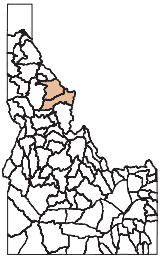
Square Miles = 1,555
% Public Land = 49%
Major Land Type = Forest

3-Year Averages
Hunters per square mile = 2.09
Harvest per square mile = 0.42
Success Rate = 20%
%6+ Points = 17%



Dworshak Zone – is moderately limited by predation and agricultural impacts

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk populations and predator populations, and improve habitat capabilities	Increase or maintain predator harvest levels	Evaluate current wolf harvest levels relative to elk population performance and adjust efforts and approach accordingly Maintain liberal predator seasons and bag limits Explore opportunities to increase wolf hunter, trapper, and outfitter client effectiveness
	By 2017, evaluate results from a model estimating effects of wolves on elk survival as it applies to this zone	Complete development of elk survival model by Wildlife Research
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives	Develop a map of area priorities for elk habitat improvement projects on public ownerships by September 2014 Conduct an interagency meeting by March 2015 to explain use of the map to focus habitat management efforts. Involve private landowners if needed	Convene a regional team who will use the statewide map of seasonal elk habitats to develop and prioritize properties and projects for protection, restoration, and enhancement of elk habitat Work with conservation organizations, elected officials, and private landowners to provide long-term conservation measures of important elk habitat
	Continue to support and/or improve existing habitat management agreements designed to improve or enhance elk habitat	Work with the Army Corps of Engineers to update elk habitat plans and support habitat enhancement efforts on key elk winter range surrounding Dworshak Reservoir
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2014, provide a full-time Biologist to work on the Nez Perce-Clearwater National Forest out of a USFS District Office to improve elk habitat on a landscape level	Collaborate with the USFS to promote well-designed, early-seral-stage habitat improvement projects using information on habitat use and seasonal movements of elk



Lolo Zone

Game Management Units 10, 12

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Increase the zone's elk population.

The Lolo Zone elk population is limited by habitat conditions and predation. Elk numbers in this zone peaked in the late 1980s and have since been on a long-term decline. Lack of early successional stage forest was a primary factor behind the initiation of this decline. Since then, the decline has been severely exacerbated by high elk predation rates by black bears, mountain lions, and most recently wolves. Restoring this elk population will require liberal predator harvest through hunting and trapping seasons, and control actions in addition to improvements in elk habitat at a landscape level.

Short-term goals are to stabilize this elk population and then begin to realize a positive growth rate. Retaining the population objectives

Long-term Population Objectives

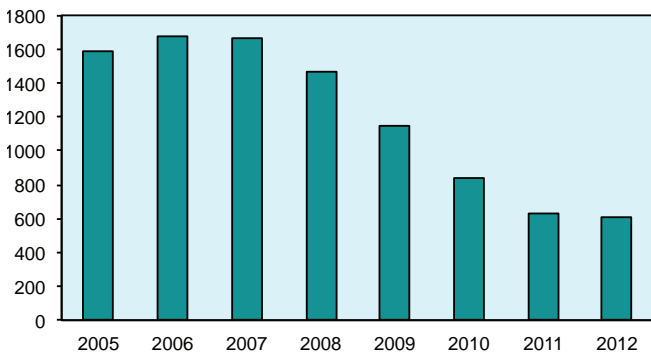
Objective		
Cows	Bulls	Adult Bulls
6100-9100	1300-1900	725-1200

Lolo Zone Population Surveys

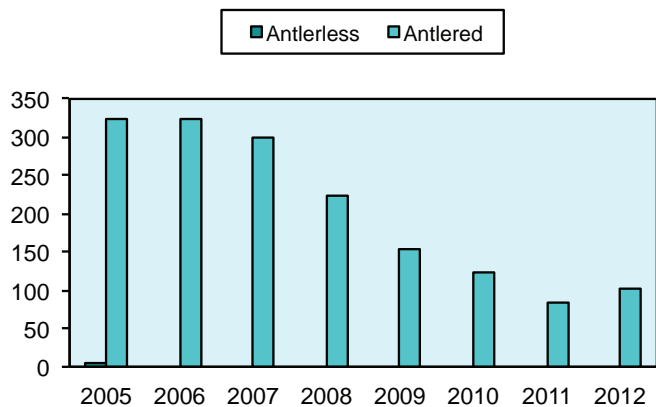
Survey 1 - 2006				Survey 2 - 2010			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
3254	979	865	5098	1358	594	182	2134
	30*	27*			44*	13*	
*per 100 cows							

from the previous plan as long-term goals (despite the current greatly reduced elk population) represent a desire to ultimately restore this population to levels achieved in the 1990s.

Lolo Zone Elk Hunter Numbers



Lolo Zone Elk Harvest

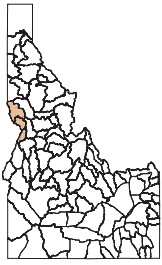


Square Miles =	2,373	3-Year Averages	
% Public Land =	97%	Hunters per square mile =	0.29
Major Land Type =	Forest	Harvest per square mile =	0.04
		Success Rate =	15%
		%6+ Points =	47%



Lolo Zone - is highly limited by predation and habitat

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Over the next 10 years, improve calf elk recruitment to 25-30:100 Update the Predation Management Plan for the Lolo Zone annually and adapt as needed	Manage wolf population at the specified level in the Predation Management Plan for the Lolo Zone to address wolf predation on elk Evaluate current wolf season structure (harvest level) and removal effects relative to elk population performance and adjust efforts and approach accordingly Continue use of control actions (WS, IDFG personnel) as necessary to manage predators to prescribed level Explore opportunities to increase wolf hunter, trapper, and outfitter client effectiveness Continue to offer long seasons, second tags, reduced-price nonresident tags for black bears and mountain lions
	By 2017, evaluate results from a model estimating effects of wolves on elk survival as it applies to this zone	Complete development of elk survival model by Wildlife Research
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2014, provide a full-time Biologist to work on the Nez Perce-Clearwater National Forest out of a USFS District Office to work with the USFS to improve elk habitat on a landscape level	Collaborate with the USFS to promote well-designed, early-seral-stage habitat improvement projects using information on habitat use and seasonal movements of elk Continue to provide other technical assistance to USFS for habitat improvement projects
Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives	Develop a map of area priorities for elk habitat improvement projects on public ownerships by September 2014 Conduct an interagency meeting by March 2015 to explain use of the map to focus habitat management efforts. Involve private landowners if needed	Convene a regional team who will use the statewide map of seasonal elk habitat to develop and prioritize properties and projects for protection, restoration, and enhancement of elk habitat Work with conservation organizations, elected officials, and private landowners to provide long-term conservation measures of important elk habitat
	Maintain 20-30% of elk summer range in early successional habitat, and on breaklands, increase early successional habitat to provide forage	Use a combination of variable retention regeneration harvests, commercial, & pre-commercial thinning to meet desired levels Strategically place timber harvests to allow for implementation of landscape-level prescribed and natural fire. Promote diverse shrub/forb response utilizing warm season burns
	Restore or maintain mid-to-low elevation open ponderosa pine communities to provide forage	Identify and treat stands that are at risk from stand replacing fire Utilize variable density thinning, then introduce fire into existing ponderosa pine plantations Design prescribed fire rotation to maintain open grass/forb/shrub understory; allow natural fire



Hells Canyon Zone

Game Management Units 11, 13, 18

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Decrease the cow elk population to proposed objectives to improve calf production;
- Due to declining cow:calf ratios, maintain the bull elk population at proposed objectives.

Recent (2009 and 2013) population surveys indicate that the Hells Canyon Zone elk population is exhibiting signs that it is currently habitat-limited. Calf elk recruitment rates dropped over the last 20 years and cow elk condition observed during the last surveys appeared to be less than optimal. In Unit 11 over the last 20 years, total elk numbers have increased from a low of 453 to a high of 1,564 (+345%). Yet in the 2013 survey, only 176 calves with 1,012 cow elk (17:100) were estimated as compared with 143 calves with 392 cows (37:100) in 1996.

The Hells Canyon elk population is limited by population growth and habitat. In addition to reducing elk densities, habitat conditions,

particularly the persistence of noxious weeds, will need to be addressed to insure long-term herd health.

Cow elk population objectives for this zone represent an increase over the previous plan, but a decrease from current status to address higher than desired elk densities that are impacting cow elk condition and calf elk recruitment rates.

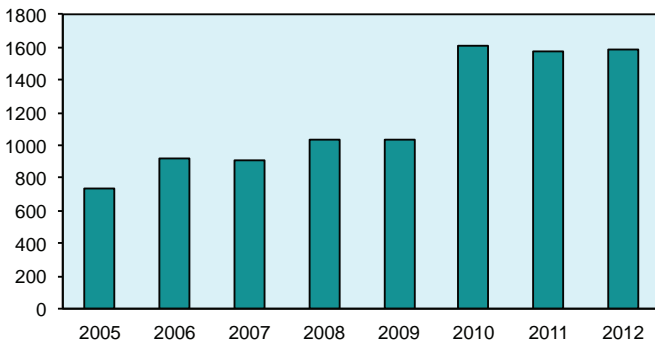
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
2000-2900	420-610	240-348

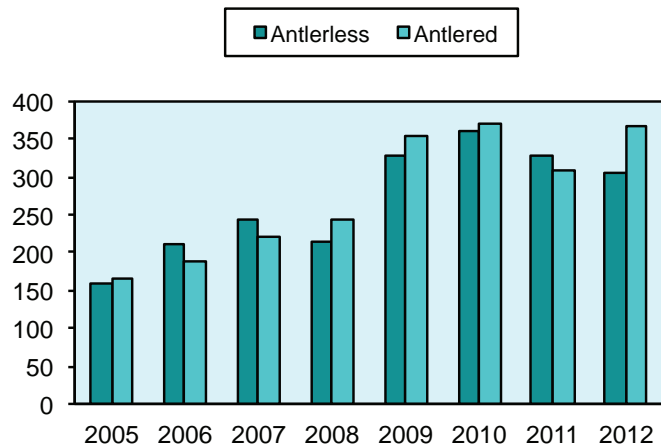
Hells Canyon Zone Population Surveys

Survey 1 - 2009				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
3642	973	965	5580	3633	1059	781	5473
	27*	26*			29*	21*	
*per 100 cows							

Hells Canyon Zone Elk Hunter Numbers



Hells Canyon Zone Elk Harvest



Square Miles = 1,389

% Public Land = 36%

Major Land Type = Forest, Rangeland

3-Year Averages

Hunters per square mile = 1.14

Harvest per square mile = 0.49

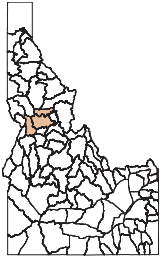
Success Rate = 43%

%6+ Points = 43%



Hells Canyon Zone – moderately limited by habitat and existing elk population growth

Management Direction	Performance Objective	Strategy
When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health	Over the next 10 years, decrease cow elk population >20% to proposed population goals to improve calf production (≥ 25 calves:100 cows)	Reduce elk densities through aggressive cow elk harvest regimes to improve productivity
Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity	Over the next 10 years, maintain bull elk population at proposed population goal of 415-710 bulls	Increase hunting opportunities proportionally among established weapon types where biological conditions warrant If decreased hunting opportunities are warranted, maintain historic controlled any weapon hunt tag levels first and then decrease equally among established weapon types
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Continue to provide IDFG staff on public agency Interdisciplinary Teams, Burn Plan Teams, and other planning efforts regarding elk	Collaborate with the USFS to promote well-designed, early-seral-stage habitat improvement projects using information on habitat use and seasonal movements of elk
Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives	Develop a map of area priorities for elk habitat improvement projects on public ownerships by September 2014 Conduct an interagency meeting by March 2015 to explain use of the map to focus habitat management efforts Involve private landowners as needed	Convene a regional team who will use the statewide map of seasonal elk habitat to develop and prioritize properties and projects for protection, restoration, and enhancement of elk habitat Work with conservation organizations, elected officials, and private landowners to provide long-term conservation measures of important elk habitat



Elk City Zone

Game Management Units 14, 15, 16

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

The Elk City Zone was last surveyed in 2008. Although more current survey data is not available, survey results from previous years indicated that the population was stable and within objective ranges.

This zone's elk population is limited by habitat, predation and agricultural impacts. Management direction involves continued coordination with the U.S. Forest Service to improve elk habitat conditions, maintaining liberal predator seasons, and continued responsiveness to depredation concerns.

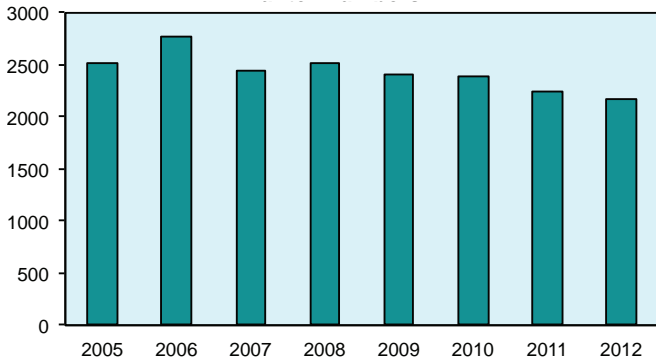
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
3150-4650	675-1000	350-575

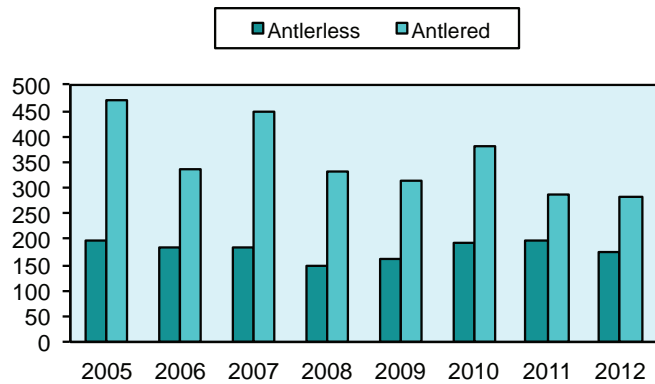
Elk City Zone Population Surveys

Survey 1 - 2006				Survey 2 - 2008			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
3334	686	904	4924	4264	863	875	6002
	21*	27*			20*	21*	
*per 100 cows							

Elk City Zone Elk Hunter Numbers



Elk City Zone Elk Harvest



Square Miles = 1,838

% Public Land = 82%

Major Land Type = Forest

3-Year Averages

Hunters per square mile = 1.24

Harvest per square mile = 0.28

Success Rate = 22%

%6+ Points = 23%

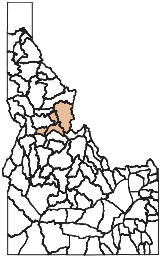


Elk City Zone – is moderately limited by predation, agricultural impacts, and habitat

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Increase or maintain predator harvest levels	Maintain liberal predator seasons and bag limits Explore opportunities to increase wolf hunter, trapper, and outfitter client effectiveness
	By 2017, evaluate results from a model estimating effects of wolves on elk survival as it applies to this zone	Complete development of elk survival model by Wildlife Research
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Continue to provide IDFG staff on public agency Interdisciplinary Teams, Burn Plan Teams, and other planning efforts regarding elk	Collaborate with the USFS to promote well-designed, early-seral-stage habitat projects using information on habitat use and seasonal movements of elk Continue to provide technical assistance to USFS, BLM, and IDL for habitat improvement projects regarding elk Consider becoming a Cooperating Agency or completing other agreements to formalize our role with USFS to promote elk habitat projects at a landscape level

Elk City Zone

Management Direction	Performance Objective	Strategy
<p>Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives</p>	<p>Develop a map of area priorities for elk habitat improvement projects on public ownerships by September 2014</p> <p>Conduct an interagency meeting by March 2015 to explain use of the map to focus habitat management efforts</p> <p>Involve private landowners if needed</p>	<p>Work with conservation organizations, elected officials, and private landowners to provide long-term conservation measures of important elk habitat</p> <p>Use the statewide map of seasonal elk habitat to assist prioritization of properties and projects for habitat, protections, restoration, and enhancement</p>
	<p>Annually, restore 2,000 acres of USFS elk summer range to early successional habitat trending toward the natural range of variability</p>	<p>Conduct prescribed fire, thinning, variable retention, and noxious weed control projects</p> <p>Require preventative measures on all forest activities to reduce the spread of noxious weeds</p>
	<p>Maintain 20-30% of elk summer range in early successional habitat</p>	<p>Place emphasis on Vegetation Response in Units 4, 7, 8, and 17</p> <p>Use a combination of variable retention regeneration harvests, commercial, & pre-commercial thinning to meet desired levels</p> <p>Strategically place timber harvests to allow for implementation of landscape-level prescribed and natural fire. Promote diverse shrub/forb response utilizing warm season burns</p>
	<p>Annually, treat 2,000 acres of elk winter range to restore or maintain native bunchgrass and ponderosa pine community on the low-elevation breaklands along the Clearwater River and Salmon River</p>	<p>Evaluate cattle grazing effects on elk range and design grazing practices that benefit elk</p> <p>Strategically place timber harvests to allow for implementation of landscape-level prescribed and natural fire. Promote diverse shrub/forb response utilizing warm season burns</p> <p>Once an area is treated, conduct annual maintenance projects using prescribed fire, thinning, and noxious weed control</p>



Selway Zone

Game Management Units 16A, 17, 19, 20

Population Objectives • Current Status • Harvest Information

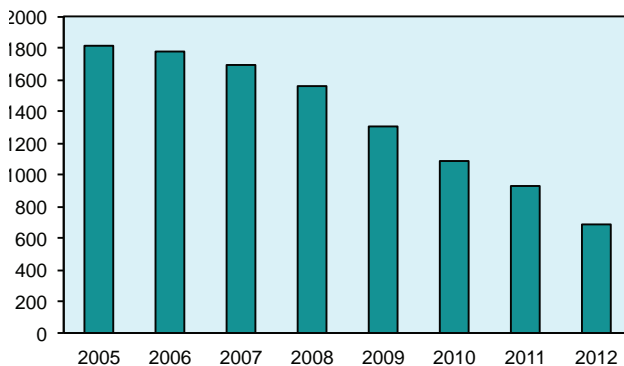
Proposed 10-year Management Direction:

- Increase elk populations from current levels.

The Selway Zone elk population peaked in the mid-1990s and has declined precipitously since then. This decline has been fueled by declining habitat conditions and predation. Noxious weeds are the primary habitat issue in the zone, particularly spotted knapweed on elk winter range. Low calf elk survival rates suggest that predation is likely a factor as well, although predation data specific to this zone is lacking. Addressing these two issues to restore this elk population will require large-scale treatment of noxious weeds to minimize their effects in addition to aggressive predator management.

Short-term management goals involve stabilizing the elk population, followed by steps to realize positive growth rates. Retaining similar population objectives from the previous plan as long-term

Selway Zone Elk Hunter Numbers



Square Miles = 2,527
% Public Land = 99%
Major Land Type = Forest

Long-term Population Objectives

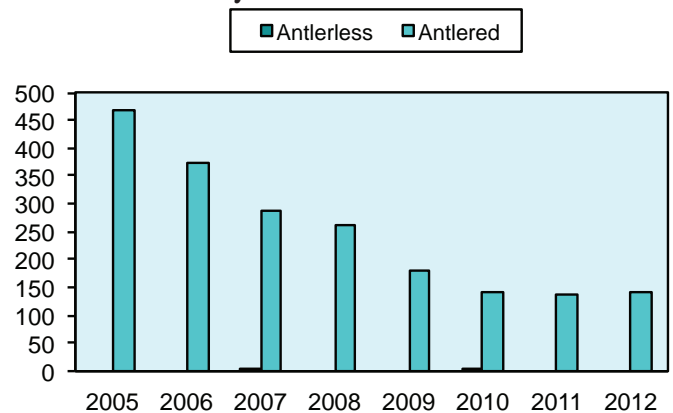
Objective		
Cows	Bulls	Adult Bulls
4900-7300	1050-1550	600-900

Selway Zone Population Surveys

Survey 1 - 2004				Survey 2 - 2007			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
4637	960	976	6573	3381	934	589	4904
	21*	21*			28*	17*	
*per 100 cows							

goals (despite the current greatly reduced elk population) represents a desire to ultimately restore this population to levels achieved in the 1990s. The bull/cow and adult bull/cow ratios have been adjusted to 18 to 24 per 100 and 10 to 14 per 100 respectively during this recovery process to match those prevalent in the zone during the higher population level of the early to mid-1990s.

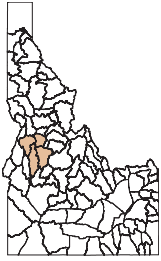
Selway Zone Elk Harvest



3-Year Averages
Hunters per square mile = 0.36
Harvest per square mile = 0.06
Success Rate = 16%
%6+ Points = 50%

Selway Zone – is highly limited by predation and habitat

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Over the next 10 years, improve calf elk recruitment to 25-30:100 Update the Predation Management Plan for the Selway Zone annually and adapt as needed	Manage wolf population at the specified level in the Predation Management Plan for the Selway Zone to address wolf predation on elk Evaluate current wolf season structure (harvest level) and removal effects relative to elk population performance and adjust efforts and approach accordingly Continue use of control actions (WS, IDFG personnel) as necessary to manage predators to prescribed level Explore opportunities to increase wolf hunter, trapper, and outfitter client effectiveness Continue to offer long seasons, second tags, reduced-price nonresident tags for black bears and mountain lions
	By 2017, evaluate results from a model estimating effects of wolves on elk survival as it applies to this zone	Complete development of elk survival model by Wildlife Research
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide adequate habitat for elk populations to meet statewide objectives	See Statewide Objectives in Table 7 Annually, restore 2,000 acres of noxious weed infested grassland to desirable grass/forb community along the main-stem of the Selway drainage	See Statewide Strategies in Table 7 Use biological, chemical, and cultural control of noxious weeds on grasslands below 4,000 feet in elevation In post-treatment grassland areas composed of ≥30% noxious weeds, reseed with a desirable grass/forb mix



McCall Zone

Game Management Units 19A, 23, 24, 25

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within current objectives.

Population objectives are set at current levels to maintain a stable population and address agricultural concerns.

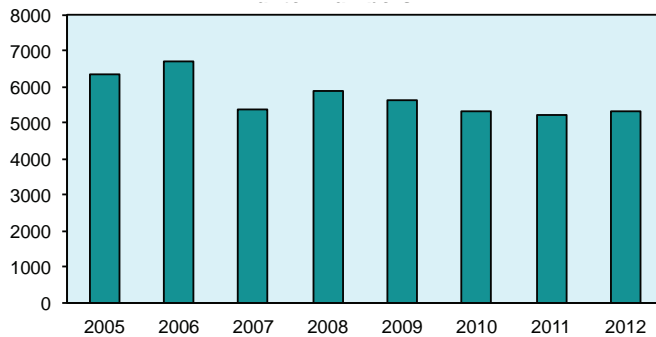
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
2500-3700	525-800	300-450

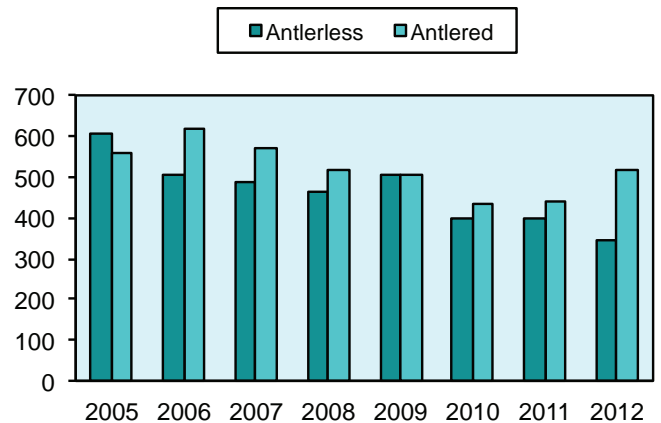
McCall Zone Population Surveys

Survey 1 - 2008				Survey 2 - 2010			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
2972	809	677	4458	3292	616	606	4514
	27*	23*			19*	18*	
*per 100 cows							

McCall Zone Elk Hunter Numbers



McCall Zone Elk Harvest

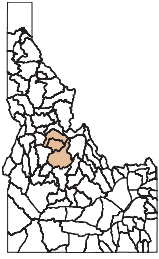


Square Miles = 2,984
% Public Land = 82%
Major Land Type = Forest

3-Year Averages
Hunters per square mile = 1.77
Harvest per square mile = 0.28
Success Rate = 16%
%6+ Points = 31%

McCall Zone - is moderately limited by predation and agricultural concerns

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Maintain cow elk population between 2,500-3,700 cows in 2 consecutive aerial surveys conducted at 3-year interval	Maintain adequate wolf hunting seasons and liberal bag limits to reduce wolf impacts Implement wolf trapping seasons in unit(s) where increased wolf harvest is warranted Develop and implement Predation Management Plan if zone antlerless population falls below objective, including consideration of professional trappers and aerial removal
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7



Middle Fork Zone

Game Management Units 20A, 26, 27

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Stabilize/maintain the elk population; long-term objective is to increase elk numbers towards eventual recovery.

The Middle Fork Zone elk population is limited by predation. Elk numbers in this zone were higher in the 1990s and early 2000s and have since declined. Likely the decline has been exacerbated by high elk predation rates. Restoring this elk population will require liberal predator harvest through hunting and trapping seasons, and control actions. Recent fires in this zone could provide a boost of nutrition if habitat response is favorable to elk.

Short-term management goals involve stabilizing the elk population, followed by steps to realize positive growth rates. Retaining similar population objectives from the previous plan as long-term goals (despite the current greatly reduced elk

Long-term Zone Population Objectives

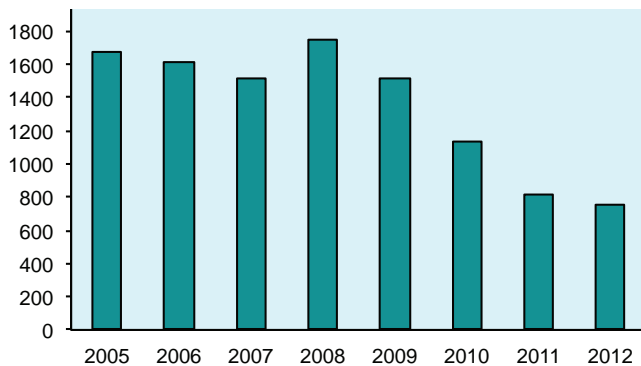
Objective		
Cows	Bulls	Adult Bulls
3850-5750	690-1030	390-810

Middle Fork Zone Population Surveys

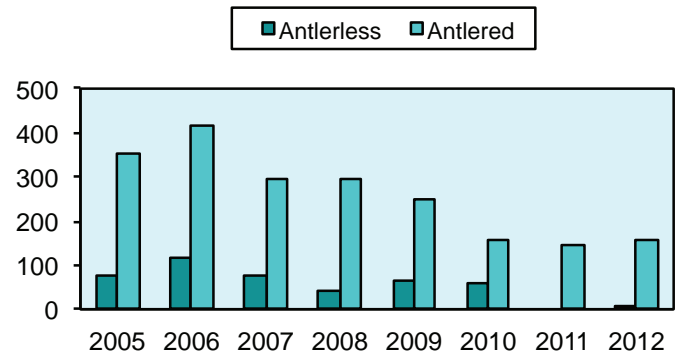
Survey 1 - 2006				Survey 2 - 2011			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
5137	834	1007	6978	3341	462	420	4223
	16*	20*			14*	13*	
*per 100 cows							

population) represents a desire to ultimately restore this population to levels achieved in the 1990s. The bull/cow and adult bull/cow ratios have been adjusted to 18 to 24/100 and 10 to 14/100 respectively during this recovery process.

Middle Fork Zone Elk Hunter Numbers



Middle Fork Zone Elk Harvest

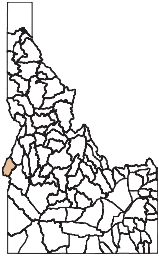


Square Miles = 2,885
% Public Land = 99%
Major Land Type = Forest

3-Year Averages
Hunters per square mile = 0.31
Harvest per square mile = 0.06
Success Rate = 19%
%6+ Points = 50%

Middle Fork Zone - is highly limited by predation

Management Direction	Performance Objective	Strategy
<p>When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities</p>	<p>Maintain cow elk population between 2,400-3,600 cows in 2 consecutive aerial surveys conducted at 5-year interval</p> <p>Develop Predation Management Plan by 2014</p>	<p>Maintain adequate wolf hunting and trapping seasons and liberal bag limits to reduce wolf impacts</p> <p>Develop and implement Predation Management Plan, including consideration of professional trappers and aerial removal, to address antlerless elk populations that are below objective</p>



Brownlee Zone

Game Management Unit 31

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain bull elk at or above objectives;
- Maintain cow elk populations at current levels.

Population objectives are to maintain elk populations at current levels to address agricultural concerns and provide quality elk hunting opportunities.

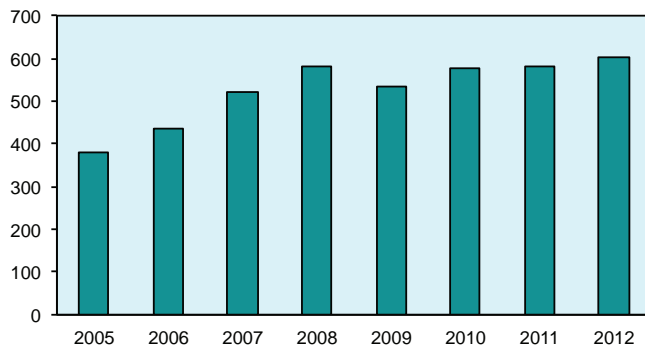
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
550-850	150-200	75-125

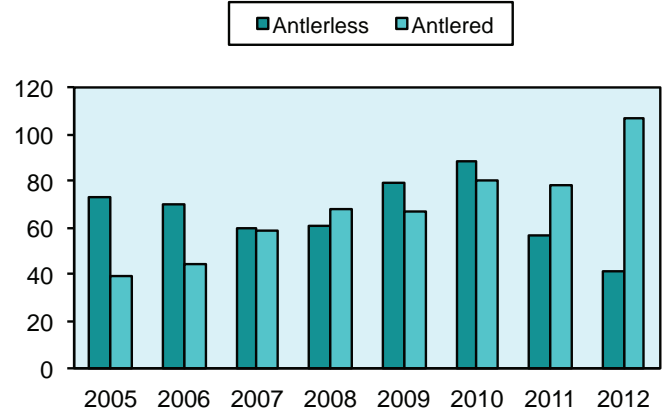
Brownlee Zone Population Surveys

Survey 1 - 2007				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
412	206	159	777	841	333	249	1423
	50*	39*			40*	30*	
*per 100 cows							

Brownlee Zone Elk Hunter Numbers



Brownlee Zone Elk Harvest

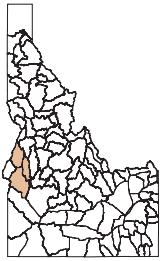


Square Miles = 598
% Public Land = 50%
Major Land Type = Rangeland, Forest

3-Year Averages
Hunters per square mile = 0.98
Harvest per square mile = 0.25
Success Rate = 26%
%6+ Points = 57%

Brownlee Zone - is highly limited by agricultural concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7



Weiser River Zone

Game Management Units 22, 32, 32A

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Decrease cow elk population within proposed objectives;
- Maintain bull elk population within proposed objectives.

Population objectives for the Weiser River Zone involve reducing overall elk numbers in areas where agricultural concerns are high while continuing to provide a broad range of hunting opportunity.

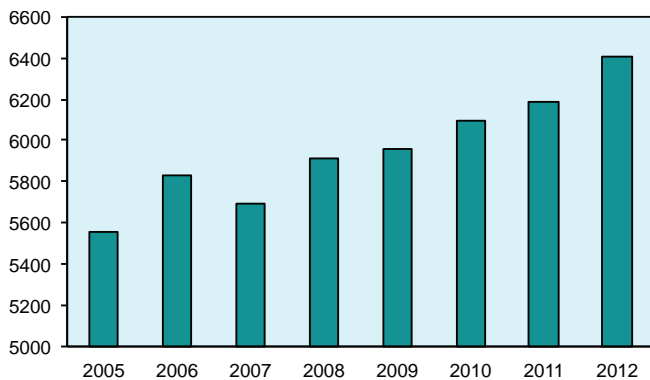
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
3300-5000	670-1000	325-500

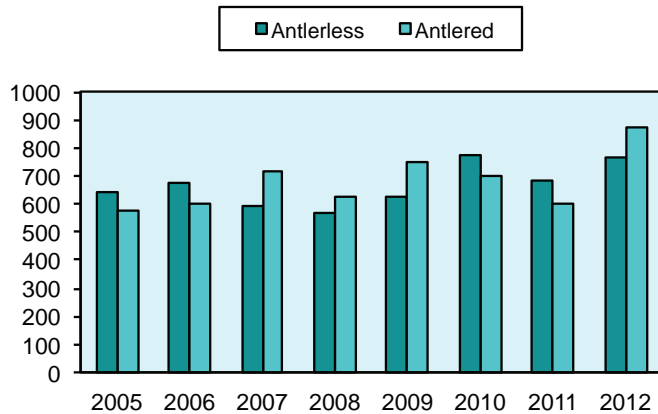
Weiser River Zone Population Surveys

Survey 1 - 2007				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
5372	909	1571	7852	7461	1116	1894	10471
	17*	29*			15*	25*	
*per 100 cows							

Weiser River Zone Elk Hunter Numbers



Weiser River Zone Elk Harvest



Square Miles = 2,895

% Public Land = 51%

Major Land Type = Rangeland, Forest

3-Year Averages

Hunters per square mile = 2.15

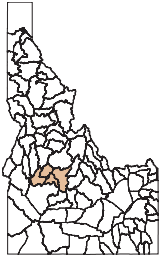
Harvest per square mile = 0.51

Success Rate = 24%

%6+ Points = 24%

Weiser River Zone - is highly limited by agricultural concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7



Sawtooth Zone

Game Management Units 33, 34, 35, 36

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Increase the elk population from current levels.

Elk population objectives in the Sawtooth Zone remain the same because this population has responded favorably to management actions the last three years. It is anticipated that this herd will continue to increase and ultimately meet objectives. Fish and Game is managing for a robust elk population with general hunt opportunity near a large human population center, while keeping the elk population within the carrying capacity of a limited winter range, and limiting agricultural crop and property damage complaints on private land during winter.

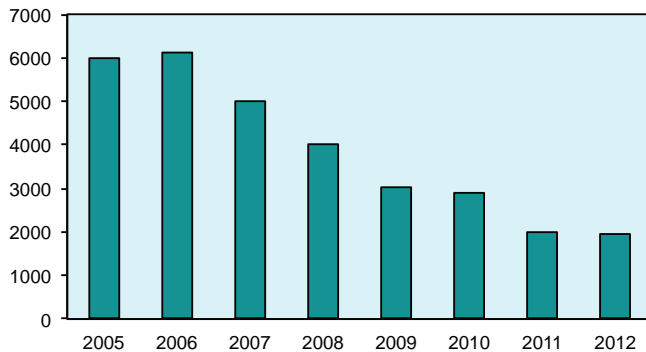
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
3000-4500	630-945	360-540

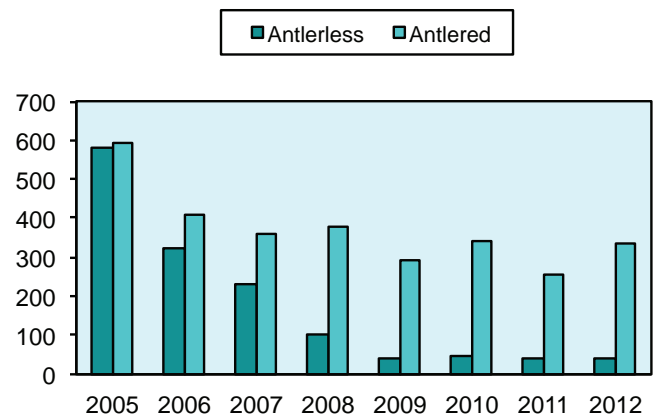
Sawtooth Zone Population Surveys

Survey 1 - 2009				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
2696	251	509	3456	2396	324	926	3646
	9*	19*			14*	38*	
*per 100 cows							

Sawtooth Zone Elk Hunter Numbers



Sawtooth Zone Elk Harvest



Square Miles = 2,541

% Public Land = 97%

Major Land Type = Rangeland, Forest

3-Year Averages

Hunters per square mile = 0.90

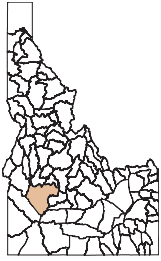
Harvest per square mile = 0.14

Success Rate = 15%

%6+ Points = 27%

Sawtooth Zone – is moderately limited by predation, habitat, and agricultural impacts

Management Direction	Performance Objective	Strategy
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Over the next 10 years, improve or maintain calf elk survival as measured by winter calf:cow ratios of 30:100 Over the next 10 years, improve or maintain natural adult cow annual survival above $\geq 90\%$ (under average winter conditions) Update the Sawtooth Predation Management Plan annually; adapt and implement as needed	Maintain liberal wolf seasons and bag limits Continue developing tools to monitor black bears and mountain lions Implement annual composition counts to monitor cow:calf ratios
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Map the reflective values and trends in habitat quality for the zone using current technology by 2015	Continue to provide other technical assistance to USFS for habitat improvement and travel management projects
Implement proactive measures to reduce and minimize elk depredations	Maintain current low levels of agricultural depredations in Garden Valley (3-4 complaints per year)	Emergency winter feeding when warranted and recommended by advisory board Encourage conservation easements on key winter ranges to reduce the threat of development
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7 Reduce total acres of rush skeletonweed infestation in the South Fork of the Payette River watershed by 5% annually Improve 1,000 acres of elk calving and parturition habitat annually in Grandjean, Deadwood, and Bear Valley	See Statewide Strategies in Table 7 Prioritize elk winter range as a target for cooperative integrated weed management efforts Enhance or develop early successional mixed shrub habitat in mixed conifer forest areas



Boise River Zone

Game Management Unit 39

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

Elk population objectives remain the same due to a stable population and harvest rate. Management direction involves balancing a robust and migratory elk population with general hunt opportunity near a large human population center, while limiting agricultural crop and property damage on private land during winter.

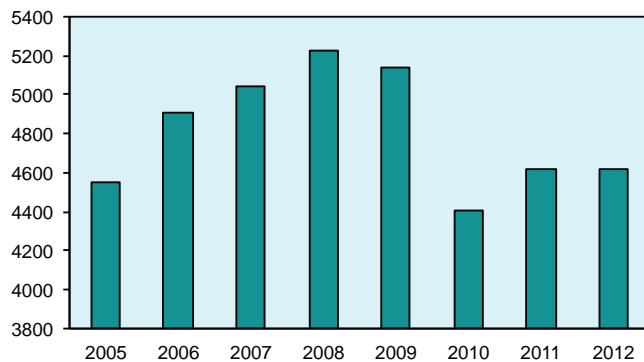
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
3200-4800	650-950	375-575

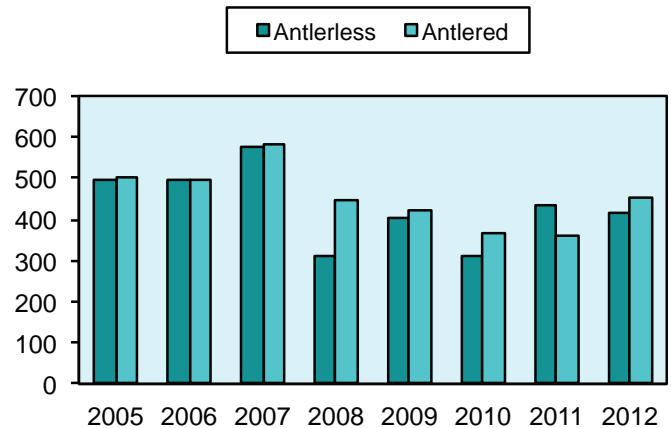
Boise River Zone Population Surveys

Survey 1 - 2008				Survey 2 - 2011			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
4216	962	1106	6901	4971	916	1388	7275
	23*	26*			18*	28*	
*per 100 cows							

Boise River Zone Elk Hunter Numbers



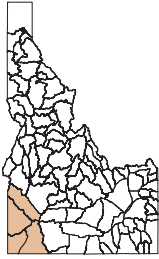
Boise River Zone Elk Harvest



Square Miles =	2,444	3-Year Averages	
% Public Land =	76%	Hunters per square mile =	1.86
Major Land Type =	Rangeland, Forest	Harvest per square mile =	0.32
		Success Rate =	17%
		%6+ Points =	22%

Boise River Zone - highly limited by habitat and agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Maintain or improve current levels of landowner support for our programs over the next 5 years	Evaluate strategies which allow landowners to benefit from animals harvested on private land
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	<p>Coordinate with County Planning and Zoning boards to identify and provide 1:1 mitigation for impacts on all approved residential development on elk winter range</p> <p>Develop a map of area priorities for elk habitat improvement on private lands by September 2014, and improve 500 acres annually thereafter</p> <p>Develop a map of area priorities for elk habitat improvement projects on public lands by September 2014, and improve or protect 5,000 acres annually thereafter</p> <p>Annually quantify impacts to winter range resulting from residential development activities on private lands adjacent to public land</p> <p>Coordinate with BLM to identify 5,000 acres of land with lower wildlife habitat values that could be used in land exchanges for higher value habitats</p>	<p>Develop off-site habitat improvements, limit total area of impact, provide open space, manage for responsible travel management, include restrictive covenants to minimize disturbance effects, and use conservation easements as mitigation</p> <p>Utilize Farm Bill, non-governmental conservation organizations, and other habitat improvement programs to protect and improve elk habitat on private lands with willing cooperators</p> <p>Restore shrub steppe habitat from annual grassland, protect priority habitat areas from fire with green stripping and fire breaks</p> <p>Improve quality in winter range on additional adjacent public lands by an equivalent amount annually</p> <p>Manage travel on winter ranges to minimize cumulative disturbance impacts</p> <p>Assist conservation organizations to identify and prioritize private lands for conservation easements that will protect and improve elk habitat</p>



Owyhee Zone

Game Management Units 38, 40, 41, 42

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

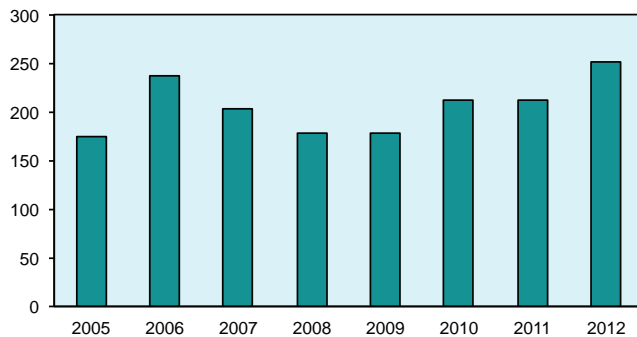
- Split the Owyhee-South Hills Zone into two zones; The new Owyhee Zone would consist of GMUs 38, 40, 41 and 42;
- Maintain or increase the elk population within proposed objectives.

Objectives for the Owyhee Zone elk population are not derived from aerial surveys due to expansive land area, dispersed groups of elk, poorly defined winter range, and difficult winter access. This population is monitored using harvest data, occasional fixed wing flights, and other biological observations. The elk population,

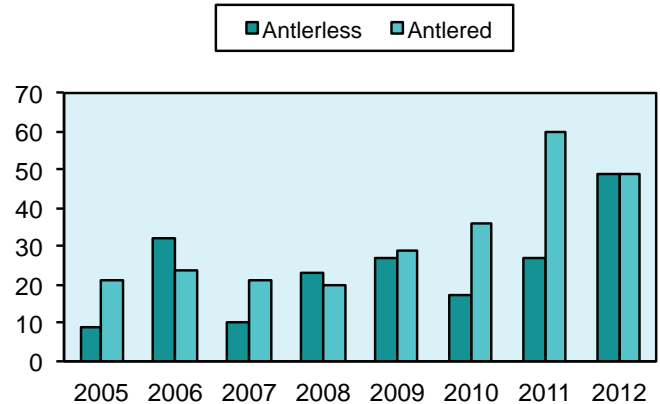
The Owyhee Zone elk population is one of a few where aerial surveys are not conducted because of the large land area and dispersed groups of elk. Elk populations are managed in this zone through harvest data analysis.

and subsequent elk harvest, will be allowed to gradually increase as long as it is socially acceptable and does not impact the mule deer population.

Owyhee Zone Elk Hunter Numbers



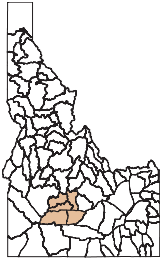
Owyhee Zone Elk Harvest



Square Miles =	8,003	3-Year Averages	
% Public Land =	72%	Hunters per square mile =	0.03
Major Land Type =	Rangeland, Forest	Harvest per square mile =	0.01
		Success Rate =	35%
		%6+ Points =	84%

Owyhee Zone - is somewhat limited by agricultural concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Maintain or improve current levels of landowner support for our programs over the next 5 years	Evaluate strategies which allow landowners to benefit from animals harvested on private land



Smoky-Bennett Zone

Game Management Units 43, 44, 45, 48, 52

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Combine the Smoky Mt. and Bennett Hills Zones;
- Maintain the elk population within proposed objectives.

Radio-collared elk that previously wintered at feed sites in the South Fork Boise River drainage have increasingly wintered in the Bennett Hills Zone over the last five to eight years. These elk have been missed during winter surveys of the Smoky Mountain Zone, making it difficult to ascertain whether the lower numbers that have been observed represent an actual elk decline in the Smoky Mountain Zone or are primarily the result of winter redistribution of elk.

Conversely, it is difficult to determine whether Bennett Hills Zone elk numbers are truly increasing, or are a result of immigration by elk from the Smoky Mountain Zone. Combining these zones will help generate more accurate and

comprehensive population estimates. Deployment of additional radio collars will help monitor elk movements away from wintering areas to better determine elk elk distribution during hunting seasons.

Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
2000-3000	620-930	400-595

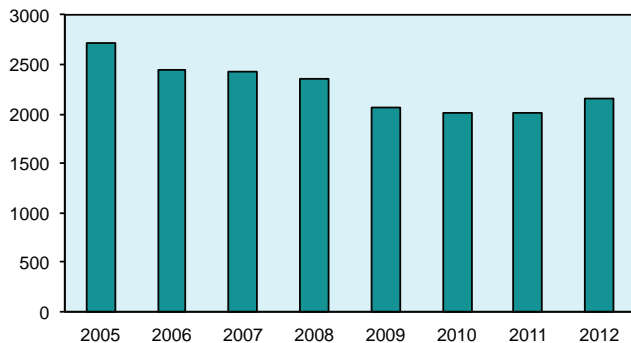
Smoky Mountain Zone Population Surveys

Survey 1 - 2006				Survey 2 - 2009			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
1849	825	703	3377	1560	502	655	2630
	45*	38*			32*	42*	
*per 100 cows							

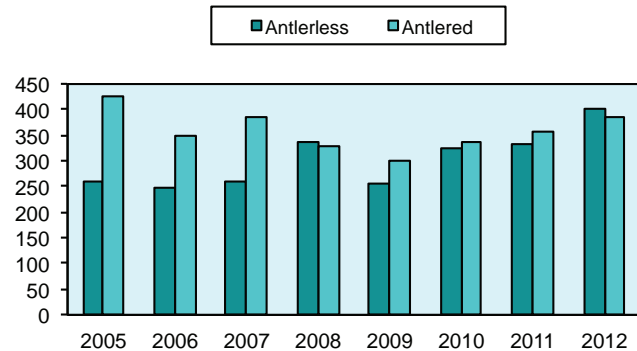
Bennett Hills Zone Population Surveys

Survey 1 - 2010				Survey 2 - 2012			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
420	120	177	717	--	--	--	1309
	29*	42*					
*per 100 cows							

Smoky-Bennett Zone Elk Hunter Numbers



Smoky-Bennett Zone Elk Harvest



Square Miles = **3,982**

% Public Land = **72%**

Major Land Type = **Rangeland, Agriculture**

3-Year Averages

Hunters per square mile = **0.21**

Harvest per square mile = **0.04**

Success Rate = **21%**

%6+ Points = **0%**



Smoky-Bennett Zone - highly limited by agricultural impacts and moderately limited by habitat

Management Direction	Performance Objective	Strategy
When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health	Annually focus antlerless harvest in areas with depredation concerns while minimizing cow harvest in other portions of the zone to increase overall cow numbers	Radiocollar cow elk in depredation areas to better target harvest of these elk when they are not actively impacting agricultural crops Use targeted harvest during depredation issues to remove problem elk
	Eliminate winter feeding in GMU 43 (South Fork Boise River) by 2014	Begin dismantling feeding facilities at Big Smoky, Lightfoot Bar, Big Water, and Featherville
	Continue elk feeding operation at Warm Springs Creek in GMU 48 Eliminate all private elk feed sites by 2017	Continue to feed elk at the Bullwhacker feed site west of Ketchum to reduce elk conflicts with civilization Work with Blaine County Commissioners to develop an ordinance that would prohibit unauthorized elk feeding Annually provide educational materials to Wood River Valley residents regarding potential pitfalls of elk feeding
Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity	Maintain a bull:cow ratio of 25-29 bulls:100 cows Annually maintain controlled, quality bull hunting opportunity	In the GMU 45 portion of this zone, depredation concerns will take priority over bull management objectives Continue controlled archery and controlled any- weapon hunts
	Maintain a diversity of hunting opportunities for multiple weapon types Maintain general bull hunting opportunity where supportable by bull populations that are meeting or exceeding objectives	Increase hunter access through landowner agreements including, but not limited to, easements, incentive programs, and the Access Yes! program to help meet harvest objectives Increase hunting opportunities proportionally among established weapon types where biological conditions warrant opportunity increases If decreases in hunting opportunities are warranted, evaluate data and implement decreases as follows: Decrease opportunity based on which weapon types may have the most significant impact on bull populations, as indicated by harvest data Allocate the decrease in hunting opportunity proportionally among the different weapon types

Smoky-Bennett Zone

Management Direction	Performance Objective	Strategy
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7 Annually, restore 2,000 acres of noxious weed infested grasslands to desirable grass/forb communities on elk winter ranges. Focus efforts on foothills north of I-84 from Gooding west to Mayfield	See Statewide Strategies in Table 7 Use biological, chemical, and cultural control of noxious weeds on grasslands In post-treatment grassland areas composed of $\geq 30\%$ noxious weeds, reseed with a desirable grass/forb mix Prioritize wildfire rehab efforts in areas that burn critical big game winter range
Develop biological studies to improve population, predator, and habitat management capabilities	By 2016, determine what proportions of elk observed during winter surveys return to different Smoky-Bennett GMUs during hunting season By 2016, identify movement patterns and seasonal habitat use of elk involved in depredations	By 2014, deploy 20-30 satellite radiocollars on cow elk to obtain detailed information on elk movements and seasonal use areas
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2016, use aerial survey and radiocollar data to update elk habitat and migration corridor maps Reduce highway mortalities by 25%, especially on Hwy 75 in the Big Wood Valley and on Hwy 20 between Timmerman Junction and Fairfield	Provide updated elk habitat and migration corridor maps to federal agencies and planning and zoning commissions for their use during development planning processes Continue the collaborative effort with Blaine County to develop solutions to reduce vehicle-elk collisions on Hwy 75
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7



South Hills Zone

Game Management Units 46, 47, 54, 55, 56, 57

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

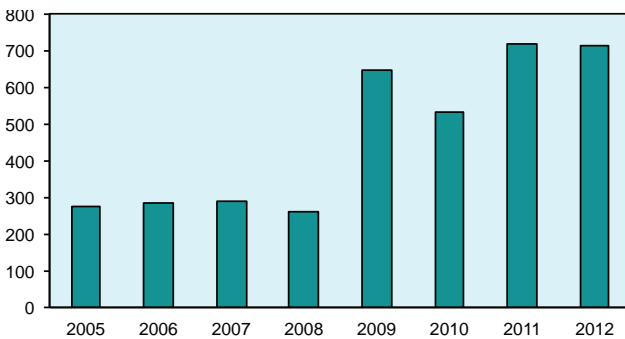
- Split the Owyhee-South Hills Zone into two zones;
- The new South Hills Zone would consist of units 46, 47, 54, 55, 57 and 56 (from the Bannock Zone);
- Increase the elk population within the zone.

Aerial surveys are not conducted in the South Hills Zone due to the large land area and dispersed wintering elk population. Fish and Game receives annual agricultural crop and property damage within this zone. Management issues (primarily agricultural issues) and hunting opportunity (quality) are similar across the GMUs proposed to be included in this zone. Grouping them will better allow wildlife managers to balance preserving quality hunting opportunities by slowly increasing elk populations while being watchful of and responsive to depredation concerns. Elk populations will be allowed to

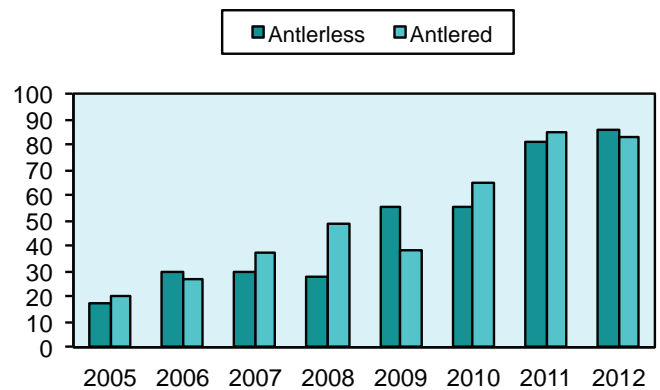
The South Hills Zone elk population is one of a few where aerial surveys are not conducted because of the large land area and small dispersed groups of elk. Elk populations in this zone are managed using harvest data analysis and minimization of elk depredations on agricultural lands.

stabilize or slowly increase to sustain valued high-quality hunting opportunities while maintaining property damage complaints at or below current levels by implementing new and proactive measures for increasing landowner tolerance of elk.

**South Hills Zone
Elk Hunter Numbers**



South Hills Zone Elk Harvest



Square Miles = 2,895
% Public Land = 51%
Major Land Type = Rangeland, Forest

3-Year Averages
Hunters per square mile = 2.15
Harvest per square mile = 0.51
Success Rate = 24%
%6+ Points = 24%

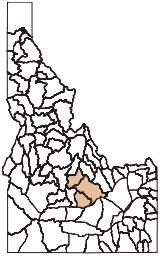
South Hills Zone – is highly limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	By 2014, deploy 20-30 satellite radiocollars on cow elk to obtain detailed information on elk movements and habitat use in relation to road densities and recreation Consider landowner incentives for habitat improvements that benefit elk populations	Become involved with federal agency travel planning and resource management plan revisions to contribute information about elk habitat use and movement patterns and habitat needs Support the Shoshone Basin Habitat and Access Partnership Work with ranchers and other private landowners to protect elk habitat and public access to elk habitat
When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health	Manage bull and cow numbers within objectives for trophy harvest and minimizing depredation complaints	Monitor overlapping seasonal habitat use by elk and mule deer Consider increasing elk harvest to reduce elk populations should evidence suggest elk may be competing with mule deer for resources
Develop an elk monitoring program that includes modeling or monitoring zone population abundance during the years between aerial surveys	By 2016, identify movement patterns and seasonal habitat use of elk involved in depredations Annually coordinate with Nevada Division of Wildlife By 2016, incorporate any portions of GMUs 46, 47, or 41 not surveyed by Nevada into the aerial survey rotation	By 2014, deploy 20-30 satellite radiocollars on cow elk to obtain detailed information on elk movements and habitat use Obtain Nevada's most current survey numbers, identify gaps in survey areas, and develop ways to determine what proportion of elk spend what seasons in Idaho or Nevada Explore use of forward-looking infrared (FLIR) technology to quantify elk in GMUs 46, 47, and 41



South Hills Zone

Management Direction	Performance Objective	Strategy
<p>Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity</p>	<p>Over the next 10 years, maintain a bull:cow ratio of 30-35 bulls:100 cows</p> <p>Provide high quality bull hunting opportunity</p> <p>By 2015, develop harvest-related management objectives for antlered elk to maintain the trophy potential of hunts</p>	<p>Implement mandatory check for bull elk to ensure bulls are meeting quality objectives. A trial voluntary check will be implemented beginning in 2013</p> <p>Continue controlled archery and controlled any weapon hunts</p> <p>Maintain general hunting opportunity where supportable by bull populations that are meeting or exceeding objectives</p> <p>Increase hunting opportunities proportionally among established weapon types where biological conditions warrant opportunity increases</p> <p>If decreases in hunting opportunities are warranted, evaluate data and implement decreases as follows:</p> <p>Decrease opportunity based on which weapon types may have the most significant impact on bull populations, as indicated by harvest data</p> <p>Allocate the decrease in hunting opportunity proportionally among the different weapon types</p> <p>Maintain a diversity of hunting opportunities for multiple weapon types</p>
<p>Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats</p>	<p>See Statewide Objectives in Table 7</p>	<p>See Statewide Strategies in Table 7</p>



Pioneer Zone

Game Management Units 36A, 49, 50

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

Population objectives have been revised to better reflect current elk population levels, increasing agricultural crop and property damage issues, and to balance elk hunting opportunity while minimizing agricultural concerns.

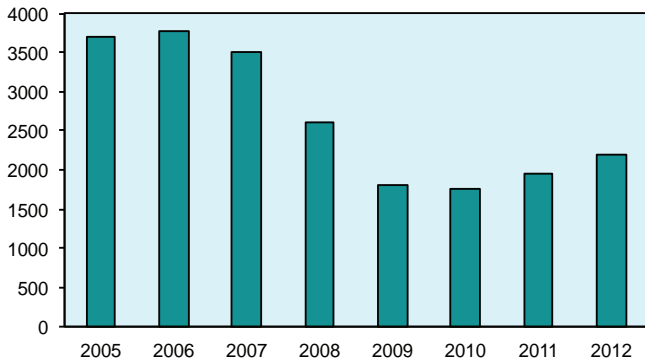
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
3150-5600	1025-1820	630-1120

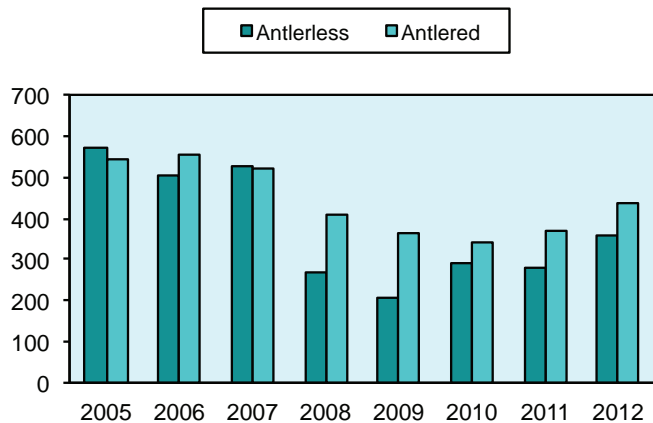
Pioneer Zone Population Surveys

Survey 1 - 2008				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
3448	845	1139	5459	5544	2045	2149	9738
	25*	33*			37*	39*	
*per 100 cows							

Pioneer Zone Elk Hunter Numbers



Pioneer Zone Elk Harvest



Square Miles = 3,202
% Public Land = 82%
Major Land Type = Rangeland, Forest

3-Year Averages
Hunters per square mile = 0.61
Harvest per square mile = 0.22
Success Rate = 35%
%6+ Points = 45%

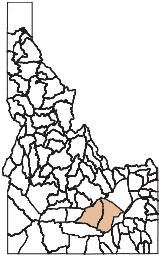


Pioneer Zone - is highly limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Maintain greenfield hunt structure Provide material to build 10 permanent stack yards over the next 10 years	Implement a variety of hunting season frameworks, including greenfield hunts, to reduce depredation Provide permanent stack yard fencing to landowners to protect hay stacks
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Coordinate annually with local non-profit conservation organizations to provide data necessary for directing conservation easements and habitat improvements towards elk habitat	Participate in meetings with non-profit conservation organizations to provide up-to-date information on elk habitat use, movement patterns, and population data to better direct conservation efforts
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity	Annually maintain controlled, high quality bull hunting opportunity Over the next 10 years, maintain a bull:cow ratio of 30-35 bulls:100 cows Annually maintain general season opportunity Maintain controlled cow hunting opportunities within portions of this zone experiencing chronic depredation complaints Maintain opportunities for multiple weapon types	Offer bull hunting opportunity as population levels allow Consider expansion of current general archery season if depredation complaints increase and elk populations exceed objectives Implement extra tags, landowner permission hunts, or special weapon hunts with boundaries designed to target areas with chronic depredations Increase hunting opportunities proportionally among established weapon types where biological conditions warrant opportunity increases Annually maintain at least 50,000 acres of private land enrolled in the Access Yes! program If decreases in hunting opportunities are warranted, evaluate data and implement decreases as follows: Decrease opportunity based on which weapon types may have the most significant impact on bull populations, as indicated by harvest data Allocate the decrease in hunting opportunity proportionally among the different weapon types

Pioneer Zone

Management Direction	Performance Objective	Strategy
<p>When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health</p>	<p>Eliminate all private elk feed sites by 2017</p>	<p>Work to pass a county ordinance that would prohibit unauthorized elk feeding</p> <p>Annually provide educational materials to Wood River Valley residents regarding the potential pitfalls of elk feeding</p>
<p>Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats</p>	<p>During allotment assessments every 10 years, work with federal land management agencies to determine best long-term utilization rates</p> <p>Plan annual meeting with federal land management agencies to discuss the allocation of grazing resources among wildlife and livestock</p> <p>Reduce highway mortalities, especially on Hwy 75 in the Big Wood Valley by 25%</p> <p>By 2018, identify and implement strategies to protect important elk linkage corridors</p>	<p>Cooperate with federal, state, and private land managers and owners to provide suitable winter range, including management of disturbance that could displace elk</p> <p>Engage federal land management agencies regarding drought conditions and emergency drought procedures</p> <p>Continue the collaborative effort with Blaine County to develop solutions to reduce vehicle-elk collisions on Hwy 75</p> <p>Work with vehicle collision database and ITD to identify important elk movement corridors</p> <p>Provide technical assistance for wildlife fencing and passage to reduce vehicle collisions where elk cross highways</p>



Big Desert Zone

Game Management Units 52A, 68

Population Objectives • Current Status • Harvest Information

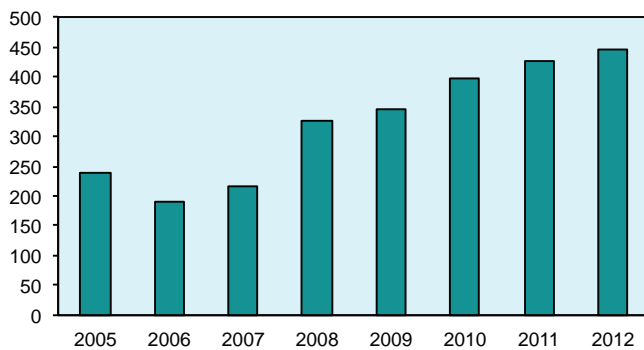
Proposed 10-year Management Direction:

- Reduce elk populations to lower levels.

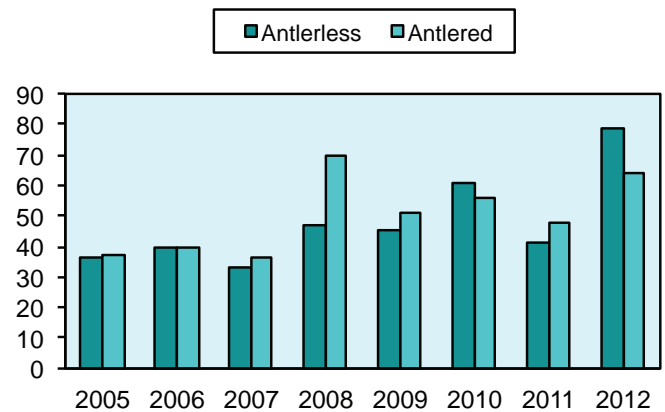
This management direction continues the approach taken in the Big Desert during recent years. As agricultural crop and property damage have increased, so have antlerless tag numbers. Hunts have been designed to help address elk damage to agricultural crops in the times and places where it occurs. Hunter success has remained high in the Big Desert. Where agricultural concerns are now at manageable levels - such as in much of Unit 68 - elk numbers will be maintained at levels which limit agricultural damage yet provide a desirable hunting opportunity and experience. As with other zones limited by agricultural impacts, the overall goal is to strike a balance between being responsive to depredation issues while still providing quality hunting opportunity.

The Big Desert Zone elk population is one of a few where aerial surveys are not conducted because of the large land area and small dispersed groups of elk. Elk populations in this zone are managed using harvest data analysis and minimization of elk depredations on agricultural lands.

Big Desert Zone Elk Hunter Numbers



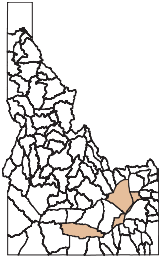
Big Desert Zone Elk Harvest



Square Miles =	3,553	3-Year Averages	
% Public Land =	80%	Hunters per square mile =	0.12
Major Land Type =	Rangeland, Agriculture	Harvest per square mile =	0.03
		Success Rate =	28%
		%6+ Points =	62%

Big Desert Zone - is highly limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	<p>See Statewide Objectives in Table 7</p> <p>Map and determine status of all water developments by 2015</p> <p>Relocate/upgrade water developments (if needed) by 2016</p> <p>Contact all land managers to keep water developments operational through hot/dry months by 2015</p> <p>Work with land managers to restore 1,000 acres of wildfire impacted habitat per year with native plant communities (seedings/ plantings)</p> <p>Other objectives should dove-tail with those for Snake River Zone</p>	<p>See Statewide Strategies in Table 7</p> <p>Assure water developments are tracked and maintained</p> <p>Assure that existing water developments are optimally placed to supplement native habitat and reduce agricultural conflicts</p> <p>Assure existing water developments continue to provide water through hot/dry months regardless of ownership or livestock presence</p> <p>Improve habitat impacted by wildfire</p>
Provide a diversity of hunting opportunity, including socially desirable and biologically sustainable levels of antlerless and mature bull opportunity	<p>Annually maintain general season opportunity</p> <p>Maintain controlled cow hunting opportunities within portions of this zone experiencing chronic depredation complaints</p> <p>Maintain controlled, quality bull hunting opportunity in the portions of this zone less affected by depredation concerns</p>	<p>Consider expansion of current archery season if depredation complaints increase</p> <p>Implement extra tags, landowner permission hunts, or special weapon hunts with boundaries designed to target areas with chronic depredations</p>



Snake River Zone

Game Management Units 53, 63, 63A, 68A

Population Objectives • Current Status • Harvest Information

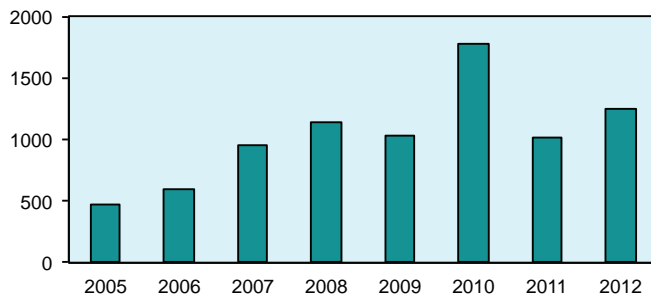
Proposed 10-year Management Direction:

- Decrease elk populations within the zone.

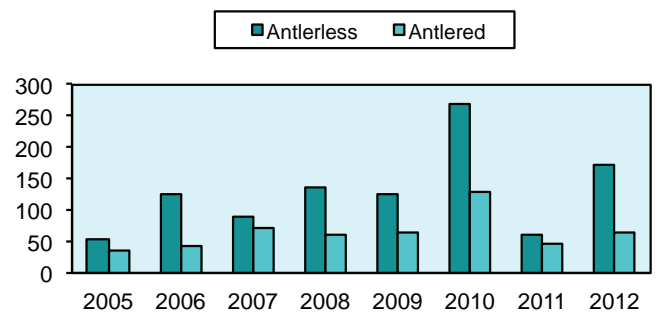
Management direction in the Snake River Zone involves decreasing the current elk population. The zone is dominated by agricultural lands and small communities that are not compatible with large numbers of resident elk. It is proposed to continue managing for minimal elk numbers by using long, liberal hunting seasons and prompt responses to crop and property damage on agricultural lands.

The Snake River Zone elk population is one of a few where aerial surveys are not conducted because of the large land area and small dispersed groups of elk. Elk populations in this zone are managed using harvest data analysis and minimization of elk depredations on agricultural lands.

**Snake River Zone
Elk Hunter Numbers**



Snake River Zone Elk Harvest



Square Miles =	13,739	3-Year Averages	
% Public Land =	71%	Hunters per square mile =	0.05
Major Land Type =	Desert, Rangeland	Harvest per square mile =	0.01
		Success Rate =	25%
		%6+ Points =	85%

Snake River Zone - is highly limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Provide annual elk hunting opportunities	Annually maintain general season opportunity	Consider expansion of current short-range weapons season if depredation complaints increase
When zones are meeting objectives, actively manage elk populations commensurate with habitat capabilities to maximize reproductive performance and overall herd health	Focus increased harvest in areas with chronic depredation concerns	Implement extra tags, landowner permission hunts, or special weapon hunts with boundaries designed to target areas with chronic depredations



Bannock Zone

Game Management Units 56, 70, 71, 72, 73, 73A, 74

Population Objectives • Current Status • Harvest Information

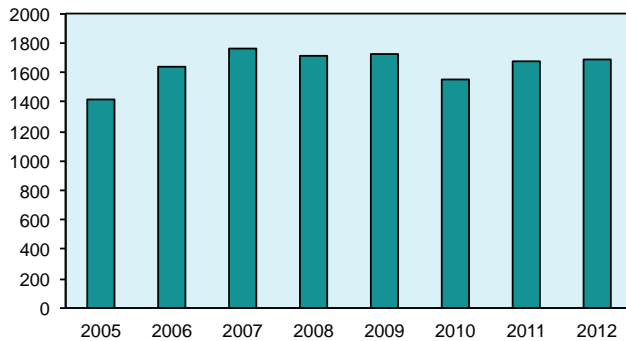
Proposed 10-year Management Direction:

- Maintain the current elk population level;
- Remove unit 56; add it to the new South Hills Zone.

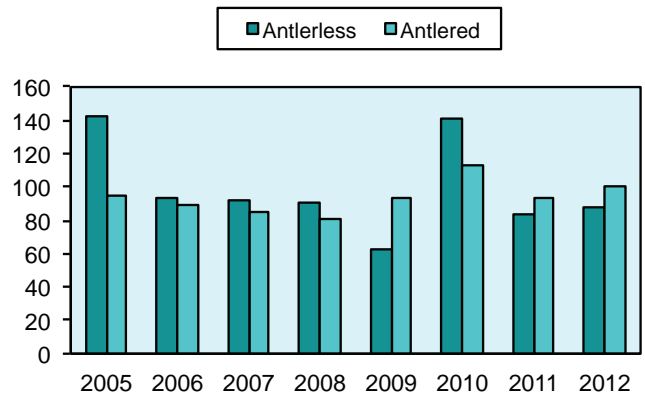
The Bannock zone will continue with the management direction and approaches used since the last elk management plan was developed. The goal is to maintain elk populations, hunter opportunity and hunter success similar to current levels. Elk in the Bannock zone consist of relatively small dispersed populations, which in the past have created agricultural crop and property damage concerns due to the mix of agricultural lands, range lands and forest habitat. Maintaining elk populations at levels which limit agricultural impacts through the use of relatively long seasons, with a diversity of opportunity will continue to be used to provide a balance between agricultural impact concerns and hunter desires for increased elk numbers.

The Bannock Zone elk population is one of a few where aerial surveys are not conducted because of the large land area and small dispersed groups of elk. Elk populations are managed in this zone through harvest data analysis of antlerless and percent 6-point bulls.

**Bannock Zone
Elk Hunter Numbers**



Bannock Zone Elk Harvest



Square Miles = 3,742

% Public Land = 32%

Major Land Type = Rangeland, Agriculture

3-Year Averages

Hunters per square mile = 0.44

Harvest per square mile = 0.06

Success Rate = 13%

%6+ Points = 57%

Bannock Zone – is moderately limited by agricultural concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2018, develop strategies identifying specific needs and actions for movement corridors	Work with state and federal agencies to improve movement corridors across highways to facilitate better dispersal onto seasonal ranges
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7



Bear River Zone

Game Management Units 75, 77, 78

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

The management direction in the Bear River zone involves maintaining elk populations at current levels during the life of this plan. This zone currently has agricultural crop and property damage concerns and winter range limitations, which must be balanced with elk population goals and hunter opportunity. Efforts will continue to address agricultural impacts and increase landowner tolerance for elk. Maintaining populations and providing a diversity of hunting opportunity will continue to be the direction for this zone.

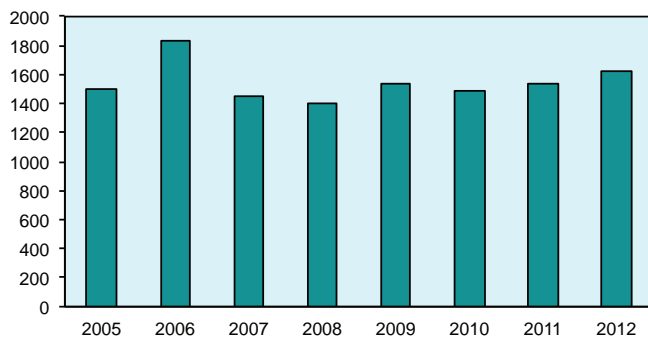
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
400-700	84-147	48-84

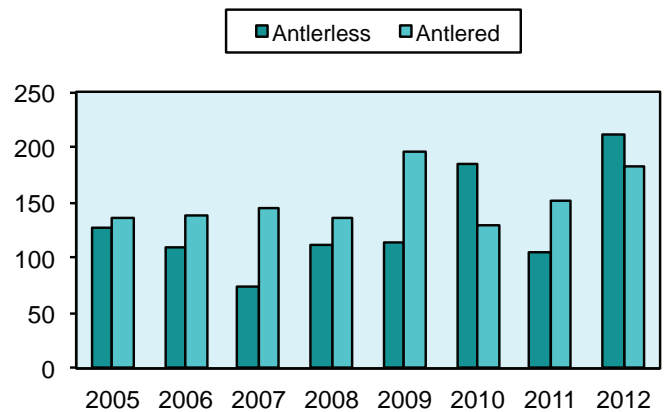
Bear River Zone Population Surveys

Survey 1 - 2006				Survey 2 - 2010			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
379	91	91	561	606	98	205	909
	24*	24*			16*	34*	
*per 100 cows							

Bear River Zone Elk Hunter Numbers



Bear River Zone Elk Harvest



Square Miles = 887
% Public Land = 52%
Major Land Type = Forest

3-Year Averages
Hunters per square mile = 1.75
Harvest per square mile = 0.36
Success Rate = 21%
%6+ Points = 30%

Bear River Zone – is moderately limited by agricultural concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	By 2022, reduce depredation and baiting-feeding operations by 15%	Expand the lure crop program to keep elk in acceptable areas Provide permanent stack yard fencing to protect haystacks
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7



Diamond Creek Zone

Game Management Units 66A, 76

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain bull elk within proposed objectives;
- Increase cow elk numbers to meet proposed objective.

The goal for the Diamond Creek Zone is to increase elk numbers beyond current population estimates. While landowners in this zone experience agricultural crop and property damage, increasing and diversifying proactive measures to address these concerns should allow for an increase in elk numbers. This zone's proposed management direction involves continuing to provide quality hunts, with general hunting opportunity for archery and controlled rifle hunting opportunity.

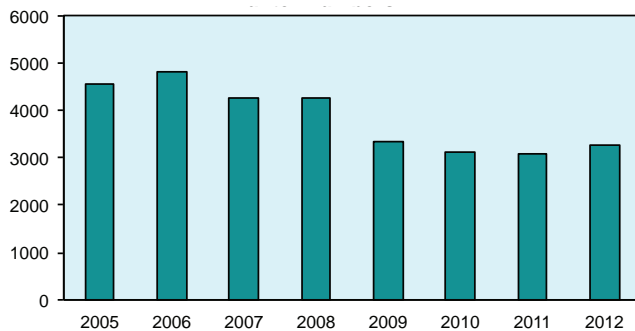
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
1500-2200	488-715	315-462

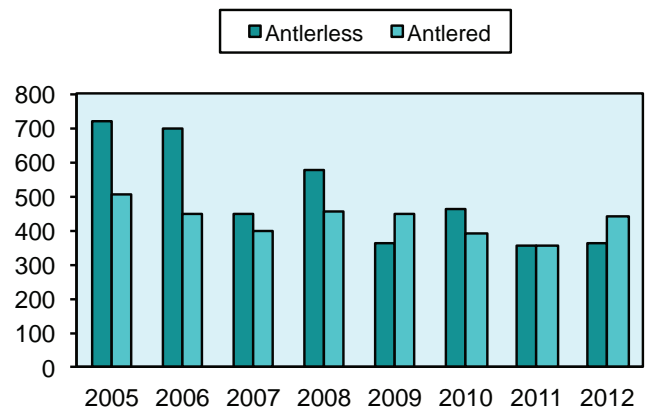
Diamond Creek Zone Population Surveys

Survey 1 - 2009				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
1205	478	285	2220	1218	583	534	2352
	40*	24*			48*	44*	
*per 100 cows							

Diamond Creek Zone Elk Hunter Numbers



Diamond Creek Zone Elk Harvest

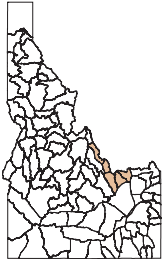


Square Miles = 1,659
% Public Land = 60%
Major Land Type = Forest

3-Year Averages
Hunters per square mile = 1.90
Harvest per square mile = 0.48
Success Rate = 25%
%6+ Points = 42%

Diamond Creek Zone - is moderately limited by agricultural and habitat concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	By 2022, reduce depredation and baiting-feeding operations by 15%	Expand the lure crop program to keep elk in acceptable areas Provide permanent stack yard fencing to protect haystacks
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2018, identify and implement strategies to protect important elk linkage corridors	Improve movement corridors across highways to facilitate better dispersal between seasonal ranges - Rocky Point, Georgetown Summit Continue to work with ITD on wildlife fencing and passages as well as improved signage
Minimize the influence of disease as a limiting factor in elk populations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	Recommend or support projects that would treat and/or improve an average >1,000 acres of summer-fall-winter habitat annually Promote awareness of impacts to elk calving habitat from phosphate mining and transmission line construction Cooperate with USFS to assure Elk Valley Marsh grazing management optimizes potential habitat benefits for elk and other wildlife Develop a map of seasonal habitat use with priorities for elk habitat improvement projects by 2016 Purchase Walker property (760a) and BLM parcel (80a) associated with Georgetown Summit WMA Reseed 20a of Georgetown Summit WMA IDL lease to forage mix by 2020	Work with private landowners, mining companies, power companies and public land managers to restore or mitigate disturbed and degraded areas to improve elk habitat Provide technical expertise through East Idaho Aspen Working Group to improve aspen habitat Work with conservation organizations, elected officials, and land managers to provide long-term conservation measures



Beaverhead Zone

Game Management Units 30, 30A, 58, 59, 59A

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

Proposed population objectives for the Beaverhead Zone provide a necessary balance between hunter opportunity, hunter success and crop/property damage concerns on agricultural lands.

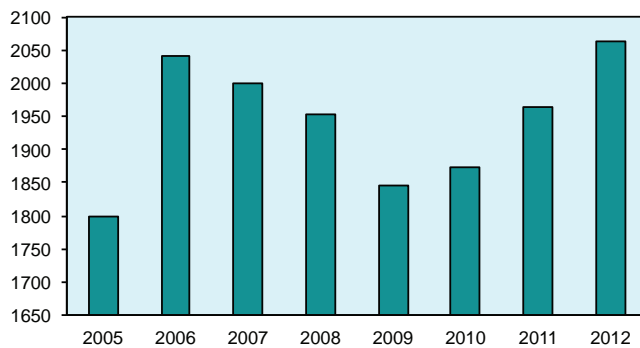
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
2050-3075	555-830	330-485

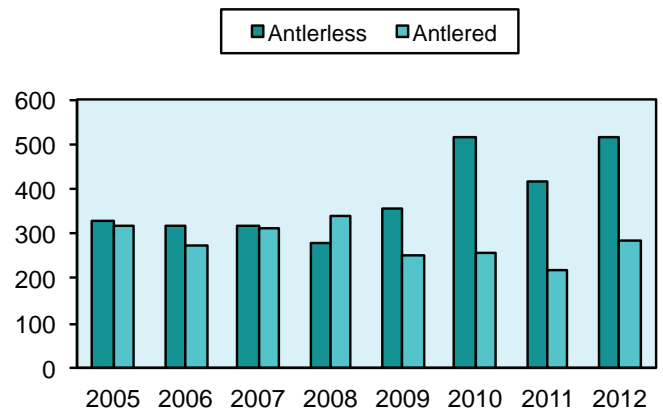
Beaverhead Zone Population Surveys

Survey 1 - 2005				Survey 2 - 2009			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
2467	706	797	3970	3257	862	1333	5452
	29*	32*			26*	41*	
*per 100 cows							

Beaverhead Zone Elk Hunter Numbers



Beaverhead Zone Elk Harvest



Square Miles = 2,037

% Public Land = 85%

Major Land Type = Rangeland, Forest

3-Year Averages

Hunters per square mile = 0.97

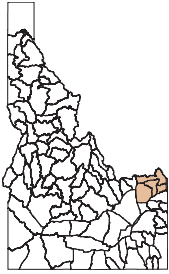
Harvest per square mile = 0.36

Success Rate = 38%

%6+ Points = 42%

Beaverhead Zone – moderately limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	<p>Acquire budget enhancements by FY16 to provide an additional \$10,000 for stack yard material</p> <p>Provide material to build 10 permanent stack yards over the next 10 years</p> <p>Maintain greenfield hunt structure as well as trying at least 1 landowner permission hunt</p>	<p>Provide permanent stack yard fencing to landowners to protect hay stacks</p> <p>Use hunting as the primary tool to manage agricultural depredations</p>
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	<p>During allotment assessments every 10 years, work with federal land management agencies to determine best long-term utilization rates</p> <p>Plan annual meetings with federal land management agencies to discuss the allocation of grazing resources among wildlife and livestock</p>	<p>Cooperate with federal, state, and private land managers and owners to provide suitable winter range, including management of disturbance that could displace elk</p> <p>Engage federal land management agencies regarding drought conditions and emergency drought procedures</p>
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Coordinate with the Salmon-Challis National Forest and BLM on all potential summer range elk habitat enhancement projects (technical assistance and funding)	Continue to provide technical assistance to USFS and BLM and consider becoming a Cooperating Agency to formalize our role with our federal partners



Island Park Zone

Game Management Units 60, 60A, 61, 62, 62A

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Add unit 62 from the dissolved Teton zone;
- Maintain the elk population within proposed objectives.

The Island Park Zone will now include unit 62 from the dissolved Teton Zone. The unit 62 elk herd is small and shares part of its range with some current Island Park Zone elk. The addition of the unit 62 elk herd will allow better management of the entire Island Park Zone elk population, while providing better hunter opportunity.

Proposed population objectives for the Island Park Zone balance hunter opportunity and hunter success with crop and property damage on agricultural lands.

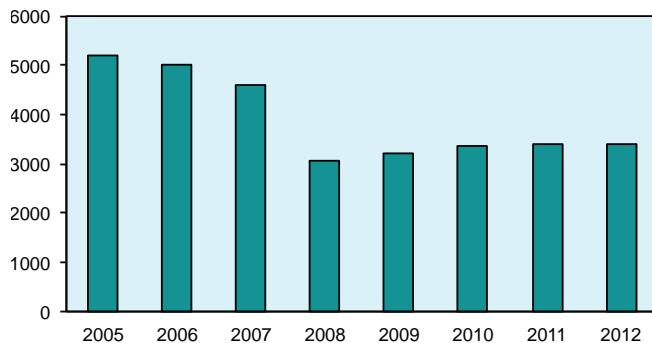
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
1200-1800	400-575	250-375

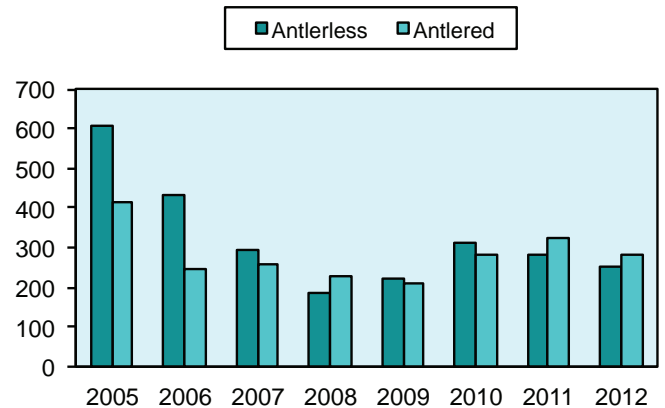
Island Park Zone Population Surveys

Survey 1 - 2006				Survey 2 - 2010			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
1069	315	364	1748	1476	313	722	2512
	29*	34*			21*	49*	
*per 100 cows							

Island Park Zone Elk Hunter Numbers



Island Park Zone Elk Harvest



Square Miles = 2,886
% Public Land = 63%
Major Land Type = Forest, Rangeland

3-Year Averages
Hunters per square mile = 1.18
Harvest per square mile = 0.20
Success Rate = 17%
%6+ Points = 26%

Island Park Zone - moderately limited by agricultural impacts and predation

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Acquire budget enhancements by FY16 to provide an additional \$10,000 for stack yard material	Provide permanent stack yard fencing to landowners to protect hay stacks
Minimize the influence of disease as a limiting factor in elk populations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Maintain or improve calf:cow ratios ≥ 30 calves:100 cows Maintain or improve natural adult cow annual mortality at <10%	Maintain liberal black bear and mountain lion hunting opportunities Maintain wolf season length and harvest quotas Maintain wolf trapping opportunity



Palisades Zone

Game Management Units 64, 65, 67

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Add unit 65 from the dissolved Teton Zone;
- Maintain the elk population within proposed objectives.

The Palisades Zone will now include unit 65 from the dissolved Teton Zone. The unit 65 elk herd is small and shares part of its range with some current Palisades Zone elk. The addition of the unit 65 elk herd will allow better management of the entire Palisades Zone elk population, while providing better hunter opportunity.

Proposed population objectives for the Palisades Zone balance hunter opportunity and hunter success with crop and property damage on agricultural lands.

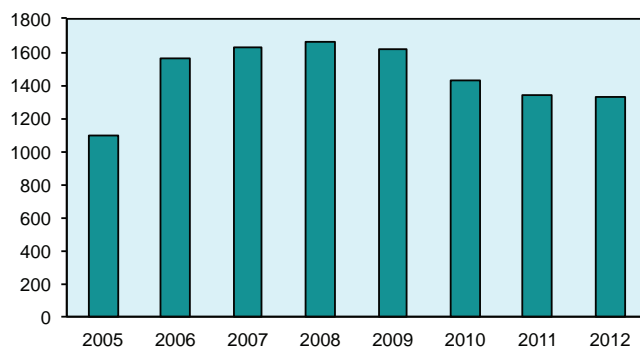
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
400-600	125-200	75-125

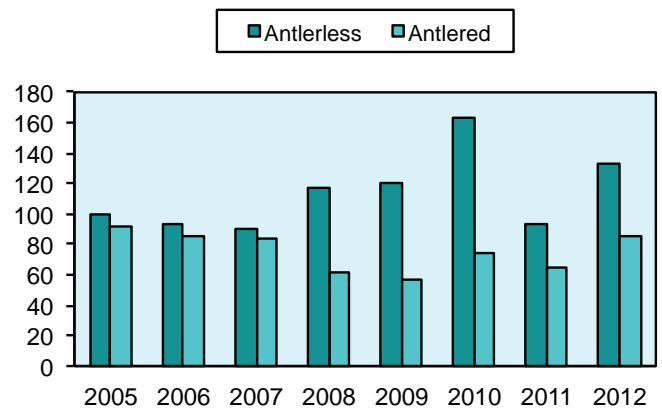
Palisades Zone Population Surveys

Survey 1 - 2004				Survey 2 - 2009			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
375	214	99	688	461	195	141	797
	57*	26*			42*	31*	
*per 100 cows							

Palisades Zone Elk Hunter Numbers



Palisades Zone Elk Harvest



Square Miles = 771
% Public Land = 52%
Major Land Type = Forest, Agriculture

3-Year Averages
Hunters per square mile = 1.77
Harvest per square mile = 0.27
Success Rate = 15%
%6+ Points = 48%

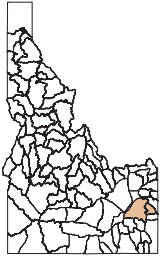
Palisades Zone – is moderately limited by agricultural impacts and habitat

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Acquire budget enhancements by FY16 to provide an additional \$10,000 for stack yard material	Provide permanent stack yard fencing to landowners to protect hay stacks
Minimize the influence of disease as a limiting factor in elk populations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Improve habitat on public and private lands for elk population to meet population goals	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
	Annually, actively manage at least 2,400 acres of aspen or aspen/conifer mix habitat on USFS land to maintain or improve elk summer range	Conduct prescribed fire, thinning, or other active forest management techniques to maintain aspen age diversity and reduce conifer encroachment Manage beneficial wildfires that will diversify or rejuvenate aspen habitats or reduce conifer encroachment
	Annually, restore 1,000 acres of USFS elk winter or transitional range to early successional habitat	Conduct prescribed fire, thinning, or other active management techniques to set back succession in mature conifer, mountain mahogany, and mountain shrub stands below 7,500 ft. elevation
	Annually, improve at least 150 acres of elk winter range habitat on private lands on Pine Creek Bench	Utilize Farm Bill programs, or other conservation funding sources, to convert stands of sod-forming grasses to stands of a beneficial grass/forb/shrub mix
	Cooperate with BLM on improving elk winter range habitat on their conservation easements and fee-title acquisitions on Pine Creek Bench	Provide technical assistance, funding, and labor (where feasible) to convert stands of sod-forming grasses to stands of a beneficial grass/forb/shrub mix
	Annually, improve 400 acres of elk winter forage on private lands from Hwy 33 south to Hwy 31, within four miles of the west side of the Teton River	Utilize Farm Bill programs, or other conservation funding sources, to plant fall annual crops on irrigated land-used for grain production Utilize Farm Bill programs, or other conservation funding sources, to convert stands of sod-forming grasses to stands of a beneficial grass/forb/shrub mix
	Annually, improve 400 acres of elk winter forage on private lands adjacent to the Big Hole Mountains between Milk Creek and Moody Creek	Utilize Farm Bill programs, or other conservation funding sources, to convert stands of sod-forming grasses to stands of a beneficial grass/forb/shrub mix



Palisades Zone

Management Direction	Performance Objective	Strategy
Protect key elk habitats that are necessary to meet or exceed statewide objectives	Conserve a corridor of habitat that connects USFS lands to the existing BLM, IDFG, and Teton Regional Land Trust conservation easements and BLM lands on Pine Creek Bench west of Hwy 31	Utilize fee-title acquisitions or conservation easements to conserve property
	Annually, conserve at least 400 acres of elk winter range between Palisades Creek and Hwy 31 (exclusive of the protected corridor on Pine Creek Bench)	Utilize fee-title acquisitions or conservation easements to conserve property
	Annually, conserve at least 200 acres of elk winter range on the west side of the Teton River between Hwy 33 and Hwy 31	Utilize fee-title acquisitions or conservation easements to conserve property
	Annually, conserve at least 200 acres of elk winter range adjacent to the Big Hole Mountains between Milk Creek and Moody Creek	Utilize fee-title acquisitions or conservation easements to conserve property
	Annually, improve the security cover of at least 800 acres of elk winter range between Moody Creek to Milk Creek	Work with private landowners, public land managers, and county officials to manage access on elk winter range by either road/area closures and/or posting of private property during critical winter months
	Annually, improve the security cover of at least 100 acres of elk winter range on the west side of the Teton River between Hwy 33 and Hwy 31	Work with private landowners, public land managers, and county officials to manage access on elk winter range by either road/area closures and/or posting of private property during critical winter months
	Improve the security cover of elk summer and transition habitats in the Big Hole Mountains by adhering to road density guidelines outlined in the Caribou-Targhee National Forest Plan	Work with USFS to remove and rehabilitate illegal roads and trails on public land Work with the IDL to remove and rehabilitate roads created on State lands for timber harvest
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	During allotment assessments every 10 years, work with federal land management agencies to determine best long-term utilization rates	Cooperate with federal, state, and private land managers and owners to provide suitable winter range, including management of disturbance that could displace elk
	Plan annual meeting with federal land management agencies to discuss the allocation of grazing resources among wildlife and livestock	Engage federal land management agencies regarding drought conditions and emergency drought procedures



Tex Creek Zone

Game Management Units 66, 69

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain elk populations within proposed objectives.

Proposed elk population objectives for the Tex Creek Zone provide a necessary balance between hunter opportunity, hunter success and crop/property damage concerns on agricultural lands.

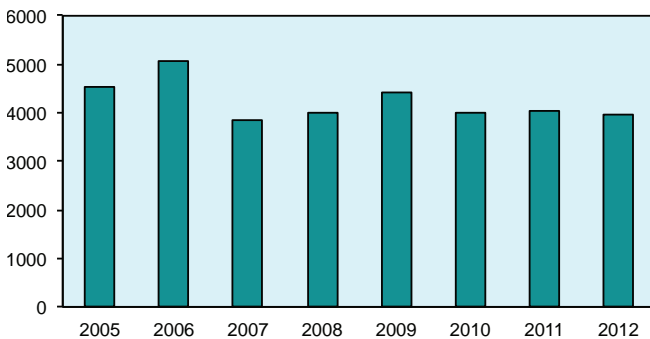
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
2000-3000	425-625	250-350

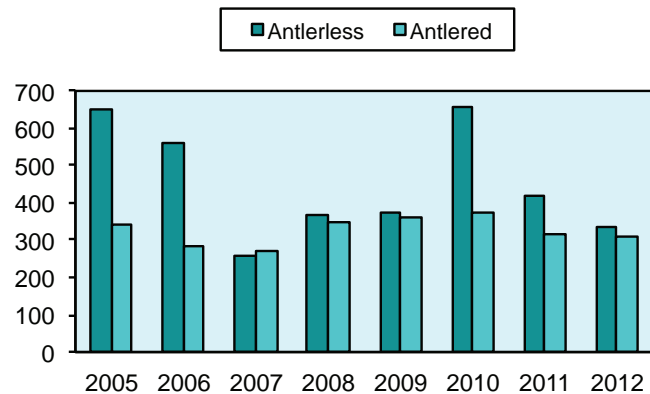
Tex Creek Zone Population Surveys

Survey 1 - 2010				Survey 2 - 2013			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
2277	577	974	3831	2214	583	1088	3885
	25*	43*			26*	49*	
*per 100 cows							

Tex Creek Zone Elk Hunter Numbers



Tex Creek Zone Elk Harvest



Square Miles = 1,796

% Public Land = 36%

Major Land Type = Agriculture, Rangeland, Forest

3-Year Averages

Hunters per square mile = 2.23

Harvest per square mile = 0.45

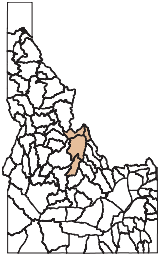
Success Rate = 20%

%6+ Points = 28%



Tex Creek Zone – is highly limited by agricultural concerns

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Acquire budget enhancements by FY16 to provide an additional \$10,000 for stack yard material	Provide permanent stack yard fencing to landowners to protect hay stacks
Minimize the influence of disease as a limiting factor in elk populations	See Statewide Objectives in Table 7	See Statewide Strategies in Table 7
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	<p>During allotment assessments every 10 years, work with federal land management agencies to determine best long-term utilization rates</p> <p>Plan annual meeting with federal land management agencies to discuss the allocation of grazing resources among wildlife and livestock</p>	<p>Cooperate with federal, state, and private land managers and owners to provide suitable winter range, including management of disturbance that could displace elk</p> <p>Engage federal land management agencies regarding drought conditions and emergency drought procedures</p>



Salmon Zone

Game Management Units 21, 21A, 28, 36B

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain cow elk population within proposed objectives;
- Increase bull elk population to meet proposed objectives.

Population objectives for the Salmon Zone are designed to allow the elk population to increase from current levels to reach biological carrying capacity while not exceeding social carrying capacity.

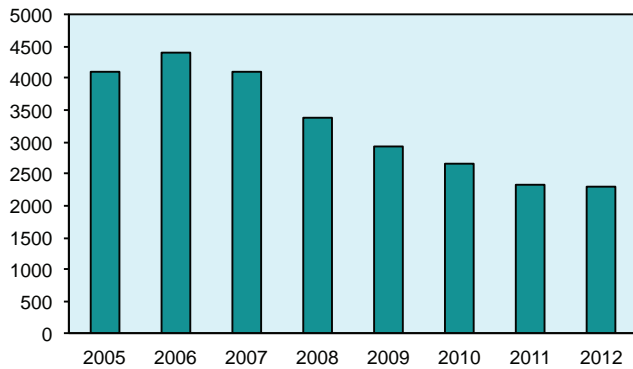
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
4850-7400	1020-1560	585-885

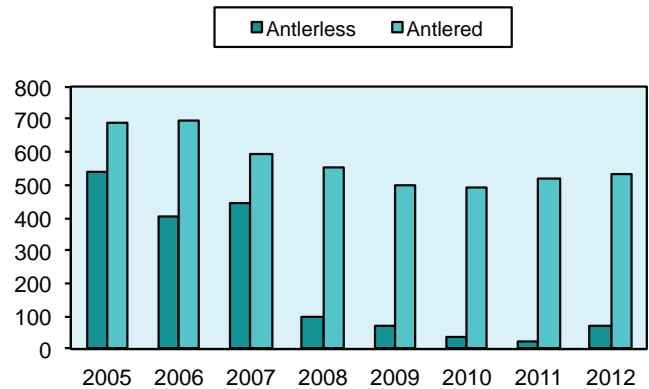
Salmon Zone Population Surveys

Survey 1 - 2008				Survey 2 - 2010			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
6182	884	1333	10611	5628	606	1432	7666
	14*	22*			11*	25*	
*per 100 cows							

Salmon Zone Elk Hunter Numbers



Salmon Zone Elk Harvest



Square Miles = 2,651

% Public Land = 95%

Major Land Type = Forest

3-Year Averages

Hunters per square mile = 0.92

Harvest per square mile = 0.21

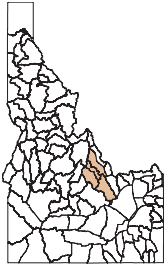
Success Rate = 23%

%6+ Points = 22%



Salmon Zone - is highly limited by predation and moderately limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Maintain or expand greenfield hunt structure for selected units based on relationship to cow elk objectives	Implement a variety of hunting season frameworks, including greenfield hunts, to reduce depredation
When zones are below objectives, aggressively manage elk and predator populations, and improve habitat capabilities	Maintain or increase wolf hunting seasons and bag limits to achieve wolf harvest limit Maintain adequate wolf trapping seasons and bag limits to achieve wolf harvest limit Maintain cow elk population between 4,850-7,400 cows in 2 consecutive aerial surveys conducted at 5-year interval; or estimated lower cow elk population based on modeled population performance	Maintain adequate wolf hunting seasons and liberal bag limits to reduce impacts of wolves Implement wolf trapping seasons in unit(s) where increased wolf harvest is warranted Develop and implement a Predation Management Plan if zone antlerless elk population falls below objective, including consideration of professional trappers and aerial removal
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	Continue coordination and funding for local weed management programs (Lemhi Co. cooperative weed management)	Support and provide funding for invasive weed control
Improve key summer, winter, and transitional habitats on public and private lands that provide for elk populations to meet statewide objectives	Participate in and support (technical assistance and funding) the local Aspen Working Group to maintain or improve ≥ 200 acres of aspen per year in GMUs 21A, 28, and 36B	Promote well designed forest management projects that closely resemble natural disturbance
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2018 identify and implement strategies to protect important elk linkage corridors	Work with vehicle collision database and ITD to identify important elk movement corridors Provide technical assistance for wildlife fencing and passage to reduce vehicle collisions where elk cross highways



Lemhi Zone

Game Management Units 29, 37, 37A, 51

Population Objectives • Current Status • Harvest Information

Proposed 10-year Management Direction:

- Maintain the elk population within proposed objectives.

Population objectives are designed bring elk populations within social carrying capacity near existing levels.

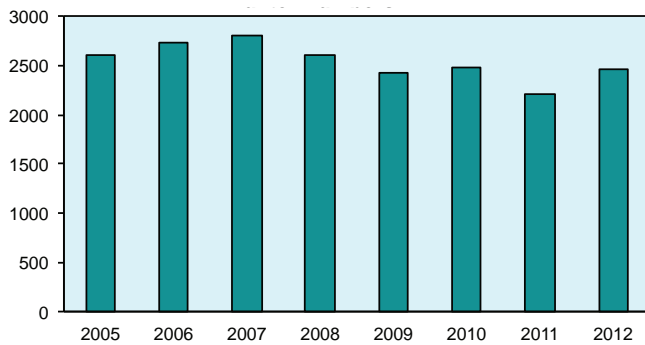
Proposed Zone Population Objectives

Objective		
Cows	Bulls	Adult Bulls
1850-2950	600-960	370-590

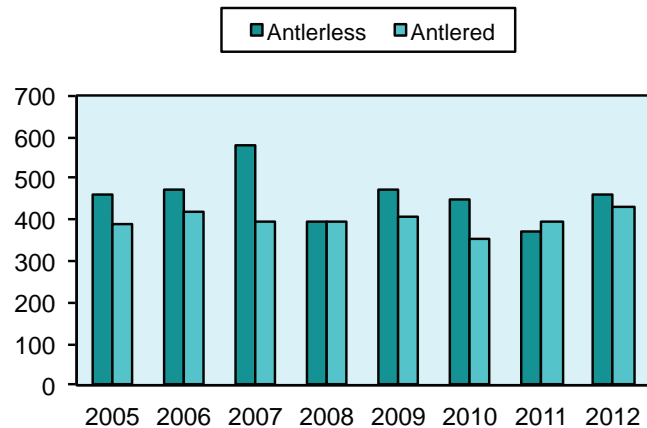
Lemhi Zone Population Surveys

Survey 1 - 2007				Survey 2 - 2011			
Cows	Bulls	Calves	Total	Cows	Bulls	Calves	Total
3262	1442	1201	5905	2753	1005	1206	4964
	44*	37*			37*	44*	
*per 100 cows							

Lemhi Zone Elk Hunter Numbers



Lemhi Zone Elk Harvest



Square Miles =	2,703	3-Year Averages	
% Public Land =	89%	Hunters per square mile =	0.88
Major Land Type =	Rangeland, Forest	Harvest per square mile =	0.30
		Success Rate =	34%
		%6+ Points =	40%



Lemhi Zone - is moderately limited by agricultural impacts

Management Direction	Performance Objective	Strategy
Implement proactive measures to reduce and minimize elk depredations	Maintain greenfield hunt structure and possibly extend it until September 30 in GMU 29	Use hunting as the primary tool to manage depredation levels Implement a variety of hunting season frameworks, including greenfield hunts, to reduce depredation
	Provide material to build 10 permanent stack yards over the next 10 years	Provide permanent stack yard fencing to landowners to protect hay stacks
	Identify whether any landowners in GMUs 37 or 37A will entertain use agreements for elk	Implement long-term continued use agreements with willing landowners, including securing wintering habitat on private rangeland in GMUs 37 and 37A Cooperate with Federal land managers to assure range conditions provide adequate forage for elk in areas prone to depredations Fence off agricultural fields with chronic complaints
Increase IDFG involvement in long- and short-term land-use planning efforts by providing information, analysis, and recommendations to improve and preserve elk habitats	By 2018, identify and implement strategies to protect important elk linkage corridors	Work with vehicle collision database and ITD to identify important elk movement corridors Provide technical assistance for wildlife fencing and passage to reduce vehicle collisions where elk cross highways

Financial Plan

Management of elk in Idaho is almost entirely funded by hunters. Although many non-hunting citizens of Idaho enjoy the presence of elk, IDFG receives no state general funds for management. The 2 primary sources of revenue are state-generated license and tag sales and federal funding available through the Pittman-Robertson Aid in Wildlife Restoration Program administered by the USFWS. Historically, elk management has received a disproportionately high percentage of state and federal funds. Additionally, IDFG implements a limited number of elk projects funded by sportsmen organizations and cost-share agreements with the USFS and BLM.

Management goals in this plan are ambitious and will require public support and additional funding to accomplish. Particularly, attainment of long-term population objectives will require extensive habitat management activities with associated

costs. Short-term management objectives can likely be met with existing funding. The IDFG will continue to work with the Governor's Office, other elected officials, federal land management agencies, conservation organizations, private landowners, and sportsmen to secure the necessary funding for attainment of long-term management goals. While we anticipate a vast majority of elk management program costs will continue to be borne by hunters, IDFG will actively pursue nontraditional funding sources, especially for those program activities that benefit all Idaho citizens. As a priority program for IDFG, elk management will continue to receive a disproportionately high percentage of wildlife management funding.



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Appendix A
2012 Idaho Elk Hunter Opinion Survey

Elk Hunting in Idaho



Understanding the needs
and experiences of hunters



Take this survey online – save your time and our printing and postage costs!

Go to: <http://www.cnr.uidaho.edu/idfg>

Conducted by:

Department of Conservation Social Sciences

For:

Idaho Department of Fish and Game

University of Idaho
College of Natural Resources



First, some questions about your general hunting behavior.

1. About how many years have you hunted in Idaho? *(Please enter number of years)*

_____ Years

2. How often do you hunt each of the following game species in Idaho?

Game Species	How often do you hunt the following species in Idaho?			
	<i>(Please circle one response for each species)</i>			
A. Black Bear	Never	Some Years	Most Years	Every Year
B. Moose, Bighorn Sheep, Mountain Goat <i>(one in a lifetime)</i>	Never	Some Years	Most Years	Every Year
C. Mountain Lion	Never	Some Years	Most Years	Every Year
D. Mule Deer	Never	Some Years	Most Years	Every Year
E. Pronghorn	Never	Some Years	Most Years	Every Year
F. Upland Game/ Birds	Never	Some Years	Most Years	Every Year
G. White-tailed Deer	Never	Some Years	Most Years	Every Year
H. Wolf	Never		2009-2010	2011-2012

Now, some questions about your Idaho Elk hunting experiences and preferences.

3. About how many years have you hunted Elk in Idaho? *(Please enter the number of years)*

_____ Years

4. Please circle those years that you **did** hunt Elk in Idaho during the past 7 years?
(Please circle all that apply)

2011 2010 2009 2008 2007 2006 2005



9. Which of the following Idaho Elk archery, short-range weapons or muzzleloader seasons did you hunt in during the last 7 years (2005-2011)? *(Please check all that apply)*

- None, I Only Hunted Elk With a Rifle ➔ **Please Continue with Q-11, on the next page.**
- I Hunted In Archery-Only Seasons
- I Hunted In Short-Range Weapon Seasons
- I Hunted In Muzzleloader-Only Seasons

10. How important was each of the following in your decision to hunt in Elk archery, short-range weapons or muzzleloader seasons?

Reasons for Archery, Short-range Weapons or Muzzleloader Hunting	How important was each reason for hunting in Elk archery, short-range weapons or muzzleloader seasons? <i>(Please circle one response for each reason)</i>				
	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
A. To increase the challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. To hunt when fewer hunters are a-field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. To improve my chance of harvesting an Elk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. To expand my hunting season.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. To hunt in a zone where rifle Elk hunting opportunity is limited.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. For the adventure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. To engage in traditional forms of hunting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. To build my confidence as an Elk hunter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. To hunt Elk during the rut.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. What has been your Elk harvesting success in Idaho? *(Please check all that apply)*

- I Have **NEVER** Harvested an Elk in Idaho. ➔ **Please continue with Q-12, below.**
- I **Harvested** Elk In Idaho In: *(Circle all the years that you harvest an Elk in Idaho)*

2011 2010 2009 2008 2007 2006 2005 2004 2003 2002

12. If you could not hunt Elk in Idaho, how would you react? *(Please check only one response)*

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Not Miss it
at All | Miss it a
Little | Miss it
Somewhat | Miss it
Considerably | Miss it a Great
Deal |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Idaho Elk Management Plan

13. If you could not hunt Elk in Idaho how would your hunting change?

Changes to your hunting	If you could not hunt Elk in Idaho how would your hunting change?				
	<i>(Please check one response for each change)</i>				
A. I would hunt waterfowl more.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
B. I would hunt upland game more.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
C. I would spend more time hunting other big game.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
D. I would hunt Elk in other states.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
E. I would not hunt at all.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely

14. Which of the following best describes where you typically hunt Elk in Idaho?

*(Please check only **one** response)*

I Typically Hunt In The Same Zone Every Year.

I Typically Hunt In Different Zones Each Year.

15. In which zones did you hunt Elk in Idaho during 2011?

*(Please check all the zones you hunted in **2011**)*

Panhandle

Pioneer

Palouse

Owyhee-South Hills

Hells Canyon

Boise River

Lolo

Smoky Mountain

Dworshak

Bennett Hills

Elk City

Big Desert

Selway

Snake River

Middle Fork

Island Park

Salmon

Teton

Weiser

Palisades

McCall

Tex Creek

Lemhi

Bannock

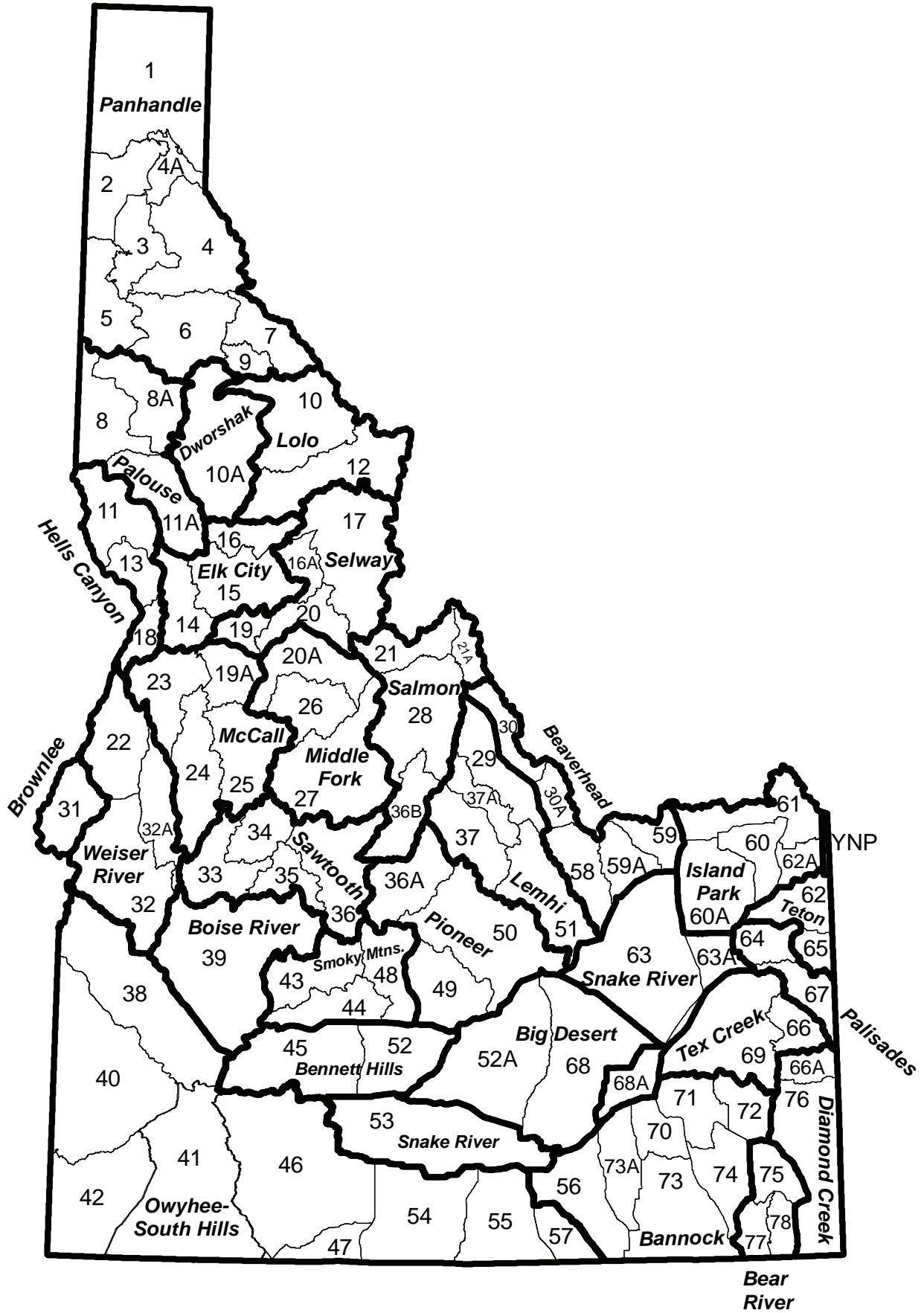
Beaverhead

Bear River

Brownlee

Diamond Creek

Sawtooth



Idaho Elk Management Plan

16. What makes that a desirable zone to hunt Elk? *(Please check all that apply)*

- It is close to my home or cabin.
- Tradition—i always hunt there.
- It provides a good chance of harvesting an elk.
- It has the seasons i prefer.
- It is a general zone that i can get every year (not a controlled hunt).
- There are not many hunters there competing with me for elk.
- I can also hunt deer during the same season.
- It has OHV restrictions.

17. What are your perceptions of Elk numbers in the zone you hunted in 2011? Select the **ONE** statement from the list below that most closely matches your perceptions.

(Please check only ONE response)

- Elk numbers have declined abruptly in the last 10 years and Elk are scarce in the zone.
- Elk numbers have declined in the last 10 years, but still remain relatively abundant.
- Elk numbers have remained stable in the last 10 years.
- Elk numbers have increased slightly in the last 10 years.
- Elk numbers have increased substantially in the last 10 years and Elk are over-abundant.

18. If you hunted in more than one zone in the past 10 years please list them below. *(Please write in the Zone names)*

19. If you have hunted in more than one zone in the past 10 years please tell us why you changed zones. *(Please write in your answer)*

20. How long have you hunted Elk in each of the zones you listed in Q-18?
(Please write in the name of the zone and number of years)

I Have Hunted in the _____ Zone for _____ Years.

I Have Hunted in the _____ Zone for _____ Years.

I Have Hunted in the _____ Zone for _____ Years.

I Have Hunted in the _____ Zone for _____ Years.



21. Do you also hunt for Elk in other states? (Please check one response)

Yes No, Please continue with Q-22 on the next page.

If **YES**, please list the states:

22. What do you believe is *the* primary factor limiting Elk numbers in the zone you hunted in 2011? (Check only **ONE** response)

Predators

Habitat

Disease

Hunter Harvest

Weather

23. Would you like to be able to hunt in multiple zones in a year for a *single* Elk? (Please check one response)

Yes No

If **YES**, would you be willing to pay a higher fee (\$100 more for non-residents; \$30 more for residents) to do so? (Please check one response)

Yes No

25. When the zone system was implemented the mechanism for reducing unlimited over-the-counter opportunity called “capping the zone” was developed by the department with the help of legislators, sportsmen and outfitters. This “capping the zone” is an allocation formula to distribute Elk tags to hunters (residents, nonresidents and outfitted residents) based on the historical use of the previous 5 years. What has been your experience with this management strategy? (Please circle one response for each question)

A. Do you hunt in a capped zone?	Yes	No
B. Has “capping a zone” affected where you hunt?	Yes	No
C. Has “capping a zone” caused you to change the zone you hunt in?	Yes	No
D. Do you think the allocation formula based on the previous 5 years of use by the 3 groups is appropriate?	Yes	No

26. If you hunt in a “capped zone” has the Elk hunting changed since it was capped? (Please check one response)

Elk Hunting has Improved.

Elk Hunting has Stayed the Same.

Elk Hunting has Become Worse.

In this section we seek an understanding of what you consider when deciding what kind of Elk to hunt and where to hunt them.

27. How desirable is it to you to harvest the following kinds of Elk

Kind Of Elk	How desirable do you find harvesting each kind of Elk?				
	<i>(Please circle one response for each kind of Elk)</i>				
A. Large Bull <i>(greater than 350 Boone & Crocket points)</i>	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	
B. Mature Bull <i>(6 points a side)</i>	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	
C. Raghorn Bull <i>(4-5 points a side)</i>	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	
D. Spike Elk	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	
E. Cow Elk	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	
F. Calf	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	
G. Any Elk	Not Very Desirable	Moderately Desirable	Quite Desirable	Extremely Desirable	

28. Below is a list of possible reasons for hunting Elk in Idaho. How important to you is each of the following reasons for hunting Elk in Idaho?

Reasons For Hunting	How important is each reason for hunting Elk in Idaho?				
	<i>(Please circle one response for each reason)</i>				
A. Being close to nature.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
B. Harvesting an antlerless Elk	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
C. Viewing the scenery.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
D. Harvesting any Elk.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
E. Seeing Elk in a natural setting.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
F. Testing my abilities.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
G. Harvesting a large bull. <i>(greater than 350 Boone & Crocket points)</i>	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
H. Sharing what I have learned with others.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
I. Being with friends.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
J. Harvesting a raghorn bull. <i>(4 or 5 points on a side)</i>	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
K. Learning more about nature.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
L. Doing something with my family.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important



M. Putting meat on the table.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
N. Keeping physically fit.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
O. Harvesting any bull.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
P. Developing close friendship with my hunting companions.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
Q. Harvesting a mature bull. (6 points on a side)	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
R. Just being outdoors.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important

29. Each of the following characteristics may be things you consider when deciding where to hunt Elk in Idaho. How does each characteristic affect your choice of where to hunt Elk in Idaho?

Characteristics

How does each characteristic affect where you decide to hunt Elk in Idaho?

(Please circle one response for each characteristic)

A. An area with few other Elk hunters.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
B. An area that has many Elk but few mature bulls.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
C. An area where I have hunted Elk for many years.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
D. An area where my family can also hunt Elk with me.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
E. Ability to hunt Elk every year.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
F. An area where I can also hunt deer during the Elk season.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
G. An area close to my home or cabin.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
H. An area with a long Elk season.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
I. An area that is remote and hard to reach.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
J. An area that has an early start to the season.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
K. An area where I have access to public lands (Forest Service, BLM).	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
L. An area where I also have access to private lands.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
M. An area where I think I have the greatest chance of harvesting an Elk.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
N. An area that has a late end to the Elk season.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
O. An area where I will not encounter motorized hunters using OHVs.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
P. An area where I am able to use my OHV or other motorized vehicle while hunting Elk.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important

Idaho Elk Management Plan

Q. An area where I can hunt Elk with the weapon of my choice.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
R. An area where I have the best chance of getting drawn for an Elk hunt.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
S. An area where Wolves are not present.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
T. An area where I can also hunt Wolves.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important

30. Are there any times during the general Elk hunting season in Idaho that you prefer or avoid?
(Please check as many as apply)

	I Prefer	I Avoid
A. Opening Day	<input type="checkbox"/>	<input type="checkbox"/>
B. First Weekend	<input type="checkbox"/>	<input type="checkbox"/>
C. First Week	<input type="checkbox"/>	<input type="checkbox"/>
D. Any Weekend	<input type="checkbox"/>	<input type="checkbox"/>
E. Any Weekday	<input type="checkbox"/>	<input type="checkbox"/>
F. Last Week	<input type="checkbox"/>	<input type="checkbox"/>
G. Last Weekend	<input type="checkbox"/>	<input type="checkbox"/>
H. Last Day	<input type="checkbox"/>	<input type="checkbox"/>

31. What attributes are important to a quality Idaho Elk hunting experience?

Attributes of an Idaho Elk Hunting Experience

How important is each attribute to the quality of your Idaho Elk hunting experience?

(Please circle one response for each attribute)

A. Low Elk hunter densities.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
B. Harvesting an Elk.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
C. Seeing harvestable Elk.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
D. Being able to hunt for mature bulls.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
E. Being able to hunt Elk with family and friends.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
F. Being able to hunt Elk every year.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
G. Being able to hunt Elk using an OHV.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
H. Competing only with other Elk hunters on foot or horseback.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
I. Not having competition from other Elk hunters using other forms of transportation (OHV, mountain bike, etc.).	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important



J. Having the opportunity for reduced price nonresident junior mentored tag.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important
K. Having a long Elk season.	Not Important	Somewhat Important	Moderately Important	Quite Important	Extremely Important

Next, your opinions about some possible management options.

32. Managing to produce more large bull Elk would require reductions in bull harvest. Managers need to know whether hunters are willing make trade-offs between the size of bulls and the amount of opportunity to hunt. *(For each of the following pairs of opportunity choices please indicate which one is most favorable to you by circling the appropriate letter)* **Please answer every one, even if you do not like either option.**

The opportunity to hunt for a raghorn bull (4 or 5 points a side) every year	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a mature bull (6+ points a side) once every 10 years
The opportunity to hunt for a mature bull (6+ points a side) once every 3 years	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a raghorn bull (4-5 points a side) every year
The opportunity to hunt for a mature bull (6+ points a side) once every 3 years	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a spike bull every year
The opportunity to hunt for a spike bull every year	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a raghorn bull (4 or 5 points a side) once every 3 years
The opportunity to hunt for a cow Elk every year	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a raghorn bull (4 or 5 points a side) once every 3 years
The opportunity to hunt for a mature bull (6+ points a side) once every 3 years	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a cow Elk every year
The opportunity to hunt for a cow Elk every year	<input type="checkbox"/> A	OR	<input type="checkbox"/> B	The opportunity to hunt for a spike bull every year

33. Were there times during your 2011 Elk season when the numbers of other hunters seriously detracted from the quality of your hunting experience? *(Please check one response)*

Yes No I Did Not Hunt Elk in 2011

34. How do you feel about each of the following potential ways of improving Elk hunting, if needed?

Potential Management Options	How do you feel about the following potential ways of Elk hunting? <i>(Please circle one response for each option)</i>			
A. Longer Seasons.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information
B. Choose only one weapon (<i>archery, muzzleloader, rifle</i>).	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information
C. Choose only one species—Deer or Elk.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information

Idaho Elk Management Plan

D. Controlled hunts.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information
E. Stratified hunts (<i>a choice of one of several short seasons (example 5- 7 days).</i>)	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information
F. Choose an area with the Motorized hunting rule or other travel restrictions.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information
G. Choose an area with a capped zone (limited first come first served).	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information

35. We would like to know how you feel about the following *potential* restrictions to increase the quality and size of Elk in Idaho and improve Elk hunting opportunities. Please indicate your opinion on the following *potential* restrictions.

Potential Restrictions	How you feel about the following potential restrictions? (Please check one response for each restriction)				
A. Restricting the use of OHVs.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
B. Making some Elk zones foot and horse access only.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
C. Retaining the current spike-only regulations.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
D. Instituting a brow-tine restriction.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
E. Choosing a single weapon for the entire Elk season.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
F. A shorter Elk season (<i>less than 10 days</i>) but being able to hunt Elk every year.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
G. More controlled hunts that provide more and/or larger bulls and higher harvest success, but not being able to hunt Elk every year.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
H. More controlled hunts that provide more and/or larger bulls and higher harvest success, and not being allowed to hunt for Elk if you did not draw a tag.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	
I. Being able to purchase an Elk tag only every other year.	Favor it	Do Not Favor, But Acceptable	Not Acceptable	Need More Information	

36. **IF** Idaho Fish and Game introduces restrictions that reduce Elk hunting opportunities to improve Elk populations, how would your hunting behavior change?

Changes to your hunting	How likely would you change your behavior? (Please check one response for each attribute)				
A. I would hunt in different zones.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
B. I would quit hunting Elk.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
C. I would shift to hunting other species.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely



D. I would not change my hunting behavior.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely
E. I would change my weapon type for increased Elk hunting opportunity.	Very Unlikely	Unlikely	Neither Unlikely nor Likely	Likely	Very Likely

Now, some questions about the satisfaction you experienced with Elk hunting in Idaho in 2011.

37. How satisfied were you with each of the following aspects of your 2011 Elk hunting experience?

If you ***DID NOT*** Hunt Elk in Idaho in 2011, Please Check Here and Skip to Q-38 on the next page ➡

Attributes of Your 2011 Idaho Elk Hunting Experience	How satisfied were you with your 2011 Idaho Elk hunting experience?				
	<i>(Please check one response for each attribute)</i>				
A. The number of Elk you saw.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
B. The number of <i>harvestable</i> Elk you saw.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
C. The numbers of bulls you saw.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
D. The length of the Elk season.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
E. The timing of the Elk season.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
F. The number of other Elk hunters you encountered.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
G. The amount of access.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
H. The number of OHVs encountered.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
I. The amount of Elk hunting opportunity.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
J. Elk harvest success.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
K. The opportunity for friends and family to hunt Elk together.	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied

38. How would you feel about a big game regulation that sets the general season conditions for 2 years in advance, just like the current Moose, Mountain Goat, Bighorn Sheep, upland game, Turkey and fishing regulations? *(Please check one response)*

Favor it Do Not Favor, But Acceptable Not Acceptable Need More Information

Two questions about predators in Idaho.

39. How do Wolves affect your Idaho Elk hunting experience?

(Please circle one response for each item)

- A. Does the presence of Wolves affect where you hunt Elk? Yes No
- B. Is the opportunity to hunt Wolves along with Elk important to you? Yes No
- C. Did you choose your Elk zone because the negative effect of Wolves have had on your Elk hunting experience? Yes No
- D. Do you hunt Elk in zones with few Wolves? Yes No

40. Do you anticipate Elk numbers to increase now that Idaho Fish and Game is responsible for managing wolves? *(Please check one response)*

- Yes
- No

Finally, some questions about you!

41. Where did you live in 2011? *(Please check **one** response)*

- Developed Area (city, town, suburb) **in Idaho**
- Rural Area **in Idaho**
- Developed Area (city, town, suburb) Out-of-State ➡ Please Continue with Q-43
- Rural Area Out-of-State ➡ Please Continue with Q-43

42. How long have you lived in Idaho? *(Please enter the number of years)* _____ Years

43. When were you born? *(Please enter the year)* I was Born in 19_____

44. Do you have any physical conditions such as vision or hearing impairment, or any condition that limits your ability to perform activities such as walking, climbing, reaching, lifting, or carrying?
(Please check one)

- Yes
- No

45. Are you: *(Please check one)*

- Male
- Female

46. Are you: *(Please check all that apply)*

- American Indian/Alaskan Native
- Hispanic or Latino/Latina
- Asian
- Native Hawaiian/Pacific Islander
- African American
- White



47. During the 2011 hunting season were you: *(Please check all that apply)*

- Employed Full-Time
- Employed Part-Time
- Student
- Retired
- Homemaker
- Unemployed

We would appreciate your answering the last question. If, however you feel this is a private matter we respect your decision to not answer.

48. Which of the following best describes your gross **family income** before taxes in **2011**?
*(Please check only **one** response)*

- Less Than \$20,000
- \$20,000-\$39,999
- \$40,000-\$59,999
- \$60,000-\$79,999
- \$80,000-\$99,999
- \$100,000-\$119,999
- \$120,000-\$139,999
- \$140,000-\$159,999
- \$160,000-\$179,999
- \$180,000 or More

Thank you for your help. Is there anything else you'd like to tell us about Elk hunting in Idaho?
We would appreciate any comments.

To return your completed questionnaire, simply mail it back in the enclosed postage-paid envelope to:

ELK HUNTER SURVEY
STATE OF IDAHO
PO BOX 25
BOISE, ID 83707-9973

Thank you

Department of Conservation Social Sciences; College of Natural Resources; University of Idaho



Executive Summary

Elk Hunting in Idaho: Understanding the Needs and Experiences of Hunters

Prepared by:

**Nick Sanyal, Ph.D., Associate Professor,
Ed Krumpke, Ph.D., Professor, and
Alexandria Middleton, Research Assistant**

**Department of Conservation Social Sciences,
College of Natural Resources,
University of Idaho,**

For:

**Idaho Department of Fish and Game
August 2012**

EXECUTIVE SUMMARY

Overview

The main goal of this study of Idaho Elk hunters is to provide the Idaho Department of Fish and Game representative information about the views of elk hunters in Idaho. Descriptions of who they are, what their preferences and motivations are, how they make decisions about where to hunt, and their opinions on various Elk management issues were collected in the summer of 2012. This study is the first comprehensive investigation of Idaho Elk hunters since a similar study was conducted by the University of Idaho over 20 years ago in 1988-89, and provides an important update to knowledge about Elk hunters. The results provided here, in combination with biological data, are key to continuing to improve wildlife planning and management in the state of Idaho.

Survey Objectives

This current study was designed to provide contemporary data for the quantification of the following characteristics of a sample Idaho Elk hunters:

1. Hunting Elk hunter profiles (basic demographics, travel patterns, hunting history, harvest success, zone use);

2. Elk hunting preferences and motivations;
3. Acceptability of current and proposed management strategies and the trade-offs involved;
4. Decisions about where to hunt;
5. Attributes of a quality Elk hunting experience;
6. Hunting satisfaction; and
7. Perceptions of predators

Methods

Survey research using a mail back and web-based instrument was used to collect data from stratified random samples of hunters licensed to hunt Elk in 2011 Idaho. This study uses a differential design (Graziano & Raulin, 2007), seeking to understand selected characteristics of groups designated on the basis of preexisting variables. The questionnaire (survey instrument) was designed with input from representatives of the Idaho Department of Fish and Game. The instrument was pre-tested on a convenience sample of Moscow, Idaho, residents who had similar recreational propensities that the study required.

Sampling

The sample was a stratified random sample of Idaho residents:

- Mailed to 6,200 hunters who purchased a general Elk tag in 2011.
- Sample was stratified by the 29 Elk hunting zones
- Random sample of 200 resident and 20 non-resident hunters in each of the 29 elk zones.
- N=6,200 hunters (18 or older) from all Idaho Elk hunting licenses in 2011 (data from Idaho Department of Fish and Game)

A total of 2,786 useable questionnaires were returned and used in the analyses, which is a 48.5% response rate after accounting for undeliverable instruments and refusals. This response is judged to be adequate to produce a statistically representative sample of the population of Idaho Elk hunters at 3 10% level of accuracy.

Elk Hunter Profiles

- Idaho Elk hunters are very experienced, the majority of whom have hunted Elk in Idaho every year since 2005.
- Hunters most frequently travel on foot when hunting, and they almost never use mountain bikes.
- The majority of Elk hunters typically use a rifle to hunt. About a third use a compound bow.
- The 3 primary reasons hunters decide to hunt during Elk archery, short-range weapons or muzzleloader seasons is to hunt when fewer hunters are afield, to hunt during the rut, and for the adventure of hunting with these types of weapons.
- Overall, hunters are fairly successful in harvesting Elk in Idaho, averaging about 23% over the past 10 years.
- Almost all Idaho Elk hunters are dedicated to the sport, and if for some reason they could not hunt Elk in Idaho, they would miss it a great deal. If they could not hunt Elk in Idaho, hunters reported they would spend more time hunting other big game, or they would hunt Elk in other states.
- The majority of Elk hunters typically hunt in the same zone every year.
- When asked what makes the zone they hunted in 2011 desirable, half the hunters said a zone that was close to their home or cabin, and half said a general zone that they can get every year (not a controlled hunt) was most desirable.
- One-half of the Elk hunters perceive that in 2011 Elk numbers have declined abruptly in the last 10 years and Elk are scarce in the zone they hunted.
- Elk hunters have hunted in their preferred zones on average for over 14 years. Those who hunted Elk in other states most frequently did so in Montana, Colorado and Wyoming.

- Three-quarters of the hunters believe predators are the primary factor limiting Elk numbers in the zone they hunted.
- A large majority would like to be able to hunt in multiple zones, and over one-half would be willing to pay a higher fee to do so.
- Almost half of the Elk hunters have experience hunting in a capped zone. Generally, capping has not had much effect on hunting behavior. A majority of hunters felt that Elk hunting has become worse since the zone they hunt in was “capped.”

Elk Hunting Preferences and Motivations

- Hunters reported that harvesting a mature bull (6 points a side) or a large bull (greater than 350 Boone & Crockett points) was most desirable.
- When asked how important various reasons were to them for hunting Elk, the top 6 reasons were “just being outdoors,” “seeing Elk in a natural setting,” “being close to nature,” “viewing scenery,” “being with friends,” and “doing something with my family.”
- The motivations associated with harvesting Elk were of less importance than these reasons that describe being immersed in the natural setting. In almost every case, Idaho Elk hunters prefer to preserve the amount of opportunity to hunt over hunting for large bull Elk.

Acceptability of Current and Proposed Management Strategies and the Trade-Offs Involved

- Elk hunters generally favored 5 of 7 potential ways to improve Elk hunting, if needed. The most favorable or acceptable was to choose only 1 weapon such as archery, muzzleloader, or rifle.
- A majority of Elk hunters clearly found 3 potential restrictions to increase the quality and



size of Elk in Idaho and to improve Elk hunting opportunities to be favorable or acceptable. Over 70% favored making some Elk zones foot and horse access only, restricting the use of OHVs, and choosing a single weapon for the entire Elk season.

A clear majority found it unacceptable to be restricted to being able to purchase an Elk tag only every other year, having more controlled hunts that provide larger animals but not being able to hunt Elk every year, and more controlled hunts but not being able to hunt Elk every year if you did not draw a tag.

- Seventy-two percent of the Elk hunters said that that it was unlikely or very unlikely that they would quit hunting Elk if IDFG introduces restrictions that reduce Elk hunting opportunities to improve populations.
- A majority of the Elk hunters feel it would be acceptable to have a big game regulation that sets the general season conditions for 2 years in advance, but almost 30% said that they would need more information.

When and Where to Hunt

- The top 5 characteristics that affected their choice of where to hunt Elk in Idaho were the ability to hunt every year, an area where they have access to public lands, an area where they think they have the greatest chance of harvesting an Elk, an area where wolves are not present, and an area with few other Elk hunters.
- Elk hunters primarily prefer to hunt on any weekday, on the last week of the season or the first week of the season. They tend to avoid the first weekend, any weekend in general and opening day.

Attributes of a Quality Elk Hunting Experience

- Attributes that define a quality Elk hunting experience center on preserving the hunting opportunity. Most important were being able

to hunt for Elk every year and seeing a harvestable Elk.

Hunting Satisfaction

- One-third of hunters felt that there were times when the numbers of other hunters seriously detracted from their hunting experience. The 4 aspects Elk hunters were most satisfied with in 2011 were the opportunity for friends and family to hunt Elk together, the timing of the Elk season, the length of the season, and the amount of Elk hunting opportunity.
- They were least satisfied with the number of bulls seen, the number of harvestable Elk seen, the number of Elk seen, and Elk harvest success.

Perceptions of Predators

- Three-quarters of the Elk hunters reported that the presence of wolves affected where they hunt Elk, and just over one-half said the opportunity to hunt Wolves along with Elk is important to them.
- Close to one-half (46.5%) hunt Elk in zones with few Wolves.
- Over two-thirds (64%) said they did not choose their Elk zone because of the negative effect Wolves have had on their Elk hunting experience.
- Almost two-thirds of the Elk hunters anticipate Elk numbers will increase now that IDFG is responsible for managing wolves.

Demographics

- The respondents have a considerable amount of experience hunting in Idaho, averaging almost 50 years of Idaho hunting experience.
- Idaho Elk hunters also hunt for other species, notable Mule deer and upland game/birds.
- Idaho Elk hunters have lived in Idaho an average of 33 years and have an average age of 49.3 years.

Appendix B

2013 Idaho Elk Hunter Opinion Survey

IDAHO DEPARTMENT OF FISH AND GAME

600 South Walnut/P.O. Box 25
Boise, Idaho 83707

C.L. "Butch" Otter / Governor
Virgil Moore / Director

April 2013

Name
Address
City, ST ZIP

Control#:

Dear Idaho Elk Hunter,

The Idaho Department of Fish and Game is revising the Statewide Elk Management Plan. This process started with a Phase I survey to ask the opinions and attitudes of Idaho elk hunters. In June 2012, in cooperation with the University of Idaho, the survey was mailed to Idaho elk hunters. The survey was mailed to a random sample of 6,160 general elk hunters statewide. The elk hunters were asked a variety of questions about their preferences and motivations for hunting elk in Idaho. We heard that most Idaho hunters would like to be able to hunt in multiple zones. The "2012 Elk Hunter Survey Results" can be seen on our website on the Elk Management page under "More Information" at <http://fishandgame.idaho.gov/public/wildlife/?getpage=324>.

The following survey is Phase 2 of our study. You were randomly selected to receive this survey. This survey deals specifically with two different options for expanding your general elk hunting opportunity, to allow you to hunt in 2 or more zones. Your input is very important to determine which option we move forward with in 2014. Please take a few minutes to complete the survey on the following pages and return it in the enclosed prepaid envelope by **May 10th, 2013**.

Thank you for your time and interest in Elk Hunting and Management in Idaho.

Sincerely,



Toby Boudreau,
State Deer and Elk Coordinator
208-334-2920
Toby.boudreau@idfg.idaho.gov

Enclosure



1. About how many years have you hunted **in Idaho**? (Please write number of years.)

_____ Years

2. How often do you hunt for each of the following game species in Idaho?

Game Species	How often do you hunt the following species in Idaho? (Please circle one response for each species)			
I. Black Bear	Never	Some Years	Most Years	Every Year
J. Moose, Bighorn Sheep, Mountain Goat (<i>once in a lifetime</i>)	Never	Some Years	Most Years	Every Year
K. Mountain Lion	Never	Some Years	Most Years	Every Year
L. Mule Deer	Never	Some Years	Most Years	Every Year
M. Pronghorn	Never	Some Years	Most Years	Every Year
N. Upland Game/ Birds	Never	Some Years	Most Years	Every Year
O. White-tailed Deer	Never	Some Years	Most Years	Every Year
P. Gray Wolf	Never	Some Years	Most Years	Every Year

Now, some questions about your Idaho Elk hunting experiences and preferences.

3. About how many years have you hunted **ELK** in Idaho? (Please enter number of years.)

_____ Years

4. Please check those years that you **did** hunt **ELK** in Idaho during the past 7 years.
(Please check **all** that apply.)

2012 2011 2010 2009 2008 2007 2006

5. If you **did not** hunt Elk in Idaho **for 2 or more years** during the past 7 years (2006 through 2012), please tell us why. (Please circle **all** that apply.)

- | | |
|--------------------------------|--|
| A. Poor Health | H. Access Limitations |
| B. Work Schedule | I. The Season Length |
| C. Family Obligations | J. The Timing of the Season |
| D. Low Elk Numbers | K. Too Much Off-Highway Vehicle Activity |
| E. I Hunted Other Game Species | L. Too Many Hunters |
| F. No Hunting Partner | M. Other (please explain) |
| G. I Couldn't Afford It | _____ |

6. Of those you circled in Question 5, which **ONE** was the most important reason you **DID NOT** hunt Elk during those years.

Enter **ONE** letter (A – M) from the list in Question 5: _____

Expanding Elk Hunting Opportunity to Multiple Zones

In the statewide elk hunter survey last year, elk hunters were asked if they were interested in the opportunity to hunt in 2 zones in a given year to harvest a single elk. Eighty-two percent said “yes”, they would be interested in the opportunity. We also asked if they would be willing to pay an extra \$30 for residents and \$100 for nonresidents to have the additional opportunity. Sixty-seven percent of respondents said they would be willing to pay more for the added opportunity. We have developed 2 options to expand general elk hunting opportunity in Idaho. Please tell us what you think about the 2 options.

Option 1: 2-Zone Hunt – Allows you to hunt in **2 general elk zones** with one elk tag.

- This tag would allow you to **harvest only one elk**.
- This would be available only in certain zones that are meeting or exceeding population goals for the upcoming hunting season.
 - The whole state would not be included. Please see Page 4, Question 8, for a list of proposed zones included for the 2014 hunting season.
- The zones available could change from year to year as elk numbers fluctuate.
- This tag would allow you the option of selecting a capped zone as one of the zones you could hunt in.
- The 2-zone option would cost hunters for the additional opportunity.
 - In addition to general elk tag fees, the cost would be \$30.00 for residents and \$100.00 for nonresidents.
- Hunters would be able to hunt in the open seasons for the 2 zones they choose.
- Any combination of A-tag and B-tag hunts from the available zones could be selected. (See Page 4, Question 8 for proposed zones for the 2014 hunting season.)
For example, in 2014 you could select:
 - A-tag Tex Creek and A-tag Bannock
 - B-tag Bear River and B-tag Boise River
 - A-tag Diamond Creek and B-tag McCall
- Hunters would be able to change their choices of 2 zones, before the season opens in either of the 2 zones.
- Hunters must use the weapon types that are legal during the season they are hunting. For example, the hunter must use archery equipment during archery season in that zone.
- Hunters who draw a controlled elk hunt tag would not be eligible to participate in the 2-zone hunt opportunity.

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9. Of those zones listed above please pick the top **3 zones** that you would potentially consider hunting in a 2-Zone option?

The following zones are **NOT** included in the 2-Zone Option:

Dworshak Zone, Lolo Zone, Selway Zone, Hells Canyon Zone, Middle Fork Zone, Sawtooth Zone and Owyhee-South Hills Zone.

Option 2: C-tag Option – Allows you to hunt in any of the designated C-tag units with one elk tag.

- This tag would allow you to **harvest only one elk**.
- Would apply only in units within zones that are meeting or exceeding population goals. The whole state would not be included.
 - Hunters would be allowed to hunt in any season within the C-tag units. Proposed units for the 2014 season are:
 - Units 1, 2, 3, 4, 4A, 6, 8A, 11A, 19A, 22, 23, 24, 25, 31, 32, 32A, 36A, 50, 52A, 53, 67, 68, 70, 71, 72, 73, 73A, 74.
 - For example, a person could hunt the archery A-tag in Unit 1, and then if unsuccessful, go to Unit 67 and hunt the rifle bull B-tag season.
- Capped zones would not be included in the list of available zones or units.
- The C-tag option would cost hunters for the additional opportunity.
 - In addition to general elk tag fees, the cost would be \$30.00 for residents and \$100.00 for nonresidents.
- Hunters may only hunt during the open season and with the weapon type allowed for the zone or units they are hunting in.
- Hunters would be able exchange their C-tag for an A-tag or B-tag until the season in any one of the zones or game management units within the C-tag has started.
- Hunters who draw a controlled elk hunt tag would not be eligible to participate in the C-tag opportunity.

10. What is your opinion of the C-tag Option to expand elk hunter opportunity? (*Please check one.*)

Extremely
Unfavorable

Moderately
Unfavorable

No opinion

Moderately
Favorable

Highly
Favorable



The following is a list of proposed Units that could be available for the C-tag Option for the 2014 hunting season.

11. Please check the Units that you would *most likely* hunt. (Please check **all** that apply.)

- Units 1, 2, 3, 4, 4A, 6 (Most of the Panhandle Zone)
- Units 8A, 11A (Part of the Palouse Zone)
- Units 22, 32, 32A (Weiser River Zone)
- Units 19A, 23, 24, 25 (McCall Zone)
- Units 31 (Brownlee Zone)
- Units 36A, 50 (Part of the Pioneer Zone)
- Units 52A, 68 (Big Desert Zone)
- Units 53 (Small part of the Snake River Zone)
- Units 67 (Part of the Palisades Zone)
- Units 70, 71, 72, 73, 73A, 74 (Bannock Zone)

These two options to increase elk hunting opportunity by allowing hunting in more than one zone may have unintended consequences, such as reducing the quality of the elk hunting experience. Crowding and increased harvest could occur in some general hunt zones. This might result in future restrictions to offset increased pressure.

Here are three examples to illustrate the possible range of impacts:

1. If Diamond Creek A-tag holders could also hunt on the Pioneer A-tag, few impacts are anticipated. These seasons are concurrent and both restricted to archery only. We do not expect an increase in the number of hunters.
2. If Diamond Creek A-tag holders could also hunt on the Tex Creek A-tag, we anticipate that crowding could be an issue. These zones offer different hunting opportunities at different times. We expect an increase in hunter numbers and harvest in both zones.
3. If hunters could use both A-tags and B-tags within one zone, we anticipate an increase in the number of hunters and harvest in that zone.

12. Would you be in favor of expanding your hunting opportunity into 2 or more zones if it might cause these zones to become more restrictive in the future (such as tag quotas, shortened seasons, etc.)?

(Please check **one**.)

Extremely
Unfavorable

Moderately
Unfavorable

No opinion

Moderately
Favorable

Highly
Favorable

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13. Based on the descriptions of the two options, 2-Zone and C-tag, which would you be more likely to participate in? *(Please pick **one** choice.)*

- 2-Zone Option C-Tag Option Neither

14. Do you think we should move forward with these options to hunt in multiple zones?

- Yes No No Opinion

15. What weapon type(s) are you most likely to use while elk hunting? *(Please choose **all** that apply.)*

- Rifle
 Muzzleloader
 Archery

16. Do you have any additional comments or opinions about the 2 different options?

Finally, some questions about you!

We understand that these questions are personal. However they will help us better understand who our customers are. We would appreciate it if you would answer these questions. We will not publish your personal information in any identifiable way.

17. Where did you live in 2012? *(Please check one response)*

- Developed Area (city, town, suburb) **in Idaho**
 Rural Area **in Idaho**
 Developed Area (city, town, suburb) Out-of-State ➡ Please Continue with Q-19, below.
 Rural Area Out-of-State ➡ Please Continue with Q-19, below.

18. How long have you lived in Idaho? *(Please write the number of years.)* _____ Years

19. Do you have any physical conditions such as vision or hearing impairment, or any condition that limits your ability to perform activities such as walking, climbing, reaching, lifting, or carrying? *(Please check **one**.)*

- YES No



20. Are you: (Please check **one**)

- | | |
|---|---|
| <input type="checkbox"/> American Indian/Alaskan Native | <input type="checkbox"/> Hispanic or Latino/Latina |
| <input type="checkbox"/> Asian | <input type="checkbox"/> Native Hawaiian/Pacific Islander |
| <input type="checkbox"/> African American | <input type="checkbox"/> White |

21. During the 2012 hunting season were you: (Please check **all** that apply)

- Employed Full-Time
- Employed Part-Time
- Student
- Retired
- Homemaker
- Unemployed

22. Which of the following best describes your gross family income before taxes in 2012:
(Please check **one**.)

- | | |
|--|--|
| <input type="checkbox"/> Less than \$20,000 | <input type="checkbox"/> \$100,000 - \$119,999 |
| <input type="checkbox"/> \$20,000 - \$39,999 | <input type="checkbox"/> \$120,000 - \$139,999 |
| <input type="checkbox"/> \$40,000 - \$59,999 | <input type="checkbox"/> \$140,000 - \$159,999 |
| <input type="checkbox"/> \$60,000 - \$79,999 | <input type="checkbox"/> \$160,000 - \$179,999 |
| <input type="checkbox"/> \$80,000 - \$99,999 | <input type="checkbox"/> \$180,000 or more |

23. Is there anything else you'd like to tell us specifically about Elk hunting in Idaho?

Thank you for your help!

Appendix C

Ecological Sections

Ecological Section descriptions and Table A-1 showing the percentage of ecological sections in each elk management zone

(IDFG 2005a, McNab et al. 2007).

Okanogan Highland Section

This is a mountainous area in which glacial lakes, rivers, and streams are prevalent. Rivers and streams are rapid-flowing, particularly during spring runoff. The Pend Oreille River, Pend Oreille Lake, and Priest Lake are major waterbodies. Creeks are prevalent, and many flow through glacial outwash and debris material within narrow valleys; glacial lakes and wet meadows are also common. Rock strata are characterized by extreme metamorphism and deformation, and deposits of glacial till, outwash, and debris cover much of the landscape.

The climate is maritime-influenced. Precipitation occurs mostly as snow; the area receives 76–203 cm (30–80 in) of precipitation per year. Rain on snow is common at lower elevations. June and July are wet months, and the months of August through November are dry. Annual average temperature ranges from -1° C to 14° C (30°–58° F), with a mean temperature of 7° C (44° F). Warmest months are late July through August. The growing season varies with elevation, lasting 45 days at the highest elevations and up to 140 days in lower valleys. Cover types include forests of western white pine (*Pinus monticola*), western larch (*Larix occidentalis*), and Douglas-fir, as well as mountain grasslands.

Communities are mostly small and rural, but populations and development in some municipalities have been greatly increasing during recent years. Sandpoint, Bonners Ferry, and Post Falls are the largest population centers. Summer residences are common at lakes and

large river systems. Forestry, livestock grazing, mining, and localized agriculture are principal land uses. Participation in outdoor recreation is rapidly increasing.

Flathead Valley Section

The Purcell and Cabinet mountains are dominant landforms. Perennial streams are common, as well as small lakes, bogs, and wetlands. The Kootenai River and Clark Fork River are major waterbodies that pass through. Soils are generally moderately deep to deep with loamy to sandy textures. Most of the soil contains volcanic ash. Annual precipitation ranges from 46 cm to >254 cm (18 to >100 in); most precipitation falls as snow; summers tend to be dry. Climate is cool-temperate with some maritime influence. Temperature averages 2–7° C (36–45° F), and the growing season ranges from 45 to 120 days. While maritime influences create relatively mild winter conditions, influxes of arctic air are frequent. Forests of hemlock (*Tsuga* spp.)-Sitka spruce (*Picea sitchensis*), larch, fir-spruce, and western white pine dominate the section.

Communities are small and sparsely distributed. Timber harvest and recreation are important land uses, and livestock grazing and farming occur in some valley areas.

Bitterroot Mountains Section

This area comprises steep, dissected mountains with sharp crests and narrow valleys. Elevation ranges from 366 m to 2,135 m (1,200–7,000 ft). Soil is shallow to moderately deep with loamy to sandy textures and usually contains volcanic ash. Perennial streams are generally fairly steep and deeply incised. Major rivers include the Coeur d'Alene, St. Maries, St. Joe, and Clearwater.



Annual precipitation averages 102–203 cm (40–80 in). Most precipitation falls as snow, and summers are relatively dry. Annual average temperature ranges from 2° C to 7° C (36–45° F). Climate is maritime-influenced, having cool and moist overall conditions with relatively mild winters and drier summers. The growing season varies with elevation and ranges from 45 to 100 days. Dominant cover types are Douglas-fir and lodgepole pine (*P. contorta*) forests, and mountain grasslands.

Communities are generally small and many are situated along major waterbodies. Coeur d'Alene is the major population center. Mining, timber harvest, and recreation are dominant land uses; livestock grazing is locally important.

Blue Mountains Section

Hells Canyon of the Snake River is a major feature on this landscape. A wide, uplifted plateau occurs in the western portion, and mountains characterize the eastern portion. In addition to the Snake River, waterbodies include the lower reaches of the Salmon River, portions of the Payette and Weiser rivers, and numerous streams, as well as several reservoirs, springs, and alpine lakes. Elevation ranges from 225 m to 3,100 m (750–9,400 ft). Most mountains are 1,200–2,300 m (4,000–7,500 ft) in elevation. Soil often contains volcanic ash. An ash mantle is relatively undisturbed on gentle north slopes under forest canopies, but on southerly exposures ash has been mostly removed by erosion.

Annual average precipitation is 23–46 cm (9–18 in) in valleys and 43 to 254 cm (17–100 in) in mountains. Annual average temperature ranges from -2° C to 11° C (28–52° F). The growing season varies considerably with elevation and lasts for 30–130 days. The varied climate and landscape supports diverse cover types: ponderosa pine (*P. ponderosa*), fir-spruce, lodgepole pine, sagebrush, and larch.

Human settlements are small and scattered, occurring primarily in valleys along rivers. Mining, timber harvest, agriculture, livestock grazing, and recreation are primary land uses.

Idaho Batholith Section

This area is characterized by extensive mountainous terrain; alpine ridges, cirques, and large U-shaped valleys with broad bottoms, and other features of glacial origins dominate many areas, such as the Sawtooth Mountains. Waterbodies are predominant, including major portions of the Salmon, Clearwater, Payette, and Boise rivers. Many perennial streams and lakes are present, as well as a number of reservoirs. Elevation ranges from 425 m to 3,400 m (1,400–11,000 ft). Soils are generally shallow to moderately deep loam and sand. Volcanic ash accumulations in some soils have caused them to be especially productive. Dominant vegetation communities include Douglas-fir and lodgepole pine forests, and sagebrush.

Annual precipitation ranges from 51 cm to 203 cm (20–80 in), much of which falls as snow during fall, winter, and spring. Climate is maritime-influenced with cool temperate weather and dry summers. Average annual temperature ranges from 2° C to 7° C (35–46° F) but may be as low as -4° C (24° F) in the high mountains. The growing season lasts 45–100 days.

The northern portion of the section is primarily wilderness, with few small communities. Communities in southern areas are typically small and concentrated along rivers. Larger towns, such as Stanley and McCall are the focus of tourism and recreation. Timber harvest and recreation are dominant land uses, with livestock grazing and mining of local importance.

Challis Volcanics Section

This section is dominated by mountain ranges, including the White Cloud Peaks, Pioneer Mountains, Smoky Mountains, Boulder Mountains, White Knob Mountains, and portions of the Salmon River Range. There are some glaciated areas. Major waterbodies include the Wood River, Big Lost River, and the Salmon River, and many perennial streams and alpine lakes exist. Elevation ranges from 1,200 m to 3,600 m (4,000–11,800 ft). Douglas-fir and lodgepole pine forest

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dominate higher elevations; sagebrush-steppe occurs from valley bottoms to timberline.

Climate is influenced by prevailing winds from the west and the general north-south orientation of mountain ranges. Precipitation ranges from 25 cm to 120 cm (10–45 in) annually with an average of 56 cm (22 in). The majority of precipitation occurs during fall, winter, and spring. A rain shadow effect from high mountain barriers to the west reduces precipitation in this section. Summers are dry with low humidity. Much of the precipitation that falls at lower elevations during summer months evaporates. Average annual air temperature is 3–10° C (34–50° F) but may be as low as -4° C (24° F) in the high mountains. The growing season ranges from 70 to 120 days.

Approximately one-half of the land is forested and major land uses are timber harvest, livestock grazing, and recreation. Mining for gold and silver is also an important use. The Wood River Valley, including Ketchum, Hailey, and Bellevue, is the population center. Development in this scenic valley has been rapid and extensive during recent decades.

Beaverhead Mountains Section

This area includes the highest mountain ranges in the state. Landscapes are characterized by sharp alpine ridges, cirques, and glacial valleys at higher elevations, contrasting with wide dry valleys, alluvial terraces, and flood plains at lower elevations. Intermittent streams are common, indicating the arid nature of the area. Lakes occur in glaciated areas at higher elevations. Major rivers include the Lemhi, Beaverhead, Big Lost, and Little Lost. Elevation ranges from 1,100 m to 3,860 m (3,600–12,662 ft). Mountain soils are generally shallow to moderately deep loam and sandy containing rock fragments. Valley soils are moderately deep loam and clay.

Annual precipitation ranges from 25 cm to 127 cm (10–50 in) with most precipitation falling as snow in fall, winter, and spring. Winters are cold, and growing season conditions are dry. Soil moisture is not sufficient for tree growth on some south and west aspects below timberline, and shrub-

steppe communities often extend from valley floors to mountain tops. Primary forest types are lodgepole pine and Douglas-fir. Average annual temperature is 2–8° C (36–46° F). The growing season ranges from 45 to 100 days.

Communities occur primarily at lower elevations along rivers and are sparse and small. Livestock grazing is the dominant land use. Timber harvesting, mining, and recreation are also important land uses.

Palouse Prairie Section

This section is characterized by dissected loess-covered basalt plains, undulating plateaus, and river breaklands. Elevation ranges from 220 m to 1,700 m (720–5,700 ft). Soils are generally deep, loamy to silty, and have formed in loess, alluvium, or glacial outwash. Lower reaches and confluence of the Snake and Clearwater rivers are major waterbodies.

Climate is maritime influenced. Precipitation ranges from 25 cm to 76 cm (10–30 in) annually, falling primarily during fall, winter, and spring; winter precipitation is mostly snow. Summers are relatively dry. Average annual temperature ranges from 7° C to 12° C (45–54° F). The growing season varies with elevation and lasts 100–170 days. Historically, mountain grasslands dominated, with areas of ponderosa pine. However, the landscape has been largely converted to agricultural production (primarily wheat).

Population centers include Lewiston and Moscow, and small agricultural communities are dispersed throughout.

Owyhee Uplands Section

This area is characterized by deeply dissected canyons formed through the combination of erosion and geologic uplifting. Lava formations are prevalent and are older than those of the Snake River Plain. The Owyhee Mountains are composed primarily of granite, and most of the uplands are rhyolites, ash deposits, and wind-blown loess. Elevation ranges from 1,200 m to 2,500 m (4,000–8,000 ft). The Snake, Owyhee,



and Bruneau rivers are the major waterbodies and are among the few perennial waterbodies represented. Small streams are typically intermittent and arise from snow accumulation at higher elevations, but some streams are fed by springs. Few small lakes and reservoirs are present.

Precipitation ranges from 20 cm to 40 cm (7–15 in) annually. Much precipitation is lost to evaporation during summer months. Average annual temperature ranges from 2° C to 8° C (35–45° F). The growing season varies with elevation, ranging from 120 days to <60 days at higher elevations. Vegetation communities are sagebrush and pinyon (*Pinus* spp.)-juniper (*Juniperus* spp.).

Residential communities are small and sparsely distributed in the central and southern parts of the region, but the northern part of the section is the urban center of the state containing about one-half of the state's population. Livestock grazing, dryland and irrigated agriculture, and recreation are major land uses.

Snake River Basalts and Basins Section

The landscape comprises extensive plains, isolated buttes, and block-faulted mountains. The surface is a lava plateau with a thin windblown soil layer covering it. Lava flows prevalent throughout the area vary in thickness from <30 m (100 ft) to thousands of meters. Shield volcanoes, cinder cones, and lava ridges are common. Craters of the Moon National Monument is an example of the recent volcanic features. Elevation ranges from 900 m to 2,000 m (3,000–6,000 ft). The Snake River, American Falls Reservoir, Lake Walcott, and Mud Lake are major waterbodies, and few other perennial surface waterbodies are present.

Precipitation ranges from 12 cm to 30 cm (5–12 in) annually and is evenly distributed throughout fall, winter, and spring, but is low in summer. Precipitation during summer months is generally lost to evaporation. Average annual temperature ranges from 4° C to 13° C (40–58° F). The

growing season ranges from 60 to 165 days, decreasing from west to east and with elevation. Enough precipitation falls in some foothills for dry farming. Desert shrub and sagebrush cover types dominate the area.

Population centers include Idaho Falls and Pocatello, and small communities are dispersed primarily along the Snake River corridor. Livestock grazing and dryland and irrigated farming are major land uses. Recreation is also important.

Northwestern Basin and Range Section

This area is characterized by north-south trending mountain ranges and volcanic plateaus interspersed with broad, nearly level basins and valleys. The elevational range is 1,200–2,200 m (4,000–7,200 ft). Large alluvial fans have developed at the mouths of most canyons, and playas and marshes occur in valleys and basins. Water is scarce except at higher elevations. Few streams are present, and groundwater is a major water source for agricultural and residential uses. Sagebrush-steppe and desert shrub are dominant cover types.

Summers are hot and dry, and winters are cold and dry. Precipitation ranges from 10 cm to 79 cm (4–20 in) annually. Precipitation is evenly distributed throughout fall, winter, and spring. Average annual temperature is 5–10° C (41–50° F). The growing season ranges from 30 to 140 days.

Residential communities are small and sparsely distributed. Livestock production is the primary land use. Mining occurs in some areas.

Overthrust Mountains Section

Landscapes are characterized by minor mountain ranges and broad valleys. Mountain ranges include the Webster, Aspen, Portneuf, Bannock, and Bear River ranges. Linear valleys and ridges are products of thrust faults. Rivers are of 2 major drainage basins, flowing either into the Snake River or into the Great Salt Lake in Utah. Important rivers include the South Fork of the Snake River, Portneuf River, and Bear River. A

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few lakes and wet meadows are associated with higher elevations above 1,500 m (5,000 ft). Large waterbodies include Bear Lake and Palisades Reservoir. Elevation ranges from 1,300 m to 3,000 m (4,400–9,900 ft). Sedimentary rock formations, such as limestones, siltstone, sandstones, and shales, are predominant.

Climate is influenced by prevailing winds and general north-south orientation of mountain ranges. Precipitation ranges from 40 cm to 100 cm (16–40 in) annually with most occurring during fall, winter, and spring. Precipitation occurs mostly as snow above 1,800 m (6,000 ft). The majority of precipitation falls as snow in winter. Summers are dry. Annual average temperature is 2–10° C (35–50° F). The growing season lasts 80–120 days.

Population centers are primarily along the Portneuf and Bear rivers and include Pocatello and Preston. Approximately 70% of the land is forested with fir-spruce or lodgepole pine; sagebrush dominates lower elevations and small pockets of alpine tundra occur on high mountains. Timber harvest, livestock grazing, and recreation are major land uses. Phosphate mining is an important land use in some areas.

Yellowstone Highlands Section

This area comprises the western margins of the Yellowstone Plateau. Much of this area has been glaciated and moraines are common. Perennial streams, wet meadows, and lakes are numerous and prevalent. Major waterbodies include Henrys Lake, Henrys Fork of the Snake River, and Island Park Reservoir. Elevation ranges from 1,500 m to 2,500 m (5,100–8,500 ft). Soils in basins and valleys are generally coarse and shallow to moderately deep.

Precipitation ranges from 51 cm to 114 cm (20–45 in) annually with most occurring during fall, winter, and spring. Precipitation occurs mostly as snow above 1,800 m (6,000 ft) and mostly as rain during the growing season. Climate is cold, moist continental. Temperature averages 2–8° C (35–47° F). The growing season lasts 25–120 days with a shorter growing season at higher elevations.

Dominant cover types are lodgepole pine or fir-spruce forests, sagebrush, and alpine tundra.

Communities are small and primarily scattered along the Henrys Fork. Recreation, timber harvest, and livestock grazing are dominant land uses. A small amount of forage and other crops are grown in some valleys.

Bear Lake Section

This section comprises Bear Lake, Bear Lake Valley, and dry hillsides and ridges to the east of Bear Lake. Bear Lake drains through Bear River, which is eventually a tributary of Great Salt Lake. Elevations range from 1,800 m to 2,400 m (5,900–7,800 ft).

Precipitation ranges from 40 cm to 100 cm (16–40 in) annually with most occurring during fall, winter, and spring. Precipitation occurs mostly as snow above 1,800 m (6,000 ft). Summers are dry with low humidity. Temperature averages 1–9° C (34–48° F). The growing season ranges from 50 to 180 days. Sagebrush and chaparral-mountain shrub cover types are common. Livestock grazing, agriculture, and recreation are primary land uses.



Table A-1. Ecological Sections for Idaho elk zones.

Elk zone	Ecological Sections*	Percentage of zone
Panhandle	Flathead Valley	10.1
	Okanogan Highlands	33.4
	Bitterroot Mountains	53.2
	Palouse Prairie	3.4
Palouse	Bitterroot Mountains	28.5
	Palouse Prairie	71.5
Dworshak	Bitterroot Mountains	66.7
	Palouse Prairie	33.0
	Idaho Batholith	0.3
Hells Canyon	Palouse Prairie	37.2
	Blue Mountains	62.8
Lolo	Bitterroot Mountains	61.4
	Idaho Batholith	38.6
Elk City	Palouse Prairie	8.8
	Blue Mountains	10.0
	Idaho Batholith	81.2
Selway	Idaho Batholith	100
Middle Fork	Idaho Batholith	51.8
	Challis Volcanics	48.2
Salmon	Idaho Batholith	50.7
	Challis Volcanics	20.0
	Beaverhead Mountains	29.3
Weiser River	Blue Mountains	78.5
	Owyhee Uplands	18.7
	Idaho Batholith	2.8
McCall	Blue Mountains	9.9
	Idaho Batholith	82.6
	Challis Volcanics	7.5
Lemhi	Beaverhead Mountains	98.3
	Snake River Basalts	1.7
Beaverhead	Beaverhead Mountains	89.1
	Snake River Basalts	10.9
Brownlee	Blue Mountains	92.1
	Owyhee Uplands	7.9
Sawtooth	Idaho Batholith	89.0
	Challis Volcanics	11.0
Pioneer	Challis Volcanics	77.2
	Beaverhead Mountains	19.8
	Owyhee Uplands	1.0
	Snake River Basalts	2.0

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Elk zone	Ecological Sections*	Percentage of zone
Owyhee-South Hills	Owyhee Uplands	74.7
	Northwestern Basin Range	17.3
	Snake River Basalts	8.0
Boise River	Idaho Batholith	83.8
	Owyhee Uplands	15.3
	Blue Mountains	0.9
Smokey Mountains	Idaho Batholith	54.3
	Challis Volcanics	33.3
	Owyhee Uplands	12.4
Bennett Hills	Owyhee Uplands	83.4
	Snake River Basalts	15.5
	Challis Volcanics	0.3
	Idaho Batholith	0.8
Big Desert	Snake River Basalts	99.5
	Challis Volcanics	0.4
	Beaverhead Mountains	0.1
Island Park	Beaverhead Mountains	18.3
	Snake River Basalts	47.0
	Yellowstone Highlands	34.7
Teton	Snake River Basalts	70.3
	Yellowstone Highlands	22.3
	Overthrust Mountains	7.4
Palisades	Snake River Basalts	36.7
	Overthrust Mountains	62.2
	Northwestern Basin Range	0.1
Tex Creek	Northwestern Basin Range	48.0
	Snake River Basalts	10.0
	Overthrust Mountains	42.0
Bannock	Northwestern Basin Range	50.5
	Snake River Basalts	12.7
	Overthrust Mountains	36.8
Bear River	Overthrust Mountains	87.7
	Northwestern Basin Range	6.3
	Bear Lake	6.0
Diamond Creek	Overthrust Mountains	79.2
	Northwestern Basin Range	3.2
	Bear Lake	17.6



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