

MANAGEMENT PLAN *for Elk (*Cervus elaphus*) in the Yukon*



June 2008

MANAGEMENT PLAN *for Elk (*Cervus elaphus*) in the Yukon*

Prepared by the Yukon Elk Management Planning Team

June 2008



MANAGEMENT PLAN
*for Elk (*Cervus elaphus*) in the Yukon*

APPROVED BY



*Dennis Fentie
Minister
Environment Yukon
Government of Yukon*

26.06.08

Date

For additional copies of this report please contact:

Director
Fish and Wildlife Branch
Yukon Department of Environment (V-5A)
P.O. Box 2703
Whitehorse, YT Y1A 2C6
E-mail: fish.wildlife@gov.yk.ca

Front cover photos, clockwise from top left: A. Koss-Young, N. Jacobsen, J. Meikle, B. Bell. Back cover photos, top to bottom: B. Bell, N. Jacobsen.

This report may be cited as:

Yukon Elk Management Planning Team, 2008. Management Plan for Elk (*Cervus elaphus*) in the Yukon. Yukon Department of the Environment, Whitehorse, Yukon. 36 pp.

DISCLAIMER: The goals, objectives and management actions herein are subject to governmental priorities and budgetary constraints, as well as modifications necessary to accommodate new objectives or findings.

ACKNOWLEDGEMENTS: This management plan was developed by the Yukon Elk Management Planning Team (Appendix A). Planning team meetings were facilitated by Bob Hayes. Much of the background information that forms the basis for this management plan was originally compiled by Manfred Hoefs. Karen Clyde, Rob Florkiewicz, Thomas Jung, Bob Hayes, Michelle Oakley and Joella Hogan were responsible for drafting the management plan.

CONTENTS

Background	1
Taxonomy of elk in Yukon	1
Origin and distribution of elk in Yukon	1
Population status of Yukon elk	3
Legal and conservation status in Yukon	3
Why develop a management plan for elk?	4
Scope of the management plan	4
The planning participants and process	5
Management goals, objectives and actions	6
Goal 1: Ensure healthy and viable populations of free-ranging elk in Yukon.	7
Goal 2: Wisely manage elk habitats and range	16
Goal 3: Understand the potential impact of elk on the land.	20
Goal 4: Provide for greater human use and appreciation of elk.	23
Goal 5: Address human concerns regarding elk	30
References	34
Appendix A: Yukon Elk Management Planning Team, 2005-2008	36



BACKGROUND

Taxonomy of elk in Yukon

Elk (*Cervus elaphus*) belong to the Family Cervidae (Deer Family), and are the second largest species of deer in the world; only moose (*Alces americanus*) are larger. The taxonomic relationship between elk and red deer in Eurasia has been long debated. Compelling evidence from recent studies using mitochondrial DNA suggest that elk are genetically distinct from red deer (Cronin 1992, Polziehn and Strobeck 1998, 2002, Ludt *et al.* 2004). However, the current convention is to include both elk and red deer as one species.

Of the six subspecies of elk believed to have inhabited North America in recent history, four remain, including the Roosevelt Elk (*Cervus elaphus roosevelti*), Tule Elk (*Cervus elaphus nannodes*), Manitoban Elk (*Cervus elaphus manitobensis*) and Rocky Mountain Elk (*Cervus elaphus nelsoni*). Elk in Yukon largely were from animals translocated from Elk Island National Park, Alberta, which are considered to be Manitoban Elk. Mixing of these animals with some of those already on game farms in Yukon, which reputedly were Rocky Mountain Elk, may have resulted in free-ranging elk in Yukon being a mixture of these two named subspecies. Genetic studies of the validity of the named subspecies of elk in North America, however, have found little support for a differentiation between Manitoban Elk and Rocky Mountain Elk (Polziehn *et al.* 1998, 2000). Thus, any potential mixing of these two named subspecies is likely of little management or conservation concern.

Origin and distribution of elk in Yukon

Elk came to North America via the Beringian land bridge, likely more than 10,000 years ago. They were a member of the large mammal fauna in Yukon during the late Pliocene; fossil remains found in Yukon date to as recently as about 1500 years ago (Guthrie 1966). In more recent times, elk were distributed in North America from Ontario westward to British Columbia. The species also occurs in Asia, from the Pacific westward to the Lena River in Russia.

Crude estimates of the number of elk found in North America prior to European settlement are as high as 10 million animals (O’Gara and Dundas 2002, Rosatte *et al.* 2007). Populations were extirpated from much of their North American range, and by the turn of the century their distribution was largely confined to the Rocky Mountain region, west to the Pacific. There have been a number of reintroductions of elk throughout North America, with the aim of restoring this species to its original range (see Larkin *et al.* 2003, 2004, O’Gara and Dundas 2002, Rosatte *et al.* 2007).

Elk in Yukon represent the most northern extent of viable populations in North America: Yukon is the northern edge of their range. Recent populations of elk in Yukon are derived from both natural colonization and deliberate introduction by humans. Elk naturally occur in small numbers in some years in southeastern Yukon along the British Columbia-Yukon border. These animals likely move up from British Columbia where populations are growing in numbers, and expanding their range. In the adjacent Northwest Territories, elk have been observed as far north as 62°N and sightings have become more regular in recent years (N. Larter, GNWT, pers. comm.). The extent and

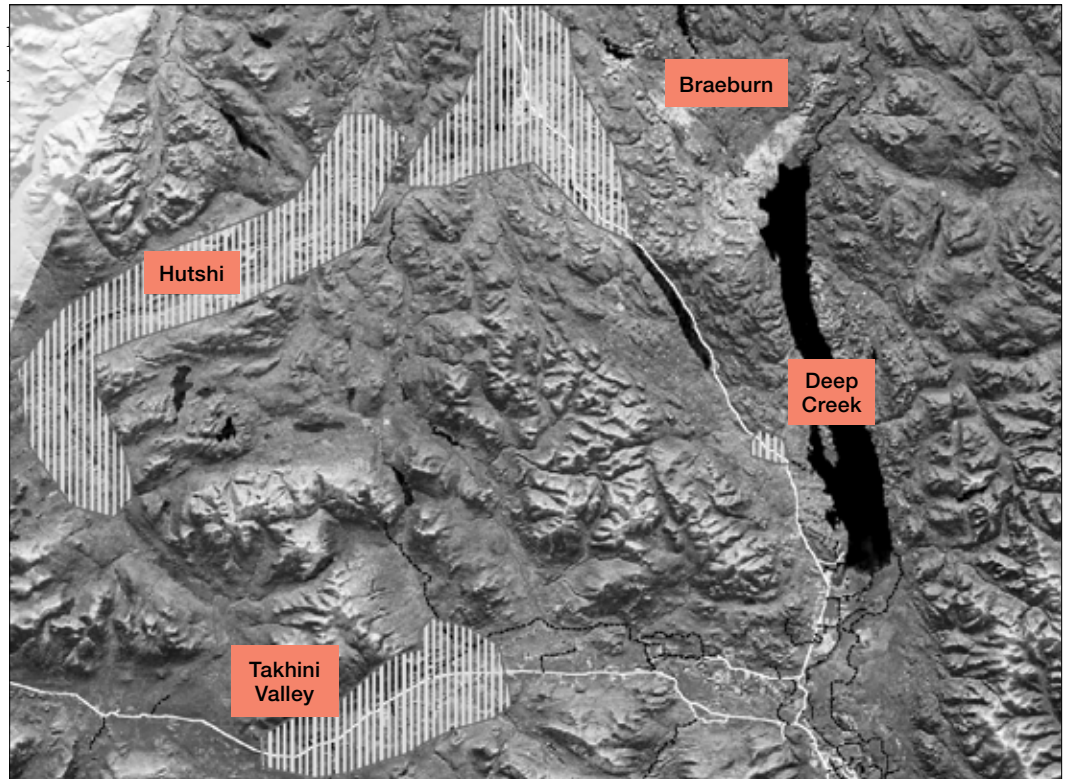
ARRC Alsek Renewable Resources Council
CAFN Champagne and Aishihik First Nations
GGA Game Growers Association
KDFN Kwanlin Dün First Nation
LRRC Laberge Renewable Resources Council
LS/CFN Little Salmon/ Carmacks First Nation
RRCs Renewable Resources Councils
TKC Ta’an Kwach’an Council
YAA Yukon Agricultural Association
YFGA Yukon Fish and Game Association
YFWMB Yukon Fish and Wildlife Management Board
YG Yukon Government
YG (AG) Yukon Government, Agriculture Branch
YG (FW) Yukon Government, Fish and Wildlife Branch
YOA Yukon Outfitters Association

occurrence of expanding elk populations in southeastern Yukon are unknown, but it is believed that they are not a regular part of Yukon fauna in that region.

In the late 1940s, the Yukon Fish and Game Association (YFGA) successfully lobbied the Commissioner of Yukon to introduce free-ranging elk in southern Yukon. The intent was to provide elk for new hunting opportunities, which would eventually reduce pressure on other big game (McCandless 1985). Nineteen elk transferred from Elk Island National Park were released near Braeburn Lake in 1951, followed by another 30 in 1954. To supplement persisting elk populations, Yukon Government released a further 119 animals in the Braeburn Lake ($n = 73$ animals), Hutshi Lakes ($n = 28$ animals) and Takhini River valley ($n = 18$ animals) areas.

Elk have remained within a broad area, roughly between Whitehorse and Carmacks to the north and between Whitehorse and Haines Junction to the west (Figure 1). Free-ranging elk can be separated into two herds: the Takhini Valley Herd and the Braeburn Herd. The Takhini Valley Herd mainly ranges in the Takhini River valley west of Whitehorse, as far west as the Aishihik River. The Braeburn Herd ranges along the North Klondike Highway between Fox Lake and Carmacks. Elk have historically inhabited the Hutshi Lakes area since their initial release in the early 1950s but numbers in recent years have dwindled, possibly having been attracted to the large burn in the Fox Lake area near Braeburn. Movements between the two herds are not well known. Small mixed groups and lone bulls are sometimes seen relatively far from the known range of the two

Figure 1. Approximate range of free-ranging elk in Yukon.



Population status of Yukon elk

Monitoring of elk in Yukon has not been intensive or systematic since their release. A quarter of a century after the initial introduction, observations suggested that elk persisted in small numbers (Youngman 1975) and the project did not appear to be a success. Intensive surveys, irregular monitoring flights and incidental observations suggested that elk remained below 100 animals until about the early 1990s. Since the recent release of additional elk in 1989-1994, numbers appeared to increase, especially in the Takhini Valley Herd. Ground-based counts by the Yukon Fish and Game Association and numerous sightings by highway travellers suggested that there was upwards of 200 elk in the Takhini Valley Herd (Hoefs 2004). Relatively mild winters between 1998 and 2006 likely aided population growth. Recently, Florkiewicz et al. (2007) conducted an inventory of the Takhini Valley Elk Herd and, using mark-resight methodology, obtained a population estimate of 144 animals (90% confidence intervals of 130 to 158 elk).

Legal and conservation status in Yukon

Under the Yukon *Wildlife Act*, elk are listed as Specially Protected Wildlife, making it an offence to harvest them. Elk introduced to southern Yukon are also classified a Transplanted Population in the Yukon First Nations Umbrella Final Agreement, and are exempt from First Nations subsistence harvesting rights.

Elk are not listed as a species at risk in Yukon, or elsewhere in Canada. The introduced Yukon populations (i.e. Takhini Valley Herd and Braeburn Herd) were classified as an Exotic species in the 2005 conservation ranking of Yukon wildlife. Those that may occur in southeastern Yukon are classified as Undetermined, because of our lack of knowledge of those populations.

Table 1. Summary of elk released in Yukon.

Year	Total released	Location	Bulls	Cows	Calves	Origin of animals	Comments
1951	19	Braeburn Lake	5	14	0	Elk Island National Park	Original release
1954	30	Braeburn Lake	8	22	0	Elk Island National Park	Original release
April 1989	12	Hutshi Vowel Mtn.	2	2	8	Penner Farm	Trailer into Vowel Mtn.
Oct 1990	8	Takhini Valley (37 Mile Creek)	0	8	0	Midnight Sun Farm	Yearlings. Two later confirmed mortalities with wolf sign present
March 1991	38	Braeburn near Dawson Trail	36	1	1	Elk Island Park	An additional 18 elk were retained for future release
April 1991	16	Hutshi Lake	0	3	13	Midnight Sun Farm	Moved with otter. Animals in relatively poor condition
June 1991	6	Takhini Valley	6	0	0	Midnight Sun Farm	All yearlings
May 1992	4	Takhini Valley	2	2	0	Midnight Sun Farm	All yearlings
July 1993	6	Braeburn	4	2	0	Midnight Sun Farm	All yearlings
July 1994	29	Braeburn	21 adults		8	Midnight Sun Farm	Final dispersal of government elk herd
Totals	168		138	30			

Elk from original release in 1951 and 195449 elk
 Subsequent release to the Takhini valley18 elk
 Subsequent release to Braeburn/Hutshi area . . .101 elk
 Total168 elk

Note: Midnight Sun Farm is the same facility as Yukon Wildlife Preserve.

Why develop a management plan for elk?

A publicly developed and sanctioned management plan for elk ensures that as many interests in the management of elk in the southern Yukon are heard and addressed as is possible. Management plans should be considered working documents, based on current circumstances, and it follows that they should be revised as conditions change.

Population size and distribution of the elk have changed since the development of the original management plans for the Takhini Valley Herd and Braeburn Herd in 1990. Populations have apparently grown and begun to make seasonal excursions outside of where they usually had been found, resulting in increased conflict with agriculturalists, concerns about possible increased competition with moose, and the potential for increased elk-vehicle accidents, among other concerns.

In 2004, the Yukon Fish and Wildlife Management Board requested that the Department of Environment undertake a review of the original management plans. The Hutshi Lake/Nordenskiold Valley Elk Management Plan (1990-1998) and the Takhini Valley Elk Management Plan (1990-1998), took into account the knowledge at that time, but did not fully include the input from First Nations and communities. With implementation of Yukon First Nation Final Agreements in the early 1990s, a new era of fish and wildlife management has evolved. The need to address concerns regarding elk must be done in a cooperative fashion, and the development of a publicly sanctioned management plan is a means of working together to take care of the elk and deal with the concerns.

Scope of the management plan

This management plan is intended to provide a broad framework to guide elk management in Yukon. It is meant to be enabling in approach, allowing managers to work within an adaptive management framework, recognizing that elk abundance and distribution may change, and that there are many things we do not know about elk in Yukon. Prescriptive recommendations and regulations are, for the most part, left for later development through working groups and action plan development. Many of these initiatives have begun and are anticipated to be ongoing.

This management plan is focussed solely on those free-ranging elk in southwestern Yukon that comprise what we refer to as the Takhini Valley Herd and the Braeburn Herd. Those few free-ranging elk that are occasionally seen in southeastern Yukon are considered to be naturally colonizing. Those elk are not considered in this management plan, largely because we know so little about them and there are currently no issues concerning them. Likewise, captive elk on game farms and wildlife preserves in Yukon are not directly considered in this plan and are managed under different regulations.

The planning participants and process

In 2005, a planning team was established to provide advice about elk management. The planning team was comprised of representatives of groups that either have a management responsibility for elk within elk range, or who have an interest in how elk are to be managed in the future (Appendix A). Local Renewable Resources Councils (RRCs) and the Yukon Fish and Wildlife Management Board (YFWMB) also participated in the development of the plan, in keeping with roles and responsibilities defined in First Nation Final Agreements.

A community-based fish and wildlife management plan for the Little Salmon/Carmacks First Nation traditional territory (2004) provided further detail about management of the Braeburn Herd. Concerns regarding the Takhini Valley Herd were also recently raised in the 2007 fish and wildlife planning process for the Champagne and Aishihik First Nations traditional territory.

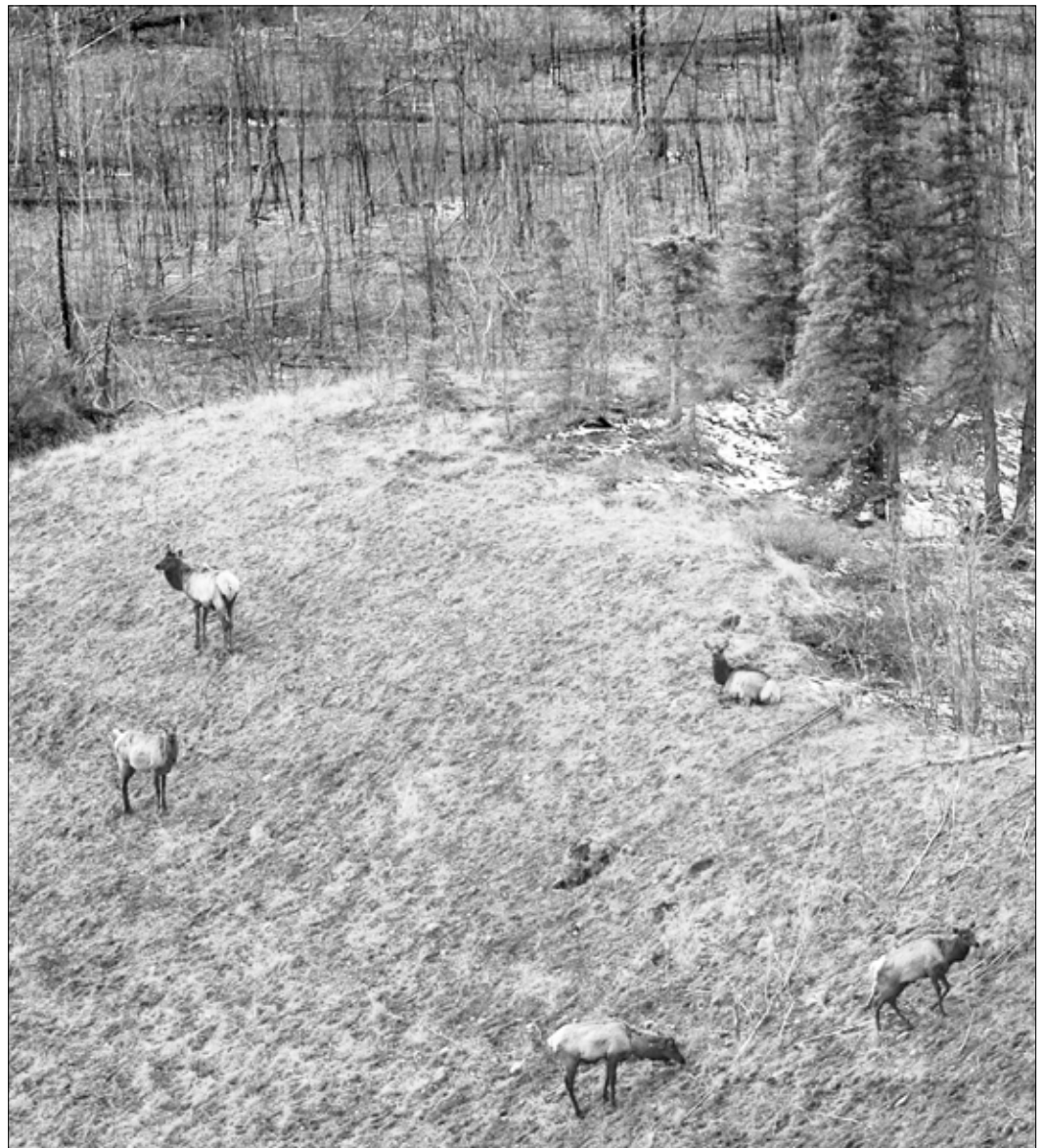
The planning process was developed as an open and inclusive public process to allow the public to become involved in development of a Yukon elk management plan. Public meetings were held in Whitehorse, Carmacks and Haines Junction during the spring of 2005. They provided current information about elk management, and allowed the opportunity to hear local concerns. These preliminary meetings among governments, communities, RRCs and stakeholder groups indicated Yukoners wanted a new elk plan to address contemporaneous issues and concerns.

Following development of the plan framework (goals and objectives) in the spring of 2005, more detail to the plan (actions) was added in 2006 by working groups that focused on specific management areas topics. These working groups independently developed actions for the plan relating to health and genetics, research and monitoring, human use and appreciation, land use and mapping, and awareness and communication. The completed draft plan was provided to the YFWMB for public consultation during the summer of 2007, with the YFWMB making its final recommendations to the Minister in January 2008.

MANAGEMENT GOALS, OBJECTIVES AND ACTIONS

The following details the goals and objectives for the management of free-ranging elk in the southwestern and south-central Yukon. These elk populations are the result of releases by the Yukon government over many decades. To assist in plan implementation, specific actions to reach these goals and objectives are identified. Five goals for elk management in Yukon have been identified during the planning process.

- Goal 1 relates to well-being of elk populations.
- Goal 2 deals with managing elk habitat and range.
- Goal 3 deals with the impact of elk on the land.
- Goal 4 deals with issues related to human use and appreciation of elk.
- Goal 5 addresses the socio-economic impacts and management of elk.



J. Jantunen

GOAL 1 Ensure healthy and viable populations of free-ranging elk in Yukon.

Goal 1 relates to ensuring the well-being of elk populations in Yukon; that is, taking care of the elk so that populations remain into the future.

There are three objectives under Goal 1:

- Objective 1: Maintain stable populations of elk in the south-central and southwestern Yukon.
- Objective 2: Elk in the wild should be healthy and free of diseases of concern.
- Objective 3: Maintain genetic integrity of free-ranging elk.

Objective 1 Maintain stable populations of elk in the south-central and southwestern Yukon.

Elk in Yukon exist in a complex mosaic of south-facing grassland slopes and early succession forest types resulting from past wildfires. The arrangement and extent of suitable habitat types for elk vary between the Takhini Valley Herd and the Braeburn Herd ranges.

Much of the Takhini Valley Herd range burned in 1958 and there has been considerable growth of aspen in the past years. In recent years, many elk have been taking advantage of the brome grass along the Alaska Highway right-of-way. In the last couple of years, the herd has spent at least some of the winter period outside their “traditional range,” moving into areas as far west as the Aishihik Road, east to the Takhini Crossing area, and north around the Takhini Hot Spring Road.

Similar to the Takhini valley, much of the existing Braeburn Herd range was burned in 1958. Parts of their range also burned in 1995. The herd currently uses areas at the edge of the 1995 burn and it is possible that more of the burn will provide elk forage in the future. There is also extensive, grassland slopes near the North Klondike highway between Little Fox Lake and Carmacks.

It is likely that elk numbers will continue to fluctuate, to some extent, depending on environmental and biological conditions, making it difficult to define the minimum number of animals required to sustain these herds.

Several winter aerial counts have been attempted by the Department of Environment to obtain a reliable estimate of elk numbers in the Takhini Valley Herd and the Braeburn Herd. None, however, have managed to record elk numbers as high as those reported through the Yukon Fish and Game Association ground-based project (Hoefs 2004) or from public sightings. Currently, the Takhini Valley Herd is estimated to be near 200 animals and the Braeburn Herd is estimated at about 100 animals.

Some members of the public believe the upper threshold of “socially acceptable” elk numbers has already been reached and suggest that elk numbers should not be permitted to increase beyond current levels. This is based on the view that there are enough elk to provide reasonable viewing opportunities, and that allowing the herds to continue to grow would conflict with community interests. Concerns have been raised about the capacity of the range to support additional elk, the potential for elk-vehicle collisions, incidents of crop depredation, and the potential negative impacts of elk on other species such as moose and caribou. In community-based fish and wildlife plans, residents of both the Carmacks and Haines Junction areas have raised concerns about social competition between elk and moose and caribou.

In consideration of these views and concerns, it is recommended that elk numbers should not be permitted to increase beyond current levels for the next five years. This will provide an opportunity to ensure that community interests and issues are well addressed. Harvest will be the primary management tool used to achieve this objective.

Action 1 Monitor population size, composition, and survival.

Ground-based monitoring, led by YFGA in 2003 and 2004, has provided useful fall-composition data, and provided a population estimate for the Takhini Valley Herd. This work has been carried out by members of the YFGA and other volunteers, and demonstrates a method to reduce costs for ongoing monitoring of elk. Monitoring the Takhini Valley Herd using these techniques has worked well, largely because the area where elk congregate is an open valley, making it easier to locate the elk when counting. Monitoring the Braeburn Herd using this method would be far more challenging due to the variability of the landscape, increasing the potential to miss counting some elk. Ground-based monitoring of either herd would work well during the fall rut when elk congregate in groups and in places where visibility from accessible points along highways is optimal. It can provide data on yearly calf productivity.

Monitoring elk has not been a management priority of the Yukon government. At the direction of participants in this planning process, and reflecting community concerns, the need to develop and implement a study to understand population changes is an important component within the context of this plan. Establishing a baseline of the population size and developing methods to monitor the population composition are priorities. Both are needed to understand the impacts elk have on their range, the potential effects of other land uses, and to address public interest in a harvest. Further, population modelling can be used as a tool to assess and predict population trends in consideration of factors including calf survival, predation and harvest.

These needs however, should not take funds or management effort away from the management of other important wildlife species (e.g. moose, caribou), and non-government sources should be explored for funding data collection.

Task

By whom? By when?

YG (FW) lead, with YFGA
and others
Early in the plan

Develop study design to establish baseline count and composition of the Takhini Valley Herd and the Braeburn Herd.

YG (FW) lead, with YFGA
others
Ongoing

Conduct composition trend surveys using methods that may be funded from alternative sources.

Action 2 Estimate carrying capacity for elk within their range.

The increasing numbers of elk in the Takhini valley and Braeburn areas have lead to some questions about the location, quantity and quality of key seasonal habitats, and carrying capacity of these habitats for elk. Agricultural and residential use of land, in the Takhini valley in particular, is fragmenting natural habitats. Consideration of elk habitat requirements in both the Takhini valley and Braeburn is needed to guide land use planning in these areas.

If the elk population increases, further range expansion is likely. Identifying both current habitat use (i.e. core wintering areas) and where the range may expand is required to keep habitats intact. Research by Florkiewicz (1994) and Hoefs (2005) on the carrying capacity of elk in the Takhini valley provide direction about managing habitats in these areas. A simple, low-cost field study to monitor changes to key habitats caused by grazing would enable monitoring over time, and throughout the range. Suggested methods to do this work include establishment of permanent enclosure fencing or identification of permanent plots within the elk range. Community involvement in these monitoring projects, working collaboratively with a university graduate student or with Yukon College, may be a way to conduct this research for a reduced cost. For this work to proceed, a cost-effective method to design and implement the study needs to be identified.

Task

By whom? By when?

YG (FW) lead with researcher
Early in the plan

Design and implement a simple, low-cost study to monitor grazing effects within elk range.

Action 3 Model estimated population size under different management options and changing environmental conditions.

Since their reintroduction, both elk herds have demonstrated resilience to pressures on their populations. Natural changes to landscapes, weather severity, predation, and land use impacts, all contribute to population fluctuations. To better anticipate these fluctuations, wildlife managers will use population size, composition and survival data to build a model of the population. Over a number of years, a model can be a useful tool to demonstrate the impacts of changing scenarios, such as the introduction of an elk harvest, on the population.

Task

By whom? By when?

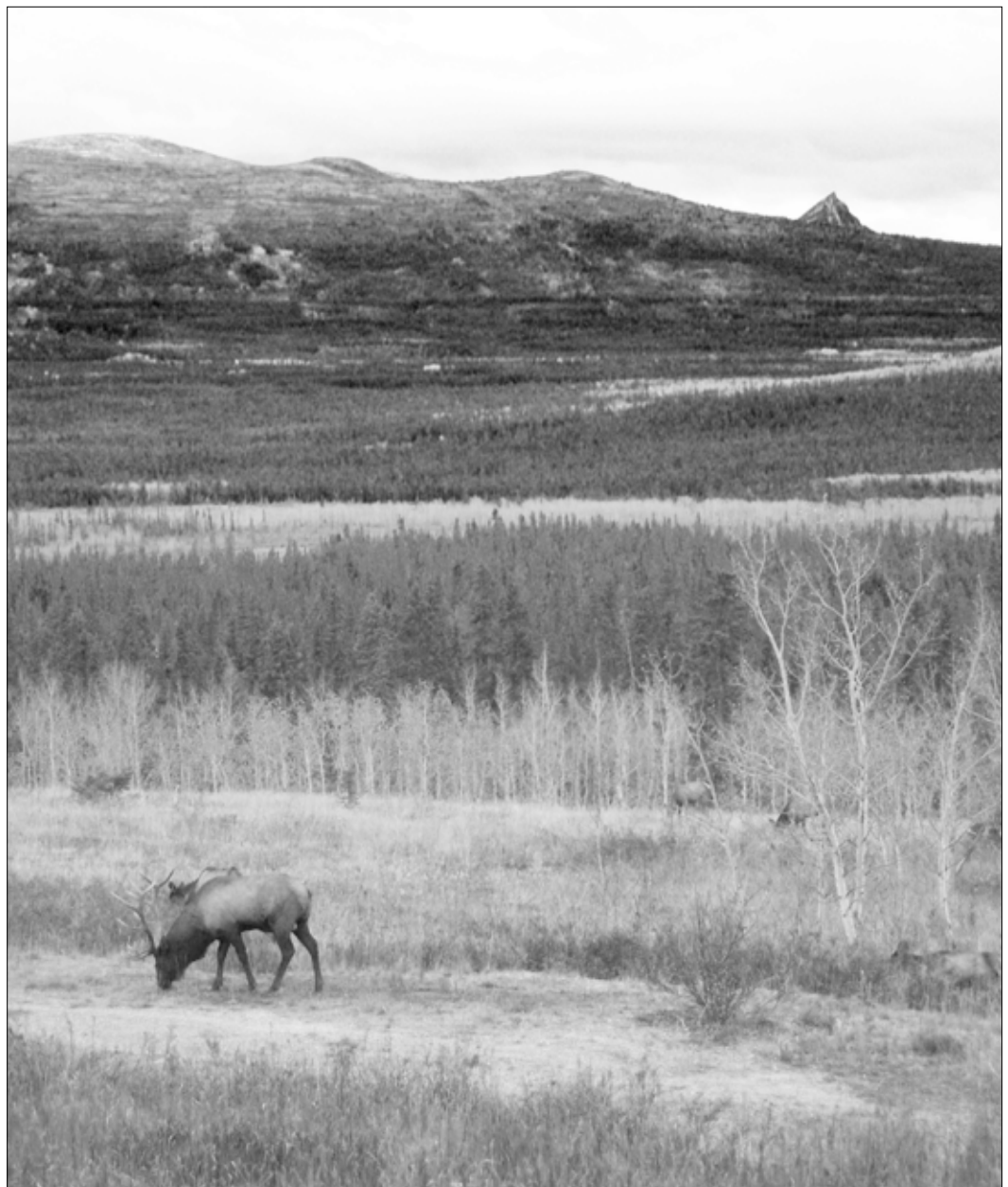
YG (FW) lead
Mid-plan

Estimate levels of risk of harvest, natural change to landscape, weather, and drought on population trend.

Objective 2 Elk in the wild should be healthy and free of diseases and parasites of concern.

Healthy wildlife populations are very important to Yukoners for food, culture and well-being, as well as for economic pursuits, such as outfitting and tourism. The health status of elk and other wildlife in Yukon can also directly affect the availability of markets to farmers, as some diseases and parasites are transmittable between wildlife and livestock. The Yukon public and stakeholders expect the Department of Environment to ensure wildlife populations are protected from new and emerging diseases.

Diseases such as Chronic Wasting Disease (CWD), tuberculosis (TB), malignant catarrhal fever (MCF), Johne's and winter tick can seriously impact elk, other wildlife species and nearby livestock. Potential impacts from disease in the wild include population declines, loss of biodiversity, lost opportunities for harvest, and cultural and economic pursuits, and costs potentially in the millions to tax payers, governments and farmers for disease eradication efforts. For example, CWD management costs Saskatchewan over 30 million



K. Clyde

dollars a year and the US spends more than 100 billion dollars a year on control of this single disease. Even with unlimited funds, disease control or eradication in wildlife is exceedingly difficult. Once an infectious disease or parasite is established in a wild population, it serves as a “reservoir”, able to infect other wildlife or nearby livestock.

Due to the cost and difficulty of disease and parasite management in the wild, focus needs to be placed on prevention and early detection. It is in the best interest of both domestic animals and wildlife that important diseases and parasites are prevented first and foremost, and that surveillance programs are in place for earliest possible detection. As contact at the ‘domestic-wildlife interface’ is a well-known cause of disease and parasite outbreaks in Canada and worldwide, programs preventing contact between wildlife and livestock should be cooperatively developed.

Unless adequate maintenance and prevention programs are in place, threats of disease and parasite introduction may increase. Factors that affect this include a changing Yukon climate, expanding human/agriculture activities into elk range, and rapid movements of people and animals (and their pathogens) worldwide represent increasing threats of disease and parasite introduction, unless adequate monitoring and prevention programs are in place. It is important that this plan and future elk management initiatives recognize ‘disease prevention’ as a high priority to ensure our Yukon stock remain healthy and protected.

Action 1 Maintain current knowledge of elk disease and parasite issues.

Emerging diseases and parasites in people and animals have been increasing worldwide due to rapid, global movements of people, animals and their pathogens; intensive farming practices; increasing contact between wildlife, people and livestock; and changing climate/weather patterns. Over 70% of emerging diseases originate in wildlife, and can infect both people and animals. Due to the emerging nature of animal diseases, a static list of diseases for which we should manage is not useful. Instead we need our knowledge and ability to manage diseases risks to remain flexible and current. CWD is certainly one obvious concern due to the known devastating effects and costs; however, there are many other diseases that may be a higher risk to Yukon elk that also need to be considered and prevented.

Disease information needs to be readily available and openly shared amongst wildlife managers, livestock owners and agriculture extension services in ways that address both confidentiality and management needs.

Task

By whom? By when?

**YG (FW) lead, with
YG (AG) and others**

Early in the plan and regular
updates

**YG (AG) lead, with
YG (FW) and others**

Early in the plan and regular
updates

Stay up to date on elk disease and parasite risks.

Maintain ongoing understanding of livestock disease and parasite risks in Yukon.

Action 2 Monitor captive and wild elk for disease and parasites.

Farmed elk in Yukon are regularly tested for Brucellosis and TB. All dead elk are also tested for CWD and have always been negative. It is very unlikely that CWD is present in farmed Yukon elk populations, based on this testing and the fact that elk have not been imported into Yukon for nearly a decade. The nearest known foci of CWD in the wild are over fifteen hundred kilometres away and do not present a risk to farmed elk. Although the risk for CWD is apparently low in Yukon, the consequences of CWD introduction are staggering, and, therefore, strict protective measures need to be considered, and ongoing monitoring maintained.

Wild elk have not been tested for most diseases of concern, although a small number of road-kill animals examined for CWD were negative. Winter tick, a species previously thought unable to survive in Yukon, but has recently been found in the Takhini Valley Herd, is cause for concern and further work. Otherwise, the health status of wild elk is relatively unknown. Contact with livestock, direct or indirect (through feed), is an extremely high risk activity for wild elk, in terms of disease and parasite transmission. Using samples from harvested or collared elk will not adequately address disease sampling or surveillance needs. Focused sampling efforts and additional monies for this work will be required.

Early detection of disease and parasites requires a well-designed surveillance plan that will include regular testing of both free-ranging and farmed animals in sufficient numbers. This requires discussions with farmers to design and implement cooperative prevention and testing programs. Similarly, a pro-active, regular disease and parasite testing program is needed for wild elk; samples can be gathered from hunter submissions, from samples and health assessments collected by biologists in collaring/handling operations, and from samples (when useable) collected from elk killed by vehicle collisions. As well, other sample collections may be recommended depending on the disease of concern; for example, winter tick infestation may be addressed through spring elk observations, tick larvae collection from plants in the fall, or from complete carcass disease and parasite assessments.

Task

By whom? By when?

**YG (FW) lead, with
YG (AG) and others**

Early in the plan

Develop an elk disease and parasite surveillance program.

**YG (FW) lead, with
YG (AG) and others**

Early in the plan

Conduct disease and parasite sampling activities.

Action 3 Promote measures to prevent contact between livestock (including captive wildlife) and free-ranging elk.

Elk (and deer) are very mobile on the landscape and can be attracted to forage crops in agricultural areas. An increase in agricultural lands in the greater Whitehorse area and the importation of livestock to those ranges presents an unknown risk for the introduction of new diseases to Yukon, and especially into Yukon wild animal populations. Contact between wildlife and farmed elk and bison and other domestic species is as much a disease and parasite issue as a crop damage issue, as this contact represents the highest risk of disease and parasite transmission.

There have been many proposed solutions to reduce the risk of disease and parasite transmission, and, especially, contact between wildlife and domestic species. Suggestions have included culling or harvesting free-ranging elk (or 'lead' animals in the herd) that frequent farms, double-fencing farms, limiting agricultural developments in some areas, and limiting the wild elk herd sizes. They all have associated down sides, but warrant further cooperative discussion. Establishment of a cooperative working group to consider management measures to reduce disease risk will focus discussion on how to address concerns. These suggestions should be considered by the working group referred to in Goal 5, Objective 3 regarding agriculture and elk land use conflicts.

Task

By whom? By when?

YG(FW)

Early in the plan

All

Ongoing

Provide information as needed on the disease and parasite risks of the elk-livestock interface to the elk-agriculture conflict working group.

Identify outside funding sources to assist in wildlife interface issues.



J. Meikle

Action 4 Develop a plan for dealing with diseases and parasites of concern once detected.

A general plan to deal with diseases and parasites as they are detected could focus on agreements for cooperative disease and parasite management, describe roles and responsibilities of key agencies or groups, agree to information sharing and confidentiality, and list other important aspects to consider if a disease or parasite is discovered and control warranted. Specifics for disease and parasite control vary with the pathogen in question, so would not be included.

A foreign animal disease emergency (FADE) control plan is currently being developed between the Canadian Food Inspection Agency (CFIA) and each province and territory to address livestock diseases and parasites of considerable threat to human or animal health, or to trade. This FADE plan covers diseases and parasites under federal control such as Bovine Spongiform Encephalopathy (BSE) or highly pathogenic avian influenza.

Although the FADE plan will not generally apply to disease and parasite outbreaks in free-ranging wildlife, it is an example of a plan to involve all responsible parties in Yukon and federally in the case of certain disease and parasite outbreaks.

Task

By whom? By when?

**YG (FW) lead, with
YG (AG) and others**

Mid-plan

YG (AG)

Ongoing

Once a disease or parasite of concern is detected, establish a working group to evaluate the information, and cooperatively develop prevention and management programs.

Foreign animal disease emergency plan under development.



B. Bell

Objective 3 Maintain the genetic integrity of free-ranging elk.

Free-ranging elk in Yukon originated from a small number of captive elk and therefore, a limited genetic pool. Limited genetic founders in a population, or limited genetic diversity, can threaten the long-term viability of small populations, either through increased susceptibility to disease, development of genetic defects, or a general limited ability to adapt to changing environments or disease challenges. The Takhini Valley Herd and the Braeburn Herd are separated from other natural elk populations of free-ranging elk in southeastern Yukon or northern British Columbia by at least 400 km. These factors combined imply that the genetic composition of elk in Yukon may be limited and that it will likely decrease over time. The genetic well-being of elk in Yukon should be evaluated to ensure that there is no “genetic bottleneck” that could adversely influence the health of Yukon’s wild elk population.

Action 1 Assess the genetic diversity of Yukon elk.

Given their origin, history, and small population size, an assessment of the genetic diversity of Yukon elk should be completed during this plan. DNA samples should be collected, opportunistically at every available opportunity, to build up a reasonable sample size for analyses. The sample size should be evaluated in five years to determine if an assessment can proceed.

Task

By whom? By when?

YG (FW) lead
Ongoing

Collect DNA samples to enable an assessment of genetic diversity.

Action 2 If necessary, enhance the genetic diversity of Yukon elk.

If genetic diversity of Yukon elk herds is deemed to require enhancement to ensure long-term population viability, then consider options for improving genetic diversity. Genetic management practices used for other elk herds, or in the farming industry, should be considered to understand options, limitations and risks prior to commencing an elk genetic enhancement project in Yukon.

Task

By whom? By when?

YG (FW) lead
Ongoing

Summarize genetic diversity, discuss management options.

GOAL 2 Wisely manage elk habitats and range.

Elk are unique large herbivores in Yukon because, although they are primarily grazers, they also use a variety of vegetation types and sometimes also browse on woody plants. Because they are relatively large bodied, they need range that produces varied and abundant vegetation. They rely on complexes of grasslands, shrubs, and early successional forest that grow after wildfires. These different habitats also need to be relatively close to each other, providing abundant food and cover for females to hide their calves in the summer and early green vegetation on the slopes to feed on in the early spring, following the long Yukon winter.

Elk need range that includes habitats to provide food (e.g. south-facing slopes, post-fire areas where shrubs are regenerating, and grasslands), hiding and escape cover from predators. If some of these key habitats are not available, then it is likely that the numbers of elk will decrease.

This goal pertains to taking care of elk range and habitats. It has three objectives:

Objective 1 Define the core range and key habitats for elk populations.

Objective 2: Carefully manage core range and key habitats.

Objective 3: If necessary, undertake habitat enhancement projects.

Objective 1 Define the core range and key habitats for elk populations.

Recent shifts in range use by elk have focused attention on the need to better understand current and potential ranges. Defining elk range should include consideration of the use and relative importance of, for example, the Hutshi/Nordenskiold area where elk were relatively common in the past, as well as the potential of the 1995 Fox Lake fire to provide suitable habitat. Range use may shift as some elk (often bulls) explore other suitable habitats adjacent to historic ranges.

Important elk habitats include mixed complexes of south-facing slopes, grasslands, new vegetation following fire, and dense aspen and willow re-growth that provides summer hiding cover. Winter range has been identified as key to elk. Key wildlife areas are generally defined as those areas that are used for seasonal life functions (e.g. winter range, spring calving, or movement corridors). Animals tend to be concentrated in key areas and tend to use these areas traditionally. Identification of winter range for elk is based their distribution since they were first released to Yukon. However, winter distribution in recent years has been more variable. Elk continue to use the traditional winter range and nearby aspen forests but have also ranged to the west in the Mendenhall River and Cracker Creek areas, and to the east towards Takhini Crossing. Also, as land becomes increasingly developed within elk range, particularly in the Takhini valley, the loss of movement corridors becomes an increasing problem.

Within the general elk ranges, elk will choose particular habitat types for feeding, resting, hiding or predator escape. These habitat types need to be identified, maintained and connected within the elk range.

Action 1 Monitor and map seasonal distribution and range use of elk.

Monitoring of range use can occur by using local knowledge (e.g. documenting sightings), ground-based monitoring, and by monitoring collared elk within the herds. Opportunistic monitoring during other wildlife surveys (e.g. bison surveys) may provide further data.

Task

By whom? By when?

All

Ongoing

Monitor and map seasonal distribution and range use of elk.

Action 2 Identify and map key habitats used by elk.

Habitat types used by elk need to be identified and mapped using local knowledge and where possible, ecosystem or vegetation maps. Once these habitats are documented, updated key area for elk should be entered into the Yukon government's Wildlife Key Area database. The key areas should be re-evaluated periodically to consider changes in habitat use.

Task

By whom? By when?

All

Ongoing

YG

Once key habitats are identified and mapped

YG

As required

Identify and map key habitats used by elk.

Update Wildlife Key Area database.

Review key area use.



J. Jantunen

Objective 2 Carefully manage core elk range and key habitats.

Elk range where there are high demands for land for residential and agricultural uses. Core elk ranges need to be defined to inform land planning to reduce conflicts and ensure that important habitat elements of elk range are preserved such as calving areas (including nursery/hiding areas). The decision process about land needs to be inclusive, considering the values and interests of land holders, other groups with land interest, and elk habitat needs.

Core elk range needs to be defined to reduce land use conflicts and ensure that important habitat elements of elk range are preserved.

Core elk range and key elk habitats need to be given a higher level of care than other areas within elk range. They should be notated on maps for use in land use planning and environmental assessment processes.

Action 1 Key habitats should be highlighted on maps used for land-use planning initiatives.

Elk in both herds range where there are significant land disposition interests, both for agricultural and residential use. To respond to applications for land in elk range, managers require maps of current elk range and key habitats (including mineral licks and important migration trails connecting seasonal habitats) completed and available. Ongoing updates, management, and mapping of these areas are required.

Task

By whom? By when?

YG (FW)

Ongoing

Update and maintain key habitat maps for use in land use planning.

Action 2 Important core habitats should be managed, firstly for elk, before competing land use or other developments.

Task

By whom? By when?

YG

Ongoing

Promote protection (through management) of key elk habitats.

Objective 3 **If necessary, undertake elk habitat enhancement projects.**

Although elk continue to occupy the aspen-regenerated areas from the 1958 fire, it is possible that the maturing aspen forest is declining in value for elk. In order to provide elk habitat for many years to come, habitat improvement projects may be needed.

Action 1 **Identify if a need exists for habitat enhancement projects.**

Past management plans for both herds suggested habitat enhancement within elk range may improve conditions for grazing. Habitat enhancement may be a way to divert elk from highway corridors, while identifying areas that will still enable wildlife viewing. The need to undertake this work should be evaluated during plan implementation, and should also identify areas where this could potentially be done.

Task

By whom? By when?

All

Mid-plan

Determine if habitat enhancement for elk is feasible.

Action 2 **Where required, develop elk habitat enhancement projects with private landowners and communities.**

Suggested ways to accomplish these projects include cultivating off-road areas (with native perennial seeds) or controlled burning of mature forest on south-facing slopes within elk range. One private landowner in the Takhini valley has indicated willingness to plant crops that are favourable for elk. As well, elk have been making use of agricultural parcels in the Braeburn area for many years.

Creation of attractive habitat away from highway corridors should consider and support wildlife viewing interests, ensuring that these opportunities are not lost by redirecting elk to other habitats. Proposed methods and projects will need to consider community and local private landowners' interests.

Task

By whom? By when?

All

Ongoing

Where required, develop habitat enhancement projects.

GOAL 3 Understand the potential impact of elk on the land.

It is important to review the impact that elk could be having on native ecosystems in and near elk range. This may not have been an issue when animal numbers remained small, but may be increasingly important because of the recent increases in the number of elk and recent range expansion. This goal addresses the need to take care of the land where elk populations have been introduced; it has two objectives:

Objective 1: The presence of elk should not be to the detriment of other valued wildlife species and ecosystems.

Objective 2: Investigate the impact of elk on their range.

Objective 1 The presence of elk should not be to the detriment of other valued wildlife species and ecosystems.

Many people who live in North Klondike Highway communities say that as elk have increased, moose numbers have declined. People believe that elk are more aggressive than moose, caribou or sheep, and that elk may chase other wildlife. Although the local information indicates that moose numbers have declined in the North Klondike Highway area, it is not clear whether the increase in elk numbers is the cause.

There are also concerns about elk moving into new areas where there is a possibility of competition for food and space with other wildlife populations, other land interests and the possibility of increasing elk-vehicle collisions. There are sensitive wildlife habitats and places where elk are not welcome, including riparian areas used by moose, and areas used by people from nearby communities. People in Carmacks are especially concerned about where elk should and should not be allowed to expand their range. These areas of concern need to be mapped and recognized when decisions about range management are being made.



J. Meikle

Action 1 Populations of other ungulates and large predators within and near elk range should be monitored for change.

In recent years, residents have voiced concern about the implications of increased elk numbers on populations of moose, caribou and predators. This is particularly a concern in the Braeburn area, voiced by Little Salmon/Carmacks First Nation elders in their community-based fish and wildlife management plan. Residents are concerned that increasing elk numbers will lead to increased predator numbers, in turn creating more predation pressure for moose and caribou.

Gathering information about the potential for increased predation would help to address these concerns. Suggestions to do so include: inviting a knowledgeable resident from areas where elk and moose co-exist to meet with Carmacks and/or Haines Junction area residents and discuss management approaches, conducting a literature review of research that has addressed this question in other areas, and providing this information at community meetings. Involvement of local residents, including trappers and pilots, to document knowledge about predator density and activities within elk range can provide current information that can be otherwise difficult to obtain.

Task

By whom? By when?

LS/CFN, CAFN, YG
Ongoing

Review potential for population changes of other ungulates and large predators within elk range through consideration of examples from other places, reviewing relevant literature, and documenting local knowledge.

Action 2 Social and food competition between elk and other ungulates in elk range should be studied.

To understand potential competition within elk range, two aspects of range use need to be addressed between elk, and other wildlife and horses: diet overlap and habitat overlap. To address the first, annual pellet collection done with the assistance of community members could provide data on seasonal diets. Assessing habitat overlap could be done by creating seasonal habitat suitability maps for elk, moose, deer and sheep. Location and intensity of use of existing grazing leases by horses should be considered when evaluating available grazing resources for wildlife.

Study design for both research questions should build on relevant work in other jurisdictions, and find ways to minimize cost through community involvement in data collection and local/traditional knowledge mapping.

Task

By whom? By when?

YG (FW) lead, with
community involvement
Mid-plan

Study social and resource competition on elk range with other ungulates.

Objective 2 Investigate the impact of elk on their range.

Elk may have a substantial impact on plant community dynamics, particularly as elk numbers increase and ground forage decreases. Elk regularly use young aspen forests following burns, and south-facing hillsides, particularly in the spring. Grassy hillsides are limited in the elk range, providing an important resource to other wildlife (as varied as meadow voles to grizzly bears) during the late winter and spring. To better understand elk-habitat interactions it is important to monitor the effect that elk populations have on plant communities and succession.

Action 1 Monitor the effects of elk grazing on forest succession in burned and unburned forests.

Monitoring elk browsing effects could be done through the establishment of exclosures to monitor long-term changes to grazed and ungrazed vegetation. Establishment of exclosures in the area burned in 1998 near Fox Lake and in the adjacent 1958 burn may provide a comparison of successional changes following a burn, and be valuable for monitoring the impacts of browsing. Related research should be reviewed through a literature search.

Task

By whom? By when?

YG (FW) lead with researchers

Mid-plan

Monitor the effects of elk browsing on forest succession in burned and unburned forests.

Action 2 Monitor the effects of elk grazing on plant communities on south-facing hillsides.

Task

By whom? By when?

YG (FW) lead, with researchers

Mid-plan

Monitor the effects of elk grazing on south-facing hillsides.

GOAL 4 Provide for greater human use and appreciation of elk.

The long-term persistence of elk depends on human appreciation of elk. This goal addresses the need to maintain or increase human appreciation of elk. There are three objectives for this goal:

Objective 1: Provide limited hunting opportunities of elk for Yukon people.

Objective 2: Provide elk viewing opportunities.

Objective 3: Promote greater public knowledge and appreciation of elk.

Objective 1 Provide limited hunting opportunities of elk for Yukon people.

Elk were originally introduced to Yukon in the 1950s for future hunting opportunities. In 1984 and 1985, the Yukon Fish and Game Association sponsored a lottery draw, permitted by the Yukon government, for four elk harvest permits. The intent was to evaluate animal condition through inspections and submission of biological samples. There is strong interest in hunting elk as represented by the Yukon Fish and Game Association and by other Yukoners. Residents of Carmacks and the Little Salmon/Carmacks First Nation have specifically indicated that they do not support any increase in the range of elk unless there is a harvest. Harvest of elk can serve many management objectives in this plan including:

- reducing elk-vehicle collisions;
- reducing crop depredation conflicts with farmers;
- increasing the appreciation and value of elk as a wild food;
- providing funds for elk research through hunting license sales or permits;
- restricting elk from moving to areas that are not appropriate for expansion; and/or
- using harvested elk to monitor disease in the wild, and other biological measurements of herd health.

Harvest of elk needs to be carefully managed to ensure that populations remain viable, wildlife viewing opportunities continue and public safety near highways and human residences are considered. Zones where harvest is allowed may need to be identified to address these concerns.

Action 1 Enable a limited harvest for elk in designated zones.

To enable a limited harvest for elk, a regulation change under the Wildlife Act is required. A proposal supporting this change would need to be proposed to the Minister of Environment for consideration. The proposal for harvest should recommend a conservative harvest, until better population data (i.e. herd size, composition, movement trends) can be obtained for the two herds.

Task

By whom? By when?

YG with First Nations,
RRCs, YFGA, YFWMB,
YOA

Early in the plan

Propose regulation change under *Wildlife Act* to enable elk harvest

Action 2 Develop a harvest plan.

If a harvest occurs, it should be guided by a harvest plan that addresses the management objectives as well as allocation of permits among First Nations and licensed hunters, areas to focus and limit harvest, public safety concerns, opportunities for school hunts, wildlife viewing interests, and opportunities to collect biological samples.

Task

By whom? By when?

YG with First Nations,
RRCs, YFGA, YFWMB

Early in the plan, if harvest
is approved

Develop a harvest plan.

Action 3 Develop hunting regulations with First Nations, appropriate boards and councils, and communities.

Task

By whom? By when?

YG

Early in the plan, if harvest
is approved

Develop hunting regulations.

Action 4 Develop a communication plan for the first years of the hunt.

A communication plan should be developed and implemented to provide information to the public about the harvest, identifying the areas of likely harvest, and management direction for elk in Yukon.

Task

By whom? By when?

YG

Early in the plan, if harvest is approved

Develop a communication plan during first years of the hunt.



B. Bell

Objective 2 Provide elk viewing opportunities.

Elk seem to be attracted to grasses that have established along right-of-ways of the Alaska Highway and North Klondike Highway. Although they have traditionally relied upon the expanses of south-facing side-hills along both highways, they have now incorporated the nearby roadside vegetation. Elk in the Takhini Valley Herd and the Braeburn Herd have become familiar with the highway traffic and seem undisturbed by vehicles. This makes them important for viewing by Yukon residents and tourists. As the number of elk has increased in the Takhini valley range, they are more often seen during summer, increasing their value to tourism. Elk rutting and harem gathering behaviour make them easy to locate and view in the fall. There may be effective ways to maintain viewing opportunities and minimize the risk of collisions, such as locating signs along highway sections most frequently used by elk, reducing grasslands along highways where visibility is limited, or developing elk viewing areas away from the highways.

Elk harvesting and viewing opportunities can conflict, so both uses need to be carefully planned for to ensure safe, quality experiences for people viewing and/or hunting elk. Activities could be separated by season, or by area, depending on the social issues and concerns about the Takhini Valley Herd and the Braeburn Herd.

Action 1 Maintain and enhance roadside elk interpretive sites and signage within elk range.

Some information about elk in the Takhini valley is provided on the Takhini Burn interpretive panels. More information can be added to existing panels as they are upgraded or developed, in collaboration with local RRCs, and other interested groups.

Task

By whom? By when?

YG

Ongoing

Maintain and enhance elk interpretive sites.

YG

Ongoing

Manage and post elk warning signs.

Action 2 Develop elk viewing and interpretive sites away from the highways.

Suggestions for more elk interpretive sites along the highways include at the Braeburn pullout, at the Takhini Burn and Fox Lake Burn, or at other existing pull-outs. Opportunities may also arise for the development of elk viewing sites away from the highways. These opportunities should be explored and developed in collaboration with RRCs, nearby residents and business owners, and other interested groups.

Task

By whom? By when?

YG

Late in plan

Explore and develop opportunities for elk viewing and/or interpretive site(s) along and/or away from the highways.

Action 3 Support elk viewing as a tourism product

Elk in the Takhini valley provide the most easily accessible and guaranteed large mammal viewing opportunity in Yukon. Some companies already include elk viewing in their tour packages, a few of which are based in the Takhini valley.

Task

By whom? By when?

YG

Ongoing

Provide information and technical support to operators interested in providing elk viewing tours and packages.



J. Meikle

Objective 3 Promote greater public knowledge and appreciation of elk.

Because naturally occurring elk have long disappeared from Yukon, many people are not familiar with the natural history of elk. Many Yukoners may not know the history of elk introductions in Yukon. Others know it well and take great pride in viewing and appreciating them. Interested groups and communities need accurate information to make better-informed decisions about elk. As well, it has been demonstrated elsewhere that there is a strong relationship between knowledge of wildlife, and its appreciation. This objective is to promote greater public appreciation of elk by providing programs materials on the history and biology of elk in Yukon.

Action 1 Identify and develop educational material on elk in Yukon, e.g. printed, internet and audio-visual material.

Providing materials about elk ecology, management practices, and current data can help inform the public, tourists and school children. Some printed materials containing such information are already circulated (e.g. Yukon Wildlife Viewing Guide and the Yukon Wildlife Preserve booklet), and can be periodically updated. A range of other methods to provide information should be explored including community presentations, website publishing, and working with other groups or agencies (e.g. Yukon Tourism and Culture Branch, YFGA) to develop and distribute materials.

Task

By whom? By when?

YG

Early in the plan, and updated periodically

Develop educational materials about elk.

Action 2 Deliver educational programs about elk.

A coordinated effort among interested agencies and groups to deliver educational opportunities should be explored. For example, collaboration with the Yukon Wildlife Preserve may help develop educational programs.

Task

By whom? By when?

All

Ongoing

Deliver elk educational programs.

Action 3 Deliver elk viewing events in the elk range.

The fall rut wildlife viewing event in the Takhini Valley Herd range hosted by the Yukon government has been well-attended in recent years. Supporting and further developing these types of events help to promote appreciation and understanding of elk, and provide an opportunity to share current information about elk management directly with the public. Materials supporting and advertising these events should be published in a number of languages in the same way other Wildlife Viewing publications have been (e.g., Wild Discoveries flyer).

Task

By whom? By when?

YG (FW)

Ongoing

Deliver elk viewing events.*J. Meikle*

GOAL 5 Address human concerns regarding elk.

The long-term persistence of elk depends on how well managers address the socio-economic impact of introduced elk on local people and communities. There are three primary objectives of this goal:

- Objective 1: Reduce the risk of vehicle collisions with elk.
- Objective 2: Increase public safety and awareness in communities in elk range.
- Objective 3: Minimize land-use conflicts between agriculturalists and elk.

Objective 1 Reduce the risk of vehicle collisions with elk.

Many of the negative feelings about elk come from highway safety concerns of Yukoners travelling the Alaska and North Klondike highways, particularly at night and in the winter. Grasses that are attractive to elk, deer and wood bison are either planted along the highways to reduce erosion after construction or may have colonized naturally. The North Klondike Highway is narrow, and in many places, shrubs have grown near the road, making it difficult to see elk and deer.

On the other hand, efforts to reduce the attractiveness of cover along roads may reduce the elk viewing opportunities.

Possible solutions could be related to attracting elk away from highways, for example by prescribed burning of other areas that are away from the roads. Some community concerns expressed around increase in elk numbers have indicated that there are some areas where range enhancement for elk would not be welcomed.



N. Jacobsen

Action 1 Continue to manage warning signs that are posted on highways in key elk areas.

Signs to warn travellers about wildlife on Yukon highways can only be placed where a significant risk of collision exists, in areas where the wildlife ranges are predictable. Elk silhouette signs are currently posted within the range of the Takhini Valley Herd and the Braeburn Herd, along the Alaska and North Klondike highways, respectively. Relocating and removing these signs to better identify when elk are along roadways is an ongoing management issue, requiring collaboration between Yukon government Environment and Highways and Public Works departments. The public travelling the roads can assist by reporting sightings along these areas.

<p>Task By whom? By when?</p> <p>YG Ongoing</p>	<p>Manage and post elk warning signs along highways.</p>
---	---

Action 2 Develop a communication plan to reduce elk collisions when elk are frequenting the highway.

A plan to inform travellers on Yukon highways about elk, their ranges and areas where they may cross should be developed. The plan should include information about the signs warning about elk crossings, and find ways to inform frequent travellers on highways (e.g. truck drivers).

<p>Task By whom? By when?</p> <p>YG, ARRC, LRRG Early in the plan</p>	<p>Develop communication plan to reduce elk-vehicle collisions.</p>
---	--

Action 3 Develop and implement ways to reduce the attractiveness of vegetation along highways.

Yukon government has worked inter-departmentally to consider this need, and is exploring appropriate methods to reduce the attractiveness of vegetation along highways for wildlife. Research on this issue has been conducted in other jurisdictions, and previous successes should be considered if feasible in Yukon.

<p>Task By whom? By when?</p> <p>YG Early in the plan</p>	<p>Develop and implement ways to reduce the attractiveness of vegetation along highways to wildlife.</p>
---	---

Objective 2 Increase public safety and awareness in communities in elk range.

Elk that are habituated to people can be dangerous in communities. Some residents of Takhini River and Mendenhall subdivisions and at Braeburn have expressed concern about public safety, particularly during the rut. In the mountain parks of Alberta, elk pose a significant danger to people in Banff and Jasper, especially during the fall rut. While this is not a significant management issue in Yukon at this point, the situation should be monitored if elk range and numbers continue to expand.

Action 1 Meet with concerned residents, and if needed, develop a communication plan to promote public safety when elk are near communities or residences.

A meeting with residents will help to define this concern further. More detail about elk conflicts (timing and duration), suggestions for management approaches, and communicating methods to reduce safety risks can be obtained by talking with area residents.

Task

By whom? By when?

All

Early in the plan

Meet with residents to better understand concerns about elk conflict.

Action 2 Develop a plan for removing elk that visit or frequent communities.

Task

By whom? By when?

All

Early in the plan

Develop a plan to deal with elk in communities.

Objective 3 Minimize land-use conflicts between agriculturalists and elk.

There is currently no management program to address conflict between elk and agriculture. The Yukon *Wildlife Act* specifically identifies that there is no right for compensation from property damage as a result of wildlife. However, there are programs available through the Yukon government agriculture branch to assist with crop losses and to secure forage crops against damage from wildlife. Other options are being discussed.

Future land dispositions near elk ranges need to recognize and address the potential for elk conflicts when planning developments. The Carmacks Renewable Resources Council has developed a fish and wildlife plan that includes plans to zone areas where agriculture is acceptable and recommend other areas that are not suitable. This zoning could help manage conflicts in elk range.

Action 1 Continue the work to address elk-agriculture conflicts.

Task

By whom? By when?

YG (AG), YG (FW), YAA,
GGA, CAFN, LS/CFN,
TKC, KDFN

Early in the plan

Establish a working group to develop a plan to manage elk-agriculture conflicts.



B. Bell

REFERENCES

- Canadian Museum of Civilization, 2005. R.E. Morlan and M. Betts (eds.). Canadian Archeology Database compiled 1999-2005.
<http://www.canadianarchaeology.ca/localc14/detail.php?id=28917>.
- Canada's National Wildlife Disease Strategy, September 2004.
http://www.cws-scf.ec.gc.ca/cnwds/index_e.cfm.
- Canada's National Chronic Wasting Disease Strategy, October 2005.
<http://wildlife1.usask.ca/Publications/NCWDCS2005.pdf>
- Cronin, M.A., 1992. Intraspecific mitochondrial DNA variation in North American cervids. *Journal of Mammalogy*, 73:70–82.
- Daszak, P. *et al.*, 2000. Emerging infectious diseases of wildlife—threats to biodiversity and human health. *Science* 287:443-449.
- Epstein, P., 2002. Biodiversity, climate change and emerging infectious diseases. *In: Conservation Medicine*, p. 270-261. Oxford University Press.
- Florkiewicz, R., 1994. Nutritional ecology of wapiti in the Yukon. MSc. Thesis. University of Alberta. Edmonton Alberta.
- Florkiewicz, R.F., R.M.P. Ward and T.S. Jung, 2007. Census of the Takhini Valley Elk Herd, September 2007. Unpublished Technical Report. Yukon Department of Environment, Whitehorse, Yukon, 9 p.
- Garde, E. *et al.*, 2006. Examining the risk of disease transmission between wild Dall's sheep and mountain goats and introduced domestic sheep, goats, llamas in the NWT. Report prepared for GNWT Environment and Natural Resources.
- Guthrie, D., 1966. The extinct wapiti of Alaska and Yukon. Territory. *Canadian Journal of Zoology*, 44, 47-57.
- Hoefs, M., 2004. The status of the Takhini Valley elk herd in September 2003 – with emphasis on the classification of bulls. Unpublished report, Yukon Fish and Game Association, 19 p.
- Hoefs, M., 2005. Nutritional and Habitat Requirements of Elk and the Capacity of Yukon's Native Range to Provide Them. Yukon Government, Agriculture Branch report, 65 p.
- Larkin, J., J. Cox, M. Dzialak, M. Wichrowski and D. Maehr, 2004. Influences on release-site fidelity of translocated elk. *Restoration Ecology*, 12:97–105.
- Larkin, J., D. Maehr, J. Cox, D. Bolin and M. Wichrowski, 2003. Demographic characteristics of a reintroduced elk population in Kentucky. *Journal of Wildlife Management*, 67:467–476.
- Ludt, C.J., W. Schroeder, O. Rottmann and R. Kuehn, 2004. Mitochondrial DNA phylogeography of red deer (*Cervus elaphus*). *Molecular Phylogenetics and Evolution*, 31:1064-1083.
- McCandless, R.G., 1985. Yukon wildlife: a social history. University of Alberta Press, Edmonton, Alberta, 200 p.

- Nishi, J. *et al.*, 2002. Implications of agricultural and wildlife policy on management and eradication of bovine TB and brucellosis in free-ranging wood bison in Northern Canada. *In: The Domestic Animal/Wildlife Interface*, p. 236-244. Pub. Annals of NY Acad of Sci No. 969, editors P. Gibbs and B. Bokma.
- O'Gara, B. and R. Dundas. 2002. Distribution: past and present. *In: North American Elk: Ecology and Management*. D.E. Toweill and J. W. Thomas (eds.), Smithsonian Institution Press, Washington, DC.
- Polziehn, R.O., J. Hamr, F.F. Mallory and C. Strobeck, 1998. Phylogenetic status of North American Elk (*Cervus elaphus*) subspecies. *Canadian Journal of Zoology* 76:998-1010.
- Polziehn, R.O. and C. Strobeck, 1998. Phylogeny of wapiti, red deer, sika deer, and other North American cervids as determined from mitochondrial DNA. *Molecular Phylogenetics and Evolution*, 10: 249–258.
- Polziehn, R.O., J. Harm, F.F. Mallory and C. Strobeck, 2000. Microsatellite analysis of North American wapiti (*Cervus elaphus*). *Molecular Ecology*, 9:1561-1576.
- Polziehn, R.O. and C. Strobeck, 2002. A phylogenetic comparison of red deer and wapiti using mitochondrial DNA. *Molecular Phylogenetics and Evolution*, 22:342–356.
- Rosatte, R., J. Hamr, J. Young, I. Filion and H. Smith, 2007. The restoration of elk (*Cervus elaphus*) in Ontario, Canada: 1998-2005. *Restoration Ecology*, 15:34-43.
- Youngman, P.M., 1975. *Mammals of the Yukon Territory*. National Museums of Canada, Ottawa, Ontario. 192 pages.

APPENDIX A

Yukon Elk Management Planning Team, 2005-2008

Alsek Renewable Resources Council	Patt Delaney
	Paul Birckel
	Boyd Campbell
Carmacks Renewable Resources Council	Don Marino
	Gary Sam
Champagne and Aishihik First Nations	Linaya Workman
	Michael Jim
Consultant	Bob Hayes
Laberge Renewable Resources Council	Manfred Hoefs
Little Salmon/Carmacks First Nation	Joe Bellmore
Kwanlin Dun First Nation	Dave Sembsmoen
	Gillian McKee
Ta'an Kwach'an Council	Geraldine Pope
	Emmie Fairclough
YG - Agriculture	Kevin Bowers
YG - Fish & Wildlife Planners	Karen Clyde
	Joella Hogan
YG - Regional Biologists (Southern Lakes, Northern Tutchone and Kluane)	Rob Florkiewicz
	Mark O'Donoghue
	Michelle Oakley
YG - A/Wildlife Viewing Biologist	Sara Nielsen
YG - Senior Wildlife Biologist (Biodiversity)	Thomas Jung
Yukon Agricultural Association	Bill Drury
	Rose Drury
	Dallas Schaber
Yukon Fish and Wildlife Management Board	Graham Van Tighem
	Don Hutton
Yukon Fish and Game Association	Clayton White
	Aaron Koss-Young
	Stuart Breithaupt
Yukon Game Growers Association	Bill Drury
Yukon Outfitters Association	Phil Dyke



Yukon
Environment
Fish and Wildlife Branch