Yukon Wildlife Key Area Inventory

User's Manual

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Habitat Programs
Fish and Wildlife Branch
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1 Introduction

This document describes the Wildlife Key Area (WKA) Inventory, including an overview of the Inventory, criteria used to identify WKAs, and a list of available WKA products updated in December, 2013. It also contains the end-user licence agreement, to which all users of WKA Inventory products are expected to adhere.

The WKA data (v. 2013) are available in various formats to support specific users or GIS technology. Technical information pertaining to each format is available in separate documents distributed with each format.

2 The Yukon Wildlife Key Area Inventory

2.1 The Wildlife Key Area Inventory in the Yukon Habitat Programs Section

The Habitat Programs Section of the Yukon Department of Environment works to ensure that there is enough good quality habitat to maintain wildlife populations. Inventory is a priority, since all other components of the program depend on current and detailed information about important wildlife areas.

A major goal of the Habitat Programs Section is to catalogue the location, distribution and abundance of **key** areas for legally harvested and protected wildlife species.

Wildlife Key Area is a concept devised and adopted by the Department of Renewable Resources in 1988 to catalogue locations important to populations of legally harvested and protected wildlife species. The WKA Inventory Program evolved from a manual, hand-drawn map system to a fully digital, spatial, relational database system currently managed and maintained by Yukon Department of Environment, Habitat Programs Section.

2.2 What are Key Areas?

Wildlife Key Areas are geographical locations used by wildlife for critical, seasonal life functions. . For example, in winter thinhorn sheep forage on grasses and forbs only available on limited winter ranges. Many species like sheep use key areas traditionally, around the same time each year, while others (e.g. moose) will use them only occasionally when they are forced to by factors such as severe weather. Some key areas, e.g. caribou winter range, are dynamic, changing and shifting in response to environmental processes such as fire and succession. Others are more static such as mineral licks and raptor nesting cliffs.

Often animals aggregate on key areas in relatively large numbers, making populations vulnerable to disturbance or direct habitat loss. So, in general, if key areas are destroyed or the animals using them are disturbed the population could significantly decrease, as could its likelihood of survival. Key areas need to be protected to maintain the health and sustainability of wildlife populations.

The key area concept does not apply well to all species. It is ideal for species that use specific areas seasonally each year, such as thinhorn sheep. Mapping key areas for species such as carnivores is much more difficult, because they often have large home ranges and/or do not use habitat in an easily defined way. It may be possible in the future to identify their key areas by locating places abundant with their prey.

2.3 Why Identify Key Areas?

Wildlife populations can use a significant amount of habitat other than WKAs, but it is not possible to prevent all activities that impact the land and wildlife. The WKA Inventory serves to focus mitigation/protection efforts to those areas that are limited in availability, most valuable to the species/population, and/or where wildlife is most vulnerable. With the help of land managers and wildlife and habitat biologists, developers can plan their activities to avoid key areas altogether or during periods of critical use.

The WKA inventory is currently used in the development assessment process by the Environmental Affairs Unit of Environment Yukon and by the Yukon Environmental and Socio-economic Assessment Board (YESAB). Depending on the land use activity, specific recommendations are made to maintain key areas and reduce impacts. In addition, the assessment process through YESAB is improved, because land use proponents that obtain key area information can tailor proposals to reduce conflicts and shorten review times.

The WKA Inventory also provides relatively comprehensive information on wildlife values for land use planning, which requires an inventory and assessment of multiple resource interests. Land use planning strives to ensure that use of lands and resources is consistent with social, cultural, economic and environmental values (Yukon Land Use Planning Council website).

2.4 How are Key Areas Identified and Mapped?

Key areas for most species are given a boundary primarily through assessing animal location during key seasons of use. Mapping the known locations of sheep in winter, for example, identifies their winter range. Definitions of WKA for each species/taxon group are discussed in more detail in section 3.

2.4.1 Data Sources

Wildlife surveys are the primary source for delineating seasonal distribution and key areas. But other significant sources used to locate animals and their key areas include interviews with knowledgeable locals and biologists, published and unpublished literature and/or maps, and hunting and trapping statistics.

While survey data can provide accurate locations from which to interpret WKAs, it can often be limited in quantity, providing a narrow view of a population's use of the landscape. But as surveys are repeated from year to year, the ability to capture the full extent of use improves. Local knowledge or anecdotal information, while sometimes more general, can date further back in time giving a historic perspective and provide a fuller picture of what is actually happening on the land. Both data sources are complementary and valuable to WKA interpretation.

2.4.2 Mapping Methods and Criteria

In the mid 1990's the WKA mapping methods were transitioned from a subjective, manual means to a more systematic, semi-automated approach utilizing spatial data tools in Geographic Information Systems (GIS).

Mapping methods and criteria using these tools vary between species or taxon group and/or populations. Possible criteria include relative distribution (e.g. proximity: excluding data outside a specified nearest-neighbor distance threshold), density (e.g. animals/unit area: beaver and muskrat), sensitivity (e.g. ranking), and geographical (e.g. latitudinal: moose in North Yukon).

Generating (i.e. mapping) key area polygons from queried survey data often used buffer thresholds that depended on species or population characteristics. Methods have evolved recently to use home range analysis tools within GIS, and applying these on seasonal data sets.

Local knowledge, on the other hand, involves interpreting interview data that match defined WKA criteria and including these as key areas into the GIS system.

2.4.3 WKA Mapping Level

Incorporated in the 2009 version of WKA is the concept of "Level". There are 3 Levels defined in the WKA Inventory and database. Level 1 includes the specific locations used to delineate key areas. These data are not included in the WKA database, as they are usually captured as points from wildlife surveys and maintained by other databases. Level 2 data are key areas derived from Level 1 source data, and are the primary level for detailed land use assessments and management decisions. Level 3 key areas are a more generalized representation suitable for smaller scale mapping and broad-based management initiatives (e.g. State of the Environment reporting).

A species or taxon group may or may not have both Level 2 and Level 3 mapping. Often Level 2 key areas are nested within Level 3 key areas, for a given taxon group or population. For example, for a given herd of woodland caribou Level 2 winter range will be represented by multiple polygons that reflect animal locations, whereas Level 3 winter range will be represented by one polygon that encompasses all the smaller polygons. For some species or taxon groups Level 3 key areas are the sole representation of key areas. For example, wood bison key areas are currently represented as Level 3 only until suitable Level 2 methods are defined and implemented. Some sensitive Level 2 key areas are withheld from public release, while the more general Level 3 interpretation that obscures the true location of the feature is available (e.g. mineral lick, nest, and den sites).

2.5 Limitations

When using WKA data do not assume that all the key areas for a species within a region are identified. **The data only include those areas we know about**. It is important to recognize that there may be data gaps.

Much of the Yukon has not been surveyed intensively, or surveys that have been done were not at key times of year. Furthermore, surveys are but one source for delineating WKAs. First Nation and other people that travel on the land know a great deal about wildlife distribution, and most of this knowledge has not been captured in the WKA inventory.

It is also important to consider the scale when using the maps. Key Area polygons are compiled against 1:250,000 scale National Topographic Database (NTDB), produced by Natural Resources Canada (NRCan). It is not appropriate to re-map the areas on to a *larger* scale, that is, to transfer the areas from the 1:250,000 scale to 1:50,000 scale. This process results in increased accuracy of the boundaries that is not based on knowledge. On the other hand, there is no problem with reducing the precision of the lines by re-mapping at a smaller scale, but in some instances generalization of the polygons would be useful to reduce unnecessary detail.

Another important consideration is that the WKA Inventory does not usually include an evaluation of the habitat features important to the wildlife. Rather, animal observations delineate the area. Sometimes general knowledge about biophysical factors that influence habitat use patterns are used to "fine tune" key areas. For example, when sheep are located in winter it is known that they are using primarily south-facing, wind swept slopes that are clear of snow. Key area boundaries are refined based on inferences about the extent of near-by habitat being used by the observed sheep. Where baseline habitat mapping has occurred and where it is known which of these habitat types are important to the species in question, then habitat type mapping can inform the delineation of key area boundaries. For example, woodland caribou preferentially select habitat types with abundant terrestrial lichen. Winter range polygons can then be delineated using both animal location and lichen mapping.

3 Wildlife Key Area Criteria

The critical, seasonal life functions for each species or taxon group were defined through extensive literature reviews and consultation with species biologists. The table below summarizes the key life cycle features defined for Yukon wildlife species or taxonomic group, including the key area type, and season and function codes. The rationale for which seasonal life functions were considered key for each species or taxonomic group is described in the sections that follow.

3.1 Summary of Yukon Wildlife Key Areas

Taxon/Species	Key Area Type	Season Code	Function Code
Moose 	Early Winter Range (Faro, post-rut)	ew	R
	Late Winter Range	lw	R
	Summer Range (Old Crow Flats)	s	R
	Year-Round, All Functions (North Yukon)	y	A
Woodland Caribou 	Winter Range	w	R
	Summer Post-calving (Chisana Caribou Herd)	s	Y
	Fall Rut	f	B
	Migration Corridor	sp, f, y, u	C
Barren-ground Caribou 	Spring Calving	sp	X
	Summer Insect Relief	s	I
Thinhorn Sheep 	Winter Range	w	R
	Spring Lambing	sp	X
	Early Winter Rut	ew	B
	Year-Round, All Functions (small, isolated populations)	y	A
	Movement Corridor	sp, s, f, ew, y, u	C
Mountain Goat 	Year-Round, All Functions	y	A
	Movement Corridor	y	C
Mule Deer 	Winter Range	w	R
	Year-Round, All Functions	y	A

Elk 	Year-Round, All Functions	y	A
Wood Bison 	Year-Round, All Functions	y	A
Muskox 	Winter Range Fall Rut	w f	R B
Any of the Above	Mineral Lick (Level 3)	y, sp, s, f, w, u	L
Grizzly Bear 	Major Feeding Range	y (sp, s, f)	R
Black Bear 	Major Feeding Range	y (sp, s, f)	R
Polar Bear 	Denning Area	w	D
Wolf 	Denning Site	sp, s	D
Fox 	Denning Area (Level 3)	sp, s	D
Beaver	Year-Round, All Functions (high density area)	y	A

			
Muskrat	Year-Round, All Functions (high density area)	y	A
			
Waterfowl:	Spring Staging	sp	S
Ducks	Summer Nesting	s	X
	Summer Moulting	s	M
	Fall Staging	f	S
Geese			
			
Swans			
			
Raptors:	Summer Nesting	s	X
Alpine  *(Golden Eagle, Gyrfalcon)*			
Riparian  *(Bald Eagle, Osprey, Peregrine Falcon, Rough-legged Hawk)*			
Other  *(Merlin, Unspecified)*			
Sharp-tailed Grouse	Year-Round, All Functions	y	A
			
Shorebirds			
	Summer Nesting	s	X
	Summer Brood Rearing	s	Y
	Fall Staging	f	S
Seabirds	Summer Nesting	s	X
(Black Guillemot)	Fall Staging	f	S
			
Larids	Summer Nesting	s	X
(Gulls)	Summer Brood Rearing	s	Y

	Fall Staging	f	S
Seals	Year-Round, All Functions	y	A
			
Beluga Whale	Migration Corridor	sp, f	C
			
Bowhead Whale	Summer Range	s	R
	Fall Range	f	R

3.1.1 Season codes

- w winter (October - April)
- ew early winter (October - January)
- lw late winter (February - April)
- sp spring (April - June)
- s summer (June - August)
- f fall (August - October)
- y year round
- u unknown

3.1.2 Function codes

- R range (i.e. feeding area)
- B breed (e.g. rutting area, courting area)
- X reproduction (e.g. lambing area, nesting area)
- D den
- I insect relief
- S stage (i.e. migratory stop-over area)
- M moult
- Y rear young (e.g. post-calving area)
- C migration corridor
- A all functions
- L mineral lick

3.2 Species and Taxonomic Group Criteria

3.2.1 Moose

Winter can be a stressful season for many species, including moose. Moose are affected primarily by the difficulties in travelling through deep snow and having to dig through snow to reach the shrubs on which they feed. Because snow gets deeper over the winter, the critical period when moose may need to move to special habitats is late winter. For much of the Yukon,

late winter range is considered to be key areas where moose gather between January and April that have relatively shallow snow depths and abundant browse.

River valleys are typical of late winter habitats. The bands of shrubs and poplar near the river provide browse for the moose. Adjacent upland mature spruce forests have a dense canopy that intercepts a significant amount of snow fall that would otherwise accumulate on the ground, so moose use these stands as travel corridors and for cover. Moose that inhabit mountainous areas with high snow accumulation are particularly likely to move to and from late winter ranges. Here, moose descend from sub-alpine shrub communities to mixed spruce-shrub forests found in valley bottoms and/or river valley floodplains.

In many areas of the Yukon the average annual snowfall is not deep enough to cause moose to move to late winter ranges. In years of low snow depth disturbed sites such as burns or logged areas and stands of tall shrubs are heavily utilized. Late winter range is key only during years of significant snowfall (i.e. greater than 70 cm). But even though this may happen only once every ten years in some regions of the Yukon, identifying and protecting late winter ranges is necessary to provide moose with safe areas to weather these difficult times.

What is key for moose is defined differently for the northern Yukon. Here, **year-round range** is considered key for moose, because suitable habitat is limited. In a landscape dominated by tussock tundra and where forested areas are scarce, moose are found primarily in shrub habitats throughout the year. This habitat type is mainly limited to narrow bands along rivers, streams and gullies, and represents only about 5% of the North Slope landscape.

Relatively high concentrations of moose are known to use Old Crow Flats as **summer range**. Characteristic of this transitional, forest-tundra wetland are white spruce/tall willow communities that line major drainages, and extensive upland shrub and wet meadows. Moose are attracted to the shallow lakes and ponds that have abundant aquatic vegetation. They migrate into the wetlands from the southeast Brooks Range in Alaska starting late March and move out of the flats in late August. This population has one of the largest recorded migratory distances for moose in NW Canada and Alaska (mean maximum distance of 123 km).

In the early winter following the intensive rut, bull moose, depleted of energy stores, aggregate in areas abundant with willows. In mountainous regions these willow rich areas are often located in sub-alpine drainages. Here, moose feed to replenish their energy expended during the rut. **Early winter (post-rut) range** is not key for most moose populations, because this habitat type is not limited. However, for a population north of Faro there is a consistent and exceptionally high density of moose at this time of year, and as such post-rut areas were mapped as key for this population.

The traditional use of **calving sites** by adult cows are not currently mapped as key but may be quite important, particularly on a local level. For example, some islands seem to be heavily used for calving by moose. Since moose surveys do not normally occur during the calving season, local knowledge will be the primary source of information for locating calving sites and evaluating their importance.

Taxon/Species	Key Area Description	Season Code	Function Code
Moose 	Early Winter Range (Faro, post-rut)	ew	R
	Late Winter Range	lw	R
	Summer Range (Old Crow Flats)	s	R
	Year-Round, All Functions (North Yukon)	y	A

3.2.2 Woodland Caribou

Winter range, select **summer post-calving range**, **fall rutting areas**, and **migration corridors** have been identified as key for woodland caribou. These habitat types are all used traditionally. Calving areas are also used consistently, but are not considered key because cows bearing young are solitary and widely dispersed.

As winter progresses, woodland caribou become particularly vulnerable. Cold temperatures are not a problem for caribou, but deep, hard packed snow interferes with feeding, makes travelling difficult, and under certain conditions can inhibit escape from predators. Snow conditions become more unfavourable for woodland caribou as winter progresses. In response, they move along traditional routes or migration corridors to forests and, in moderate winters, subalpine shrub areas where snow conditions are less severe and where lichens, their primary food, are more readily available.

It is typically the discrete use of winter ranges that have enabled biologists to recognize 25 distinct woodland caribou herds. Together these herds occupy nearly all of the south and central Yukon.

There is increasing evidence that **summer post-calving range** may be key for at least some woodland caribou herds, as cows and their calves appear to congregate in areas of high quality forage. One post-calving area for the Chisana Caribou Herd was identified and included in the WKA database, given its designation as a particularly vulnerable herd and listing as "specially protected wildlife" under the *Yukon Wildlife Act*. Post-calving areas for other herds will be assessed and mapped where the information is available and if they are considered key.

During the fall rut, woodland caribou aggregate in traditional areas for about one month. These areas are typically located at higher elevations in open, alpine/sub-alpine communities.

Taxon/Species	Key Area Description	Season Code	Function Code
Woodland Caribou 	Winter Range	w	R
	Summer Post-calving (Chisana Caribou Herd)	s	Y
	Fall Rut	f	B
	Migration Corridor	sp, f, y, u	C

3.2.3 Barren-ground Caribou

Key areas for barren-ground caribou include **calving grounds**, **post-calving range**, and **insect relief areas**. These definitions are based on Porcupine Caribou Herd studies that resulted in ranking the importance of the various seasonal uses. Winter range is ranked relatively low in importance for barren-ground caribou. Herds can choose to use one of several suitable winter ranges and show little fidelity to any one range.

There are two major barren-ground caribou herds in the Yukon. The Porcupine Caribou Herd is the largest and ranges over most of the northern Yukon and into Alaska. The Fortymile Caribou Herd is much smaller and due to past severe overhunting now occurs mainly in Alaska, although it used to occupy the entire southwest Yukon. Recent herd growth has seen the re-occupation of Fortymile caribou in its former Yukon range west of Dawson, as evidenced in the early winter of 2013. If this trend continues, particularly for seasons other than winter, key area for this herd will

be re-assessed.

Calving grounds and post-calving range of the Porcupine herd occur where there is abundant high quality forage and the onslaught of insects is delayed. Insect harassment in the summer (primarily by mosquitoes) can have a significant impact on barren-ground caribou in the northern Yukon. In response to harassment large groups of Porcupine caribou will seek windy areas, such as coastal and mountainous regions, or snow patches.

Taxon/Species	Key Area Description	Season Code	Function Code
Barren-ground Caribou	Spring Calving	sp	X
	Summer Insect Relief	s	I

3.2.4 Thinhorn Sheep

Dall (white) and Stone (dark) sheep are two subspecies of thinhorn sheep found in the Yukon. Fannin sheep, a unique colour-phase of Dall sheep, is also found in the territory. Thinhorn sheep are very traditional users of **winter ranges**, **lambing areas**, **rutting grounds**, and **movement corridors**. These are all key areas, because they are used traditionally and are limited in extent.

Generally, winter ranges are found on steep, south-facing slopes where strong winds and sun exposure minimize snow accumulation. In early winter sheep are typically not restricted significantly by snow, because it is usually soft enough to allow movements and cratering. Moving into mid-winter, however, snow can become wind-packed, confining and concentrating sheep into smaller snow-free, wind-blown areas where forage is available.

Lambing, which occurs between May and early June, is a key time of year for ewes and lambs. During lambing, they are vulnerable to predation, primarily by wolves, coyotes, grizzly bears, and golden eagles. To avoid predators ewes will give birth on steep cliff faces. These areas are used traditionally for lambing but may also be used as predator escape terrain during other seasons.

Small groups of sheep use rutting, or mating, grounds in early winter. The locations and physical characteristics of rutting grounds are not well known, but the behaviour itself is more significant than the location. Preventing the disturbance of these rutting groups is important to ensure successful reproduction. More research is required to better define the physical attributes of rutting grounds.

Smaller, isolated sheep populations are known to occur along the Yukon River northwest of Minto. Suitable habitat, including summer range, is limited and movement to distant alternate ranges is risky and unlikely. As such, areas used **year-round** for **all functions** are key for these isolated sheep populations.

Sheep travel along well-worn trails to access summer and winter ranges, mineral licks, and other habitats. These seasonal **movement corridors** need to be protected from disturbance or destruction to ensure sheep are able to reach important areas within their total range.

Taxon/Species	Key Area Description	Season Code	Function Code
Thinhorn Sheep	Winter Range	w	R

Spring Lambing	sp	X
Early Winter Rut	ew	B
Year-Round, All Functions (small, isolated populations)	y	A
Movement Corridor	sp, s, f, ew, y, u	C

3.2.5 Mountain Goat

Year-round, all functions has been identified as key for mountain goats, because this species and the habitats they use are uncommon and not well studied in the Yukon. Sites for all important life functions, such as winter range, kidding areas, and rutting grounds are included within key area boundaries. Mountain goats prefer high elevations on steep slopes with escape, or cliff, terrain nearby. Winter range is predominantly located on south-facing slopes and cliffs, and on high ridge areas where sun and wind limit snow accumulation. Kidding occurs on rugged, steep terrain.

The central Yukon is the northern-most location of the North American mountain goat. Their distribution in the Yukon is not extensive, primarily because of habitat limitations. Mountain goats are found in rugged, mountainous regions most often associated with intrusive and metamorphic bedrock groups, which provide more stable footing than sedimentary rock. They also prefer areas with substantial precipitation, such as found in the St. Elias Mountains and Yukon-Stikine Highlands ecoregions.

Taxon/Species	Key Area Description	Season Code	Function Code
Mountain Goat	Year-Round, All Functions	y	A
	Movement Corridor	y	C

3.2.6 Mule Deer

Mule deer populations are not intensively monitored in the Yukon, but their numbers, while considered to be relatively low, are believed to be increasing, possibly in response to changes in habitat. Central Yukon is the northern extent for this species. Given these factors, **year-round, all functions,** is mapped as key, but some **winter ranges** have also been identified. In the Yukon, mule deer are commonly found in burn areas and on exposed, south facing slopes. They prefer relatively dry sites, in which there is a diversity of habitat types such as grasslands, aspen stands, and white spruce or pine stands. Mule deer populations are limited by the availability of forage, water, and cover, particularly during the winter.

Key areas were mapped mainly from reported sightings. Burn areas were also mapped as key mule deer habitat when deer observations within these areas were common. The definition of what areas are key for mule deer in the Yukon could change if and when intensive studies to identify deer population status and seasonal habitat use are completed.

Taxon/Species	Key Area Description	Season Code	Function Code
Mule Deer	Winter Range	w	R

	Year-Round, All Functions	y	A

3.2.7 Elk

Populations of elk in Yukon were established from both deliberate introduction by humans and, more recently, through natural colonization. Elk were introduced in 1951 and 1954 to the southwest Yukon by the Yukon Department of Renewable Resources, together with the Yukon Fish and Game Association. As a result there are two small but distinct elk herds, the Takhini Valley Herd in the Takhini River valley and the Braeburn Herd which ranges between Carmacks and Fox Lake. Additionally, small numbers of elk are naturally present some years in southeast Yukon along the border with British Columbia, likely a result of range expansion of growing populations.

Elk prefer habitats that have immature forests interspersed with grasslands, meadows, or open, south-facing slopes. This mosaic of habitat types provides a large amount of edge habitat where the quantity and diversity of forage is greatest. Elk frequent exposed south-facing slopes in winter, where snow accumulation is low and amounts of forage and nutrient levels are relatively high. South-facing slopes are critical to elk in the spring, since early green-up provides the first source of high quality forage. Elk use forested habitats for shelter throughout the year.

Year-round, all functions is identified as key for the Takhini and Braeburn elk herds, because of their low numbers. The herds' key areas were mapped separately for both survey and local knowledge and further refined based on management units identified in the "*Management Plan for Elk (Cervus elaphus) in the Yukon" (2008)*. The year-round range includes habitats that support important life functions, such as calving, rutting, and wintering.

Taxon/Species	Key Area Description	Season Code	Function Code
Elk 	Year-Round, All Functions	y	A

3.2.8 Wood Bison

Wood bison were extirpated from many parts of their historic North American range, including disappearance from the Yukon 800 to 1000 years ago. In 1975 a Canadian Wood Bison Recovery Program involving federal, provincial, and territorial governments was initiated with the objective of re-establishing free roaming herds of wood bison in various locations, thus reducing their vulnerability to extirpation. This program came to the Yukon in 1980.

The initial phase of the project was to determine habitat potential for wood bison in the Yukon. The Nisling River valley was selected as the most favourable area for bison relocation. In March 1986 wood bison from Elk Island National Park were brought to the Nisling River valley and placed in a corral. Two years later most of these bison were released into the wild. Since that time more bison were brought in and released, and a herd is now becoming well established in the Nisling River valley and the Aishihik Lake area.

Year-round, all functions is considered key for wood bison. The core range identified in the map *"Yukon Wood Bison Core Range – August, 2011"* was used as the key area for this herd.

Mapping this core range, and key area, was based primarily on radio-telemetry relocation and census surveys. The distribution of the bison may continue to change, as this herd is still relatively young and unsettled. As such, key areas for this population will be updated as more data becomes available, and key seasonal ranges may be identified and mapped.

Taxon/Species	Key Area Description	Season Code	Function Code
Wood Bison	Year-Round, All Functions	y	A

3.2.9 Muskox

Winter range and **fall rut** are mapped as key for muskox, based on reported sightings, surveys and satellite collar relocations. In winter muskox are limited by snow depth so they tend to frequent areas with shallow snow cover, such as ridges, hillsides, and uplands. Fall rut is key primarily because of the behavioural sensitivity at this time. That is, aggregations of male and female muskox in fall are not necessarily tied to traditionally used areas.

In the summer growing season muskox prefer riparian areas with an abundance of willows, their primary food. In Yukon most observations of muskox are made on the coastal plain, Herschel Island and along major river drainages of the North Yukon.

Muskoxen are believed to have inhabited the Arctic coasts of Alaska and the Yukon before being extirpated from these areas in the mid-1800's. In an attempt to reintroduce this species in Alaska, 51 muskoxen were released on Barter Island in 1969, 120 km northwest of the Yukon border. By 1985 the population had increased to 476 animals. Breeding populations are becoming established, and continued expansion of muskox herd size and range can be expected on the Yukon's North Slope.

Taxon/Species	Key Area Description	Season Code	Function Code
Muskox	Winter Range	w	R
	Fall Rut	f	B

3.2.10 Mineral Licks

All Yukon ungulates (moose, caribou, sheep, goats, deer, elk, bison, and muskox) as well as some other animals use mineral licks. Mineral licks, which are scattered throughout the Yukon, provide animals with essential minerals such as sodium, magnesium and trace elements. Different animals use different types of mineral licks. For example, sheep and goats usually use dry earth exposures, whereas moose and caribou generally prefer wet muck licks and mineral springs.

Mineral licks appear to have a profound effect on ungulate distribution and movement patterns. Sheep, for example, have been known to travel many kilometres to visit mineral licks seasonally. There have been few specific biological surveys for mineral licks in the Yukon; mapping sources

included scientific studies, incidental observations during wildlife surveys, observations by knowledgeable locals, and outfitter questionnaires. Most recently, motion sensor camera technology has been used at some known mineral lick sites to determine species that use the site and at what time of year. Additionally, soil samples were taken from some sites and analyzed for mineral composition.

Given the fixed location of mineral licks and traditional, seasonal use, animals using them can be vulnerable to harvesting. So the exact location of mineral licks is concealed within general Level 3 mapped areas. More detailed Level 2 data are available to managers to mitigate the impact of land use activities at these important sites.

Taxon/Species	Key Area Description	Season Code	Function Code
Any of the Above	Mineral Lick (Level 3)	y, sp, s, f, w, u	L

3.2.11 Grizzly Bear

Key areas for grizzly bears may be mapped as **spring, summer**, or **fall range** or as **year-round range** if there is a lack of information on season of use. It includes areas where they concentrate seasonally, such as natural feeding areas and movement corridors. Grizzly bears are known to feed in the same berry areas each year. They also concentrate seasonally along major salmon spawning rivers. The key area maps identify only a few areas of grizzly bear concentration; more study is required to complete this mapping.

Grizzly bear key areas tend to be difficult to locate, because bears exist at relatively low densities, are most often solitary, and make long movements in search of food. Any area with large tracts of wilderness can be expected to harbour bears. But some areas within these large tracts have seasonally higher concentrations or have particularly high value to bears.

Winter denning sites may be key for grizzly bear populations, but they are not currently included in the WKA database. The importance of denning areas to grizzly populations needs to be reviewed and considered for inclusion in WKA.

Identifying grizzly bear key areas has land use implications. Conflicts between bears and people are more likely when land use activities occur on or adjacent to key areas. Stringent land use guidelines are required to prevent conflicts.

Taxon/Species	Key Area Description	Season Code	Function Code
Grizzly Bear	Major Feeding Range	y (sp, s, f)	R

3.2.12 Black Bear

Seasonally concentrated feeding areas constitute black bear key areas. These include **spring**, **summer**, and **fall ranges**. The various plant foods on which black bears depend become available in different habitats at different times of year. Concentrations of black bears in the

spring usually occur in sagewort/bearberry/grassland habitat, which is located on open, south-facing hillsides, commonly on the edge of deciduous forests. In the summer and fall they use productive berry areas. Black bear key areas remain unknown for much of the Yukon, particularly for summer and fall ranges. Black bears den from October to late April or early May.

Black bears occupy many habitat types, given their diverse diet and large home ranges. The diet of the black bear is just as variable as that of the grizzly bear. Black bears are mainly herbivorous, consuming grasses, berries, and emergent forbs. They will, given the opportunity, eat meat in the form of scavenged carrion or prey. Black bears are usually excluded by grizzly bears from salmon spawning rivers and streams.

Taxon/Species	Key Area Description	Season Code	Function Code
Black Bear	Major Feeding Range	y (sp, s, f)	R

3.2.13 Polar Bear

Denning is not mandatory for polar bears, unlike for grizzly and black bears. Only pregnant polar bear sows move to dens in October and November, where they remain until the spring. These **winter** maternal **denning** areas are mapped as key. Most polar bear denning occurs on the pack ice of the Beaufort Sea, and a significantly lesser number of dens are found on the mainland. However, this may be shifting in response to changing ice pack conditions due to climate change. Polar bears are known to den on Herschel Island and the coastline of northern Yukon.

Polar bear distribution throughout the year is closely related to the location of multi-year pack ice. In the summer most polar bears remain on the drifting pack ice. But when the summer winds blow the ice south to the mainland, the polar bears will often “jump ship”. Movement of individuals within the population’s range can be substantial. One attraction of the mainland to polar bears is the carrion of beached whales and seals.

The Southern Beaufort Sea polar bear population (coasts of Alaska, Yukon and NWT) numbers only about 1,500animals. This population, which is collaboratively managed by the Yukon, Alaska and other government agencies and co-management boards, is believed to be in decline.

Taxon/Species	Key Area Description	Season Code	Function Code
Polar Bear	Denning Area	w	D

3.2.14 Wolf

Wolf maternal **den sites** used in **spring** and **summer** are mapped as key, but only in the northern Yukon. Here, areas suitable for denning are limited by the presence of permafrost. In the few areas where dens are constructed, permafrost action can cause them to cave in. Those left intact can be used each year (May - August) by the same mating pairs. The known maternal

den sites are all located near rivers or creeks. Dens must be protected from destructive land use activities year-round.

Habitat use by wolves is dependent on the location and distribution of their primary prey species; wolf prey varies among regions of the Yukon. Wolf packs that rely heavily on sheep or barrenground caribou commonly occupy alpine or tundra areas and those that hunt moose or woodland caribou are typically found in subalpine and forested regions. Many different habitat types are used to some degree, because wolves have large home ranges.

Taxon/Species	Key Area Description	Season Code	Function Code
Wolf	Denning Site	sp, s	D

3.2.15 Fox

The maternal **spring** and **summer den sites** of both the arctic and red fox are defined as key in the north Yukon only. As with wolf dens, suitable areas for fox den construction are limited by permafrost. Most of the dens on the coastal plain are found in sandy soil along streamside cutbanks and in dunes. On Herschel Island dens were often found on the mounds formed by coastal erosion and permafrost melt. Dens are occupied from late spring through the summer, but they require year round protection since they are often reused each year.

The Arctic fox population in the Yukon is very small, probably less than 100 animals. Their breeding distribution is confined to Herschel Island and the Yukon's coastal plain. Herschel Island has the highest concentration of arctic fox maternal dens in the north Yukon, whereas the coastal plain west of the Babbage River has a much lower density. No arctic fox dens are located east of the Babbage and Old Crow Rivers. In winter, arctic fox range widely in search of food, often moving onto the ice pack.

The red fox is an adaptable and opportunistic predator. In North America red fox occupy climates ranging from low arctic to sub-tropical, and they are adapted to rural and urban settlements as well as wilderness. They are distributed throughout most of the Yukon, including the tundra of the north Yukon. There are fewer red fox maternal dens in the Yukon's coastal plain and Herschel Island, relative to the arctic fox. In winter these red fox are suspected to move south of the coastal plain.

As with mineral licks, the exact locations of fox dens are concealed within the generalized Level 3 mapped areas. The more detailed Level 2 data are confidential, and available only to managers to mitigate the impact of land use activities at these important sites.

Taxon/Species	Key Area Description	Season Code	Function Code
Fox	Denning Area (Level 3)	sp, s	D

3.2.16 Beaver

Year-round, all functions in high quality habitats defines key areas for beaver, because they do not use habitats seasonally. Beaver colony density is used as a measure of habitat quality. Food cache counts are used as an estimate of colony density, and thus whether or not the area is considered key. Key areas for beaver were defined as water bodies or drainage systems with less than or equal to 2.0 kilometres per active colony (excellent habitat) or 2.1 to 3.0 kilometres per active colony (good habitat). As these areas are depleted of forage, beavers will search for more favourable habitat. Similarly, key area locations will also shift with the beavers.

The best long-term habitat for beavers includes areas with numerous wetlands and abundant forage. The beaver needs fresh water habitats where the water is at a relatively stable level, is sufficiently deep to prevent freezing to the bottom, and is still or slow flowing. Beaver habitats must also have an abundance of deciduous trees and shrubs, such as aspen (which is preferred), willow, balsam poplar, or birch.

Taxon/Species	Key Area Description	Season Code	Function Code
Beaver 	Year-Round, All Functions (high density area)	y	A

3.2.17 Muskrat

High quality habitat suitable for **year-round, all functions** is defined as key for muskrats. Muskrats do not use habitats seasonally, although suitable muskrat habitat is more restricted in winter than summer. Therefore, muskrat density measured in winter is used as an indicator of habitat quality.

Abundance of muskrat “pushups” can be used as an index of animal density. Pushups are breathing holes that muskrats construct by chewing through the ice and piling vegetation around the hole. These holes allow the animals to extend their feeding ranges while remaining under the ice. Pushups become evident landmarks in late winter and are counted during population surveys.

Specific criteria based on pushup densities and whether the habitat is isolated or continuous are used to further define these areas. Known muskrat locations are key if (i) there is a moderate pushup density (1 - 5 per square kilometre) and the wetlands are continuous, or (ii) there is a high pushup density (greater than or equal to 5 per square kilometre) and the wetlands are either isolated or continuous. Isolated wetlands with pushup densities of less than 5 per square kilometre are not considered to be key.

Muskrat require permanent water bodies that remain at a relatively stable level, are still or slow flowing, have an adequate amount of submergent or emergent vegetation (food source), and are bordered by herbaceous vegetation in the uplands. In the Yukon, still water bodies must be sufficiently deep (greater than 1.5 metres), so as not to freeze to the bottom in winter, yet must not exceed a depth of 3 to 4 meters allowing for growth of aquatic plants. Muskrat occupy marshes, ponds, potholes, shallow lakes, and slow-moving rivers and streams.

In the southern Yukon, the best muskrat habitats are the perched basins and oxbow sloughs associated with river floodplains. In the northern Yukon, the lakes and ponds of the Old Crow Flats provide high quality habitat.

Taxon/Species	Key Area Description	Season Code	Function Code
Muskrat 	Year-Round, All Functions (high density area)	y	A

3.2.18 Waterfowl

Waterfowl includes species of ducks, geese, and swans. Key areas for waterfowl include wetlands used for **spring** and **fall staging**, and **summer nesting** and **moulting**. Spring staging areas are lake outlets or portions of rivers that become free of ice early in spring. Waterfowl aggregate on these areas to feed and wait for other wetlands to become ice-free. In the summer, concentrations of small ponds (wetland complexes) or large, extensive marshes generally contain the highest densities of breeding ducks. Larger water bodies with available food are commonly used for moulting. Through the summer, waterfowl, particularly the young of the year, must build enough body reserves for the long flight south in the fall. Flocks of waterfowl use fall staging areas to rest and feed prior to and during this migration. Both large lakes and wetland complexes may be used for fall staging.

On a National and International scale, regions of the Yukon are important primarily as spring and fall migration corridors for waterfowl. These birds are generally going to and from major summer ranges in Alaska and the Yukon North Slope. The major migration corridors, or flyways, in the Yukon are the Shakwak Trench and the Tintina Trench. Despite this general movement through the Yukon, many habitats are important to waterfowl populations.

The Yukon Waterfowl Technical Committee has rated wetland significance to waterfowl based on the numbers of birds using the area and the predicted impact on the waterfowl population if the wetland were lost. For example, M'Clintock Bay on Marsh Lake is used by thousands of ducks and swans in spring and there are no alternative sites which could replace it. Habitats such as M'Clintock are considered important to the waterfowl populations as a whole, and are mapped as key.

Taxon/Species	Key Area Description	Season Code	Function Code
Waterfowl:	Spring Staging	sp	S
Ducks 	Summer Nesting	s	X
	Summer Moulting	s	M
Geese 	Fall Staging	f	S
Swans 			

3.2.19 Raptors

Raptors, or birds of prey, include hawks, falcons, harriers, eagles, owls, and ospreys. In the Yukon Gyrfalcon, Peregrine Falcon, Golden Eagle, Bald Eagle, Osprey, Merlin, and Rough-leggd Hawk are given management priority, because of their high vulnerability to disturbance. **Summer**

nesting areas are mapped as key. Nest sites are used from March to August, although the exact nesting period varies depending on the species and nesting latitude.

Gyrfalcon and Golden Eagle dwell in the alpine whereas Peregrine Falcons, Bald Eagles, Osprey, and Rough-legged Hawk live near water (riparian habitats). Merlin can be found nesting in forested habitats. Raptor species generally have special requirements for nest sites. Bald Eagles, for example, commonly nest in large trees on or near the shores of lakes or rivers; these sites are limited in the Yukon. The falcons, Golden Eagle, and Rough-legged Hawk usually nest on cliffs. Alpine and riparian raptors also tend to use the same nest site every year, so disturbing these species' nests would be more detrimental than for bird species which find or build new nests every year.

Most managers agree that disturbances within two kilometres of raptor nest sites can impede breeding success. The key areas mapped for alpine and riparian raptors include at least a two-kilometre buffer zone. The exact locations of raptor nest sites are kept confidential to protect these birds from illegal activities, but like mineral licks and fox dens, specific locations are available to managers for mitigative prescription.

Most raptors migrate south every year to avoid harsh northern winters, but many Gyrfalcon remain in the Yukon all year, particularly when their primary winter prey (ptarmigan) are abundant. Seasonal and annual fluctuations in raptor numbers are related to the availability of their food resources. The continued survival of raptors is dependent upon the status of their prey and the quality of their habitat.

Taxon/Species	Key Area Description	Season Code	Function Code
Raptors:	Summer Nesting	s	X
Alpine (Golden Eagle, Gyrfalcon)			
Riparian (Bald Eagle, Osprey, Peregrine Falcon, Rough-legged Hawk)			
Other (Merlin, Unspecified)			

3.2.20 Sharp-Tailed Grouse

Year-round, all functions are mapped as key for Sharp-tailed Grouse. Of the several species of grouse in the Yukon, only the Sharp-tailed Grouse is of immediate management concern. Sharp-tailed Grouse have a limited distribution in the Yukon, which in addition to their unique habitat requirements, restricted movements, and intense social behaviour makes them particularly vulnerable to disturbance. Only small pockets of suitable habitat for Sharp-tailed Grouse occur in the Yukon. Some of these areas that have in the past supported populations of this species now have none or only remnant populations.

Sharp-tailed Grouse habitat includes leks, or communal courting grounds, which form the centre of social activity throughout the year for a population. Lekking areas generally have small mounds elevated from the surrounding terrain and have little shrub or tree cover. Sharp-tailed Grouse habitat has been characterized as having a "parkland structure", which are open areas

with low ground cover dispersed in shrub or treed groves. In the Yukon gravel outwashes with fairly stable aspen parkland habitat and wet sedge-hummock meadows after fire are considered suitable habitats for Sharp-tailed Grouse.

Taxon/Species	Key Area Description	Season Code	Function Code
Sharp-tailed Grouse	Year-Round, All Functions	y	A

3.2.21 Shorebirds

Key areas for shorebirds include **summer nesting** and **brood rearing** areas and **fall staging** areas. These sites have only been identified along the north Yukon coast, where large numbers are known to nest in the summer and stage in the fall. During the peak fall migration in August shorebirds move eastward along the coast before heading south. Some areas along the coast are used specifically for fall staging, such as the Babbage River Delta. Nesting and brood rearing often occur in the same areas, but sometimes broods are moved to different areas that have abundant food.

Sixteen species of shorebirds have been shown to breed on the coast of the Alaska National Wildlife Refuge (ANWR), and it is likely that these species also use the Yukon's coastal plain. The more abundant species include the Red-Necked Phalarope, Semipalmated Sandpiper, Lesser Golden Plover, and Pectoral Sandpiper. Overall phalaropes are the most common shorebird species.

Taxon/Species	Key Area Description	Season Code	Function Code
Shorebirds			
	Summer Nesting	s	X
	Summer Brood Rearing	s	Y
	Fall Staging	f	S

3.2.22 Seabirds

For species of seabirds, which includes guillemots, cormorants, and fulmars, **summer nesting** and **brood rearing** areas are defined as key. Seabirds tend to nest in colonies, making these sites extremely important for the survival of the populations.

The only seabird for which a key area is mapped is the Black Guillemot. The town site at Pauline Cove on Herschel Island is the only significant nesting area for Black Guillemots in the Beaufort Sea region. Rather than their usual nesting habitat of cliffs and talus slopes, they use old buildings and driftwood piles at this historic site, making the birds and their key area unique and unusual among Yukon's wildlife.

Taxon/Species	Key Area Description	Season Code	Function Code
Seabirds	Summer Nesting	s	X

(Black Guillemot)	Fall Staging	f	S

3.2.23 Larids

Larids include species of gulls, jaegers, and terns. Key for these birds are concentrated **summer nesting** and **brood rearing** areas and **fall staging** areas. Key areas for larids are mainly mapped in the north Yukon. The Glaucous Gull is the most abundant gull species that breeds in the north Yukon. These gulls primarily nest in colonies on barrier islands or on islands in fresh water lakes. The largest colony is at Escape Reef. Individual glaucous gull nests are found throughout the ponds of the coastal plain, but are not mapped as key. Less common breeding gulls on the Yukon coastal plain includes Thayer's, Sabine's, and Bonaparte's gulls.

Arctic Tern are also known to nest in colonies on the barrier islands east of Nunaluk Spit, but most terns are believed to nest on inland waters. The Parasitic and Long-tailed Jaegers both commonly breed on the Yukon coastal plain, but the Pomarine Jaeger rarely does. Key areas have not yet been identified for these birds.

Taxon/Species	Key Area Description	Season Code	Function Code
Larids	Summer Nesting	s	X
(Gulls)	Summer Brood Rearing	s	Y
	Fall Staging	f	S

3.2.24 Seal

Two species of seal are found in the waters off the Yukon coastline, the more common ringed seal and the less abundant bearded seal. **Year-round range, all functions** is mapped as key, because their habitat is the interface between ice and water and is not predictable within narrow boundaries in time or space. Both species are found in the eastern Beaufort Sea, including Yukon coastal waters, year round. Some of the largest concentrations of ringed seals in the Beaufort Sea have been recorded along the Yukon coast.

In winter and spring, ringed seals are found within the shorefast ice around breathing holes. They also use areas with pressure ridges and accumulated snow to construct birthing lairs. The lairs, which are used to protect pups from predators and the cold, are built above breathing holes and can be complex structures. During the ringed seals annual moult from late May to mid-June, individuals will haul out on shorefast ice near open leads. During summer and fall many of these seals are found at the edge of the pack ice, but some remain in deeper lagoons near shore.

The bearded seal represents only 10% of the seal population in the Beaufort Sea. This species prefers shallow water zones in areas of moving ice. They tend to follow the leading edge of pack ice as it moves north in the spring and south in the fall. Bearded seals do not construct lairs, and they are not found in shorefast ice until it breaks up in June. During this period these seals also moult.

Taxon/Species	Key Area Description	Season Code	Function Code
Seals	Year-Round, All Functions	y	A

3.2.25 Beluga Whale

Beluga (or white) whale **spring** and **fall migration corridors** off the north coastal waters of the Yukon is mapped as key. The Eastern Beaufort Sea population of beluga whales winter in the Bering Strait, and then large numbers migrate eastward in April and May to their summer ranges in the estuarine waters of the Mackenzie, Kugmallit and Liverpool Bays, and as far east as the west coast of Banks Island. During the spring migration offshore leads are important. Belugas first appear near Herschel Island late April or early May, depending on ice conditions.

Eventually, in June to early July, they arrive in the shallow waters of the Mackenzie Delta. Here they move southwestward along the edge of landfast ice off the Tuktoyaktuk Peninsula and into Kugmallit Bay, East and West Mackenzie Bays, Shallow Bay and the Kendall Island area where they aggregate for much of July. The western boundary of the Mackenzie estuary extends along the Yukon coast to Shingle point, but only a few belugas use this area for feeding.

During the fall migration back to the Bering Strait most beluga are believed to travel in the offshore waters far from the Yukon coast. But small groups of beluga whales are known to use the coastal waters to feed while migrating. Occasionally large groups can be seen in the fall off the Yukon coast. For example, 2,000 belugas were seen north of Herschel Island during the fall migration in September 1972.

Taxon/Species	Key Area Description	Season Code	Function Code
Beluga Whale	Migration Corridor	sp, f	C

3.2.26 Bowhead Whale

Summer and **fall ranges** are mapped as key for bowhead whales. The Western Arctic population of bowhead whale, like the beluga, also winters in the Bering Sea. This population, last estimated at 10,400 whales in 2001, migrates each spring to its summer range in the Beaufort Sea. The spring migration of bowhead whales follows the ice leads in the shorefast ice. Significant concentrations of bowhead whales are known to feed along the north Yukon coastline and in the offshore waters in early summer and fall. Here, oceanic conditions are such that the waters are rich in zooplankton.

Past exploitation of the bowhead whale from commercial whaling lead to its designation in 1983 as an endangered species by COSEWIC (Committee on the Status of Endangered Species in Canada) and as “protected stock”, which means no commercial harvesting, by the International Whaling Commission (IWC). Commercial whaling was banned by the IWC in 1947. Subsistence hunting of bowhead whale by native people is permitted on a quota basis and resulted in 20 whales being taken between 1973 and 1990, all by Alaskans. The people of Aklavik took one whale in 1991, their first after about 50 years of no harvest, and are eager to re-establish whale hunting as part of their culture. Given evidence of recovery, the Western Arctic bowhead whale was upgraded to a species of “Special Concern” in 2005.

Taxon/Species	Key Area Description	Season Code	Function Code
Bowhead Whale 	Summer Range	s	R
	Fall Range	f	R

4 Widlife Key Area Inventory Products

The following is a list of some of the products based on the Widlife Key Area Inventory.

Available to anyone:

1. The Wildlife Key Area website: http://environmentyukon.gov.yk.ca/wka.
2. This *Yukon Wildlife Key Area Inventory User Manual*. Available from the WKA website.
3. Standard Wildlife Key Area map set by 1:250,000 National Topographic Series (NTS). Printed copies are available on request from the Department of Environment. Digital PDF copies are available for download from the WKA website.
4. A shapefile and dBase file version of the data. Available for download from the WKA website.
5. An ESRI file-geodatabase version of the data, including layer files for use with ArcGIS 10.x. Available for download from the WKA website.
6. A true-type font of the animal silhouettes, as used in this document.

Available to Government of Yukon staff and some others:

7. One layer and a supporting table in the Corporate Spatial-data Warehouse (CSW). Also includes layer files for use with ArcGIS.

Available to Department of Environment staff:

8. One layer and a supporting table in Version 5 of the Departmental Spatial Data Repository (SDR). Also includes layer files for use with ArcGIS. The shapefile and file geodatabase versions above, and the 1:250,000 maps, are derived from this data set.

All of the above versions of the Inventory are derived from the same master copy of the Inventory maintained by the Department of Environment. The data are the same in all of the above versions.

5 The Wildlife Key Area Inventory User Agreement

This agreement applies to all paper, digital, or other types of products created by the Government of Yukon as part of the Wildlife Key Area Inventory (the WKA Inventory), including but not limited to printed or digital maps, printed or digital reports or documentation, copies of the data in any format (e.g., databases, shapefiles, dBase files), metadata, and any software applications developed by the Department of Environment to facilitate the use of the WKA Inventory.

The WKA Inventory is produced by the Habitat Programs Section (the Owner), Fish and Wildlife Branch, Department of Environment, Government of Yukon. All components and products of the WKA Inventory are copyrighted: 1996-2013 © the Government of Yukon.

In this agreement, primary user refers to the person or representative of an agency that requests and is granted a licence to use or downloads any of the WKA Products; secondary user refers to a person who is employed by a primary user and who uses WKA Products.

In this agreement, I, me, my refer to both primary and secondary users unless stated otherwise.

The terms of this agreement apply to both primary and secondary users.

User Declaration:

I, a primary user, understand that this agreement applies to me and extends to all of my secondary users, and that I must ensure that all of my secondary users understand and endorse this licence agreement.

I, a user of the WKA Products, may reference the Wildlife Key Area data in reports, use the data to create maps, and use the data for analyses with other data. I agree, however, to get written approval from the Owner for the representation of Key Area data in any publication or product intended for any public distribution or display. I acknowledge that I may be required by the Owner to alter or abandon my representation of Key Area data if in their opinion my representation constitutes a misinterpretation, misrepresentation, or inappropriate use of the Key Area data. I agree to comply with the wishes of the Owner in this respect.

Reports or other documents written by me that refer to or include data from the Wildlife Key Area Inventory will include the following citation (or a similar citation satisfying the intent of this citation):

> *Yukon Department of Environment. <version year>. Yukon Wildlife Key Area Inventory. Digital database and software produced by Habitat Programs Section, Fish and Wildlife Branch, Department of Environment, Government of Yukon, Whitehorse.*

Maps or other visual representations created by me that display Wildlife Key Area data will include the following statement.

> *Wildlife Key Areas (WKA) are compiled by the Yukon Department of Environment WKA Inventory Program (<version date>), against 1:250,000 NTDB from various data sources. Key Areas are based on observed locations of wildlife at key times of year, not on habitat assessment. With new information, boundaries and designations of Key Areas can change and additional Key Areas can be identified. Furthermore, Key Areas are not the only sites important for wildlife. Other information sources can identify other sites important for wildlife for reasons outside the scope of the WKA Inventory Program. Updates to Key Areas occur only periodically. For the most current information, please consult with the Regional Biologist for your area of interest. If you have questions or would like to contribute to the WKA database, please contact the WKA Inventory*

Program (wka@gov.yk.ca).

I will not distribute any of the WKA Products outside of my organization.

I will not alter any of the WKA data without written approval from the Owner.

I will not develop or deploy or have developed or deployed an internet mapping or other application that uses any of the WKA Products without written approval from the Owner.

I understand that the WKA Products are provided as is. I agree to use the WKA Products only at my own risk. I will not hold either the Owner or the Government of Yukon in general in any way responsible for any loss of data or damage to computer hardware or networks or any other problems that might result from my use of the WKA Products.

I understand that neither the Owner nor the Government of Yukon in general provides any technical support for the WKA Products.

I understand, however, that the Owner welcomes questions and comments about the contents of the Wildlife Key Area database, and that I am welcome to contact and discuss the data with the Owner.

I will not willingly misrepresent the Wildlife Key Area data. I will read the documentation provided with the WKA Products.

I understand that the Wildlife Key Area project is ongoing; that new Key Areas might be identified while existing Key Areas might be modified (altered in size, combined with other Key Areas, or deleted because they are no longer considered key); that updates are made periodically; and that the onus is on me to ensure that I am using the most current version of the Wildlife Key Area data. The Owner may notify me when updates are available.

I also understand that although every effort has been made to ensure the correctness of the data in the Yukon Wildlife Key Area database, there still might be errors. I agree that neither the Owner nor the Government of Yukon in general is responsible for any problems arising from errors in the data. I understand that I am encouraged to report errors in the data to the Owner.

6 More Information?

Anyone that has information that will assist the Wildlife Key Area Inventory Program is invited to share this knowledge. If you have information to give or if you have any questions about the program, please contact:

Habitat Inventory Coordinator
Phone: 867-667-5281
E-mail: wka@gov.yk.ca

Mailing Address:
Department of Environment V-5R
PO Box 2703
Whitehorse YT Y1A 2C6

7 Appendix

7.1 Wildlife Key Area True-Type Font

wkhanima.ttf

The WKA true-type font contains animal silhouettes that can be used to label Wildlife Key Area polygons. The table below indicates which keyboard character to use for each animal.

Wildlife	Silhouette	Character
Moose		d
Woodland Caribou		c
Barrenground Caribou		f
Thinhorn Sheep		b
Mountain Goat		a
Mule Deer		e
Elk		g
Wood Bison		i
Muskox		h
Grizzly Bear		x
Black Bear		A
Polar Bear		y
Wolf		m

Fox		o
Beaver		j
Muskrat		p
Waterfowl:		
Unspecified Ducks		N
		I
Geese		L
Swans		C
Raptors: Alpine		K
Riparian		D
Other and unspecified		O
Sharp-tailed Grouse		G
Shorebirds		F
Seabirds		E
Larids		M
Seals		u
Beluga Whale		S
Bowhead Whale		T

7.2 Wildlife Key Area Polygon Mapping and Projection

Wildlife Key Area polygons are compiled against the 1:250,000 National Topographic Database (NTDB) and are in the Department of Environment standard projection.

Projection: Albers Equal Area Conic
Datum: NAD83
Spheroid: GRS80
Central Meridian: 132°30'00" W (-132.5 decimal degrees)
Reference Latitude: 59°00'00" N
1st Standard Parallel: 61°40'00" N (61.6666667 decimal degrees)
2nd Standard Parallel: 68°00'00" N
False Easting: 500,000 m
False Northing: 500,000 m