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Evaluation of the Wildlife Key Area (WKA) Inventory

Final Report

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Evaluation of the Wildlife Key Area (WKA) Inventory Final Report

Government of Yukon
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Final Report

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Executive summary

The Government of Yukon established the Wildlife Key Area (WKA) Inventory in 1988, with the aim of carrying out a Yukon-wide systematic inventory of fish and wildlife habitats. The Inventory catalogues the location, distribution, and abundance of key areas for legally harvestable and protected Yukon wildlife species, aiming to identify areas that are most restricted in availability, most valuable, and where wildlife is most vulnerable. Its mission is to provide up-to-date, accessible, high-quality, comprehensive information that identifies important areas for legally harvestable or protected wildlife species of interest to the Government of Yukon and Yukoners.

The Government of Yukon engaged PRA Inc. to undertake an evaluation of the WKA Inventory in 2022-23, to better understand the territory's needs for, and uses of, a wildlife inventory, how the current Inventory is meeting those needs, and how the Inventory could be improved. The evaluation was intended to provide information to inform decision-making with regard to the future direction of the Inventory, including potential changes to scope, design, delivery, and funding.

This is the first formal evaluation of the WKA Inventory. The evaluation examined questions related to the Inventory's design and delivery, effectiveness, administration and management, and relevance. Findings are based on multiple lines of evidence, including a document review, key informant interviews, and case studies.

Findings

Design and delivery

Several aspects of the WKA Inventory's design are working well. Use of a multi-level approach to Inventory mapping is appropriate and logical, and is considered to bring several advantages to the Inventory, including: facilitating different types of Inventory use; facilitating protection of confidential or sensitive information; and signalling the precision of the data to Inventory users. The source information used to support WKA delineation is also considered to be appropriate; key informants widely support the WKA Inventory's primary reliance on wildlife survey data for WKA delineation, as well as the Inventory's incorporation of local knowledge. There is also widespread support for the WKA Inventory to continue to include data from multiple data sources, and to incorporate additional information from other high-quality data sources (including: telemetry collar data; vegetation, habitat, ecological land classification, and biophysical mapping and models; and other sources) to a greater extent to build on, and complement, the information gathered through wildlife surveys.

Opportunities for improving WKA Inventory design and delivery emerged from the evaluation. While efforts have been made to develop definitions of key habitat and standard mapping criteria and protocols, a systematic approach to defining and mapping key areas has not been applied consistently across the Inventory. Additionally, publicly available information about how specific WKAs are delineated, or the criteria used to identify key areas for particular species, is limited. Key informants perceive needs for: greater consistency in how the Inventory defines what is "key" or "critical" across species and areas; and re-evaluation of some established criteria, to ensure that WKAs accurately and comprehensively reflect important areas for wildlife.

Data quality is another area for improvement. While quality enhancements have been made to the WKA Inventory in recent years, data quality varies across the Inventory, with aspects of quality varying widely depending on the species or areas in question. Opportunities exist to improve the accuracy, comprehensiveness, and timeliness of the WKA Inventory by: correcting errors in the public-facing

database; re-evaluating older WKAs to ensure their ongoing accuracy; addressing gaps in Inventory coverage (such as by improving consistency in wildlife survey activities across areas and increasing efforts to incorporate additional available data); and updating the public-facing Inventory, to reduce discrepancies between the public and interim datasets.

There is wide variation in stakeholder perspectives about the current selection of species in the WKA Inventory. Streamlining the WKA Inventory to include fewer species could provide an opportunity to better align the Inventory with priorities for environmental assessment, and allow the Department of Environment to better manage the Inventory within available (limited) resources. Including additional species in the WKA Inventory could benefit various Inventory users by reducing their need to consult multiple inventories and datasets to obtain wildlife information.

Overall, the evaluation found a need to improve and increase publicly available information about the WKA Inventory in various areas, in order to improve perceptions of Inventory reliability, facilitate appropriate Inventory use, and reduce the risk of misinterpretation and misapplication of Inventory data. In particular, there is a need for clearer public communications and more detailed publicly available information explaining:

- how key areas are defined;
- the purpose and function of the different mapping levels;
- Inventory limitations, including gaps in Inventory comprehensiveness; and
- the source information supporting WKA delineation.

Furthermore, there is a need for the Inventory to provide greater context, background details, and clearer rationale regarding how local knowledge was obtained and the extent to which local knowledge is informing WKA delineation, in order to address perceived limitations regarding the reliability of local knowledge.

Effectiveness

Available data to support an assessment of the extent to which the WKA Inventory is achieving its objectives was limited. Nevertheless, there are some indications of progress, as well as opportunities for improvement, in relation to each of the Inventory's immediate and long-term expected outcomes.

- ***Stakeholders are aware of and access the WKA Inventory and related resources.*** The WKA Inventory is generally perceived to be well-known among a wide range of potential user groups. Evaluation results indicate that the WKA Inventory is accessible to Inventory users and widely accessed. WKA Inventory data is being accessed publicly on a regular basis, and the process for accessing data that is not publicly available via confidentiality and non-disclosure agreements (CNDAs) appears to be working well. Opportunities exist to improve the accessibility of Inventory information by: establishing clearer links between the two online public access points for Inventory information (i.e., Yukon.ca and GeoYukon); and increasing awareness about the existence of confidential and interim data and the process for gaining access to it.
- ***Stakeholders recognize identified areas as important for wildlife species***. There is some evidence to suggest that the WKA Inventory is achieving the goal of increasing stakeholder recognition of the importance of identified areas to wildlife. Key informants able to comment on this issue perceive the Inventory as an effective tool in assessment processes, which alerts both proponents and assessors of the need to consider wildlife impacts, and prompts further follow up and information gathering. This objective may be further achieved by including additional,

clearer details in the public-facing Inventory to help users better understand why key areas are important.

- ***Stakeholders use the WKA Inventory to inform and implement mitigation actions to preserve wildlife in identified areas.*** Available evidence indicates that the WKA Inventory is used regularly, by a variety of stakeholders to inform the Yukon Environmental and Socio-economic Assessment Board (YESAB), permitting, and land use planning processes — as well as in a variety of other ways. The WKA Inventory is widely considered to be very important to the development of mitigation actions to preserve wildlife in identified areas.
- ***The WKA Inventory contributes to protection and preservation of key wildlife areas, and sustainable populations of wildlife in Yukon.*** Key informants generally believe that the WKA Inventory is making, and will make, contributions to protection and preservation of key wildlife areas, and sustainable populations of wildlife in Yukon. However, there is some indication that issues with Inventory quality may limit the extent to which the Inventory can achieve its protection, preservation, and sustainability-related goals.

Administration and management

Current resources are insufficient to meet the Department of Environment's needs in delivering and maintaining the WKA Inventory. The additional funding and new staff positions secured by the Department to support the Inventory over the next three years are expected to help address current human, financial, and information technology (IT)-related resource limitations. However, a longer term strategy to ensure the Inventory's sustainability beyond the next three years is needed.

The Government of Yukon faces a number of risks in delivering and managing the WKA Inventory, which are closely related to resource and data quality issues identified throughout the evaluation. The following specific risks were identified:

1. A heavy reliance on corporate knowledge leaves the Department vulnerable in its ability to effectively manage the Inventory.
2. Data quality issues can reduce user confidence in the WKA Inventory and increase the risk that the Inventory's use in formal assessment processes will be challenged.
3. The slow public release of data may reduce public confidence in the Government of Yukon overall.

Addressing resource and data quality issues identified in this evaluation will help the Department of Environment to better manage the risks associated with these issues.

The Department of Environment currently does not formally track Inventory use or impacts. The absence of a formal performance measurement system for the WKA Inventory limits a comprehensive assessment and understanding of the extent to which the Inventory is meeting its objectives. Several opportunities exist for improving performance tracking for the WKA Inventory, which the Department of Environment may wish to implement as resources permit.

Relevance

The WKA Inventory is relevant. While the WKA Inventory does not meet all user needs, evidence indicates that users consider the WKA Inventory to be an important source of information that complements other available data sources. Key informants widely perceive an ongoing need for the WKA Inventory. Addressing the Inventory's quality-related issues will enhance the Inventory's ability to meet users' needs.

Areas for consideration

Based on the findings of the evaluation, the following emerged as opportunities for WKA Inventory improvement.

Design and delivery

- Improve public communications/increase publicly available information regarding Inventory design elements, to enhance user understanding of:
    - how key areas are defined and why they are important to species;
    - the purpose and function of multiple mapping levels;
    - source information supporting WKA delineation; and
    - Inventory limitations.
- Continue efforts to establish and refine criteria for identifying key areas and mapping protocols, to promote greater consistency across the Inventory.
- Consider opportunities to incorporate information from additional available data sources into the WKA Inventory.

Data quality

- Re-evaluate older WKAs to ensure their ongoing accuracy.
- Increase data collection efforts to ensure a more structured, comprehensive, and consistent approach to wildlife survey activities and address data gaps.
- Complete an Inventory update to improve public access to interim information.
- Consider ways to facilitate more regular Inventory updating, such as:
    - exploring opportunities for IT changes to streamline the updating process; and
    - establishing policies/procedures to guide and prioritize WKA re-evaluation and updating efforts.

Effectiveness

- Consider ways to improve the accessibility of, and access to, Inventory information, for example, by:
    - establishing clearer links between the two online public access points for Inventory information (i.e., Yukon.ca and GeoYukon);
    - raising awareness about the process for gaining access to confidential Inventory information; and
    - promoting the Inventory to additional potential users.

Administration and management

- Work to address current resource issues, such as by:
    - following through with plans for newly-created, Inventory-focussed term positions within the Department of Environment; and
    - exploring options and developing a longer term strategy for sustaining the Inventory.
- Address gaps in performance measurement by developing a performance measurement strategy and implementing formal tracking of indicators related to WKA Inventory use and implementation of WKA-based mitigation measures.

1.0 Introduction

The Government of Yukon established the Wildlife Key Area (WKA) Inventory in 1988 with the aim of carrying out a Yukon-wide systematic inventory of fish and wildlife habitats, with special emphasis on key areas; that is, geographical locations used by wildlife for critical, seasonal life functions. Though in existence for nearly 40 years, the WKA Inventory had never been formally evaluated. Therefore, the Government of Yukon undertook an evaluation in 2022-23 to better understand the territory's needs for and uses of a wildlife inventory, how the current Inventory is meeting those needs, and how the Inventory could be improved. The evaluation was intended to provide information to inform decision-making with regard to the future direction of the Inventory, including potential changes to scope, design, delivery, and funding.

PRA Inc., an independent evaluation consulting firm, was engaged to conduct the evaluation. This report presents the evaluation findings.

1.1 Overview of the WKA Inventory

The Government of Yukon's WKA Inventory program was established in 1988. A major goal of the WKA Inventory is to catalogue the location, distribution, and abundance of key areas for legally harvestable[1] or protected[2] Yukon wildlife species. The WKA Inventory identifies those areas that are most restricted in availability, most valuable, and where wildlife is most vulnerable.

WKA Inventory Mission

To provide up-to-date, accessible, high-quality, comprehensive information that identifies important areas for legally harvestable or protected wildlife species of interest to the Government of Yukon and Yukoners.

The Department of Environment Fish & Wildlife Branch (FWB) is the WKA Inventory program lead, responsible for administering the Inventory, including identifying and delineating wildlife key areas. Information is gathered primarily through wildlife surveys (undertaken on an as-needed basis), as well as interviews with knowledgeable locals and biologists, published and unpublished literature and/or maps, and hunting and trapping statistics.

The WKA Inventory includes both confidential and non-confidential information. Non-confidential information is maintained in the publicly accessible Corporate Spatial Warehouse (CSW) (Government of Yukon, 2023b). CSW data is served out via GeoYukon map services; WKA layers are therefore visible on the GeoYukon app. Published PDF maps are also available for direct download, and data and supporting files are available to be used with Geographic Information System (GIS) software (Government of Yukon, 2023a).

Confidential data as well as recent updates are kept on internal Government of Yukon servers that are not publicly accessible. Government of Yukon staff may access this interim WKA dataset internally via the Department of Environment's Spatial Data Repository. Members of the public may request access to

[1] Legally harvestable species include deer, elk, moose, woodland and barrenground caribou, thinhorn sheep, mountain goat, wood bison, waterfowl (ducks, geese), grizzly and black bear, wolf, fox, muskrat, beaver, sharp-tailed grouse, seals, and beluga whale.

[2] Protected species include muskox, Chisana caribou herd, shorebirds/seabirds/larids, swans, and bowhead whale.

confidential data, and access is granted on a case-by-case basis (Yukon Department of Environment, 2022).

Updates to the WKA Inventory are published when a sufficient number of new WKA polygons are created and a new version is considered feasible. Four version releases have occurred since the program began, most recently in 2013. The Government of Yukon has an internally available data layer for updates since 2013; the most recent internal update occurred in 2020. Currently, there are 4,228 WKA polygons in the public-facing database, and 420 in the internal interim file.

Stakeholders

The WKA Inventory is used extensively by the Government of Yukon and other stakeholders in the assessment of projects under the *Yukon Environmental and Socio-economic Assessment Act (*YESAA).

- The Environmental Affairs (EA) unit of the Environmental Protection and Assessment Branch within the Department of Environment is responsible for coordinating and drafting departmental input into impact assessments by the Yukon Environmental and Socio-economic Assessment Board (YESAB). EA uses WKA Inventory data on location and seasonal use when considering potential impacts of projects and recommending specific mitigations to avoid or reduce impacts in these sensitive areas.
- YESAB considers WKA Inventory data, among other sources of information, when conducting impact assessments.
- Other stakeholders, such as proponents, First Nations governments and organizations, regulators, and the public also rely on WKA Inventory data during assessments, to provide comments, determine potential impacts, draft recommendations, and issue decisions. For example, Yukon government departments issue licenses, permits, and approvals that include terms and conditions to address potential impacts to wildlife. These include departments of Environment; Energy, Mines and Resources; Highways and Public Works; and Community Services; as well as Executive Council Office.

WKA data is also used by Yukon regional land use planning commissions in land planning processes to identify areas with high ecological value. These areas may then be subject to specific management direction, or may be considered for protection under land use plans.

Expected outcomes

The WKA Inventory logic model, developed by FWB staff, was refined by PRA for the purpose of this evaluation (see Appendix A). The logic model includes two immediate outcomes, one intermediate outcome, and two long-term outcomes.

Immediate outcomes

- Stakeholders are aware of and access the WKA Inventory and related resources.
- Stakeholders recognize identified areas as important for wildlife species.

Intermediate outcome

- Stakeholders use the WKA Inventory to inform and implement mitigation actions to preserve wildlife in identified areas.

Long-term outcomes

- Key wildlife areas are protected and preserved.
- Sustainable populations of wildlife in Yukon.

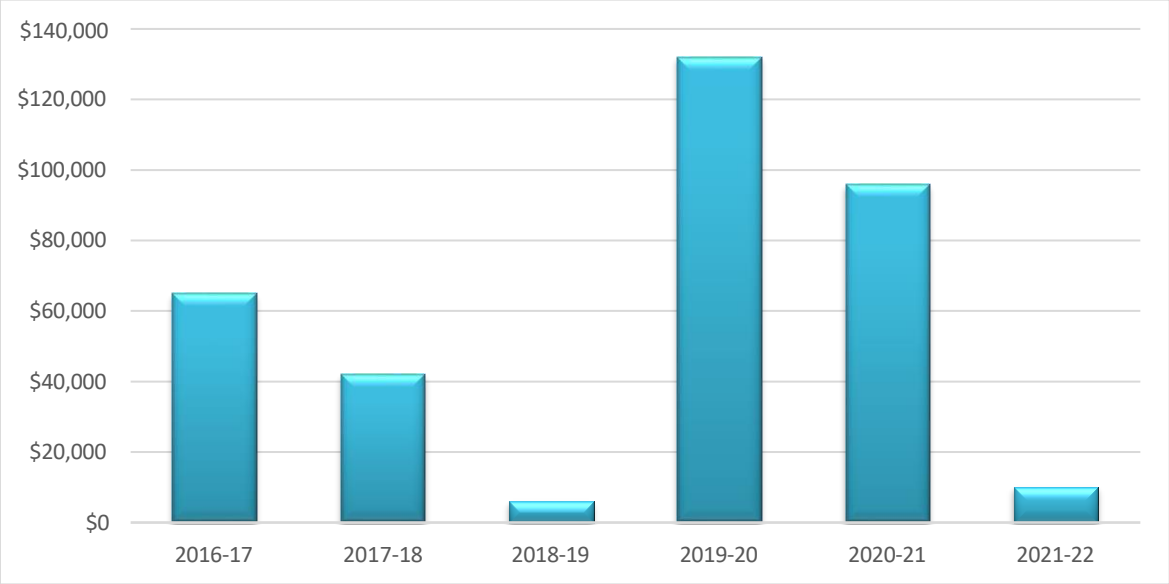
Resources

Financial resources supporting Inventory establishment and updating

The WKA Inventory's establishment in 1988 was supported with special project funding from Wildlife Habitat Canada totalling $400,000 over three years. Between 2007 and 2009, the WKA Inventory received additional external funding supplied by the Northern Strategy Trust to support the major Inventory update completed in 2009 (Yukon Department of Environment, 2022).

The Department of Environment devotes funding most years to support WKA survey activities. Between 2016-17 and 2021-22, a total of $351,000 was spent on dedicated WKA survey activities.[3] Annual expenditures on WKA surveys varied widely, ranging from $6,000 in 2018-19 to $132,000 in 2019-20 (Figure 1).

Figure 1: WKA Survey Expenditures by Fiscal Year (2016-17 to 2021-22)



Human resources

When the WKA Inventory started in 1988, three term positions were created to manually conduct the Inventory. The manual Inventory was converted to a fully integrated GIS and relational database applications in 1996 (Loewen, 2013). For the development of the GIS-based WKA Inventory, the following staff played key roles, as part of their positions:

- Habitat Inventory Coordinator, who strategically administered the program as a program lead;
- Habitat/Remote Sensing Technician, who managed the spatial and attribute database of the WKA Inventory and issued public releases; and
- Information System Designer/Analyst, who designed the current WKA database and supported technical aspects of WKA version releases (Yukon Department of Environment, 2020, 2023).

The WKA Inventory was supported primarily by the above staff for the first few decades of operation, until the staff retired. Currently, the WKA Inventory is supported by two staff members, as part of their

[3] The FWB undertakes additional wildlife survey activities beyond WKA-dedicated surveys. Results of this additional survey work may or may not be relevant to WKAs.

duties: a Senior Habitat Biologist has acted as the WKA lead since 2019, and a Geospatial Program Technician took over the previous Habitat Technician's role in 2020.

Throughout the program's history, Government of Yukon regional biologists and technicians have contributed time to organizing and conducting WKA surveys as part of their positions.

1.2 Approach to the evaluation

An evaluation matrix, consisting of key questions to be addressed by the evaluation, as well as indicators and data sources for each question, was developed to guide the evaluation. The evaluation matrix is in Appendix B.

The evaluation focussed on three main lines of evidence: a document review, key informant interviews, and case studies. Information gathered from these lines of evidence was triangulated in order to arrive at the evaluation findings.

- ***Document review.*** The document review encompassed internal documents and data generated as a result of the development, management, and ongoing delivery of the WKA Inventory, as well as relevant publicly available information, such as the YESAB online registry, land use plans, and studies. Additionally, the Department of Environment commissioned a review of several programs analogous to the WKA Inventory program which are in place in adjacent provincial and territorial jurisdictions — the results of which were available to inform the evaluation. Zotero was used to organize and manage the documents, and to support referencing.
- ***Key informant interviews.*** Key informant interviews were used to solicit informed opinions and observations on the evaluation questions from various WKA Inventory users as well as those involved in Inventory design or management. Tailored interview guides were developed for five categories of key informant: Department of Environment representatives, First Nations government representatives, Inuvialuit, members of the YESAB, and other external Inventory users.

  The EA unit and FWB developed an initial list of potential key informants. For stakeholder categories where relatively few or no organizations or contacts were identified initially, a "snowball" technique was used; key informants were asked to identify additional individuals/organizations for interviews, and efforts were made to accommodate these suggestions.

  To launch the interview process, the EA unit sent an email invitation to each of the participants identified for inclusion. The invitation provided information about the interview process as well as provisions to protect privacy and confidentiality, and encouraged participation. A total of 120 people received the interview invitation.

Interviews were conducted via Zoom and digitally recorded, with participants' permission, to ensure the accuracy of information reported. In total, 66 key informants participated in an individual or small group interview between March 2 and 31, 2023. Key informants included:

- seventeen Department of Environment representatives, including those involved in the development or maintenance of the WKA Inventory, as well as those who use the Inventory in their work;
- six representatives from other Government of Yukon departments identified as Inventory users;
- eleven First Nations government representatives; and
- thirty-one external stakeholders (potential Inventory users outside of the Government of Yukon), including representatives of land claim mandated boards and councils (n=13), YESAB (n=7), environmental non-governmental organizations (ENGOs) (n=5), environmental consulting firms (n=2), industry organizations and companies (n=9), and academic/research institutions n=3).

Interview results were analyzed thematically using NVivo qualitative data analysis software.

- ***Case studies.*** Two case studies were conducted to support the evaluation; the first focussed on a series of quartz mining proposals near the North Canol Road and the second focussed on a proposal for a quartz exploration program in an area north of Dawson City.

  Each of these case studies was selected to highlight specific considerations in relation to use of the WKA Inventory. The first case study provided an example in which the proponent challenged the validity of the WKAs used to justify terms and conditions recommended by YESAB. The second case study highlighted considerations related to the use of interim WKAs in the YESAB assessment processes.

  Findings for both case studies were based on two lines of evidence: a document and data review, and key informant interviews with WKA representatives and external stakeholders. In total, 14 key informants were interviewed across the case studies.

Limitations

The main methodological limitation encountered during the course of this evaluation concerns shortcomings in the information captured in program documentation. Internal documents and data provided to support the document review component of this evaluation mostly focussed on describing the WKA Inventory's history, goals, opportunities, and challenges. They provided less information on outcome achievement, such as information on access to and use of Inventory data. As a result, some of the evaluation questions related to results and outcomes could not be fully addressed through the document and data review line of evidence.

The use of multiple lines of evidence in this evaluation helped to mitigate this limitation; key informant interviews and case studies gathered information to address all evaluation questions, and were especially useful in responding to evaluation questions not well-addressed by the document and data review.

2.0 Findings: Design and delivery

2.1 Appropriateness of WKA Inventory design

The evaluation assessed the appropriateness of WKA Inventory design for meeting its objectives. Various aspects of the Inventory's current design were considered, including:

- the criteria used to identify key areas;
- the Inventory's use of multiple mapping levels;
- the source information used to support WKA delineation (including consideration of the Inventory's primary reliance on wildlife surveys for data collection, and inclusion of local knowledge); and
- the current selection of species included in the Inventory.

Key findings related to each of these design elements are discussed below.

Criteria for identifying key areas

Key finding: Efforts have been made to develop definitions of key habitat and standard mapping criteria and protocols; however, a systematic approach to defining and mapping key areas has not been applied consistently across the Inventory. Additionally, publicly available information about how specific WKAs are delineated, or the criteria used to identify key areas for particular species, is limited. Key informants perceive needs for: greater consistency in how the Inventory defines what is "key" or "critical" across species and areas; improved public communications around how key areas are defined and the sources used to support WKA delineation; and re-evaluation of some established criteria, to ensure that WKAs accurately and comprehensively reflect important areas for wildlife.

Over the WKA Inventory's history, some effort has gone into establishing criteria for identifying key areas. When the WKA Inventory project began, staff working initially to conduct the Inventory created definitions of key habitat for specific species or species groups of particular interest to the Department of Environment. The definitions were informed by literature review findings and consultations with species biologists (Loewen, 2013; Yukon Department of Environment, 2020). Additionally, standard mapping criteria and protocols have been identified for some species included in the Inventory (Loewen, 2013).

While Department of Environment representatives believe that the criteria for identifying key areas is well-defined, with good rationale, for the most commonly used WKAs, evaluation findings indicate that there is room for improving consistency in the definition of key areas across species, as well as in the communication of these criteria to Inventory users, as outlined below.

- **Consistency.** Criteria for identifying key areas have not been defined for all species, nor have standard mapping criteria and protocols. Additionally, there are inconsistencies across the Inventory in terms of how key areas have been delineated. While key informants recognized that definitions of key habitat and mapping criteria need to vary or be adjusted to some extent depending on the species, several perceive a need for greater consistency in how the Inventory defines what is "key" or "critical" across species and areas.

- **Communication.** The WKA Inventory User's Manual includes a brief overview of the mapping methods and criteria used by the Inventory (at a general, overarching level). However, publicly available information about how specific WKAs are delineated, and the criteria used to identify key areas for particular species, is limited.

  In interviews, Department of Environment representatives as well as external stakeholders reported that the criteria for identifying key areas are unclear. Additionally, many external key informants reported experiencing difficulty in finding and accessing detailed information on the methodology and research that led to the delineation of specific WKAs. While publicly available datasets (including WKA layers in GeoYukon) include some information on the references (data sources) supporting WKAs, this information is limited — and largely perceived to be lacking — in detail. Additionally, key informants reported instances in which the raw data and studies underlying WKA definitions appear to be missing, are not easy to find, or contain inaccuracies. While reference years are indicated in publicly available sources, key informants commented that it is not easy to determine if or when the data upon which the WKAs are based was last validated, or if more up-to date information exists. Many key informants emphasized the importance of ensuring that source information informing WKA delineation is clear, sufficiently detailed, and properly referenced, and that this information is easily accessible to the public.

There is also some indication that, even for species where criteria have been established, some adjustments may be needed to ensure that more available data can be incorporated into the Inventory and that WKAs accurately and comprehensively reflect important areas for wildlife. In particular, seasonal cut-offs for some WKAs may need to be adjusted. For example, species biologists conduct sheep surveys in July, so that survey activities do not conflict with lambing or hunting periods. Since sheep species living in mountain ranges do not move significantly, this data should be considered valid year-round; however, as summer is not considered a key season for sheep, sheep survey data collected during the summer is often not reflected in the WKA Inventory.

Multiple mapping levels

Key finding: The WKA Inventory's use of multiple mapping levels is appropriate and logical. Evaluation results indicate a need to improve public communications about the purpose and function of the different mapping levels — in particular, publicly available Level 2 and Level 3 mapping — to facilitate appropriate Inventory use.

Multiple mapping levels were introduced into the WKA Inventory with the major Inventory update completed in 2009. Since this update, the WKA Inventory has included three levels of resolution, whereby "each step up a 'level' provides a more generalized representation of wildlife locations" (Yukon Department of Environment, 2022, p. 4):

- Level 1 consists of the raw data (i.e., the specific point locations of wildlife, as documented by wildlife surveys).
- Level 2 consists of polygon interpretations of Level 1 point location data.
- Level 3 consists of generalized, seasonal distribution of polygons (Breault & Smith, 2023; Yukon Department of Environment, 2020).

Advantages of the multi-level approach to Inventory mapping include:

- **Facilitating different types of Inventory use.** The different mapping levels make the dataset more versatile for different uses. In particular, Level 2 and Level 3 mapping, which are both publicly available, lend themselves more readily to different applications. Level 2 data, which is more detailed, is the mapping level used most frequently for environmental assessment processes. By contract, more generalized Level 3 data is used for more general purposes, such as State of the Environment reporting (Loewen, 2013; Yukon Department of Environment, 2020).
- **Facilitating protection of confidential or sensitive information.** The WKA Inventory includes information on the locations of sensitive landscape features and habitats (e.g., mineral licks, nests, den sites. etc.). There is a risk that wildlife and/or habitat may be harmed if this sensitive information is misused (Yukon Department of Environment, 2022). Level 3 mapping offers the Inventory a way to provide users with an indication of broad areas where these sensitive features and habitats occur, while obscuring the exact locations of these features (e.g., mineral licks, nests, den sites. etc.) — thus providing some level of protection against Inventory misuse. Level 1 point source data is not publicly available.
- **Signalling the precision of the data to Inventory users.** Level 1 point source data collected through wildlife survey observations is spatially precise. As these point source observations are interpreted into Level 2 and Level 3 key areas, spatial precision is necessarily reduced in order to provide Inventory users with an interpreted and easier-to-use product (in the case of Level 2 mapping), and to protect sensitive Inventory information (in the case of Level 3 mapping). According to some key informants, the use of multiple mapping levels is a tools for communicating the spatial precision of information to Inventory users, which, in turn, is expected to facilitate appropriate Inventory use.

While some key informants acknowledged that not all levels are useful to them personally, most key informants who were knowledgeable about the distinctions between the different mapping levels consider the Inventory's use of multiple mapping levels to be logical.

Nevertheless, there is a need to improve clarity and communication with respect to the purpose and function of each mapping level. Many external key informants representing a range of stakeholder groups expressed uncertainty about the multiple mapping levels — either not knowing that multiple levels exist, or being aware of their existence but not fully understanding or being able to describe the difference between them. Some key informants also raised concern about the extent to which Inventory users are using the different levels as they are intended. In particular, there is some concern that Level 3 data is, at times, misused, in terms of being given inappropriate weight in land management decisions.

While it is important to note that each level is described briefly in the *Yukon Wildlife Key Area Inventory User's Manual*, outside of this publication, publicly available information about the Inventory's mapping levels is lacking. Additionally, evaluation results raise some questions about the extent to which Inventory users are: a) accessing the User's Manual, and b) finding the description of the multiple mapping levels contained within the User's Manual to be sufficiently detailed and useful. When asked to comment generally about the accessibility of the WKA Inventory and its related resources, several key informants reported that they have *not* accessed the Manual, noting that it is difficult to find online. Overall, key informants suggested that the rationale for the multiple mapping levels and how each level should be used should be more clearly communicated, and that this information should be more easily accessible to a wider range of Inventory users.

Source information supporting WKA delineation

Key finding: There is widespread support for the WKA Inventory's primary reliance on wildlife survey data for WKA delineation, and for the Inventory to continue to include data from local knowledge sources. Additionally, key informants perceive opportunities for the WKA Inventory to incorporate additional information from other high-quality data sources, to build on, and complement, the information gathered through wildlife surveys.

To address perceived limitations regarding the reliability of local knowledge, there is a need for the Inventory to provide greater context, background details, and clearer rationale regarding how local knowledge was obtained and the extent to which local knowledge is informing WKA delineation.

Wildlife surveys are the primary source used to delineate WKAs. This information is supplemented when possible with other sources of data, including interviews with local area residents, discussions with biologists, published and unpublished literature and maps, and hunting and trapping statistics (Yukon Department of Environment, 2020, 2022).

Primary reliance on survey data

Overall, the evaluation found broad support for the WKA Inventory's primary reliance on wildlife survey data for WKA delineation. The accuracy of survey data was identified in multiple lines of evidence as an Inventory strength; as wildlife surveys are based on actual wildlife observation, they provide accurate locations (at the time the surveys were taken) from which WKAs can be interpreted (Yukon Department of Environment, 2020). Key informants generally perceive wildlife surveys to be a robust, high-quality data source that provides credible, observation-based information to support WKA delineation. In particular, when surveys are repeated and up-to-date (recent), they are considered to provide a "valuable foundation" for the Inventory. It was also noted that WKAs based on well-documented survey data are defensible in environmental assessment processes because they are based on known wildlife locations, and, therefore, provide a strong basis for the development of WKA-associated mitigation measures.

However, the limitations to survey data, and the Inventory's use of survey data, were also widely documented and acknowledged. In particular:

- As wildlife surveys capture a specific point in time, individual surveys provide a limited perspective on a wildlife population's use of an area. In order to develop a comprehensive understanding and provide a wide spatial temporal context for the Inventory, there is a need to conduct many surveys and repeat them over time. However, as discussed below in Section 2.2, gaps and limitations in WKA survey coverage have been identified.
- Wildlife surveys are one of a number of methods that exist for collecting and producing information on wildlife and key habitats. While wildlife surveys are a valuable source of data, other data sources can offer certain advantages over survey data. For example:
    - Modelling approaches (such as habitat suitability mapping) can provide more comprehensive information about why certain areas are important to wildlife, and what areas may become important as changes occur over time.
    - Collar data can provide more comprehensive information on wildlife movement and migration routes.
    - Local and traditional knowledge can provide information over a longer timeframe.

In light of these considerations, there is widespread support for the WKA Inventory to incorporate additional information from other high-quality data sources, to build on, and complement, the information gathered through wildlife surveys.[4] According to key informants, moving towards a more "composite data source" for creating WKAs would be beneficial for the following reasons:

- Surveys are expensive to conduct. Supplementing survey information with wildlife-related information from other methods/using other technologies that are less expensive (e.g., modelling, eDNA) can help to develop more comprehensive Inventory coverage within available resources.
- Considering other data sources can help to ensure that WKA boundaries are drawn appropriately.[5]

In particular, key informants suggested that the WKA Inventory could incorporate information from the following sources to a greater extent:

- telemetry collar/mass surveillance data;
- vegetation, habitat, ecological land classification, and biophysical mapping and models;
- camera traps;
- harvest data; and
- local knowledge (beyond what is currently incorporated into the Inventory).

Other Jurisdictional Approaches

Alberta's Wildlife Sensitivity Datasets Program

- ***Key Range Layers*:** Habitat suitability models are used, along with information on known species ranges and occurrences to define Sensitive Raptor Ranges.
- ***Key Wildlife Layers***: Grizzly Bear Recovery Zones are informed, in part, by Resource Selection Function (RSF) models; Mountain Goat and Sheep Areas are informed by habitat suitability indexes, as well as telemetry and aerial survey data; Key Wildlife and Biodiversity Zones are Provincial Special Access Zones are delineated based on analysis of topographical data, as well as mapped ungulate ranges and other information sources.

British Columbia's Wildlife Management Areas (WMA), Wildlife Habitat Areas (WHA), and Ungulate Winter Ranges (UWR) programs

- British Columbia's programming uses a combination of survey data, and habitat suitability, topography, and vegetation mapping for WMAs, WHAs, and UWR delineation.

It is worth noting that other Canadian jurisdictions implementing similar inventory initiatives have incorporated results from other data sources — in particular, habitat suitability mapping — to a greater extent than the WKA Inventory (see text box).

Inclusion of local knowledge

The WKA Inventory currently incorporates some information from local knowledge sources. While some of this local knowledge has been provided by Indigenous people, it is important to note that this is distinct from Indigenous traditional knowledge, which is currently not incorporated into the Inventory (see text box below). Local knowledge that is included in the WKA Inventory is gathered via interviews or local knowledge surveys conducted with people who have in-depth knowledge of an area (e.g., hunters, biologists, community members who have lived in a particular area over a long period), and managed in a Local Knowledge Interview (LKI) Database. As of October 2020, information from 195 interviews had

4 The Inventory's current use of information data from multiple sources was identified in documents and by key informants as a beneficial practice and one of the Inventory's main strengths.

5 It was noted that the practice of generating key area polygons by buffering around point source observations can, at times, place WKA borders in areas — for example, the bottom of a valley — that are not suitable or critical wildlife habitat.

been used to support the WKAs registered as active in the WKA Inventory database (Yukon Department of Environment, 2020).

There is strong support for the Inventory to continue to include local knowledge. Local knowledge is considered to bring important advantages to the Inventory, namely:

- local knowledge can provide valuable context to support WKA delineation, and is particularly useful in filling in information gaps for areas not covered by surveys; and
- the information provided by knowledgeable Yukoners can date further back in time than wildlife survey data, providing a historic perspective and more comprehensive understanding of a species' use of key areas over time.

While the evaluation found some limitations to local knowledge as it is currently referenced in the WKA Inventory (see Section 2.2), the use of local knowledge is widely considered to be complementary and valuable to the Inventory. Overall, there is strong support from the majority of key informants for the Inventory to incorporate local knowledge into the Inventory to a greater extent.

Despite this broad support, it is important to acknowledge concerns raised by some industry representatives over the Inventory's current use of local knowledge. In interviews, industry representatives commented that local knowledge-based WKAs have not been verified or confirmed through scientific methods (i.e., confirmed in the field by biologists), which leads to a perception among some industry stakeholders that WKAs based solely on local knowledge are unreliable. There is also a perception among some industry representatives that local knowledge-based WKAs may be misused to justify land use decisions that the local knowledge data is too broad or insufficiently detailed to support.

Considering these concerns, it is not surprising that the evaluation uncovered challenges related to the use of local knowledge-based WKAs in formal assessment processes. In particular, there is some evidence that mitigation recommendations based on local knowledge WKAs are: a) more likely to encounter pushback from proponents; and b) more difficult to defend, compared to mitigations based on WKAs supported by wildlife survey data. The case study of quartz proposals near the North Canol Road provides an illustration of these issues. In this case, the proponent challenged the validity of several WKAs, identifying, among other data quality concerns, that documentation of the local knowledge informing certain WKAs was limited. This challenge triggered the Department of Environment to conduct a formal review of the evidence informing the WKAs in question. While the Department upheld the validity of local knowledge sources, the review resulted in the retiring of several WKAs — including one thinhorn sheep WKA, which had been established based on one local knowledge interview and lacked other evidence to support its continued inclusion in the Inventory.

Overall, key informants emphasized the importance of ensuring that local knowledge sources are properly and adequately referenced in the public-facing Inventory. Where local knowledge sources are used, there is a need for the Inventory to provide greater context, background details, and clearer rationale regarding how local knowledge was obtained, and the extent to which local knowledge is informing WKA delineation.

Indigenous Traditional Knowledge – Considerations for the WKA Inventory

The WKA Inventory currently does not include Indigenous traditional knowledge. The WKA Inventory recognizes First Nations' right to manage their own information, and acknowledges that many First Nations have concerns about how First Nations principles of ownership, control, access, and possession (OCAP) can be upheld if their traditional knowledge is incorporated into a publicly accessible government-managed database (First Nations Information Governance Centre, 2023; Loewen, 2013). Additionally, the Department of Environment understands that, if the WKA Inventory were to include traditional knowledge, this would require:

a) robust protocols to be in place, to guide information sharing and protection of Indigenous ownership rights; and
b) consideration of how and whether open government goals (which aim to increase public availability of information) can be aligned with data ownership considerations and confidentiality needs regarding traditional knowledge.

Nevertheless, the evaluation found evidence of some support for the Inventory to include Indigenous knowledge to a greater extent, provided that proper protocols and procedures are implemented. Some key informants, including First Nations representatives, believe that incorporating more First Nations' knowledge of wildlife and wildlife habitat into the Inventory in some way would be valuable.

In interviews, First Nations government representatives offered the following considerations for incorporating traditional knowledge into the WKA Inventory:

- A separate, password-protected platform could facilitate two-way sharing of confidential information and information from multiple sources between First Nations and the Government of Yukon. According to First Nations government representatives, the advantages of such a platform are that it would: allow First Nations access to more detailed information not included in the public database; support sharing and incorporation of traditional knowledge into the Inventory, while addressing First Nations' confidentiality concerns; and facilitate Indigenous engagement.
- Prior to the sharing of traditional knowledge, government departments or other seekers of this knowledge should enter into a relationship with First Nations, and develop a formal research agreement to protect and guide the use of traditional knowledge.

Selection of species included in the Inventory

Key finding: There is wide variation in stakeholder perspectives about the current selection of species in the WKA Inventory. Streamlining the WKA Inventory to include fewer species include could provide an opportunity to better align the Inventory with priorities for environmental assessment, and allow the Department of Environment to better manage the Inventory within available (limited) resources. Including additional species in the WKA Inventory could benefit various Inventory users by reducing their need to consult multiple inventories and datasets to obtain wildlife information.

The WKA Inventory currently includes 24 species (Breault & Smith, 2023). As described in Section 1.1, this total includes a mix of legally harvestable species and protected species, with a primary focus on the former. The evaluation considered the appropriateness of the current selection of species in the Inventory, including gathering stakeholder perspectives on whether any changes are needed.

Overall, there is wide variation in stakeholder perspectives about the current selection of species in the Inventory. Some key informants perceive the Inventory's current list of species as generally relevant and appropriate, with adequate coverage of harvested species, whereas others perceive opportunities for

revising the selection of species. Of those who suggested revisions, some believe that there may be opportunities to streamline the Inventory and reduce the number of species included, whereas others advocated for inclusion of additional species (in particular, federally listed species and species at risk).

One potential advantage of streamlining the WKA Inventory to include fewer species is that it could **better align the Inventory with priorities for environmental assessment**. The Inventory currently includes a number of species that were identified by key informants as being of lower priority and less essential for environmental assessment (e.g., gull and other bird species; beaver; muskrat; bison; whale, seal, and other marine species; fox; wolf; and polar bear). Additionally, more species are currently included in the Inventory than are typically used in YESAB assessment processes.[6] Key informants identified that the Inventory's inclusion of species that are of lower priority for assessment processes can lead to a couple of related issues:

- **Increased administrative burden.** The WKA Inventory is a primary data source used in YESAB assessment processes. WKAs located within a proposed project area are commonly referenced in proponent and other stakeholder submissions, and considered by YESAB in recommendations (see Section 3.3). There is some concern among industry representatives that including additional species, beyond those considered most important to inform assessment processes, may unnecessarily add to the administrative burden of YESAB assessment processes.
- **Confusion when lower priority WKAs are not referred to in Department of Environment submissions.** The Department of Environment does not always refer to WKAs for these lower priority species in their submissions to YESAB, even when they occur in the project area. When other parties acknowledge the existence of these lower priority WKAs in their submissions, the absence of Department of Environment comments on these areas is noticed and questioned.

Considering these issues, it is possible that reducing the number of species included in the Inventory to better align the Inventory with species that are considered most important for environmental assessment purposes could facilitate a clearer and less burdensome YESAB assessment process.

Another reason to include fewer species in the WKA Inventory is that it could **facilitate Inventory management**. Resources within the Department supporting Inventory management are currently limited (see Section 4.1). Reducing the number of species included in the Inventory may allow the Department of Environment to better manage the Inventory within available resources.

By contrast, the evaluation found evidence of support, particularly among YESAB representatives and those using the WKA Inventory outside of formal assessment processes (namely, researchers and those involved in land use planning processes), for the WKA Inventory to include information on additional species, namely at-risk or threatened species.

It should be noted that the FWB runs a parallel initiative, the Conservation Data Centre (CDC) database, whose layers are also available via GeoYukon. The CDC focusses specifically on species of conservation concern, and as such, already exists as a source for publicly available information on at-risk and threatened species. However, it is worth noting that several key informants who were aware of the CDC and its purpose still advocated for the WKA Inventory to include additional information on these

[6] Web analytics for GeoYukon's biological layers (including both WKA Inventory and CDC layers) provide some support for the observation that some WKA layers are viewed more than others, and that these differences correspond roughly with species considered as higher or lower priority for environmental assessment; while analytic data indicates that all WKA layers were viewed regularly in fiscal year 2022-23, total layer requests, as well as the cumulative processing time for each layer, were greatest for certain Woodland Caribou and Thinhorn Sheep WKA layers, and lowest for polar bear, seal, and whale WKAs.

species. For these Inventory users, expanding the WKA Inventory to include more at-risk and threatened species could be beneficial in reducing users' need to consult multiple inventories and datasets to obtain needed wildlife information. This perspective may be important to consider as ongoing efforts are made to coordinate and reduce the potential for duplication across the two databases.[7]

2.2 Data quality

Key finding: Data quality varies across the WKA Inventory. Opportunities exist to improve the accuracy, comprehensiveness, and timeliness of the WKA Inventory by: correcting errors in the public-facing database; re-evaluating older WKAs to ensure their ongoing accuracy; addressing gaps in Inventory coverage (such as by improving consistency in wildlife survey activities across areas and increasing efforts to incorporate additional available data); and updating the public-facing Inventory, to reduce discrepancies between the public and interim datasets. Additionally, evaluation results point to a need for clearer communications regarding gaps in Inventory comprehensiveness and the source information supporting WKA delineation, to reduce the risk of misinterpretation and misapplication of Inventory data.

The provision of high-quality data information is an important part of the WKA Inventory's mission. As such, the evaluation gathered information on the quality of WKA Inventory data, considering various aspects of quality, namely: accuracy, precision, comprehensiveness, consistency, timeliness, and reliability.

The evaluation identified several practices and features that contribute positively to Inventory quality in various ways. As noted in Section 2.1, the accuracy and precision of observational, point source data upon which WKAs are based, and the Inventory's incorporation of multiple data sources, are considered to be strengths and key factors contributing to a high-quality inventory. Additionally, where a systematic approach to defining key areas has been applied, and where source information used to develop WKA polygons is clearly referenced and publicly available, these are also factors considered to contribute positively to Inventory quality.

It is important to note that data quality improvements have been made in recent years. In managing the Inventory, the FWB has increased efforts to capture critical seasonal habitat for thinhorn sheep — one of the key wildlife species considered in YESAB reviews — by asking surveyors to: provide off-set GPS points (observational points) corrected to actual sheep locations, rather than using GPS locations of surveyors; and include field observations of potential lambing areas, to supplement post-lambing survey data (Yukon Department of Environment, 2020).

Overall, however, the evaluation confirmed a high degree of inconsistency in the quality of data across the Inventory, with data quality aspects varying widely depending on the species or areas in question. Specific issues related to the various aspects of data quality are outlined below.

[7] Work is currently underway to coordinate the CDC database and WKA Inventory. The WKA Inventory and CDC are co-managing the Spatial Bird Observation Database (BOD), which contains information on raptor nest locations. CDC staff are also currently taking the lead on developing an overall data sharing policy, which will guide sharing of restricted/confidential data for both the CDC and the WKA Inventory. Key informants acknowledged that ongoing efforts will be needed to ensure that the two datasets continue to be complementary.

Accuracy

While the WKA Inventory is largely considered to contain accurate information, a number of caveats were identified:

- **Accuracy is perceived to vary across WKAs.** Certain WKAs (for example, those reflecting caribou rutting areas, mineral licks, as well as moose and sheep WKAs) are considered to be particularly accurate (more accurate than others), in the sense that they are supported by repeated survey data, represent more stable or fixed habitat features, and/or are known to reflect areas that are used consistently by the species over time. Other WKAs based on more limited information (e.g., bear WKAs) are perceived as potentially less accurate.
- **The WKA Inventory contains some errors.** Accounts of confirmed or suspected inaccuracies in Inventory data emerged from all lines of evidence. Reported inaccuracies include: mapping errors, whereby the Inventory has identified the wrong location for specific species observations or habitat features; and source information errors, whereby WKAs are linked to the wrong source files in the public-facing database.

  This issue was exemplified in the case study of quartz proposals near the North Canol Road. In this case, a determination that mountain goat data from Itsi Mountain had been inappropriately applied to areas further north was one factor which led the Department of Environment to retire certain mountain goat WKAs based on this data.
- **Ongoing accuracy varies over time.** Wildlife surveys and local observations provide a "snapshot" in time; however, wildlife habitat and land use patterns change in response to a variety of external factors, including climate change, forest fires, landscape changes, population changes, human activity, and other disturbances. While WKAs may be accurate at the time that data is collected, there is a need to re-evaluate WKAs to consider how boundaries have changed as a result of these external factors. However, the extent to which WKAs are re-evaluated and updated is unclear to Inventory users, particularly considering the need for Inventory updating (see the discussion of timeliness below).

Some external key informants suggested that, in producing GIS data for public use, the Government of Yukon should provide some indication of the level of confidence in the accuracy of information; for example, provide some assurances that the data is accurate, clearly indicate when data was last validated, and identify the strength of the source information. According to these key informants, current disclaimers on GIS data packages raise some uncertainty about the accuracy of the data.

Comprehensiveness

While the WKA Inventory is designed and intended to provide comprehensive coverage across Yukon, evaluation results indicate that this goal has not been met. Overall, WKA coverage is not extensive across Yukon, nor is the Inventory regionally comprehensive (i.e., it does not cover regional patterns of land use by different species). Moreover, completeness varies for different species, as the Inventory does not include information for all species at key times of year throughout their ranges.

More specific issues related to the Inventory's comprehensiveness (namely, the comprehensiveness of data used to support WKA delineation) are as follows:

- **Survey activities and coverage are inconsistent.** As outlined in Section 1.1, the amount of financial resources dedicated to WKA-related wildlife surveying activities varies substantially from year to year. Additionally, throughout the Inventory's history, the amount of time spent on WKA-related surveying activities varied considerably among territorial regions, with survey work being more concentrated in some regions (i.e., Northern Tutchone and Liard) and more limited in others (i.e., Dawson, Kluane, and Southern Lakes). Additionally, key informants reported that certain species (caribou, in particular) have been prioritized more for survey activities, resulting in a greater volume of survey data supporting WKA delineation for some species than others.

  While key informants acknowledged logistical reasons for the inconsistent survey approach,[8] there is a perception that WKA survey activities have been "issue-based." A need for a more systematic approach to survey activities was identified.

- **WKAs are not based on all available data.** Not all survey data that is available (collected by the Department or by other stakeholders) has been incorporated in the Inventory. While there are legitimate reasons why some available data has not been incorporated into WKAs (e.g., some data exists in a format that is not readily usable; it must be edited and released in a usable format before WKAs can be derived from it), key informants noted that data from other sources — such as collar data and local knowledge sources — have not informed WKA delineation in all cases where it could be used.

The lack of comprehensive WKA coverage across Yukon carries some risk for Inventory misuse. It is important to note that key areas are only mapped where there is data to support them; the Inventory does not identify areas that have been surveyed, but no wildlife was found. The WKA Inventory User's Manual acknowledges that Inventory data "only include those areas we know about" and identifies this as one of the Inventory's limitations (Yukon Department of Environment, 2014). However, it is currently not possible for users to ascertain from publicly available information whether areas where no WKAs are identified actually do not contain key areas for wildlife, or whether they simply have not been surveyed (Loewen, 2013). There is, therefore, a risk that areas not captured in WKAs may be misinterpreted by Inventory users as not important for wildlife, and that the Inventory will factor inappropriately into decision-making.[9]

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8 Namely, some areas (e.g., areas closer to urban centres) are easier and more cost-effective to survey than others (e.g., more isolated areas).

9 Further to this, a few key informants noted that this is a risk, in particular, when the Inventory is used for land planning processes; these processes involve looking at a broad area and determining land use, management, and zoning considerations. Because the WKA Inventory does not include comprehensive coverage across these broad areas, data gaps may lead to poor planning decisions (i.e., the WKA Inventory's use in these processes may be considered beyond its intended purpose and scope).

In light of these risks, evaluation results indicate a need for clearer communication about gaps in Inventory comprehensiveness. In particular, the Inventory should include clearer information about areas that have not been surveyed and where wildlife data does not exist/has not been collected, as this is currently not well-articulated or clear to Inventory users.

Timeliness

The WKA Inventory is out of date. As noted in Section 1.1, the most recent update to the internally available interim WKA data layer occurred in 2020 (Yukon Department of Environment, 2022). Due to the database's complex structure, updates to the public-facing Inventory have been infrequent; [10] only four version releases to the public-facing database have occurred since the start of the program. As the last version release for the public-facing database occurred in 2013, the public does not have access to the 434 new WKA polygons that have been created since 2013.

Evidence from the key informant interviews and case studies confirms that discrepancies between the interim and publicly available datasets have led to issues in formal assessment processes. In some cases, proponents have looked to the public-facing database to support YESAB applications, only to discover at a later stage (namely, during public comment periods) that interim WKA data exists, differs from what is publicly available, and affects a different or larger area than they anticipated in their proposal. The differences between the publicly available and interim datasets lead to inefficiencies in YESAB assessment processes, and negatively impact proponents in a few key ways, namely:

- increasing the time and burden on proponents associated with the proposal assessment process (as the introduction of WKA-related information at a late stage in the YESAB assessment process can require revisions to proposed project activities and management plans);
- harming the public image of companies (when proponents appear to be proposing development through WKAs, even after striving to avoid WKAs included in the public-facing database); and
- leading some proponents to question the validity of WKAs, and incur additional costs to gather updated perspectives/assessments of the WKAs (e.g., by hiring independent biologists to carry out WKA reviews).

Issues were also identified in relation to the age (date) of source information contained in the public-facing Inventory. Many of the references to both survey data and local knowledge supporting WKA establishment are several years or decades old. While older source information is not necessarily invalid, many key informants perceive the source information contained in the Inventory to be quite dated, which leads to uncertainty about whether older WKAs continue to be key areas for wildlife.

[10] The 2013 update was described as being "particularly complicated and lengthy," due largely to the need to follow different data standards and protocols for including WKA data into three separate systems: the Department of Environment's Spatial Data Warehouse, the Corporate Spatial Warehouse, and the Geolocator application of YESAB. Many steps needed to be followed, and the update required almost a year to complete (Yukon Department of Environment, 2020). Because of this complexity, updates to the WKA Inventory are published only when a sufficient number of new WKA polygons have been created in order to consider a new version feasible; new WKAs cannot be immediately included in the database (Loewen, 2013; Yukon Department of Environment, 2020, 2022).

Overall, the evaluation identified needs to:

- improve the frequency of Inventory updates, improving public accessibility to updated information currently held internally;
- re-evaluate older WKAs, to ensure their ongoing accuracy and validity; and
- communicate the results of Inventory reassessment and updating efforts more clearly to Inventory users.

Several key informants noted that changes need to be made to the information technology (IT) system to, in order to: lessen the IT burden associated with each publication; enable more incremental changes to be made more frequently; and ensure that updates can be published in a timelier manner and with greater regularity. While it was beyond the scope of this evaluation to suggest specific IT-related changes, there may be opportunities for the Department of Environment to explore options for implementing automation to a greater extent, in order to facilitate a more efficient Inventory updating process.

Reliability

While key informants shared differing views on the extent to which WKA Inventory data is reliable, it is generally recognized that the above-mentioned issues with the Inventory's timeliness and comprehensiveness can negatively impact users' trust in the data, and lead to uncertainty about the Inventory's reliability.

3.0 Findings: Effectiveness

3.1 Awareness and access

The evaluation considered the extent to which stakeholders are aware of and accessing the WKA Inventory, which are necessary preconditions to Inventory use.

Awareness

Key finding: The WKA Inventory is generally perceived to be well-known among a wide range of potential user groups, including government departments, industry representatives, regulators, YESAB, and First Nations. Opportunities may exist to promote the Inventory to additional potential users, including resource councils and First Nations governments.

Key informants generally perceive the WKA Inventory to be well-known among a wide range of potential users. In particular, there is widespread agreement that key user groups — including government departments, industry representatives, regulators, and YESAB — are aware of the Inventory's existence and have a high level of familiarity with it.

However, the evaluation found some indication that not all potential users are aware of the Inventory. A few external key informants reported a lack of awareness among members of select resource councils. It is also worth noting that a few external interview participants (including representatives of First Nation governments, resource council members) reported that they were not familiar with the WKA Inventory prior to participating in an interview for this evaluation. Additionally, several resource council and First

Nation government representatives who were invited to participate in an interview declined due to a lack of familiarity with the WKA Inventory.

In light of these observations, it was suggested that, despite the overall high level of awareness, there may be opportunities for the Government of Yukon to promote the Inventory to more potential users — resource councils and First Nations governments, in particular.

Accessibility and access

Key finding: Evaluation results indicate that the WKA Inventory is accessible to Inventory users and widely accessed. WKA Inventory data is being accessed publicly on a regular basis, and the process for accessing data that is not publicly available via confidentiality and non-disclosure agreements (CNDAs) appears to be working well. Nevertheless, opportunities exist to improve the accessibility of Inventory information by: establishing clearer links between the two online public access points for Inventory information (i.e., Yukon.ca and GeoYukon); and increasing awareness about the existence of confidential and interim data and the process for gaining access to it.

As described in Section 1.1, the WKA Inventory includes both a publicly accessible database, as well as a non-public, interim dataset. The interim dataset includes confidential Inventory information as well as recent updates that are not yet publicly available. Requests for access to non-public Inventory data are granted on a case-by-case basis. The evaluation, therefore, considered the extent to which both publicly available and non-public Inventory information is accessible to, and accessed by, Inventory users.

Accessibility

Evaluation results indicate that the public-facing Inventory is accessible to Inventory users and widely accessed. The Inventory's public accessibility via GeoYukon and the Government of Yukon website was identified in program documents as well as by key informants as a strength. The vast majority of key informants agreed that the WKA Inventory is accessible to users, and most key informants who had personally accessed the Inventory reported that they did not encounter significant challenges or barriers to access.

However, a few caveats were identified. As identified in Section 2.2, the timeliness with which updates to the WKA Inventory are made, and the fact that the most recent Inventory updates are currently inaccessible in the public-facing database, is problematic. There is widespread agreement on the need to update the public database to ensure public access to information currently held internally in interim updates.

Additionally, key informants reported experiencing some challenges in interacting with WKA data and related resources through current public platforms. Specifically:

- Some external stakeholders reported experiencing difficulties in accessing or displaying desired WKA information via the GeoYukon application. According to these key informants, navigating through WKA layers, as they appear in the GeoYukon platform, is cumbersome, and it is not always easy to display the information that is being sought.
- Some internal and external key informants commented that the Yukon.ca website is similarly difficult to navigate, and not clearly linked to GeoYukon.
- Several Inventory users reported that they have *not* accessed the WKA Inventory User's Manual, noting that it is difficult to find online.

In light of these challenges, key informants suggested that accessibility of Inventory information could be improved by establishing clearer links between the two online access points for Inventory information (i.e., Yukon.ca and GeoYukon), and ensuring that related resources are easy to locate. More specifically, it was suggested that providing a link to the GeoYukon User Manual on Yukon.ca, and a link to the WKA Inventory User's Manual and other related resources on GeoYukon, would be helpful.

Access to publicly available information

Web analytics for GeoYukon's biological layers (including both WKA Inventory and CDC layers) provide some broad indication of public access to Inventory information. Analytics covering the period from April 1, 2022 to March 31, 2023 show that, over fiscal year 2022-23: a total of over two million (n=2,797,293) map service requests[11] related to GeoYukon biological layers were made by 26,893 unique users; and a total of over three million (n=3,322,599) layer requests[12] specific to WKA layers were made. A breakdown of map service requests over time provides some indication of a relatively stable demand; while the total number of requests varies month to month, data confirms that interactions with GeoYukon biological layers are occurring each month. While these statistics do not provide a full picture of Inventory access or usage, they indicate that WKA Inventory data is being accessed publicly on a regular basis.

Notwithstanding the accessibility-related issues noted above, key informants generally believe that that the Inventory is well-accessed. Most reported that they have personally accessed the WKA Inventory in various ways, including: interacting with the data via the GeoYukon application; printing WKA maps (to refer to during planning meetings); and downloading GIS data packages to "plug" GIS data into their own development-related maps.

Access to confidential Inventory information

The Department of Environment has developed two types of CNDAs (single-party and multi-party) to guide the sharing of confidential wildlife information contained within the WKA Inventory. These agreements, developed with support from the Yukon Department of Justice and reviewed by the Information Management Technology Branch, are intended to for use in all cases when confidential information is shared (with project proponents, contractors, academics, etc.).

While neither the number of confidential requests received by the Department nor the extent to which CNDAs have been used could be determined from available evidence, interview results indicate that the process for accessing data that is not publicly available is, for the most part, working well. Key informants who were able to comment on this process generally agreed that it is relatively simple and straightforward. Further to this, internal key informants indicated that the CNDA process provides an adequate structure for sharing confidential information. External stakeholders who had requested internal or confidential information — including representatives of land use planning councils, environmental consulting firms, industry associations and proponents — reported that it was relatively easy to get what they needed.

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11 **Map service request** analytics reflect the number of times that users employed various tools to interact with biological layer data. Map service requests include (but are not limited to) use of GeoYukon toolsets to: **export** custom map images for printing, saving, or sharing via social media platforms; **find** out about particular locations on the map, by using various tools to explore and discover data layers for areas of interest; **identify** information about the images in GeoYukon layers; and **query** the database to find specific data or filter data displayed on the map (Government of Yukon, 2020).

12 **Layer request** analytics reflect the number of times that WKA and CDC layers were "turned on" by users and displayed on the GeoYukon interactive map (Government of Yukon, 2020).

Evaluation results, however, point to a need to increase awareness about the existence of confidential and interim data and the process for gaining access. Most external key informants who had requested non-public data (and found the process for obtaining this data to be straightforward) attributed their positive experience to a pre-existing relationship that they had with key Government of Yukon staff. These key informants knew who to ask, but acknowledged that it may not be as clear to others (without established relationships with Government of Yukon staff): a) that additional information exists beyond what is publicly accessible; and b) who to contact to gain access to this information. Additionally, it is important to note that several key informants — including representatives of First Nation governments, research institutions, industry representatives, and others — reported that they were either not aware of the existence of this non-publicly available information, or that they did not know how to gain access to it. As noted in Section 2.2, interview and case study results confirm that, at times, proponents have not been aware of the existence of updated, interim WKA data until after submitting a project proposal to YESAB for assessment. The late introduction of interim WKA data in YESAB assessment processes has negative impacts on proponents, and complicates the assessment process.

3.2 WKA Inventory recognition

Key finding: There is some evidence to suggest that the WKA Inventory is achieving the goal of increasing stakeholder recognition of the importance of identified areas to wildlife. This goal may be further achieved by including additional, clearer details in the public-facing Inventory to help users better understand why key areas are important.

In the immediate term, the WKA Inventory is expected to increase stakeholder recognition of the importance of identified areas to wildlife.

While data related to this outcome was limited, interview results provide some indication that this outcome is being achieved. Of those who could comment on this issue, key informants widely agreed that the Inventory has been successful at increasing stakeholder recognition of the importance of identified areas among those who use it.[13] To support their views, several external key informants involved either directly or tangentially in assessment processes described the WKA Inventory as a "flag" which alerts both proponents and assessors of the need to consider wildlife impacts; in other words, WKAs signify the need for further follow up and information gathering regarding the presence of wildlife in particular areas of interest. A few key informants described the Inventory as an effective communications tool, aiding communication about the impacts of development on land and wildlife populations. It was also pointed out that, even when proponents challenge the validity of WKAs, the discussion that follows (between proponents and biologists) builds knowledge and awareness of the importance of identified areas.

However, key informants also acknowledged the extent to which the WKA Inventory may be limited by the level of detail and amount of information made publicly available. As noted in Section 2.1, issues have been identified in relation to the clarity, comprehensiveness, and public availability of source information informing WKA delineation. Additionally, the public-facing Inventory is perceived as containing limited information about the ways in which wildlife are using identified areas. According to

[13] Many external key informants did not offer a response to this question. Additionally, a few reported that the Inventory has not increased their understanding of the importance of identified areas to wildlife simply because they have not used it.

some key informants, while the Inventory may signal the presence of wildlife in an area, the Inventory itself may not contain sufficiently detailed information to increase understanding of *why* the areas are important.

3.3 WKA Inventory use

Key finding: As the Department of Environment does not formally track WKA Inventory use, the evaluation's ability to assess the extent to which the Inventory is used to inform and implement mitigation actions to preserve wildlife in identified areas was limited. Nevertheless, available evidence indicates that the WKA Inventory is used regularly by a variety of stakeholders to inform YESAB, permitting, and land use planning processes — as well as in a variety of other ways. The WKA Inventory is widely considered to be very important to the development of mitigation actions to preserve wildlife in identified areas.

In the intermediate term, stakeholders are expected to use the Inventory to inform and implement mitigation actions to preserve wildlife in identified areas. The evaluation, therefore, involved an examination of the extent to which, and how, the WKA Inventory is being used.

It is important to note that the Department of Environment does not formally track WKA Inventory use. Nevertheless, the evaluation found evidence that the Inventory is commonly used in YESAB assessment processes as well as in a variety of other ways, as outlined below.

Use of WKA Inventory to support YESAB and other regulatory processes

Evidence indicates that the WKA Inventory is frequently used in YESAB assessment processes. Program documents report "extensive" use of the WKA Inventory in the development assessment process, both by the Department of Environment's EA section and by YESAB. Key informants directly involved in the YESAB assessment processes — including industry and YESAB representatives — reported that references to the WKA Inventory are often included in proposals submitted by proponents to YESAB, and that YESAB considers WKA Inventory data for the majority of project assessments that the Board completes. Evidence from interviews and case studies confirms that multiple external groups — including First Nation governments, ENGOs, and land use planning commissions — refer to the WKA Inventory to inform submissions to regulatory assessment processes.

References to the WKA Inventory in YESAB project proposal forms and various guidance documents for proponents are also worth noting. Both the YESAB *Land Dispositions* project proposal form and *Forestry* project proposal form prompt applicants to consider and state their knowledge of WKAs within and around the proposed project area[14] (YESAB, 2022b, 2022a). Proponent guides developed for both of these YESAB project types provide a brief description of WKAs and advise proponents to: a) indicate in their project proposals whether the proposed project overlaps with a WKA; and b) (if an overlap is found) discuss wildlife matters with the Government of Yukon, Department of Environment, and provide

[14] Specifically, in Part 9, question 4 of the *Land Dispositions* project proposal form, applicants are asked, "Are you aware of any Wildlife Key Areas or Environmentally Sensitive Areas in or around the project area? If yes, please provide explanation" (YESAB, 2022b, p. 19). Similarly, Part 7, Section A, question 3 of the *Forestry* project proposal form asks, "Are you aware of any Wildlife Key Areas or environmentally sensitive areas that may overlap with your proposed project?" (YESAB, 2022a, p. 17).

details of these conversations in the project proposal (YESAB, 2012a, 2012b). The Yukon Chamber of Mines makes similar references to the WKA Inventory in guidance documents for proponents (Yukon Chamber of Mines, 2010). Such references may serve to raise awareness about the Inventory and promote its consideration among industry representatives, although this could not be confirmed with available evidence.

Overall, there was widespread agreement among key informants that the WKA Inventory is very important to the YESAB assessment process. Key informants (including YESAB representatives) reported that, at times, WKA Inventory data is the only source of information on wildlife, species presence, and habitat types that YESAB has at its disposal.

The WKA Inventory is also considered to some extent in relation to permitting processes. Namely:

- The Department of Environment uses the WKA Inventory to inform decisions regarding wildlife-focussed research, as part of the research permitting process under the Yukon *Wildlife Act*.
- The Energy, Mines and Resources (EMR) Department considers WKA information provided as part of permit applications in drafting permitting approvals, comparing WKA maps with proposed project locations, and using WKA Information in developing terms to protect wildlife.

Additionally, when WKA-based mitigations are reflected in assessment recommendations and make their way into permitting/licensing requirements, the plans developed by industry in response to these requirements (to address potential project impacts on wildlife) also necessarily reference the WKA Inventory.[15]

Other uses of the WKA Inventory

Another key use of the WKA Inventory is in land use planning processes. In interviews, many external stakeholders reported using the Inventory to inform regional- as well as community/local-level land management, resource use, and conservation plans. While it was beyond the scope of this assignment to search for or quantify references to the WKA Inventory in land use planning processes, the evaluation found examples in which the WKA Inventory has been referenced in planning documents.[16]

Key informants also reported using the WKA Inventory for various other purposes outside of regulatory processes. These other uses of Inventory information include:

- informing development of regional resource assessment reports (one of the first steps in land planning processes);
- informing conformity checks that development assessors complete (to assess conformity of proposed projects with land use plans);
- informing First Nations' wildlife management actions, as well as development of forestry and wildlife risk mitigations (to ensure long-term sustainability of the resources that First Nations depend on);
- informing development pre-planning and drafting of permitting applications;

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15 The Dempster Fibre Line Wildlife Management and Monitoring Plan (WMMP) and Eagle Gold Project Wildlife Protection Plan (July 2017) represent select examples of industry plans that include references to the WKA Inventory.

16 The North Yukon Regional Land Use Plan (June 2009), Peel Watershed Regional Land Use Plan (August 2019), and the Dawson Regional Planning Commission's Recommended Plan (June 2022) represent select examples of land use planning documents that include references to the WKA Inventory.

- informing research/studies conducted by their organizations;
- informing wildlife survey initiatives being considered or planned by their organizations; and
- use by students in post-secondary land planning courses.

Informing mitigation actions

Overall, WKAs are widely considered to be very important to the development of mitigation actions. Available documentation confirms that location and seasonal information provided by the WKA Inventory is used within planning and project assessment processes "as a trigger for requiring specific mitigations to avoid or reduce human impacts in these sensitive areas" (Yukon Department of Environment, 2022, p. 2). Key informants familiar with YESAB and other regulatory processes reported that the WKA Inventory is frequently used to inform the development of standard mitigation actions as part of these processes. While it was acknowledged that YESAB does not always incorporate the WKA information submitted during the assessment process into terms and conditions,[17] several key informants indicated that YESAB is generally receptive to WKA-related submissions, and WKAs are often reflected in final project decisions. In both case studies conducted for this evaluation, Department of Environment recommendations based on the WKA Inventory were reflected in final terms and conditions recommended by YESAB, and/or incorporated into proponents' revised project plans.

External key informants also provided examples of instances in which the WKA Inventory has supported mitigation measures outside of regulatory processes. Specifically, these key informants reported that WKA data is one source of information that has helped to support designations of special management or priority conservation areas (e.g., parks, stewardship areas, integrated areas) in regional land use planning processes.

3.4 Contributions to species protection and sustainability

Key finding: Key informants generally believe that the WKA Inventory is making, and will make, contributions to protection and preservation of key wildlife areas, and sustainable populations of wildlife in Yukon; however, data to support an assessment of these long-term outcomes was limited, as no formal tracking or performance measurement mechanisms are in place for the Inventory. There is some indication that issues with Inventory quality may limit the extent to which the Inventory can achieve its protection, preservation, and sustainability-related goals.

In the long term, the WKA Inventory's use in supporting recommended mitigation actions is expected to contribute to the protection and preservation of key wildlife areas, and sustainable populations of wildlife in Yukon. As described in Section 3.3, there is evidence that the WKA Inventory is used in planning and project assessment processes as a trigger for mitigations to avoid negative impacts on wildlife in key areas. However, as the Inventory currently has no formal mechanisms in place to track either the extent to which prescribed mitigations are followed, or the Inventory's effectiveness in

[17] It should be noted that The WKA Inventory is not intended to be (and is not) the only consideration in impact assessment processes and development of mitigation/protection recommendations (Yukon Department of Environment, 2022).

environmental assessment processes and land use decisions, the Inventory's contributions to these long-term outcomes were difficult to determine from available evidence.

Evaluation results indicate that issues with Inventory quality (see Section 2.2) may limit the extent to which the Inventory can achieve its protection, preservation, and sustainability-related goals. In particular, it is important to acknowledge that mitigations based on WKA information can only be effective to the extent that WKAs continue to be accurate; however, for some WKAs, ongoing accuracy is unclear considering the need for Inventory updating. Similarly, issues related to the Inventory's comprehensiveness and gaps in Inventory coverage may prevent the Inventory from fulfilling its goal of protecting key habitat; as discussed in Section 2.2, there is a need for clearer, more comprehensive communications concerning areas where WKAs have not been identified, in order to reduce the risk that users will perceive these areas as unimportant to wildlife.

Additionally, there is some indication that some WKA-related mitigation measures have greater potential to be effective, in the sense that they are easier for proponents to implement. Examples of mitigation measures which are considered to work well from a compliance and enforcement perspective include requirements to: avoid known denning sites as well as nesting, calving, and rutting areas during critical seasons for these activities; put up bear fencing; and complete or avoid work within specific designated timing windows that are clearly defined. By contrast, more subjective mitigations — for example, requirements to stop work if caribou are observed within one kilometre of a work site — are considered to be more difficult to implement and enforce.

Nevertheless, key informants generally believe that implementation of mitigation actions informed by WKA Inventory data should contribute to greater protection and preservation of key wildlife areas in Yukon, and increased sustainability of wildlife populations. In interviews, external stakeholders provided various examples in which the WKA Inventory was used to curb developments (e.g., mining and oil and gas development in caribou winter ranges; cottage lot development in critical bear habitat) which would be harmful of wildlife. While these examples could not be verified with available data, in all cases, key informants indicated that WKA Inventory information had a tangible impact on development and land use decisions, which they believe is leading or will lead to greater protection and preservation of key wildlife areas and/or sustainable populations of wildlife.

While WKA-based mitigations are generally viewed (positively) by most key informants as a measure to support sustainable development, some industry association representatives reported that some proponents view the WKA Inventory primarily as a "tool used against industry" to stop development. A need for clearer communication with proponents, to facilitate better understanding of WKA-based mitigation recommendations and why protection of WKAs is important, was identified.

Challenges in assessing long-term outcome achievement

Key informants identified various challenges in determining both the extent to which mitigation actions informed by WKA Inventory data are being implemented, and the impacts of WKA-based mitigation actions:

- Enforcement activities and powers are limited. When a YESAB assessment is complete, relevant Decision Bodies (regulators) have the authority to accept, reject, or vary mitigations recommended by YESAB (YESAB, 2023). Standard WKA-based mitigations become enforceable when they make their way into permitting; however, mitigation measures may be more or less enforceable, depending on how terms are varied and worded by the Decision Body. For example, wording like "should" or "shall make best effort to" in Decision Documents may allow proponents more leeway in how they carry out WKA-based mitigations than more strongly-worded terms

and conditions (e.g., "shall not carry out" or "shall cease activities," etc.). Additionally, mitigation actions that are deemed voluntary or recommended by assessment processes are not enforceable.

- Enforcement for certain WKA-based mitigation actions are difficult to carry out. For example, requirements to stop work if caribou are seen within one kilometre of a work site are difficult to enforce.
- The WKA Inventory is one aspect that supports identification of important areas but it is neither the only source of information on wildlife habitat, nor the only factor impacting the sustainability of wildlife populations; therefore, it is difficult to attribute sustainability impacts directly to WKA Inventory activities.

Notwithstanding these issues, there is support for the Department of Environment to implement performance measurement tracking that would better enable assessments of outcome achievement. Specific suggestions are outlined in Section 4.3.

4.0 Findings: Administration and management

4.1 Resources

Key finding: Current resources are insufficient to meet the Department of Environment's needs in delivering and maintaining the WKA Inventory. The additional funding and new staff positions secured by the Department to support the Inventory over the next three years are expected to help address current human, financial, and IT-related resource limitations. However, a longer term strategy to ensure the Inventory's sustainability beyond the next three years is needed.

Evaluation results indicate that current resources are insufficient to meet the Department of Environment's needs in delivering and maintaining the WKA Inventory. Available documentation as well as interviews identified limitations in the relation to the human, financial, and IT-related resources currently available to support the Inventory. Specific issues are as follows:

- **Limited human resources are available within the Department to support staff in carrying out and prioritizing WKA Inventory-related duties.** For staff members who currently have WKA Inventory duties included in their list of responsibilities, the WKA Inventory has comprised a small amount of their time. Internal key informants confirmed that it has been difficult for staff to prioritize WKA Inventory activities over other more pressing responsibilities. The WKA Inventory, therefore, has been relegated to a "corner of desk activity."
- **Additional IT resources dedicated to the WKA Inventory are needed to support Inventory updating and ongoing management.** As outlined in Section 2.2, the public-facing Inventory is in need of updating. Considering the large scope of needed changes and the complexity of the updating processes, the Department anticipates that a substantial amount of IT resources will be required going forward to support the required updates. However, internal key informants reported that IT staff within the Department are currently working at capacity on other initiatives.

- **Budget and capacity for carrying out wildlife survey activities to support the WKA Inventory are limited.** In interviews, Department of Environment representatives noted that budget and capacity limitations within the Department have resulted in an inconsistent approach to WKA surveying and resurveying activities. Specific gaps and inconsistencies in survey coverage are outlined in Section 2.2.

In light of these issues, Department of Environment representatives who participated in interviews widely agreed that greater resources, and at least one dedicated position, are needed to support the WKA Inventory in all aspects — including data collection, data interpretation, and database management and IT support.[18]

It should be noted that the Department has recently secured three-year funding for two newly-created term positions:

- a WKA Technician position, anticipated to devote 75% of time on WKA activities (staffed in April 2023); and
- a Habitat Assessment Biologist position, anticipated to devote approximately 33% of time to the WKA Inventory, serving as the WKA program lead (staffed for December 2023).

While this additional funding and the establishment of the above-mentioned positions are expected to help address current resource issues, internal key informants expressed some concern about the time-limited nature of this funding. A longer term strategy to ensure the Inventory's sustainability beyond the next three years is needed.

4.2 Risk management

Key finding: The Government of Yukon faces a number of risks in delivering and managing the WKA Inventory. Addressing resource and data quality issues identified in this evaluation will help the Department of Environment to better manage the risks associated with these issues.

A number of risks facing the WKA Inventory have been identified. In some cases, the Department of Environment has implemented mitigation measures that appear to be working as intended to appropriately manage the risk. In particular, the practice of obscuring the exact locations of sensitive features and habitats in publicly available Inventory data helps to mitigate the risk that wildlife and/or habitat may be deliberately harmed through misuse of sensitive Inventory information. As outlined in Section 3.1, the CNDA processes, which are designed to ensure that sensitive information is only shared as needed and guide the use of this information, appear to be working well.

[18] It was suggested that the WKA Inventory (in particular, the task of carrying out needed updating and publishing duties) needs to be recognized as a *project* and formally incorporated into annual departmental and branch planning processes, which would help to ensure that the Inventory is given adequate attention and time.

However, the evaluation identified a number of risks that the Government of Yukon faces in delivering and managing the WKA Inventory, which are closely related to resource and data quality issues identified in previous sections throughout this report and are, therefore, in need of addressing. The following specific risks were identified:

- **A heavy reliance on corporate knowledge leaves the Department vulnerable in its ability to effectively manage the Inventory.** Over its history, responsibilities for the WKA Inventory have been held within a small number of staff positions, and Inventory-related work has been heavily reliant on the expertise and skills of the individuals in those positions. Additionally, there has been insufficient delegation of WKA Inventory duties and communication across the Department about what is needed for ongoing and continued Inventory management. The processes for data publication have not been well-documented, which limits the extent to which other staff members can take on this responsibility. As a result, Inventory management has been very susceptible to staff changes, with the pace of updates slowed by the retirement of key staff members.

  This issue was linked with the resource issues described in the previous section, with Department of Environment representatives noting that the lack of dedicated resources (both human and financial) to support the Inventory has limited the extent to which corporate knowledge about Inventory management has been, or can be, passed on.

- **Data quality issues can reduce user confidence in the WKA Inventory and increase the risk that the Inventory's use in formal assessment processes will be challenged.** As noted in Section 2.2, issues related to the accuracy, comprehensiveness, and timeliness of WKA Inventory data lead some users to question the WKA Inventory's reliability. Reduced user confidence in the Inventory may, in turn, increase the risk that proponents will challenge the validity of WKAs and the WKA-associated mitigations applied to their projects.

  The case study of quartz mining proposals near the North Canol Road illustrates this risk. In this case, the proponent called into question the quality of data used to establish WKAs located within proposed project areas, and formally challenged the Department of Environment's mitigation recommendations. The Department of Environment responded to the challenge with a formal and detailed review of the WKAs in question. While a precautionary approach was applied to retain some WKAs, the Department retired six WKAs that lacked sufficient evidence to defend their existence.

- **The slow public release of data may reduce public confidence in the Government of Yukon overall.** Discrepancies between the publicly available data and data available internally may lead to the perception that the Government of Yukon is withholding information and not being transparent.

Evidence indicates that the Department of Environment is committed to addressing risks associated with Inventory management and delivery. As the case study of quartz mining proposals near the North Canol Road illustrates, the Department's willingness to facilitate a detailed review of WKAs challenged by proponents demonstrates a commitment to rigour and sound scientific data. The creation of two new staff positions focussed on the WKA Inventory is expected to contribute to the Department's ability to address data quality issues identified in this evaluation and the risks associated with them.

4.3 Performance measurement

Key finding: The absence of a formal performance measurement system for the WKA Inventory limits a comprehensive assessment and understanding of the extent to which the Inventory is meeting its objectives. Several opportunities exist for improving performance tracking for the WKA Inventory, which the Department of Environment may wish to implement as resources permit.

A logic model which identifies Inventory activities, as well as its outputs and expected outcomes has been developed for the WKA Inventory (see Appendix A). While a logic model is an important first step in guiding the development of a performance measurement strategy, the evaluation identified a need for the Department of Environment to expand its performance measurement efforts in relation to the Inventory.

There is currently no formal performance measurement system in place for the WKA Inventory. As acknowledged in previous sections of this report, the Department of Environment does not systematically gather information related to Inventory use in environmental assessment and land planning processes, or the impacts on wildlife of mitigation measures based on WKA Inventory data. The absence of this data, in turn, limits a comprehensive assessment of the extent to which the Inventory is meeting its objectives.

In interviews, Department of Environment representatives acknowledged that resources to support performance measurement are limited. Nevertheless, the evaluation found support for the Department to implement some sort of performance tracking system, in order to provide more objective information on the Inventory's impacts and effectiveness. Several opportunities exist for improving performance measurement for the WKA Inventory. As time and resources permit, the Department of Environment may wish to consider expanding performance measurement efforts in the following ways:

- **Improve tracking of Inventory-related work completed within the Department**, including better tracking of the number of surveys conducted by species and over time — to facilitate planning a more systematic approach to Inventory data collection.
- **Collect more comprehensive information on Inventory usage.** In addition to tracking downloads of WKA Inventory information from publicly available sources, it was suggested that the Department track additional indicators related to Inventory use and usability, including:
    - questions related to WKA Inventory use submitted to the Department of Environment by Inventory users;
    - references to WKA Inventory information in YESAB assessment processes; and
    - references to WKA Inventory information in land use plans.
- **Formally document instances in which WKA-based mitigations were contested by proponents**, to help assess the effectiveness of WKA-based mitigations and progress towards the Inventory's longer term outcomes.

Additionally, it was suggested that the Department of Environment could institute a requirement for brief annual reporting on WKA Inventory performance indicators.

5.0 Findings: Relevance

5.1 Meeting needs

Key finding: The WKA Inventory is one of many sources consulted by stakeholders for fish and wildlife habitat information. While the WKA Inventory does not meet all user needs, evidence indicates that users consider the WKA Inventory to be an important source of information that complements other available data sources. Key informants widely perceive an ongoing need for the WKA Inventory. Addressing the Inventory's quality-related issues will enhance the Inventory's ability to meet users' needs.

Meeting users' needs

Evaluation results indicate that Inventory users have needs for fish and wildlife habitat information that are not being met by the Inventory. The vast majority of key informants reported using other data sources in addition to the WKA Inventory to inform their work. Additionally, several external stakeholders specifically commented that, for most or all circumstances in which they use the WKA Inventory, there is a need to consult additional data sources to get the level of detail or amount of information that they need.

However, this was generally not presented as a criticism. Several external key informants involved either directly or tangentially in assessment processes described the WKA Inventory as a "flag" which signifies the need for further follow up regarding the presence of wildlife in particular areas. In other words, the WKA Inventory alerts participants in the assessment process of the need to consider wildlife impacts and seek out additional, up-to-date information. Department of Environment representatives indicated that, while the WKA Inventory is just one of a number of sources of information that they use to support their work, it is an important one. Additionally, many external stakeholders reported that the WKA Inventory mostly or partially meets their information needs (at a general, overarching level), for the tasks that they use it for.

Overall, most key informants espoused the value of considering multiple information sources to develop a more in-depth understanding of important wildlife areas. While key informants identified using various other sources[19] of information in addition to the WKA Inventory to obtain the wildlife-related information that they need, these are largely perceived as complementary to the Inventory; other information sources are considered when WKAs are not available, and as supplemental data sources to provide a fuller view of how wildlife use an area.

[19] Other sources that key informants turn to for information about important wildlife areas include: results from modelling approaches (e.g., habitat suitability modelling, resource selection function modelling); habitat, range, and ecosystem maps; collar/satellite telemetry data; wildlife survey results (i.e., those that are not currently reflected in the WKA Inventory); lichen mapping; the CDC database; traditional knowledge and ecological knowledge held in First Nations archives; interviews conducted by local resource councils; scientific studies on wildlife and habitat; hunting and harvesting data; online public information-sharing platforms (e.g., eBird, iNaturalist); the North American Breeding Bird Survey; and local knowledge beyond what is currently included in the Inventory.

Nevertheless, as outlined in Section 2.1, key informants perceive various opportunities for the Inventory to include information from additional data sources. Additionally, key informants confirmed that issues related to the timeliness of Inventory updates and perceptions of its outdated status limit the extent to which the Inventory meets their needs. Addressing these and other quality-related issues would enhance the Inventory's ability to meet users' needs.

The ongoing need for the WKA Inventory

All key informants agreed that there is a continued need for the Government of Yukon to deliver the WKA Inventory or a similar initiative, citing the following to support their views:

- The WKA Inventory is essential to support the work of YESAB, Department of Environment analysts, and regulators for mineral exploration in the Yukon. The Inventory is relied on as an important part of environmental assessment work and YESAB assessment processes; these processes need the Inventory or a similar initiative, in part, to trigger discussions among proponents, assessors, and biologists about the importance of identified areas to wildlife.
- The WKA Inventory is well-known and publicly visible; it is a source that the stakeholders know about and "want to use" for a variety of purposes.
- Identifying areas that are key for wildlife is "an important concept," and one that will become increasingly important over time as pressures for land development increase.
- The public has need of an "interpreted product" that translates observation-based data into key areas, to foster understanding of how wildlife use the land.
- The WKA Inventory contains a wealth of knowledge that "should not be lost."
- The WKA Inventory is unique; it is the only dataset of its kind in the Yukon, which makes it a valuable resource.
- If the Government of Yukon did not continue to deliver the WKA Inventory, there may not be another organization willing to take it on.
- The results of government-conducted surveys, which are supported with public funding, should be made public; the WKA Inventory's function as a platform for sharing this information publicly is important and should be maintained.
- Industry needs access to good quality data about WKAs to support project planning and guide investment decisions. A few key informants noted that industry representatives are supportive of the WKA concept, but require data quality issues to be addressed.

External stakeholders who were not aware of the WKA Inventory prior to participating in this evaluation were supportive of the idea of the Inventory, commenting generally that a high-quality database is important for good decision-making.

While there is widespread agreement that the WKA Inventory should continue, many key informants acknowledged that changes will be needed to Inventory design and delivery going forward to address quality issues and enable the Inventory to better achieve its objectives.

6.0 Conclusion

The evaluation of the WKA Inventory examined the Inventory's design, quality, effectiveness, administration and management, and relevance. Overall, the evaluation found both evidence of success and opportunities for improvement in relation to each of these considerations.

Several aspects of the WKA Inventory's design are working well. Overall, there is broad support for the Inventory's use of multiple mapping levels, primary reliance on survey data, and incorporation of local knowledge. There is also support for the WKA Inventory to incorporate additional information from other high-quality data sources, to build on, and complement, the information gathered through wildlife surveys. Various opportunities for improving WKA Inventory delivery emerged from the evaluation. In particular, there is a need to improve public communications and increase publicly available information around various Inventory design elements, including: how key areas are defined; the sources used to support WKA delineation; and the purpose and function of the Inventory's different mapping levels.

Data quality varies across the WKA Inventory. While quality improvements have been made in recent years, several issues emerged in relation to the accuracy and comprehensiveness of Inventory data, and the timeliness of Inventory updates — which, in turn, may reduce users' trust in the Inventory's reliability. Current data quality and timeliness issues bring risks to the Government of Yukon in managing the Inventory — including increasing the risk that the Inventory's use in formal assessment processes will be challenged, and reducing public confidence in the government's transparency. Opportunities exist to improve data quality and reduce management risks by: correcting errors in the public-facing database; re-evaluating older WKAs to ensure their ongoing accuracy; addressing gaps in Inventory coverage; and updating the public-facing Inventory, to reduce discrepancies between the public and interim datasets.

Available data to support an assessment of the extent to which the WKA Inventory is achieving its objectives was limited. Nevertheless, there are some indications of progress towards each of the Inventory's immediate and long-term goals:

- The WKA Inventory is generally accessible to Inventory users and widely accessed by a wide range of users.
- The WKA Inventory is used regularly, by a variety of stakeholders to, inform YESAB, permitting, and land use planning processes — as well as in a variety of other ways.
- The WKA Inventory is widely considered to be very important to the development of mitigation actions to preserve wildlife in identified areas.
- Key informants generally believe that the WKA Inventory is making, and will make, contributions to protection and preservation of key wildlife areas, and sustainable populations of wildlife in Yukon.

However, issues with Inventory quality may limit the extent to which the Inventory can achieve its longer term goals. Overall, there is a need for the Department of Environment to expand its performance measurement efforts in relation to the Inventory, in order to provide more objective information on the Inventory's impacts and effectiveness.

Current resources are insufficient to meet the Department of Environment's needs in delivering and maintaining the WKA Inventory. The additional funding and new staff positions secured by the Department to support the Inventory over the next three years are expected to help address current human, financial, and IT-related resource limitations. However, a longer term strategy to ensure the Inventory's sustainability beyond the next three years is needed.

The WKA Inventory is relevant. Evidence indicates that users consider the WKA Inventory to be an important source of information on important areas for wildlife, and one which complements other available data sources. Key informants widely perceive an ongoing need for the Department of Environment to continue to deliver the WKA Inventory.

Areas for consideration

Based on the findings of the evaluation, the following emerged as opportunities for WKA Inventory improvement.

Design and delivery

- Improve public communications/increase publicly available information regarding Inventory design elements, to enhance user understanding of:
    - how key areas are defined and why they are important to species;
    - the purpose and function of multiple mapping levels;
    - source information supporting WKA delineation; and
    - Inventory limitations.
- Continue efforts to establish and refine criteria for identifying key areas and mapping protocols, to promote greater consistency across the Inventory.
- Consider opportunities to incorporate information from additional available data sources into the WKA Inventory.

Data quality

- Re-evaluate older WKAs to ensure their ongoing accuracy.
- Increase data collection efforts to ensure a more structured, comprehensive, and consistent approach to wildlife survey activities and address data gaps.
- Complete an Inventory update to improve public access to interim information.
- Consider ways to facilitate more regular Inventory updating, such as:
    - exploring opportunities for IT changes to streamline the updating process; and
    - establishing policies/procedures to guide and prioritize WKA re-evaluation and updating efforts.

Effectiveness

- Consider ways to improve the accessibility of, and access to, Inventory information, for example, by:
    - establishing clearer links between the two online public access points for Inventory information (i.e., Yukon.ca and GeoYukon);
    - raising awareness about the process for gaining access to confidential Inventory information; and
    - promoting the Inventory to additional potential users.

Administration and management

- Work to address current resource issues, such as by:
    - following through with plans for newly-created, Inventory-focussed term positions within the Department of Environment; and
    - exploring options and developing a longer term strategy for sustaining the Inventory.
- Address gaps in performance measurement by developing a performance measurement strategy and implementing formal tracking of indicators related to WKA Inventory use and implementation of WKA-based mitigation measures.

7.0 References

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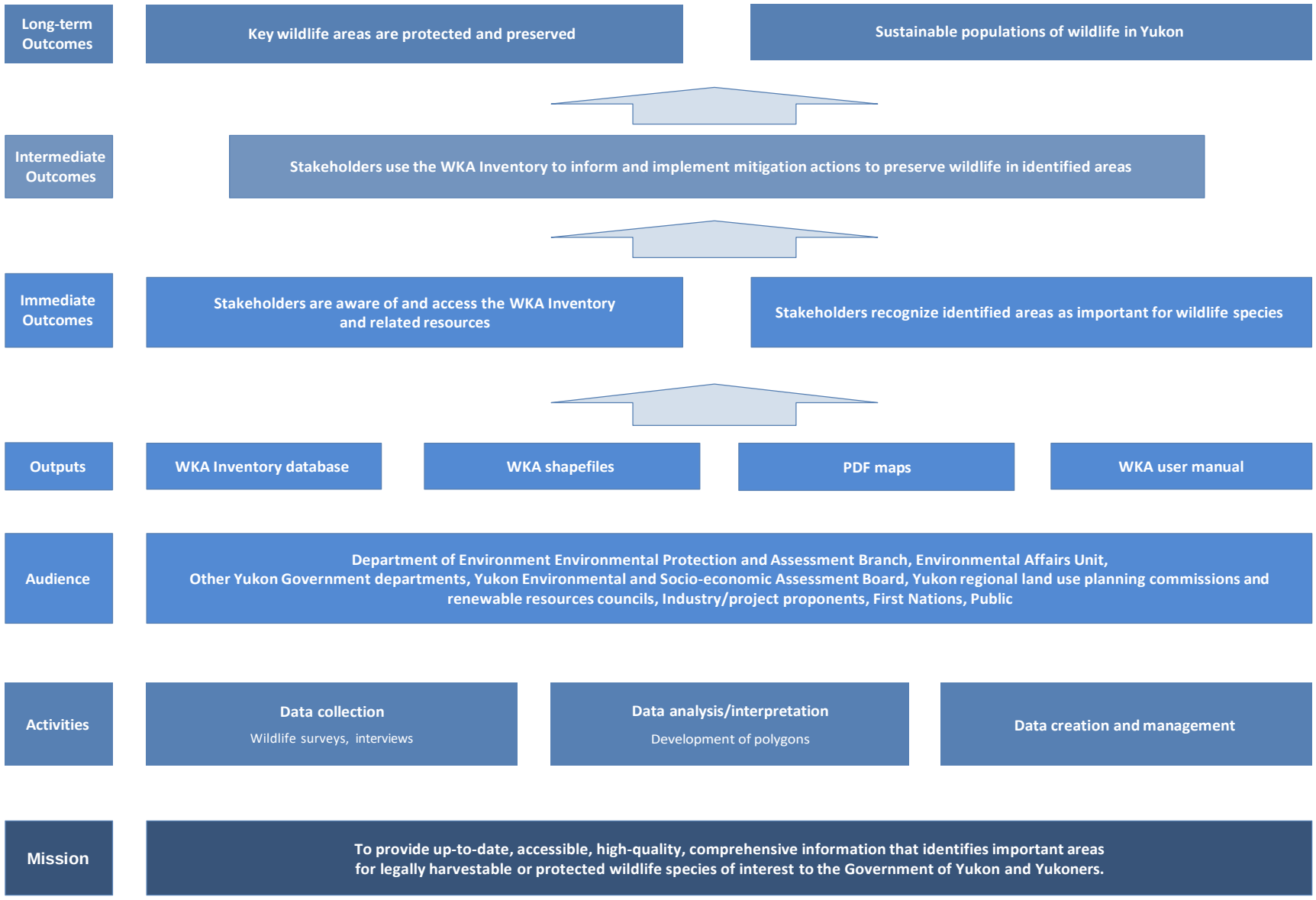
Appendix A – Logic Model



Logic Model for the WKA Inventory

Appendix B – Evaluation Matrix

EVALUATION MATRIX – EVALUATION OF THE WILDLIFE KEY AREA INVENTORY

Evaluation Questions	Indicators	Methods/Sources
Relevance		
1. To what extent does the WKA Inventory meet stakeholders' needs for fish and wildlife habitat information? What needs, if any, are not being met by the Inventory?	• Information needs identified by stakeholders, including: - Government of Yukon (Department of Environment, other departments) - YESAB - First Nations governments - Industry/proponents - Regulators - Regional land use planning commissions and renewable resources councils - Members of the public • Stakeholder perspectives on extent to which WKA Inventory meets their information needs • Extent to which stakeholders use alternative sources of information to meet their needs, and reasons why	• Key informant interviews • Case studies
2. Is there any duplication or overlap between the WKA Inventory and other sources of similar information?	• Existence of other sources of similar information as the WKA Inventory • Evidence of overlap or duplication between the WKA Inventory and other sources of information • Stakeholder perceptions of duplication/overlap	• Document review • Environmental scan • Key informant interviews
3. Is there an ongoing need for the Government of Yukon to deliver the WKA Inventory or a similar program?	• Extent to which stakeholders perceive value in the WKA Inventory • Stakeholder perspectives on continued need for the Government of Yukon to deliver the WKA Inventory	• Key informant interviews • Case studies

EVALUATION MATRIX – EVALUATION OF THE WILDLIFE KEY AREA INVENTORY

Evaluation Questions	Indicators	Methods/Sources
Design and Delivery		
4. Is the design of the WKA Inventory appropriate to meet its objectives?	• Stakeholder assessment of appropriateness of key elements of Inventory design, including: - Established criteria for identifying key areas - Multiple mapping levels (1-3) - Primary reliance on survey data - Inclusion of local knowledge - Other key elements as identified by EA representatives • Alternative approaches identified by stakeholders or used in other jurisdictions (e.g., modelling)	• Key informant interviews • Review of internal documents (e.g., strategic plan, including SWOT analysis) • Environmental scan • Case studies
5. Does the WKA Inventory provide high-quality data that is accessible to users?	• Description of data collection, data interpretation/analysis, and data creation/management activities that have been undertaken to support the Inventory (including by species and over time) • Stakeholder perceptions of quality of Inventory data, in terms of: - Accuracy - Comprehensiveness - Reliability/consistency across species and over time - Timeliness • Stakeholder perceptions of accessibility of Inventory data • Degree of end user confidence in data quality/integrity relative to needs/uses • Factors compromising data quality and accessibility	• Review of internal documents (e.g., strategic plan, including SWOT analysis) • Review of WKA data and resources available on the Government of Yukon website and GeoYukon repository • Key informant interviews • Case studies
6. Are there aspects of the WKA Inventory that are not needed and should be removed?	• Stakeholder perspectives on aspects of the Inventory that are not used or not needed	• Data review (usage analytics) • Key informant interviews
7. What changes should be made to Inventory design and/or delivery to improve utility and effectiveness?	• Stakeholder suggestions for changes to Inventory design and/or delivery • Alternative approaches being used by other programs/jurisdictions • Evaluator assessment of potential changes based on all lines of evidence	• Review of internal documents • Environmental scan • Key informant interviews • Case studies

EVALUATION MATRIX – EVALUATION OF THE WILDLIFE KEY AREA INVENTORY

Evaluation Questions	Indicators	Methods/Sources
Effectiveness – achievement of expected outcomes		
8. To what extent are stakeholders aware of and accessing the WKA Inventory and related resources?	• Inventory usage data, including trends over time • Self-reported level of awareness of the Inventory and related resources among various stakeholder groups • Extent to which various stakeholder groups report accessing the Inventory and related resources	• Data review (usage analytics) • Key informant interviews • Case studies
9. To what extent do stakeholders recognize identified areas as important to wildlife species?	• Extent to which various stakeholders recognize identified areas as important to wildlife species	• Key informant interviews • Case studies
10. To what extent do stakeholders use the WKA Inventory to inform and implement mitigation actions to preserve wildlife in identified areas?	• Use of WKA Inventory to support YESAB processes; e.g.: - Examples of mitigation actions required by YESAB that are informed by WKA Inventory data - Examples of YESAB decisions that did not rely on WKA Inventory data, and reasons why • Use of WKA Inventory to support other regulatory processes, e.g.: - Examples of WKA Inventory data cited in submissions to/decisions of other regulatory bodies • Extent to which stakeholders report using WKA Inventory data to inform and implement mitigation actions	• Document/data review, including regulatory documents (submissions, decisions) • Key informant interviews • Case studies
11. To what extent has the WKA Inventory contributed to: a. protection and preservation of key wildlife areas in Yukon? b. sustainable populations of wildlife in Yukon?	• Examples of implemented mitigation actions that were informed by WKA Inventory data • Evidence of impact of mitigation actions on protection/preservation of key wildlife areas and/or sustainability of specific wildlife populations (if any) • Stakeholder perspectives on contribution of the Inventory to protection and preservation of key wildlife areas and sustainability of wildlife populations	• Document review, including regulatory documents (submissions, decisions) • Wildlife population data for species affected by mitigation actions • Key informant interviews • Case studies
12. What factors have contributed to and constrained achievement of the expected outcomes?	• Contributing and constraining factors identified through all lines of evidence	• All lines of evidence

EVALUATION MATRIX – EVALUATION OF THE WILDLIFE KEY AREA INVENTORY

Evaluation Questions	Indicators	Methods/Sources
Administration/management		
13. Are threats/risks being appropriately managed?	• Documented evidence of threats/risks and measures being taken or recommended to address them • Staff perspectives on current threats/risks and government response to date • Staff suggestions for measures to address threats/risks • Approaches used by other programs/jurisdictions	• Review of internal documents (e.g., strategic plan, including SWOT analysis) • Environmental scan • Key informant interviews
14. Are resources sufficient to meet current and future needs?	• Level of resources currently allocated to WKA Inventory (financial resources, human resources, information management/information technology) • Staff perspectives on adequacy of current resource levels and need for additional resources	• Document/data review, including financial and other resource information • Key informant interviews
15. What performance measures and process should be put in place to track and report on performance?	• Description of currently tracked/available data • Staff perspectives on potential performance measures and process • Evaluator recommendations for appropriate performance measures and process relative to resources and expected outcomes	• Data review • Key informant interviews