



NÄN KÄK NDÄ TR'ÄDÄL

Comments on the Draft Dawson Regional Land Use Plan:
Prepared by Sebastian Jones, Fish, Wildlife and Habitat Analyst
For
Yukon Conservation Society
November 1st 2021

Dear Chair Debbie Nagano and Dawson Regional Land Use Plan Commissioners,

Thank you very much for accepting the following comments.

The Yukon Conservation Society (YCS) is a grassroots environmental non-profit organization, established in 1968. Our mission is to pursue ecosystem well-being throughout the Yukon and beyond, recognizing that human well-being is ultimately dependent upon fully functioning healthy ecosystems. We pursue this mission through a broad program of conservation education and analysis, including input into public policy and regulatory processes.

Introduction:

"Plans are useless but planning is indispensable." Dwight D. Eisenhower

The Dawson planning region, the homeland of the Tr'ondëk Hwëch'in is perhaps the longest inhabited landscape in Canada and for almost all of that time, there was no formal land use plan. However, this does not mean that people did not gather from time to time and plan out where people might live and harvest. Dividing the land up into units, drawing lines on a map with different rules for diverse places, is a very different way of doing things. Indeed, as part of an effort to Indigenize conservation, a paper entitled "*Borders don't protect areas, people do*": <https://www.facetsjournal.com/doi/full/10.1139/facets-2021-0144#ref72> the authors address how Indigenous Protected and Conserved Areas (IPCA) can 'reflect the Nation's Indigenous rights



and responsibilities, and “preserve cultural heritage and biological diversity while fostering sustainable economic opportunities”.

In these comments, we have endeavoured to look at the larger picture as well as within individual Land Management Units (LMUs).

Chapter 11 of the Tr’ondëk Hwëch’in Final Agreement outlines the requirement for land use planning. It is our understanding that completing land use plans was to be one of the earlier implementations of the agreement. Drafting a plan would likely have been much easier 23 years ago, when the land had far fewer competing interests; for example, giving priority to the 40 Mile and Clear Creek Caribou herds would have been much simpler before a network of mineral claims had spread over so much of their ranges.

A Key Recommendation (p. 8) includes: ‘Recommendations for caribou habitat in the plan include the protection of critical habitat...’. Critical habitat typically refers to habitat identified in a species recovery plan under Canada’s Species At Risk Act. None of the caribou herds in the planning region have a recovery plan or critical habitat identified. There are several Wildlife Key Areas (WKA) identified for some of the herds, but none of these WKAs are protected. The Plan should be more precise about what it means in this Key Recommendation.

YCS has carefully reviewed the Draft Dawson Regional Land Use Plan and has the following comments. For the convenience of reviewers of these comments, they are arranged in the same order as the Draft Plan.

Section One:

1. Chapter 1 is the introduction to the Draft DRLUP, it sets the tone and context for the rest of the plan, and colours and guides its direction.



- 1.1. The Plan is guided by the principle of sustainable development. This is also the core principle articulated in the Recommended Peel plan - more on principles later.

- 1.2. The Scope section describes what the plan does and does not do - it provides management direction, but is not legally binding on the Parties. However, the Plan can create legally binding Protected Areas. The Plan does not apply within municipal or LAP or existing territorial parks or KNHS boundaries.

- 1.3. Hx: Plan began in 2011, suspended in 2014, resumed in 2019.

- 1.4. Describes, broadly, the character of the region and how some land uses are not compatible. This section notes that the draft Plan 'strives to reflect community values and **strike a balance** between sustainable economic development and ecological conservation and socio-cultural preservation'. And here we have a direction that presents fundamental issues: Typically, 'balance' is achieved at the **expense** of ecological conservation and socio-cultural preservation. This idea is at the heart of the now discredited 'three -legged stool' of planning, where the three legs are environment, society and economy.

This planning direction resulted in losses to the environment and to society at the expense of industry, and it has been replaced with the far more sustainable idea of concentric circles, where the environment contains society which in turn contains the economy. This places the three priorities in the correct order - without a healthy environment there cannot be a healthy society, and without community, there cannot be industry. Three actions are identified through which the Plan will achieve this 'balance' and they are (in order): economic development, cultural preservation and, finally, the ensuring the long-term health of fish and wildlife populations and their habitat.

YCS agrees with the actions but recommends that the second paragraph be re-worded thus: **This plan acknowledges that without a healthy environment and thriving populations of fish,**



wildlife and traditional foods, there cannot be a thriving community that maintains and enhances the cultural and heritage values of the Tr’ondëk Hwëch’in and other First Nations and other residents of the planning region. A sustainable economy depends upon the health of these two conditions. Subsequent parts of this chapter do reflect this thinking, it is important to set the tone from the start.

1.4.1. Planning Issues: The Draft Plan draws upon the updated RAR and issues are summarized in the Interests & Issues report under the three themes noted above. It notes that the direction it received from the public was strongly for ‘balance’. This may well be, but certainly YCS asked for the economy to be placed within the context of the environment, not ‘balanced’ against it. For example, we would not consider it ideal to balance health with fun, because it implies that fun is bad for you. Instead, we strive for fun that *supports* health. Similarly, **we should strive for economic development that *supports* ecosystem and societal health.**

The issues are explored more thoroughly in Chapter 4, the heart of the Plan, and the YCS critique of that chapter is discussed below and in the Appendices. Finally, YCS notes that the key planning issues of Wetlands and Caribou are not specifically included in table 1-1

1.5. Terms of Reference (T.O.R.): The public has no input into the TOR, but it does give us some indications of things to look for, such as whether the draft achieves the objectives of Chapter 11?

1.6. Vision Statement and Guiding Principles

1.6.1. The Vision statements are more holistic, eschewing language around balance in favour of ‘while maintaining’.

1.6.2. Guiding Principles



1.6.2.1. *Sustainable Development* - YCS has some concerns with how this principle is applied. Can a mine that permanently alters the landscape by changing wetlands into uplands and ponds really not be undermining ecological systems? There are economic activities from which the land cannot recover, at least not in any meaningful timescale. This concern might result from the omission of the term 'sustainable' from the bullet on economic activities. A more complete sentence would go on to acknowledge that not all economic activities are sustainable. YCS appreciates how the Draft describes how sustainable development is to be achieved.

1.6.2.2. *Stewardship* - This is an excellent concept to bring to the forefront. While we appreciate the sentiment intended by designating the working landscape as 'Integrated Stewardship Areas', this designation is meaningless unless followed through - the test being whether the duty to care for the land is accomplished: Is the land cared for 'in a good way'? YCS fully supports the fostering of a mindset where all land users have a duty to care for the land. We are very pleased that the section places 'the health of land at the forefront of decision making', potentially overriding the references to balance and restoring the environment to its key, overarching importance.

1.6.2.3. The *Precautionary Principle* is another excellent, even essential principle that is typically honoured in the breach by governments that purport to be guided by it. YCS supports the definition, and interpretation of the Precautionary Principle as articulated in this section. However, it is difficult to square the application of this principle with the reluctance of the draft plan to be proactive, for example it assigns ISA levels 1 & 2 to 40 Mile Caribou summer range and migratory corridors. A more fulsome application of this principle recognizes that future decisions to exploit non-renewable resources can be made, but it is almost impossible to unmake them. For greater certainty, it is possible to disturb or destroy environments, but it is almost impossible to un-destroy them.

1.6.2.4. While YCS supports *Adaptive Management* as a principle, we find that unless it is adequately resourced, it is effectively meaningless. Adaptive Management is indeed flexible and responsive, but it requires more monitoring and more sophisticated decision making. It is not



clear, at this point, how the Plan intends to implement this principle. Perhaps the lack of clarity is related to the disconnect between the Plan principle of *Stewardship* and the use of the term *Management* here. YCS is of the opinion that the concept of stewardship is so valuable and important that the Plan should consider *Adaptive Stewardship* as the principle.

1.6.2.5. The draft Plan explicitly does not have targets for *conservation areas*, and YCS is not sure why this is the case. It is reasonable that the draft Plan have conservation targets that align with Canadian and international targets, 30% protected by 2030 being the most basic and applicable target. However, despite disavowing targets, the plan does include the target of helping to achieve representation of ecoregions in the Yukon's protected areas network. Unfortunately, the non-legal designation of SMA 2 LMUs fails to achieve this target. The criteria for candidate conservation areas are reasonable and fairly comprehensive. However, the criteria are applied parsimoniously, except for a few notable exceptions. The discipline of Island Bio-Geography explains how islanded SMAs, unconnected to other SMAs are likely to fail to achieve their goals, even disregarding the need to protect important habitat.

YCS is pleased to see key habitat identified as needing consideration; the plan should include Wildlife Key Areas (WKAs), where they are known and recommend their identification and protection where unknown. The absence of identified WKAs makes it harder to consider impacts to caribou summer range, rutting range and winter range.

1.6.2.6. **ADDITIONAL PRINCIPLES:** A notable gap is the principle of *conservation*, which is defined in the Tr'ondëk Hwëch'in Final Agreement (THFA) thus: 'The management of Fish and Wildlife populations and the regulations of users to ensure the quality, diversity and long-term optimum productivity of Fish and Wildlife populations with the primary goal of ensuring a sustainable harvest and its proper utilization.'

In the time that has elapsed between the development and signing of the Final Agreements in the 1990s, the thinking and language around Regional LUPs has evolved; it is now commonly



accepted that it is our **relationship** with the land that should be the focus of these plans, rather than **management of the use** of land. The use of the term stewardship in the plan supports this implicit idea. We suggest that it be made explicit.

1.7. Goals. 11 goals are listed, arranged into three bins - ecological, socio-cultural and economic. YCS recommends that the Plan Replace **'natural'** with **'ecological'** in goal 2. The goal of maintaining connectivity is laudable, but in some places, connectivity needs to be restored, so YCS recommends including **'or restore, where connectivity is compromised'** in goal 4. It should replace **'climate change'** with **'the climate crisis'** in goal 5. YCS appreciates the 11th goal, that of managing access infrastructure, and suggests adding: **'through the development of access management plans'**

Section Two:

YCS has no substantive comments on this descriptive chapter, but does suggest that there be a section on Fishing here, equivalent to that of Timber; while the salmon runs have collapsed in recent years, it is possible that fishing can one day again become a significant economic and cultural driver.

Section 3:

YCS agrees with the Plan Concepts as laid out in 3.1. We shall make some suggestions around LMU boundaries to be consistent with the concept of connectivity in our comments in section 5.

3.2.1 Special Management Areas:

YCS does have issues with the description of SMA 2s as laid out in 3.2.1: By eschewing legal designation for these areas, the possibility for co-management of the LMUs is removed, as is the legal underpinning of any proposed IPCA or the ability to identify an area as a Habitat Protection Area (HPA). Considerable resources are available for the management of legally designated



protected areas, including funding for Indigenous Guardians programs and for remediating and addressing conservation concerns such as legacy disturbances. YCS understands that the Commission may wish to conserve an area in the interim and interim protection should be the goal of SMA 2s. All areas that are to be permanently protected, or that are to be permanently withdrawn from mineral staking should become SMA 1s and legally designated.

There is another serious consideration that YCS thinks the Commission should include, and that is how the quantum of protected area fits into territorial, national and international goals. At 3.8% legally protected, the Draft Plan is very much an outlier compared to the North Yukon and Peel Plans, and is a long way from the goal of the Tr'ondëk Hwëch'in. All of these examples have designated 50-60% of the planning region for protection. YCS acknowledges that there are more industrial and economic interests, and more existing disturbance and roads in the Dawson region than in its predecessors, but achieving a similarly high level of protection that allows for continued industrial, community and economic development is possible, and YCS lays out a potential road map in Section 5.

In September 2020, Canada pledged to protect 30% of its land and waters by 2030. Scientific research undertaken by initiatives such as Nature Needs Half show that nature needs 50% protection to adequately support Earth's life systems. Both the North Yukon and Peel Watershed plans protected at least half of the land in their regions. However, the DRLUP fully protects **only 3.8%** of the region, with 60.7% open to industrialization. Further to this, these suggestions allow for existing yet currently undeveloped claims to be open to growth in the future.

The level of disturbance allotted to some of the SMA 2 areas is equivalent to the ISA 1 or ISA 2 designation, which is part of the reason most of the SMA2s fail to meet national and international standards for designation as protected areas.



The International Union for Conservation of Nature’s definition of a protected area is as “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”. Therefore, although SMA 2 designated areas account for 35.5% of the region in the plan, they do not contribute to Canada’s protected area goals of 30% by 2030.

3.2.2 Integrated Stewardship Areas:

As noted above, YCS congratulates the Commission for bringing Stewardship to the fore as a land planning concept.

However, YCS is concerned that the designations are reactive rather than proactive; they reflect estimates of current levels of disturbance plus a buffer to provide for further disturbance.

This approach is problematic on several levels.

The North Yukon Plan introduced the concept of disturbance thresholds, based on protecting caribou from oil and gas development. Considerable science and research were produced and considered to support these thresholds.

There does not appear to be any scientific or other justifications for the thresholds applied in the Dawson Plan. There is no indication if these thresholds are even compatible with the continued presence of caribou on the landscape.

YCS further discusses the use of thresholds and cumulative effects frameworks below.



In conclusion it must be noted that thresholds for disturbance recovery can be set, as, for example, in the North Yukon planning region. This means that if a project is proposed in an ISA that would tip it over the critical threshold, the project could be approved on the condition that reclamation within the LMU take place prior to additional disturbance being permitted.

3.2.3 Corridors:

There is no justification or discussion presented for applying a 1km band on either side of highway corridor. What values are being addressed by a corridor of this width, and would a wider or narrower corridor be as effective? Similarly, there is no reason supplied for not considering Cumulative Effects within highway corridors.

There is no reason supplied for omitting the Top of the World Highway corridor from sub-regional or other special planning. In addition, the Northern Access Route to the Coffee mine will dramatically alter access south of Dawson in LMU 12, it too should be recommended for sub-regional planning.

Having made these observations, YCS is very pleased to see the concept of highway corridor planning; this Draft Plan thus fills a gap left by its predecessors in regional planning on the Dempster highway.

3.4.1 Results Based Management Framework

YCS appreciates the description of this framework, but would also appreciate more detail on how it would be applied, and who might be responsible for its implementation. For example, considerably more monitoring and assessment of indicators will be required, and the resources to conduct this monitoring are not identified.



3.5 Cumulative Effects

Consideration of Cumulative Effects requires a discussion of the threshold approach utilized by the Commission. Thresholds are generally used as a method of dealing with the cumulative effects (CE) of multiple disturbances upon various values.

One value that is commonly used is caribou, and considerable work has been done to determine the thresholds beyond which caribou will not prosper, for instance 30 calves per 100 cows. This is called an **Ecological Threshold** and by suggesting caribou as a potential value, the Draft Plan seems to indicate that this is a threshold it will use. The problem with ecological thresholds as indicators is that by the time they become obvious, the herd will already be in decline and it can be very difficult to change that trajectory.

The North Yukon and Peel plans used measures of surface disturbance: linear density and areal disturbance. These are considered **Industrial Thresholds**. The ISA thresholds used in the Draft Plan appear to be industrial thresholds because they are expressed in percentage of land disturbed and km of linear disturbance per square km (linear density). However, industrial disturbance thresholds are not arbitrary; they are intended to place restrictions on industrial activity to protect caribou. Industrial thresholds are unpopular with industry and with governments interested in promoting natural resource development because they place limits on the amount of development.

The Draft Plan thresholds are not consistent with guidelines for caribou protection, as laid out in the COSEWIC assessment of Northern Mountain Caribou or the thresholds for other Mountain Caribou ecotypes. The ISA thresholds are neither based upon the viability of caribou herds or upon restricting industrial activity,



instead, the thresholds used in the Draft Plan are **Social Thresholds**, based on the Commission's assessment of what restrictions on disturbance the community will accept to ensure continued viability of caribou and mining in the planning region.

Unfortunately, the Draft Plan does not contain any methodology for determining social acceptance thresholds, instead they are based on an estimate of the current disturbance plus a buffer to allow for additional disturbance (DRLUPC pers comm). To further muddy the waters, the Draft Plan does not include current levels of disturbance, so we do not really know if the thresholds supplied are high enough to allow for more disturbance; we do know the threshold for ISA 4 (5%) is right on the cusp of what Woodland caribou herds further south, in places where forestry is not the main disturbance, can tolerate and in the absence of robust science to determine limits in the northern reaches of Woodland Caribou habitat, these thresholds may well exceed tolerable levels of disturbance. Please see Appendix A for further details.

YCS is of the opinion that the threshold approach used by the Dawson Regional Land Use Planning Commission (DRLUPC) in the Draft Plan will not achieve the purpose of maintaining caribou on the landscape and therefore **recommends that DRLUP use Industrial Thresholds**, i.e., restricting surface disturbance so that **ecological thresholds** are not exceeded in keeping with the **social threshold** of maintaining viable caribou populations on the landscape. This will probably mean adjusting the threshold for ISA 4 downward, most likely to no more than ISA 3 (2.5%). While this threshold is one half the threshold in the Draft Plan, it is 2.5 times as much disturbance as the maximum threshold in the North Yukon planning region, where thresholds were determined to ensure caribou viability.

A rigorous, science based socially acceptable and ecological approach to limits on disturbance thresholds may well come in **below the current level of disturbance** in parts of the planning region. Should this be determined to be the case, the Plan should



adopt a similar approach to that of the Yukon Water Board and require that existing disturbances be remediated and restored prior to future disturbances being permitted.

However, disturbance thresholds over 1km per km² are likely to be incompatible with caribou, especially cows with calves (Nellemann, C. and Cameron, R.D. 1998.

Cumulative impacts of an evolving oil-field complex on the distribution of calving caribou. Can. J. Zool. 76: 1425-1430).

YCS offers ingredients for a draft Cumulative Effects framework for consideration by the Commission, please see Appendix C

Section 4:

4.1 Sustainable Economy

- Again, at the bottom of P. 46 is reference to 'balance'. YCS suggests rewording of the sentence thus: '**...the Plan will need to recommend economic activities that support ecological, social and cultural values.**'

4.1.1 Minerals

- Recommended Management Practices is similar to, but different from Best Management Practices (BMP) - both are for proponents and assessors, but the former is linked directly to plan objectives. At a minimum, the Plan should recommend adherence to BMPs.
- We are pleased to see acknowledgment of 'the need to prioritize some areas for conservation over other interests'. It is the opinion of YCS that this further reinforces the need for a more ambitious quantum of legally protected areas.
- YCS agrees with the 3 mineral development objectives listed on P 48, however it is not clear what definition of sustainable is used when referring to mining - for



example, the Fish Habitat System For Placer Mining considers sustainability to refer to sustainability of the industry.

- Under the section on strategy, sentence 2, please remove 'balance' and replace 'while' with 'that supports'.
- YCS agrees that implementation of the Yukon Mineral Development Strategy (YMDS) is going to be a significant driver of how this plan works.
- YCS sees an opportunity for the Plan to support and integrate the inevitable end of free entry staking, as called for in the Draft YMDS, and to avoid policy recommendations that assume unregulated mineral staking will continue indefinitely. The General Management Direction for SMA IIs illustrates how, where staking is no longer allowed, reclamation can become permanent restoration.
- The intent in ISAs should be that once an area has been mined, it should be restored as much as possible and not re-mined. This intent will avoid the wasteful practice of mining an area, reclaiming it only for it to be re-staked and disturbed again, rendering all the previous restoration efforts moot. In ISAs, re-mining should only occur when something significant has changed. Examples of significant change could include the identification of new strategic minerals and new and very low impact techniques. The rigour of the rules around reclamation, restoration and re-mining would vary according to the level of ISA.

4.1.2 Transportation and Access

- YCS would like to see an objective that focuses efforts on abandonment and reclamation of roads and trails, this would be in addition to the Rural Roads Policy which will, presumably, only apply to new roads and trails.
- It is the opinion of YCS that the Access Defined box should encompass more than roads as regulated under the *Highways Act*. There are numerous roads and trails that provide access, some of which are regulated under mining legislation, others are utterly unregulated. The DRLUP provides an opportunity to inventory and consider all



access and to recommend regulations as necessary, with an eye to conserving other values, such as caribou.

- Good idea to plan for increased visitation to the Dempster/Tombstone, even if there is uncertainty how this trend will manifest post-pandemic.
- YCS requests inclusion of the scientific basis for applying a 2km width of the highway corridor. As written, it appears arbitrary.
- YCS appreciates that the Commission is recommending a ban on unregulated (i.e., Off Road Vehicles (ORVs)) backcountry access. It appears that this would apply south to the Dempster Corner.
- The section on the Top of The World (TOTW) Highway refers to a corridor, yet a corridor is not defined in the Plan, neither is there a recommendation for sub-regional planning. YCS recommends that a **sub-regional plan be developed for the TOTW**, within a corridor consistent with the Dempster and N. Klondike Highways.
- YCS assume the recommended management practices for the TOTW (pg. 53) are to account for the lack of a management plan. As noted above, the sensitivity of this landscape and the amount of traffic it accommodates warrants sub-regional planning.
- Considering the number of references to the issue of ORV use in the TOTW corridor, and considering the Research Recommendation that ORV use be monitored, YCS suggests that the **DRLUPC recommend an Off Road Vehicle Management Area (ORVMA) for the TOTW highway corridor.**
- The Advisory Committee is a good idea for managing the N. Klondike Highway, but it would be better if the Committee were charged with developing a sub-regional plan that would then guide the Committee into the future.
- Similarly, consideration should be given to setting up Advisory Committees for the Sub-regional plans for the Dempster and TOTW Highways.
- Regarding New All-Season Access, and existing all season access, their serious effect on the ability of wildlife to migrate and to move across the landscape should both be acknowledged and considered in the plan - initially in the I&I section on pg. 56. Highways and roads increase access for humans, but often impede access for wildlife.



- Given the acknowledged ‘significant concerns to wildlife’ of the Northern Access Route (NAR), YCS recommends that sub-regional planning be applied to the corridor around the NAR.
- YCS recommends an additional Recommended Management Practice: to require that mineral access is only allowed through applications to the Rural Roads/Land Management Branch; the existing practice of bypassing regulations by staking a string of mineral claims along the proposed route needs to end.
- The recommendations against new all-season access to LMUs 1, 4 and 7 are good, although they would be stronger if all new surface access was forbidden, including cat roads and winter roads. This means that LMUs 1, 4 & 7 could easily become SMA 1s.
- YCS will strongly support an inventory of existing linear disturbances in LMUs 12, 17, 9 & 20.
- We suggest extending this recommendation to include all LMUs where new access will be allowed, including LMUs 5, 6, 7, 8, 11, 15, 16 (high priority), 20, 21, 22 and 23.
- Access management plans should include consideration of the impact of access and linear disturbances on wildlife movement, with particular regard to especially sensitive wildlife such as caribou, grizzly bears and wolverine.
- YCS notes that an access management plan was a recommendation of the N. Yukon plan, and that development in some LMUs could not proceed until an access management plan was completed. We recommend similar strictures for the DRLUP.
- The DRLUPC policy recommendation to support the DDRRC in identifying areas for consideration under the ORV regs is too weak. The Commission could directly recommend that the DDRRC identify candidate ORVMAs and work towards their establishment. **The DRLUPC could directly recommend ORVMAs - an obvious one would be Wetlands.** LMUs designated primarily for conservation are obvious ORVMA candidates. The creation of ORVMAs will be greatly facilitated where the DRLUPC



recommends them, alternatively, ORVMAs will be harder to create should the DRLUP be silent.

- We support the research recommendation into the impacts of jet boats in LMUs 21 and 15. However, jet boats regularly travel into LMUs 1 and 4 via Coal Creek and the 15- and 12-Mile rivers, as well as up the Klondike into the N. and S. Klondikes. These streams should also be researched (depending on special direction for LMUs 1 and 4). In the Interim, YCS recommends that jet boats should not be allowed in these streams after the arrival of the first salmon in late June.
- We support all of the section on agriculture, however we suggest acknowledgement that agriculture, like residences, represents a permanent alienation of wildlife habitat, and therefore consideration of an area's suitability for wildlife and other ecological purposes must be considered where agriculture dispositions are contemplated.
- **Tourism** policy recommendation for LMU 1 is that it not become a "significant back country tourism destination". Although understandable, we are given to understand that is the reason for not designating it as an SMA 1, which YCS thinks is a flawed perspective and is addressed elsewhere. But to briefly address this concern, YCS draws attention to the similarly remote Fishing Branch Park which has not become a destination, except in the tightly regulated ecological reserve.
- Regarding the policy recommendation to limit air access in tourism and Wildlife Key Areas, YCS suggests that SMA management plans could readily address this concern.
- YCS supports the inclusion of 4.1.10 – impacts to MMIWG2S+

Section 4.2, Ecological Integrity and Conservation.

- Agree with goals, suggest clarifying goal 4 to 'Ensure representative areas of each ecoregion are protected' and add a goal to preserve important ecosystem services.
- A map illustrating which ecoregions are protected by the plan would be useful.



- YCS recommends inclusion of ‘abundant caribou’ as an ecological goal.

4.2.1.1 Caribou

- The Recommended Management Practices would benefit from defined metrics, these should be included in the Recommended Plan.
- YCS supports the idea of timing windows for caribou, but outside of HPAs with strong management plans, fails to see how this would be enforced. For example, it is difficult to imagine that placer mining would cease operations in July when caribou migrate through LMU 23 under proposed rules.
- Existing roads and trails in the sensitive areas identified in e) should be reclaimed unless under active permit.
- Suggest inclusion of a research recommendation to develop a Cumulative Effects (CE) indicator for caribou: *quantify the surface disturbances created by mining and exploration in caribou ranges, to investigate how these disturbances have affected the caribou herds, and how they may be related to herd health. We need to better understand the threshold of disturbances for Yukon woodland caribou, and if lessons learned from this study can be applied to other Yukon caribou herds*
- LMU 8 should be added to the list of LMUs on pg. 80 slated for access management plans - there is a Hart Caribou Herd WKA at Lee Creek, as well as one for moose.

Clear Creek Caribou Herd

YCS has performed a desk top study of disturbance for the range of the Clear Creek Caribou Herd and includes it as Appendix One to this submission.

- Moose: Please add to the introduction a reference to collision mortality on roads.
- YCS regularly hears, including during the consultations on the Draft DRLUP, that the placer mining in LMU 12 East provides such great conditions for moose that the area is able to sustainably support a high level of harvest. However, the Draft plan



contains no supporting evidence that this assertion is true. YCS requests that the next edition of the plan includes a discussion of this topic and that it includes evidence that the LMU is, as a result of placer mining, a 'moose nursery', if any such evidence exists.

- YCS is curious about how the CE indicator in Moose habitat (0.6km/km²) would work in an LMU with a 5km/km² general threshold (Research Recommendation bullet 2, P81).
- Please remove/modify reference to the high level of suspended sediment in the Yukon River (YR) near Dawson (pg. 82) - the entire YR north of the White to the ocean has seasonally high sediment loads. Unmodified, this sentence reads like a defence of anthropogenic sedimentation.
- Suggest research on the effects of jet boats on spawning habitat and on juvenile salmon as per research recommendation for water access.
- Suggest including protection for sheep movement corridors with the protections for lambing and wintering habitat.
- The Recommended management practice re: attractants for Grizzly bears could be expanded. YESAB often has valuable recommendations. YCS has suggestions, please see Appendix 2
- 4.2.3, Rivers

The Plan should consider the general management direction for the plan and consider the status of the 40 Mile River in Alaska- Wild and Scenic River- and recommend its assignment to a similar category here, such as Heritage River.

<https://chrs.ca/en/rivers?province=YT>

- YCS supports the interim designation of the Yukon River Corridor as an SMA, including the withdrawal of lands from mineral staking until a subregional plan is implemented. YCS further recommends that the river north of Dawson has such extremely high cultural and conservation values that it should be legally designated an SMA 1.



4.2.4 Wetlands

- YCS suggests that the DRLUP clarify the main objective such that conservation of existing intact wetlands is the prime objective.
- YCS supports thresholds language on pg. 94
- Fen threshold: LMUs are large enough that even with a 25% disturbance threshold, many fens could be eliminated. This needs more thought, and excellent data.
- Despite the practical difficulty, the best ecological approach is to base the threshold on watersheds. The scale should be workshopped during wetlands technical workshop on October 27th.
- YCS supports the policy recommendation on page 95. The implication is that the baseline mapping would be complete prior to any placer application, which is, considering the lack of existing wetlands mapping, problematic.
- YCS supports the stricture against disturbing unmapped wetlands is welcome.
- **YCS requests assistance in interpreting the chart on P 96 that shows the relationship between placer claims and fen protection.** It is currently unclear as to what it is attempting to state, and it is not the understanding of YCS that the relationship is linear.
- The Draft proposes designating two wetlands as being of **Special Importance**, per the draft Wetlands Policy: the Scottie Creek Complex and the Upper Indian Complex. Both of these wetlands are worthy of the designation partly because they are at the headwaters of a watershed, and thus play a significant role in water storage and flow regulation. YCS recommends that other headwaters wetlands be similarly designated.
- A portion of the Ladue watershed within LMU 21, White, is extensive and relatively undisturbed and does not include active mines and would also make an excellent candidate as a Wetland of Special Importance.



- YCS recommends that the Flat Creek wetlands become a Wetland of Special Importance both because of their extent and their role they play in the hydrology of the Klondike River.
- Given how LMU 11, Flat Creek Wetlands, contains 12.1% of the fens and 10,3% of Swamps, and does not contain any minerals dispositions, this LMU should be an SMA.
- When the Commission is deliberating how to address wetlands, it will be important to understand the difference between restoration and reclamation. Reclamation is what is done to leave the landscape in a state conducive for natural revegetation to occur, it could well include seeding or the replacement of a seed bed to speed up the re-vegetation process. It does not mean that the ecosystem that exists post-disturbance is the same as that which existed prior to disturbance. Restoration, on the other hand means re-creating the original ecosystem. Reclamation of a wetland can result in restoration, mostly in mineral based wetlands such as ponds and marshes. Reclamation of peatlands (fens, bogs and swamps) is far less likely to result in a restoration of the original wetland, indeed they are often reclaimed to uplands, i.e., non-wetlands. Other times, peat-based wetlands are reclaimed to mineral based wetlands, most often ponds or marshes.
- For wetlands that the Plan is recommending for avoidance or protection, including Wetlands of Special Importance, it will be important that consideration be given to lands around the wetland that may be critical to the persistence and function of the wetland. This *buffer zone* will vary according to circumstances, and should be calculated by a qualified person and approved by the Regulator.

4.2.5 Climate Change

- The biggest take away lesson around the effects of climate change is that the effects are coming faster and weirder than we expected even ten years ago, and that the pace of climate change is accelerating.
- Therefore, the DRLUP should rigorously apply the Precautionary Principle - things are easier to break than they are to fix.



- Given that Objective #3 is to support development of Renewable Energy in the planning region, YCS recommends that the Plan should identify places where the various types (e.g., wind, solar or hydro) of renewable energy are most appropriate.
- There is considerable evidence that the best way to allow for ecosystems and for wildlife and even for plants to persist in the face of a changing climate is to ensure that they have room to move their ranges. This is best accomplished by the creation of large connected protected areas.

4.3.2 Stewardship

- The Plan is to be applauded for its approach to and enthusiasm for a strong Stewardship element in the Plan. It explicitly calls for options to instill a sense of stewardship in all users.
- Another admirable innovation is the creation of a Land Stewardship Trust, modeled on the YFWET.

Section 5: Land Management Units

- Only 3.8% of the planning region is proposed for complete protection to international standards that would contribute to Canada's Target 1 goal of 30% protection by 2030.
- To contribute equitably to this target, it is the opinion of YCS that at least 30% of the planning region should be fully and permanently protected, to the level of Tombstone and Fishing Branch parks.
- Fortunately, closing this rather large gap is achievable in the time frame allotted for consultation before a Recommended Plan is delivered to the Parties.
- An additional 35.5% is zoned SMA II, a lower level of protection, it would not take many changes in management direction for some of these LMUs to meet national and international protected area status.



- If the DRLUPC were to (boldly and wisely) follow the requests and recommendations of YCS (listed below in the comments on individual LMUs), an additional 27.8% of the planning region would become SMA 1 for a total of 31.6% fully protected, and an additional 23.1% partially protected for a **total of 54.9% permanently or interim protected**. This leaves over 45% of the planning region available for industrial development and aligns the direction of the planning region with the North Yukon and Peel Watershed planning regions.
- YCS addresses each LMU in detail below.

Detailed Comments:

LMU 1: North, Tthetäwndëk, SMA II, 7950 km², 19.9% of planning region, SMA 2

- This large, roadless and wild area would make an excellent candidate for SMA 1 status. There are some undeveloped mineral claims in the southern portion that could retain the Special Management Direction (SMD): *Restricted industrial land use permitted within existing mineral tenure*.
- The natural model for a wilderness preserve, with a management intent to conserve the wilderness characteristic of the area without increasing visitation is Fishing Branch Park. For details see:
<https://yukon.ca/sites/yukon.ca/files/env/env-niinlii-njik-management-plan.pdf>
- All the other SMDs are consistent with SMA 1 status except the cumulative effects threshold which would match ISA 1, which ranges from 0.04% (precautionary) to 0.25% (Critical).
- Addressing mineral tenure in a protected area has bedevilled the Yukon since it began protecting areas, starting with Tombstone Park. To a large extent, this problem is of the Government's making because of its refusal to proactively



withdraw areas from staking in areas of very high conservation values until very late in the planning process.

- Therefore, it is the opinion of YCS that the DRLUPC should not overly trouble itself with fixing Government errors, and that it takes a leaf from the play book of the planning commissions for the Peel and Tombstone and designate LMU as a SMA 1, allowing for restricted activity and no land access, as in the Peel and Tombstone, with the idea that the claims would be relinquished given time.
- If a CE threshold has to be established, it should be constrained to the footprint of the mineral claims and be set at ISA 1 levels of the size of the project footprint.
- Establishing LMU 1 as a full protected area would raise the Dawson planning region PA quantum to 23.7%, which is a little less embarrassing.
- To fulfill the requirements of the acknowledged Yukon protected areas system, and to be consistent with the Conservation Priorities of the Tr'ondëk Hwëch'in, and to protect a portion of the McQuesten Highlands and N. Ogilvie ecoregions, **this LMU must be an SMA 1.**

LMU 2: Eagle Plains, Ch'ëzhän wëchël 329km², 0.8% of planning region ISA II

- This LMU was physically disconnected from the rest of the region when the N. Yukon Annex was hived off, presumably to the N. Yukon planning region, although we have heard little of this area's fate.
- It is also disconnected by its objective to preserve oil and gas development opportunities.
- However, it is primarily intended to support TH opportunities for hunting and gathering, being entirely settlement land.
- Given the fracking moratorium and the climate crisis, and given its status as settlement land, this LMU would be a **good candidate for SMA designation.**

LMU 3: Yukon River Corridor, Chu kon dëk 936 km², 2.3% of planning region, SMA 2

- **YCS will deeply engage in sub-regional planning** for this LMU.



- Setting an ISA 2 threshold for disturbance seems rather high for a protected area: If an LMU does not receive permanent protection, and if mineral claims can continue to be explored and developed, and if disturbance thresholds are consistent with an ISA, YCS is of the opinion that the LMU is effectively an ISA, not an SMA.
- The rest of the objectives and directions are acceptable so far.

LMU 4: 15/Chandindu, Tsey dëk/Tthen dëk 2792km², 7% of planning region, SMA 2

- Given the intent for TH to have co-management of this LMU, and given the directive to ban all new surface access, and given the directive to work towards an IPCA, it seems obvious that **this LMU should receive SMA 1 designation.**
- The rest of the objectives and directions are acceptable so far.

LMU 5: Tombstone, Ddal ch'ël 2100km², 5.3% of planning region

- Currently managed as a territorial park.
- Existing management plan is about to be reviewed

LMU 6: Klondike, Tr'ondëk 831km², 2.1% of planning region ISA 2

- This is the area west of the Dempster and south of Tombstone
- ISA intent is to maintain forestry opportunities - agreed.
- In the absence of direction for mineral development, and given the very high ecological values and traditional economy suitability, the **area should be withdrawn from staking and be designated an SMA 2.**

LMU 7: Upper Brewery/Hamilton, 1681 km², 4.2% of planning region, SMA 2

- Agree with management directions.
- YCS recommends a **CE study on WKAs for the Hart Caribou Herd** with an eye on the effect of the Antimony project - and others (Heidi?) in the LMU - and the placer claims on caribou and moose WKAs.



LMU 8: Lower Brewery/Hamilton, 1411km², 3.5% of planning region, ISA 3

- Designation is to allow for development of Brewery Creek mine.
- YCS requests a reason for the extension of this LMU up the N. Klondike into an area that seems to logically belong to LMU 7. YCS suspects that it is to allow for easier access to the Antimony claims from the Dempster. If this is the case, it should be laid out in the description of the LMU. If this is indeed the case, YCS disagrees; in our opinion, slicing pieces out of SMAs to mollify the mineral extraction industry is contrary to the reason for establishing SMAs in the first place. We have seen the result of this in the peculiar western boundary of Tombstone Park. This particular excision wound up reducing the social and ecological integrity of the SMA for no good purpose, even by the fleeting standards of the industry. **YCS recommends the extension of the LMU up the N. Klondike be removed.**
- Alternatively, the provision for winter access from the Dempster highway should be removed. Forestry activity should be able to use access from the Brewery Creek access road.
- WKAs for the Hart and Clear Creek Caribou herds and migration routes for the Forty Mile Herd should receive more protection, perhaps by designating areas above 700m ISA 1, similar to LMU 23.

LMU 9: Clear Creek, 473 km², 1.2% of planning region, ISA 4

- Objectives would be facilitated by designating high altitude portions of the LMU for protection, consistent with LMU 23
- Recommend a **CE study for the Clear Creek caribou herd range** - this extends beyond the planning region as well as beyond the LMU.
- YCS recommends lowering the threshold for this LMU to ISA 3, and that the plan accommodate future development by requiring excellent reclamation and



restoration in order to 'reset the clock' and reduce disturbance closer to levels tolerable to caribou.

- Recommend including provision for a plan amendment based on the CE study.
- Please see the YCS analysis of this LMU under Caribou, Appendix 1.

LMU 10: Upper Klondike, 984 km², 2.5% of planning region, SMA 1

- Agree with designation.
- Plan should consider, and either **accommodate or reject the potential for micro-hydro development** - it is unclear at present if this activity would be entirely or partly within this LMU or in LMUs 8, 6 & 13.

LMU 11: Flat Creek Wetlands, 368km², 0.9% of planning region, ISA 1

- Given the current free entry system for mineral staking, and given the absence of active mineral tenure in the LMU, it would be easier to achieve the objectives for this LMU were it to be **withdrawn from staking and assigned SMA 2 status**.
- There is the potential for forestry in this LMU; YCS maintains that carefully managed forestry can be as appropriate as carefully managed mining, which is allowed in several ISA1 and SMA2 LMUs.
- There is reason supplied for the south west boundary of the LMU being located below the height of land that topographically separates it from LMU 19, Upper Indian River Wetlands.
- YCS recommends aligning the boundary of the LMU with the topography and connecting it to LMU 19

LMU 12: East, Nācho dēk, 6606 km², 16.6% of planning region, ISA 4

- Surprised at the name - that it is not called Goldfields...
- Should include consideration of the proposed N. Access route to the Coffee project.



- Should recommend CE study for moose, based on the current high mortality rate (harvest and collision) being close to or exceeding the 4% sustainable mortality threshold.
- While wetlands are mentioned, there should be direction given to ensure undisturbed wetlands are to be avoided where possible, subject to the Yukon Wetlands Policy and the YWB Wetlands guidelines.
- Current mining roads and public roads extend down Sulfur, Dominion and Quartz Creeks to the Indian River valley, and mining roads and trails have come close to meeting from the Quartz and Dominion ends. Should a road loop be established, there will be considerable pressure to upgrade this route and for it to become a public road. This would greatly increase traffic to this, aside from mining, unvisited area and would make moose harvest management much more difficult. Therefore, **YCS recommends that the plan provide direction that such a loop cannot be established.**

LMU 13: Klondike Valley, 168km², 0.4% of planning region, ISA-future planning

- YCS shall participate in this sub-regional planning.
- Recommend that, in order to reduce additional land use conflicts, **the LMU be withdrawn from mineral staking** until the sub-regional plan has been approved.

LMU 14: Dawson City - including W. Dawson, Sunnydale, 81 km², **Outside Planning region**

LMU 15: Fortymile River, Chödähdök, 1118km², 2.8% of planning region, ISA 2

- Re: The Special Management direction to restrict boats on the 40 Mile, particular attention should be placed on jet boats, and the restriction should apply to all users in addition to tourists.
- The Fortymile River is also important Chum salmon spawning habitat; Chum have been observed spawning in Clinton and Mickey Creeks.



- The Fortymile is designated a Wild and Scenic River in Alaska, the Plan should **recommend equivalent (Heritage River) status in the Yukon.**

LMU 16: Swede Creek, 472km², 1.2% of planning region, ISA 2

- Management directions align with recent YESAB/YWB conditions
- LMU is contiguous to LMU 15 and shares many characteristics, **there is the potential to merge the LMUs**
- A more in-depth discussion of access is warranted; should the mining roads and trails get much more work there is the potential to establish a loop that connects to the TOTW at the rest stop at km 15. This would greatly increase the potential for recreational and other land use (forestry, personal wood cutting, tourism) travel. The consequences of this traffic increase should be considered in the plan and directions given accordingly.

LMU 17: Sixtymile, Khel dëk, 3148 km², 7.9% of planning region, ISA 3

- **An access management plan should be developed for this LMU**, with the goal of decommissioning and permanently closing as many roads and trails as possible, with particular attention being given to closing roads in the high country which are most often important caribou migration routes and summer grazing habitat.
- This LMU is classified ISA 3, which includes a disturbance threshold of 2.5% which is 2.5 times as intense as the maximum thresholds in the other two completed regional land use plans. It is unclear what effect this level of disturbance has on the 40mile Caribou herd, therefore YCS recommends that the Commission recommend a **CE study that covers LMUs 15,16,17 and 23 to scientifically determine thresholds of disturbance.**
- Subsequent to this study, the access management plan should recommend the decommissioning and permanent closure of as many of the multiple trails and roads in these LMUs.



- To the knowledge of YCS, the lower Sixtymile River is suitable salmon spawning habitat.
- Similar to other high industry LMUs, peat-based wetlands should be avoided.

LMU 18: Matson Uplands, 533km², 1.3% of planning region, SMA 1

- The secondary trails and airstrips in this proposed protected area should be decommissioned and permanently closed except where required for the establishment of Tr'ondëk Hwëch'in hunting camps.

LMU 19: Indian River Wetlands, 481km², 1.3% of planning region, SMA 2

- YCS commends the Commission for this innovative and bold move to specifically protect part of one of the rarest and most valuable ecosystems in the planning region. YCS does see additional actions that would add to the resilience promoted by this LMU.
- While YCS understands that without ISA 2 thresholds of disturbance, little or no additional disturbance could take place, it is the opinion of YCS that ISA 2 levels are excessive for an SMA. Therefore, YCS suggests that the threshold be rolled back to ISA 1 and that excellent **restoration** is pre-emptively applied to allow additional disturbance within ISA 1 bounds. The Implementation Commission proposed in Section six of this draft could be the body to judge when standards are achieved.
- Another way to achieve the goal of keeping disturbance below ISA 2 (or 1) levels would be to recommend that the new Placer Act incorporate longer permit periods to allow time for proponents to complete excellent restoration, in addition to the current standard of **reclamation**. This suggestion may run into issues around restoration of peat-based wetlands, which cannot be restored, indeed even the functions of peat-based wetlands cannot generally be restored.



- To be clear, YCS is not calling for 'expropriation by regulation', but we are asking that reclamation and restoration standards be substantially higher in SMAs that allow for mining.
- YCS agrees that this area contains extensive wetlands, however they are only a modest portion of the Indian river wetlands complex, the rest of which is subject to ISA 4 thresholds and face an uncertain future. The placer miners on Australia, Wounded Moose and Melba Creeks will be affected by this LMU designation, nonetheless, the DRLUPC recognized the importance of applying protection to undisturbed wetlands. It has not provided a rationale why the placer miners further down-stream should be treated more leniently, and suggests that consideration should be given to extending the SMA down as far as Quartz Creek.
- In several places in this draft plan, the Commission speaks of the importance of *connectivity*, both between ecosystems and between similarly designated LMUs. However, this LMU is uniquely an SMA island in a sea of ISA 4. However, not far to the North-East is the Flat Creek wetlands LMU. This is drafted as ISA 1, but as noted above, it should logically be assigned SMA 2 status. YCS contends the **boundaries of the LMUs should be extended so that they connect, or are merged into one.** Connecting and merging these LMUs would help to address the issue that concerns miners i.e., exceeding disturbance thresholds while improving conservation outcomes.
- This LMU provides a unique testing ground for innovative ways to achieve permanent excellent restoration of placer mines through initiatives such as the Restoration Playbook currently under development by Resolve Canada.
- Another way to apply innovation is in the regulations; the Commission could recommend that only a small percentage of the mineral claims in the LMU be worked - for example, 20%. The reason this could be a useful approach is that most of the claims in the LMU belong to one operator. Their permits expire in 2026. The operator maintains they can determine the best places to mine through drilling. The Plan can recommend that the operator identify up to 20%



of the claims that can be renewed and re-permitted. To provide an incentive for excellent reclamation, in addition to the RESOLVE play book as mentioned above, there could be a carrot extended that another percentage of claims could be made available contingent upon the quality of reclamation. Of course, the focus for claim development should be focussed on the non-wetlands claims.

- YCS has been informed of an ancient yet active wolf den complex on Australia Creek that should be protected.

LMU 20: Coffee, Tthatryãñ, 1000km², 2.5% of planning region, ISA 3

- Historically, this was important 40Mile Caribou summer range. Subsequent to extreme over harvest post-contact, the herd retreated from this area. While the herd has increased to the point where it again has the population to recolonize this area, it is difficult to see how it can, in the presence of a massive mountaintop gold mine. While it is probably beyond the scope of the DRLUP to recommend against this mine, desirable as that outcome might be, YCS contends that it most certainly is within the Commission's mandate to recommend specific conditions on the mine to reduce impact to caribou and, perhaps most importantly, to ensure that the site is fully restored and left in a condition attractive to caribou.
- The other issue that must be addressed is the spectre of an access route to the south, which would be much cheaper to build and use than the proposed N. Access Route. However, such a road would almost certainly doom the Klaza herd and eliminate any prospect of the 40mile herd re-occupying its historic range. Therefore, YCs requests that the DRLUPC stipulate that **no access can be constructed south to the nearby Casino project and trail.**
- Sub-regional planning for the Yukon river corridor can address the effects of the project within the corridor.



LMU 21: White, Tädzan dök, 4124km², 10.3% of planning region, ISA 1

- The north banks of the White River contain extensive swathes of remnant mammoth steppe, it is important that this rare ecosystem be protected from any development.
- The very high ecological values of this LMU, particularly its very sensitive capacity to enable the 40mile Caribou to reoccupy its historic habitat in the Dawson range, combined with the minimal existing mineral interest, indicate **that this area would be better designated as an SMA** . Such a designation would help connect the Matson Uplands and Scottie Creek SMAs.
- There are extensive wetlands in this LMU, particularly in the valley of the Ladue River.

LMU 22: Scottie Creek Wetlands, 355km², 0.9% of planning region, SMA 2.

- YCS supports the intent to create an HPA to protect this wetlands complex.
- Legal designation under the Parks and Land Certainty Act is required to create an HPA.
- **This LMU would make an excellent fully protected area (SMA 1)** once the existing mineral tenures have been extinguished, YCS requests that this intent be made explicit in the Recommended Plan.

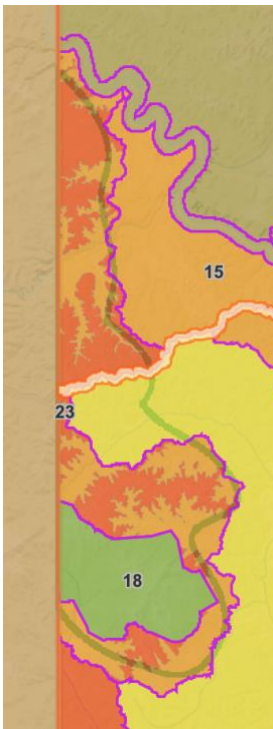
LMU 23: Fortymile Caribou Corridor, 1921km², 4.8% of planning region, ISA 1 & 2

- YCS commends the Commission for the innovative approach it took to trying to balance the competing interests of miners and caribou. However, the somewhat inelegant result neatly illustrates how ‘balance’ between two interests where one interest will permanently damage the other is inevitably an oxymoron.
- The arbitrary assignation of lands above 700m in the north of the LMU and 1000m in the south as more important caribou habitat that should be subject to less disturbance is ecologically indefensible. A consistent metric should be



applied throughout the LMU. Unsurprisingly, YCS suggest that the lower elevation will provide better outcomes for the caribou.

- However, YCS sees an opportunity to better help the caribou, and adhere to the Precautionary Principle, while still allowing for limited industrial use through **designation of this LMU as an SMA.**
- It is particularly important that no more exploration, development or access (broadly speaking) be allowed in this LMU, or it will not warrant the title 'Caribou corridor'.
- To achieve the priority of nurturing the 40 Mile Caribou herd, it is important that the summer range of the herd be afforded a high level of protection. Accordingly, YCS recommends that the LMU boundaries be re-drawn to be consistent with the Summer Corridor as out lined in green in this image:



- YCS suggests that the entire summer corridor be withdrawn from staking and that it become either ISA 1 or, even better, a Habitat Protection Area under the Parks and Lands Certainty Act.



Section 6: Implementation and Revision

- Influencing implementation is a big challenge for any Commission, and YCS wishes this Commission well.
- YCS recommends an additional Recommended action: ‘At least two members of the Implementation Committee should be drawn from the DRLUPC’.
- YCS respectfully draws the attention of the Commission to 10.5.2, SMAs: ‘Governments shall prepare, or have prepared, a management plan for each SMA...’ Accordingly, YCS recommends that all SMA2s be legally designated and that the ingredients of their management plans be identified in the Plan.
- YCS recommends that the Cumulative Effects Framework as worked out during the preparation of the Plan be included in the General Management Directions for ISAs, and if the Recommended Plan still proposes disturbance thresholds equivalent to ISA 1 or 2 in SMA 2s, in the General Management Directions for SMAs.
- Similar to our recommendation around the Implementation Committee, YCS recommends that the Plan recommend that the Planning Commission make up the majority of the planning team for sub-regional plans.
- YCS recommends modifying the Recommended Action on page 178 from an emphasis on triaging projects to reflect plan conformity capacity, to recommending that additional capacity be assigned to either a continuing Commission or the YLUPC. It is vital that this happens, or by the time the last Regional LUP is implemented, the YLUPC will be so overwhelmed that almost no projects will be checked for plan conformity.
- YCS appreciates the detail provided in how Plan Variances and Amendments will happen.
- YCS does, however, caution the Commission that even the clear process as laid out here is likely to be slow and well considered (as it should be), whereas an Order In Council (OIC) can be changed more or less at the whim of a government. We raise this



issue because, during the consultations and engagements, we have heard multiple times that an OIC is more permanent compared to a Plan that can be varied, amended or reviewed. We respectfully disagree with this perspective. This comment is meant to be read in the context of legally designating an LMU as an SMA compared to withdrawing land from staking through an OIC.

- Please include caribou as a focal species as an indicator of LMU Habitat Integrity (pg. 185).

It is our hope that these comments will be useful in your great endeavour.

Formulating a land use plan is never a trivial exercise, and producing one for a region as varied as Dawson with so many interests, some of which compete, is a significant task.

Reviewing this plan has provided YCS with an appreciation of the amount of work required to produce the Draft, and we salute you.

The Draft Plan is an excellent Draft and we look forward to seeing the even better Recommended Plan, hopefully incorporating some of the suggestions made here, and by others.

"We are nervous that we will be criticized but we will be criticized anyways. Do the big, bold aggressive things that make us more likely to save the planet." David Plouffe, advice to President Barack Obama

Sebastian



Sebastian Jones
Fish, Wildlife and Habitat Analyst
Yukon Conservation Society
Box 666 Dawson City Yukon
Y0B 1G0
(867) 993 4430
wildlife@yukonconservation.org

APPENDIX ONE

Cumulative effects of disturbances in the range of the Clear Creek Caribou Herd Range, Yukon.

Prepared by Toshibaa Govindaraj and Sebastian Jones

For the Yukon Conservation Society, October 2021.

Abstract

The progress of industrialization across the boreal forests of Canada has come at the expense of caribou. The Boreal (*Rangifer tarandus caribou*) and Mountain (*Rangifer tarandus caribou*) populations of Woodland caribou are listed as special concern or endangered under Canada's Species At Risk Act. The Yukon's Northern Mountain Woodland Caribou herds are mostly stable, but pressures from disturbances resulting from an expanding mining industry are rising. We examined the cumulative disturbances in the range of the Clear Creek Caribou Herd, in the central Yukon, using the Yukon Environmental and Socio-Economic Assessment Board (YESAB) online registry. We found that cumulative disturbances have likely reached the point that jeopardizes the future of the herd.

Introduction

Caribou are an iconic species that are deeply rooted in the fabric of the North. Within caribou, there are many subspecies which can be furthered classified into ecotypes that are determined by their behaviour, and geography (1). The Yukon boasts three ecotypes: the barren-ground caribou (*R. t. granti*), boreal woodland caribou (*Rangifer tarandus caribou*), and northern mountain woodland caribou (*Rangifer tarandus caribou*) (2).



Woodland caribou are known as both an indicator, and umbrella species (3). The title indicator species refers to the fact that woodland caribou are very sensitive to disturbances, which leads to their health reflecting that of the ecosystem as well (3). Umbrella species, on the other hand, refers to the fact that caribou have very specific habitat requirements, allowing their conservation to have cascading effects, and support the conservation of a plethora of species that depend on the same ecosystem (3).

Northern Mountain Woodland Caribou (NMWC) spend most of their summer in the alpine and subalpine, and move lower to mature, old-growth, coniferous forests that contain vast amounts of lichen that are critical to their persistence over the harsh northern winters (4; 5). These forests are generally found in conjunction with riparian zones as well as near marshes and bogs (5). The movement of the NMWC is largely based on snow cover, and food availability (4).

One such NMWC is the Clear Creek Caribou Herd (CCCH) in the Yukon. Their range is east of Dawson City, and northwest of Mayo, and falls within the traditional territories of both Tr'ondëk Hwëch'in, and Na-Cho Nyak Dun First Nation. This herd has had two censuses conducted—one in 2001, and one in 2018 (2; YG Unpublished Report). The latter showed signs of either a slowly declining herd, or one that is stable (2; YG Unpublished Report).

There are a multitude of threats that affect NMWC. In this document, we will only consider direct and indirect disturbances that stem from habitat alterations. Disturbances can result from “noise, infrastructure development, and linear features (4).” Disturbances can cause “increased stress, changes to activity budgets, physical injury or death of adults, unborn fetuses or calves and changes in movement patterns resulting in functional habitat loss through avoidance behaviour (4).”

Disturbances can also result in increased accessibility for humans and predators such as wolves, and increased predator populations due to growth in other ungulate populations (4). Indirect effects of disturbances include avoidance behaviour. As such, it is critical to understand the human-caused disturbances that exist within the herd range to better evaluate the threats caribou face.

Habitat alterations can be defined as “loss, degradation and fragmentation of habitat may be caused by factors both natural and of human origin, and are often exacerbated by the cumulative effects of these factors (4).” Habitat alterations lead to the degradation of caribou territory, which leads to alterations in the quality, quantity, as well as the configuration of the area (4). This can lead to



increased predation of caribou, decreased ability to tolerate other stressors, a decrease in food sources, etc. (4).

Furthermore, the effects of habitat alterations, and disturbances are exacerbated when combined with other stressors such as climate change (6).

While looking at habitat, we also considered Wildlife Key Areas (WKAs) apart from the encompassing annual herd range. This is because not all habitat is equally important. Within the herd range, there are certain terrains with disproportionate value to the caribou; these are identified as Wildlife Key Areas (WKAs) (5). These are geographic locations that are critical to the longevity of the species, and facilitate seasonal and critical life functions (5).

Wildlife Key Areas are further classified into three levels. Level 1 data is generally captured as points from wildlife surveys, and is used to formulate Level 2 data, which encompasses larger polygons that reflect animal locations (5). Level 3 WKAs are more generalized and cover larger swatches of land rather than precise sections as outlined in Level 2 (5). In this project, we only considered Level 2 because it is concentrated and there is clearer, and easily accessible data to support it.

We suspect that the disturbances and habitat alterations within the herd, rutting, and winter range of the CCCH has already surpassed sustainable levels signifying that this herd is likely in peril.

The objective of this project is to test our hypothesis that the disturbances in the herd range as well as in the WKAs of the CCCH have already exceeded disturbance thresholds as outlined by COSEWIC assessments, and other literature.

More often than not, action to restore caribou populations involves recovery programs rather than pro-active or precautionary measures which seek to prevent the initial decline. This project was undertaken to investigate existing disturbances to provide rationales to take preventative measures before the scale has tipped.

Methods

The online registry of the Yukon Environmental and Socio-Economic Assessment Board (YESAB) was used to tabulate surface disturbances. All listed projects within the herd range on the YESAB registry were considered, and the data from the YESAB recommendations and land use permits were used to find details of the proposed disturbances for each project.



Once tabulated, we then applied two ranges of zones of influences (ZOI) to get a lower and higher bound of potential habitat loss due to avoidance. The lower ZOI of 0.250 km and a higher ZOI of 4 km was applied to linear features, which was then used to calculate the percent area disturbed. We applied the higher and lower estimate for ZOI to be consistent with a similar study conducted on the Klaza caribou herd, in west-central Yukon (7).

We then considered YESAB projects in WKAs to determine the disturbances within the winter and the fall rutting range. This study was only concerned with Level 2 WKAs since it is more suitable for “detailed land use assessments and management decisions (5),” because it encompasses specific pockets of area known to host animals during an important stage (5). It should also be noted the post-calving areas are also considered key wildlife areas for woodland caribou, but due to a lack of information, and access to data, this WKA was not considered in this study (5).

Zone of Influence

Direct habitat loss as a result of human disturbance is relatively simple to calculate, however indirect habitat loss involves far more variables, and this preliminary paper had to make some assumptions to simplify the calculation of the amount of habitat effectively lost to caribou as a result of avoidance of disturbances.

Cumulative effects studies of the Klaza Caribou herd north of Carmacks and the Atlin Caribou herd in Northern British Columbia and Southern Yukon indicate that caribou avoid different disturbances differently in different environments, seasons, and life stages (7; 8). In addition, not all disturbances are included in publicly accessible formats. For example, a cutline or trail less than 1.5 m wide does not require a permit and does not trigger a YESAB screening, yet it can still provide increased access to wolves and result in avoidance by caribou.

However, given that the evidence is unequivocal that caribou do respond to disturbances and the zones around them through avoidance and by use reduction, we decided it was appropriate to work with a range of ZOIs. We used the Klaza Caribou Herd Range Assessment (2016) as a template, and used the minimum observed ZOI of 0.250 km and a higher bound ZOI of 4 km.

The maximum ZOI observed in the Klaza Caribou Herd Range Assessment (2016) around an active mine was 10 km, and another study by Boulanger, J., *et al.* (2021) found that barren-ground caribou avoidance around an active mine can be up to 23 km. However, we did not use these numbers



because we could not be sure it would apply since not all YESAB projects are active (9). Taking this and other observations into account, we consider our estimations of ZOI to be conservative.

Limitations in Data Collection

Placer mining applications rarely included the dimensions of the area used/disturbed, the roads built, previously existing roads, overburden removal and storage, etc. As such, there are gaps in the data available. As a result, to get an estimate of the area disturbed, we looked at the number of claims, and assumed that 75% of each claim would be developed, i.e., disturbed. The development includes tailing ponds, overburden removal and piles, trails along the claims, etc. Other on-claim activities were not considered, and were assumed to be part of the 75% disturbed. Off-claim development such as roads and trails were included as areas disturbed, as well as linear features. This method of accumulating area of disturbance, while helpful in estimating the area, does not allow us to account for the true number of linear features because it omits linear features on-claim.

As a result, it is important to remember that the linear density, particularly for placer mining, due to deficiencies in data supplied in proposals, is likely significantly larger than is reflected in the data.

Therefore, we suggest that the linear density data to be the assumed minimum present.

Moreover, there were other information gaps in the applications. The applications would often state the use of existing roads or trails or the upgrading of existing roads but would fail to provide dimensions of these features or their route. As a result, the full extent of these disturbances was not accounted for, and it is very likely that there is more development in the herd range, and in the WKAs than is reflected in the data. More specifically, there is likely a significantly higher linear density than what was found on the YESAB registry.

The YESAB applications lack enough detail to properly account for all the development occurring in the area. As well, the registry is not comprehensive due to this area having experienced significant development long before the registry existed, and because not all development is accounted for in the registry. We were only able to account for disturbances proposed since the inception of the YESAB Online registry in 2005. Human activity, and habitat alterations have almost certainly been taking place prior to 2005, so our data must be seen as very conservative, as we can only find data on the new projects - many of which expand on the existing features.



For other types of applications such as quartz mining (which usually involved quartz mining exploration rather than mines itself), and transportation (roads and/or trails), the data was more straight forward to accumulate. But still, some crucial information was omitted, or was not accessible to obtain.

Furthermore, due to the lack of publicly accessible inspection reports on permit compliance, there may be significantly more development than stated. Alternatively, applicants could exaggerate development in proposals, to avoid the risk of breaching permit limits. Because both these scenarios could be true, and given that we do not have the technology to otherwise assess, we must assume that the amount of development stated, i.e., the maximum applied for, is the development that has occurred.

Wildlife Key Area data was obtained by CPAWS – Yukon Chapter using ArcGIS software. These WKAs often overlap with one another, resulting in some double counting, but we are unable to account for the overlaps. Consequently, the area used in the calculations for both the rutting range (2264 km²) and the winter range (2128 km²) is larger than true. As a result, the area disturbed within the WKAs are likely much larger than what is expressed in the numbers.

In addition, WKAs are fluid regions, that evolve and change.

“When using WKA data do not assume that all the key areas for a species within a region are identified. The data only include those areas we know about. It is important to recognize that there may be data gaps (5).”

Consequently, we are obliged to accept the WKA mapping currently available, but in truth, there may be WKAs not yet discovered that may also house development. In addition, post-calving areas are also known to be WKAs for NMWC, but the data is not publicly available (5). As a result, there are more key areas affected than we are able to account for.

Assumptions Made in the Data Collection

There were certain assumptions that had to be made in the data collection. One such assumption is that any project, and it's ZOI, is either 100% within any given range, or 100% outside of the range. Because we are limited in the technology available, we were not able to calculate the degree of overlaps. This is also true for projects within WKAs—projects are either considered to be fully in or



fully out. As such, there may be discrepancies in the data concerning off-claim development that may not be within a WKA but is shown to be.

On the other hand, some off-claim developments such as roads and trails may pass through WKAs, but due to the limitations of the data we are unable to account for them. As such, it is also very likely that there is more development in the WKAs than reflected in the data.

Results

We found that between 13% (lower estimate) – 112% (higher estimate) of the CCCH annual range was directly disturbed or within a ZOI causing indirect disturbance (Table 1). We also found the linear density in the range to be 0.27 km/km². The rutting range WKA was found to be 22% – 122% disturbed, and have a linear density of 0.24 km/km² (Table 1). Disturbance within the winter range WKA was 32% – 108%, and had a linear density of 0.2 km/km² (Table 1).

Placer mining alone disturbed 7.2% - 29% of the herd range, and led to a minimum linear density of 0.06 km/km². Within the rutting range WKA, it was found that between 1.1% - 10% of the herd range was disturbed by placer mining and had a linear density of 0.02 km/km². Finally, in the winter range WKA, placer mining disturbed 6% - 13% of the range, and led to a linear density of 0.02 km/km².

Quartz mining, on the other hand, disturbed 5.1% - 81% of the annual herd range, and led to a linear density of 0.2 km/km². In the rutting range WKA, quartz mining was found to disturb 21% - 100% of the range and had a linear density of 0.21 km/km². Quartz mining was found to disturb 25% - 95% of the winter range WKA, and led to a linear density of 0.2 km/km².



Table 1. Showing lower and higher estimates of the percent area disturbed in the herd, rutting, and winter range of the Clear Creek Caribou Herd, as tabulated using the Yukon Environmental and Socio-Economic Assessment Board online registry.

Type of NMWC Range	Percent Area Disturbed (Lower ZOI)	Percent Area Disturbed (Higher ZOI)	Linear Density (km/km ²)
Herd Range	13%	112%	0.27
Rutting Range	22%	112%	0.24
Winter Range	32%	108%	0.20

Table 2. Showing the breakdown of lower and higher percentage disturbances resulting from quartz and placer mining applications from the Yukon Environmental and Socio-Economic Assessment Board online registry in the herd, rutting, and winter range of the Clear Creek Caribou Herd.

Type of NMWC Range	YESAB Application Sector	Percent Area Disturbed (Lower ZOI)	Percent Area Disturbed (Higher ZOI)	Linear Density (km/km ²)
Herd Range	Quartz Mining	5.1%	81%	0.20
	Placer Mining	7.2%	29%	0.06
Rutting Range	Quartz Mining	21%	100%	0.21
	Placer Mining	1.1%	10%	0.02
Winter Range	Quartz Mining	25%	95%	0.19
	Placer Mining	6%	13%	0.02



Discussion

The National Recovery Strategy for Woodland Caribou, Boreal Population determines that if 65% of woodland caribou habitat is left undisturbed, it gives the local population a 60% chance of being self-sustaining and persisting (10). The Recovery Strategy for Southern Mountain Woodland Caribou based their minimum undisturbed habitat thresholds on the aforementioned 65% from the Boreal Population Recovery Strategy. Because the NMWC are classified as ‘special concern’ under the *Species at Risk Act*, they do not have a recovery strategy which could otherwise supply a similar threshold. As such, we used the threshold outlined in the two recovery strategies for similar ecotypes to be consistent, and because it is the currently best available science that can be applied to the NMWC population. A study by Johnson, Sutherland, Neave *et al.* (2020), found that in environments where fire was the main disturbances, similar to the range of the CCCH, caribou were able to be self-sustaining with 40% undisturbed habitat, but became vulnerable with increases in the human disturbances of only 8-9% (6). This indicates that on top of the natural fire disturbances the herd faces, the CCCH can only handle a slight increase in unfamiliar, human-caused disturbances. Other thresholds used considered linear density. The COSEWIC Assessment and Status Report on Caribou (which concerned the northern, southern, and central mountain populations), states that “increasing the density of roads or cutblocks would exacerbate the decline of the Redrock-Prairie Creek subpopulation and ... increasing cutblock density to 7.2 ha/km² [0.07 km²/km²] or increasing road density by 120 m/km² would result in a ≥20% decline for the A La Peche subpopulation over the next 20 years (11).” Similarly, a study by Nelleman and Cameron (1998) found that caribou density was inversely proportional to road density. Caribou density declined by 63% in areas with road density over 0.0-0.3 km/km², and by 86% in areas with road density over 0.6-0.9 km/km² (12). This study was conducted on barren-ground caribou, and was used to illustrate caribou behavior of avoidance in response to human disturbance, and more specifically to road density (12). Based on the literature outlined, we decided to use a conservative 0.1 km/km² as the maximum linear density threshold before the herd begins to avoid an area.

The objective of this project was to test our hypothesis that the disturbances in the herd range as well as the WKAs of the CCCH have already exceeded disturbance thresholds outlined above. We found that the higher ZOIs have significantly exceeded the thresholds showing that the ZOIs occupy more of the range than there is available. This is a concerning finding because, as mentioned before, even



our higher ZOI is thought to be conservative. This signifies that the CCCH have a plethora of disturbances in their herd range, which has the potential to tip the herd into decline.

The lower estimates in all ranges allow for the existence of 65% undisturbed habitat, which would then, ideally, allude to a 60% chance of self-sustainability of the caribou herd. It is important to remember that these disturbance estimates were quite conservative, so a 60% chance of survival might well be optimistic. On the other hand, another study found that in environments where fire was the main disturbances, as seen the CCCH range, caribou were able to be self-sustaining with 40% undisturbed habitat but became vulnerable with a human disturbance level of 8-9% (6). The lower ZOIs have surpassed this, and could be indicative of a herd in peril.

The lowest linear density, 0.20 km/ km², was identified in the winter range (Table 1). This surpasses the linear density threshold outlined above (0.1 km/km²) and indicates that the herd may be in danger of decline. The second threshold outlined showed that caribou density declined by 63% in areas with a linear density of 0.0-0.3 km/ km² (12). Our findings, which are the assumed minimum, surpass this and indicate that there is likely serious avoidance of these features.

Since our ZOI estimates have been conservative, and we are not able to fully compile all the disturbances within the herd range, there is a strong possibility that the true surface disturbances have either exceeded sustainable thresholds or are close to exceeding them. This may potentially explain the slow decline in the CCCH population observed in the 2018 census.

Surface disturbances, and linear features cause habitat alteration that affect caribou in a number of ways. Firstly, they provide access into the range for hunters increasing legal and illegal hunting pressure (13). Secondly, surface disturbances increase early seral stage vegetation that allow other populations of prey animals to thrive, which in turn increases predator population leading to increased predation of caribou (1). Disturbances can also lead to changes in the predator-prey dynamics of the area due to predators having better access to caribou (1). Furthermore, these features hinder forage availability for caribou by altering the seral stage of the forests, and thus decimating an important food source—lichen (1). Disturbances can also lead to changes in caribou behaviour, as they induce stress, alter movements due to avoidance, lead to physical death or injury, increased energy expenditure, changes in foraging behaviour, or movement, which may lead to displacement from suitable habitat (1).



Due to the variety of ways caribou are hindered by the introduction of surface disturbances, it is essential to know the surface disturbances within the herd range, as well as within the WKAs, to better understand the threats caribou face.

Development in WKAs has serious implications. Wildlife Key Areas are geographic locations that facilitate critical, and seasonal life functions (5). Typically, and in the case of caribou, these regions are used seasonally, and traditionally due to their availability of resources not found elsewhere (5). Caribou winter range encompasses forests that provide protection in winter and house lichen, an essential food source (5). Providing both shelter, and substance, unaltered winter ranges are critical during the intense northern winters. Fall-rutting ranges are traditional areas used by caribou for reproductive functions, and are critical for the longevity of the herd, and species (5). Due to the importance of WKAs, these parcels of land should be effectively free of development, yet our baseline data has shown that they house a significant amount of development that exceed sustainable levels as determined by COSEWIC assessments and other literature. This may be the cause of the decline found in the last census, or may have the potential to lead to future decline.

Forests adjacent to marshes, bogs, lakes, and rivers—known as riparian zones—usually house mature forests thick with terrestrial and arboreal lichens that are critical for caribou by providing an essential food source (14). Additionally, areas such as peatlands, and other isolated riparian zones, are used by cows to calve due to the relatively low predator-density (14).

Placer mining primarily occupies these important areas leading to degradation of these key habitats, exposing caribou to predators, and humans, and forcing them out of suitable habitat—presumably to habitat that is less ideal (11). Furthermore, development in riparian zones effects downstream habitats as well by impacting water quality, and sediment load (15).

Riparian areas, hold immense importance to not only caribou, but most animals that inhabit the boreal forest and need to be protected. We found that placer mining disturbs caribou behaviour in up to 29% of the herd range. This not only exceeds sustainable levels, but also specifically impacts riparian zones that are essential to caribou and have the potential to impact caribou habitat quality downstream as well.

Minimum undisturbed habitat thresholds that were set for different ecotypes of caribou have likely been exceeded, signalling that more light should be shined on NMWC. The aim of these findings is to take preliminary measures for this herd to ensure that this herd does not tip into a more dramatic



decline. We hope this data can be used as a starting point for further research into the surface disturbances, habitat alterations, and/or overall threats this herd may face.

In following studies, mapping technology should be employed to see what actual development there is on the ground. This can be compared with the data we found on the YESAB database to help understand if people overshoot development on the applications, or if it is understated. Furthermore, we would gain a better understanding of what development predates the YESAB process and allow for a better assessment of cumulative effects in the area.

Other studies should integrate the data tabulated in this study and compare it with global positioning system (GPS) data which could help to better outline how caribou react to the disturbances.

Conclusion

In the Yukon, cumulative effects studies are relatively uncommon, but are beginning to gain interest. The Yukon is host to most of the stable or increasing NMWC herds in the world. As such, it is critical to understand the adversities they face that might limit their growth and to intercede before they are faced with decline.

We have shown that development in the herd range, as well as in the WKAs, likely surpasses the thresholds outlined in COSEWIC assessments, and other literature.

The data gathered and presented here is preliminary. It is used to illustrate that the cumulative effects have been ignored in the territory for long enough, and that the NMWC population face the very real threat of having their habitat disturbed beyond repair.

We hope that this report will instigate preventative measures to ensure the longevity of this herd, and lead to better management of the CCCH range and NMWC throughout the Yukon.



Works Cited

1. **Government of Canada.** SARA registry: Woodland Caribou (*Rangifer tarandus caribou*), Northern Mountain population. *Government of Canada.* [Online]
2. *Status of northern mountain caribou (Rangifer tarandus caribou) in Yukon, Canada.* **Hegel, Troy M. and Russell, Kyle.** 59 , Whitehorse, YT : ResearchGate, 2013 , Vol. 33.
3. **Canadian Parks and Wilderness Society - Saskatchewan Chapter .** *Caribou As Unsung Heroes: An Indicator And An Umbrella Species.* s.l. : Canadian Parks and Wilderness Society - Saskatchewan Chapter.
4. **Environment Canada.** *Management Plan for the Northern Mountain Population of.* Ottawa, ON : Species at Risk Act Management Plan Series , 2012.
5. **Department of Environment, Government of Yukon.** Yukon Wildlife Key Area Inventory User's Manual. [Online] April 2014.
http://webcache.googleusercontent.com/search?q=cache:cAmVgyrTGZIJ:ftp://ftp.geomaticsyukon.ca/GeoYukon/Metadata/Wildlife_Key_Areas_250K_Manual.pdf+&cd=3&hl=en&ct=clnk&gl=ca.
6. *Science to inform policy: Linking population dynamics to habitat for a threatened species in Canada.* **Johnson, C.A., et al.** 57:1314–1327, s.l. : Journal of Applied Ecology , 2020.
7. **Francis, S. and Nishi, J.** *A range assessment for the Klaza caribou herd in the Dawson.* Whitehorse, Yukon : Prepared for Environment Yukon. Yukon Fish and Wildlife, 2016.
8. *Identifying indirect habitat loss and avoidance of human infrastructure by northern mountain woodland caribou.* **Polfus, J.L., Hebblewhite , M and Heinemeyer, K.** 11, s.l. : Biological Conservation , 2011, Vol. 144.
9. *Estimation of trends in zone of influence of mine sites on barren-ground caribou populations in the Northwest Territories, Canada, using new methods.* **Boulanger, J., et al.** 1, s.l. : BioOne Complete, 2021, Vol. 2021.
10. **Environment Canada.** *Recovery Strategy for the Woodland Caribou (Rangifer tarandus.* Ottawa : Species at Risk Act Recovery Strategy Series, 2012.



11. **COSEWIC**. *COSEWIC assessment and status report on the Caribou Rangifer tarandus*. Ottawa : Committee on the Status of Endangered Wildlife in Canada, 2014.
12. *Cumulative impacts of an evolving oil-field complex on the distribution of calving caribou*. **Nellemann, C. and Cameron , R D**. 1425-1430, s.l. : Canadian Journal of Zoology, Vol. 78 (8).
13. *The Distribution of Caribou and Wolves in Relation to Linear Corridors*. **James, Adam Ross Cochrane**. Edmonton, Alberta : s.n.
14. **Government of Canada** . Species Profile . *Species at Risk Public Registry* . [Online] Government of Canada , January 2005 . https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=637.
15. **Watersheds Canada** . The Riparian Zone . *The Ribbon of Life*. Perth, ON : Watersheds Canada , 2016..

APPENDIX TWO

Bear Attractant Guidelines

- All camps **shall** be enclosed within a functioning electric fence, instructions found here: https://yukon.ca/sites/yukon.ca/files/env/env-electric-fencing_en.pdf;
- All camps **shall** be located away from prime bear habitat, including riparian areas and berry patches and travel corridors; (REF)
- All attractants, including food, fuel, garbage, kitchen waste and strained solids from kitchen waste **shall** be stored in a container that prevents access to bears and other wildlife until properly disposed of according to the Solid Waste Regulations, to be found at: https://yukon.ca/sites/yukon.ca/files/env/env-requirements-commercial-dumps_0.pdf;
- Proponents **shall** adhere to the Guidelines for Industrial Activity in Bear Country; the Guidelines **shall** be considered equivalent to permit terms and



conditions, to be found at: <https://yukon.ca/en/guidelines-industrial-activity-bear-country>;

- All persons at the camp **shall** receive training in how to manage attractants;
- All persons at the camp **shall** receive training in how to respond to wildlife incidents;
- All wildlife incidents **shall** be reported to the Conservation Officers within 24 hours of the incident;
- All staff **shall** receive training in how to report wildlife incidents;
- All persons at camp **shall** understand the terms and conditions of the permit related to managing human wildlife conflict;
- These terms and conditions **shall** be posted in a conspicuous place within the camp.

APPENDIX THREE

Cumulative Effects Framework:

The Commission held a very useful workshop on determining a Cumulative Effects Framework to use in the Plan. Unfortunately, this framework is not available in the Draft, however YCS does have some suggestions for inclusion in the Framework:

- Use caribou. Caribou are very sensitive to disturbance, thus make good indicators. Plans elsewhere in Canada have almost uniformly failed to adequately protect caribou habitat and migration routes resulting in lamentable declines and extirpation of caribou.
- Francis and Hamm 2011 provides a great foundation for further discussion.
- Thresholds can be perceived as limits to development rather than ways to manage environmental change. Of course, managing involves limits, but we always have limits - currently we call them permits. Consistent thresholds can



provide ‘certainty’. Another way to view the threshold approach is that it regulates the pace of development i.e., if a disturbance is considered restored, there is scope for additional disturbance. At the risk of giving forestry some credit, that industry tries to ensure that logging rates match regeneration rates. Well implemented disturbance thresholds can encourage excellent restoration. This restoration can lead to further development opportunities.

- Thresholds cannot be based only on science; they must take into account social values, public policy, and traditional and local knowledge.
- Thresholds work best when they are developed and used to manage negative effects of human activities, not stop resource development.
- Thresholds work best when they are part of a cumulative effect’s assessment and management framework.
- “Technically defensible’: thresholds must reach agreement and reflect the best available local and traditional knowledge and science. *Until recently, threshold development has been stalled at this first stage because the use of thresholds generates much technical debate and controversy.*
- ‘Politically acceptable’: thresholds must be socially acceptable and appropriate. This does not happen on its own and generally requires: a clear management vision; involvement and support of all residents, managers, and resource users; a clear understanding of likely benefits and costs; political and community support; and adequate time and resources. *Land use planning processes are the most effective way to achieve this.*
- ‘Administratively efficient’: implementation requirements must be directly evaluated and addressed when developing thresholds. *This includes: existing legal requirements; administrative processes and procedures; project-specific impact management tools; decision rules; and monitoring, enforcement and reporting requirements.*
- In addition to caribou, other useful indicators are moose, salmon, water, air, soil permafrost, geo-morphology, biodiversity and fire regimes.



- Indicators related to caribou, and moose:
 - Population size
 - Population health
 - Population change rate
 - Predator/prey relationship
 - Demography
 - Cow/calf ratio
 - Calf survival
 - Sex ratio
 - Recruitment rate
 - Pregnancy/parturition rates
 - Summer range quality
 - Access to high quality range
 - Availability of high-quality range
 - Availability of high-quality habitat
 - Connectivity of habitats
 - Availability of wildlife for harvest
 - Catch Per Unit Effort
 - Harvest rate
 - Distribution of harvest
 - Quality of harvested meat
 - Quality of harvest experience
 - Widespread presence of wildlife on the landscape
- Indicators related to Salmon and Water:
 - Water quality
 - Sediments
 - Metals
 - Nutrients
 - Suspended solids



- Dissolved Organic Carbon
- Rate of flow
- Including seasonal patterns
- Ability to exercise traditional harvest
- Return to commercial harvest
- Benthic health
- Flooding
- Stream temperature
- Withdrawal amount
- Riparian health
- Rearing habitat availability
- Fluvial geomorphology changes (both natural and anthropogenic)
- Salmon spawning areas
- IK of quality and quantity
- Ability to pass on IK
- IK of usage patterns
- IK of taste
- Ichthyophonus
- Surface disturbance and Linear Density make useful indicators because they are readily:
 - Mappable
 - Cheap to quantify
 - Straightforward to apply
 - Simple to understand
 - Restorability is measurable
 - Work with permitting process
 - We have some experience with it
 - There is a body of science related to them
 - Enforceable



- Scalable
- Applies to multiple values
- Applies to multiple land activities.
- Can save vast reclamation costs
- Imposes limits on activities
- Further Cumulative Effects Framework (CEF) considerations:
 - If the plan cannot complete a CEF, leave solid recommendations in the plan to guide the successor to the Commission
 - Test drive the CEF prior to implementation
 - Be aware that this plan will be a template for future plans
 - Leave space for new land uses
 - Ensure CEF recommendations meet the obligations in the FAs
 - Be aware that CE limits can lead to erosion of Indigenous rights
 - Carefully consider language around Plan review
 - Ensure Commissioners are present at these workshops
 - Dream small...for realistic implementation
 - Take a precautionary approach if CE indicators are not fully developed.
 - Ensure the intent of the Plan is clear.
 - Recognize importance and challenge of CE and Adaptive mgt, and that it is an iterative process.
 - Consider how to build community support for CEF through actions such as Community Based Ecological Monitoring and other monitoring efforts
 - Balance social, environmental and economic interests.
 - Identify the builders of the framework once the Commission has developed the architecture of it.
 - Develop a CEF manual
 - Meet with/involve YESAB