Meeting Summary

Moose Solutions Roundtable

April 1 & 2, 2019

Williams Lake, BC

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Prepared For:
Tsilhqot'in National Government
BC Ministry of Forests, Lands, Range, Natural Resource Operations and Rural Development

[1] This report provides a high-level, non-attributed summary of key themes of discussion. When common ground emerged among diverse participants, the report highlights these areas. Errors and omissions are the fault of the author.

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Executive Summary

On April 1 & 2, 2019, Indigenous and Provincial representatives in the Cariboo-Chilcotin co-hosted a **Moose Solutions Roundtable** including perspectives from guides, resident hunters, trappers and forestry companies. (Ranchers have been involved in discussions to date but were not able to attend due to the time of year.) The meeting built upon an inaugural exploratory session held in December 2018.

The aim of the meeting was to review and approve draft Terms of Reference for the Roundtable, provide population and habitat assessment updates, identify shared solutions and actions, and seek consensus on next steps. Involvement in discussions was solutions-focussed among those with direct interests in moose recovery and management.

Key Themes:

1. Moose are a common concern and responsibility and declines in the population have made it even more important to find common ground and implement solutions. The Moose Solutions Roundtable (MSR) is an important forum for identifying and recommending actions.
2. The Terms of Reference for the Moose Solutions Roundtable was accepted in principle with minor revisions. The Roundtable is now established under the strategic direction of a Joint Leadership Group. A Planning Group will undertake the detailed work of the MSR.
3. The Moose Solutions Roundtable reached consensus on 3 top priority solutions for immediate effort and action for moose recovery and management. These are:
    - Plan and undertake **access management**, especially for non-status roads, combined with forest licensee road deactivation and habitat restoration.
    - Develop a multi-faceted and integrated approach to understanding and addressing **predator impacts on prey** while also improving habitat. There is a strong desire for timely action on reducing impacts from predators.
    - Enhance population assessment methods to include Indigenous and local data sources and develop **common and accessible information platform** to inform decisions.
4. Within the next 12 months, these priority solutions should be trialed in a sub-area of Region 5 to maximize opportunities for monitoring, learning and adapting. Management Unit 5-13 was proposed.
5. Cumulative effects, assessments for all wildlife, habitat restoration and better use of legislative/regulatory tools all need to be key components of action planning. While focusing on moose, we need a "vision for wildlife" in the region.

Specific Next Steps:

- The Joint Leadership Group will establish the Roundtable and Participating Organizations will identify their representatives for the Planning Group. TOR refinements will be approved asap.
- Planning Group will advance specific actions on the 3 priority solutions at their next meeting.

- Consideration may be given to have another large MSR meeting prior to summer to further advance actions.
- This meeting summary will be prepared and available publicly.

Thank you to T'exelc and Northern Secwepemc for hosting us in their ancestral lands and especially Chief Willie Sellars for the welcome. Thank you also to Cecil Grinder for the opening ceremony and Elder Joan Palmantier Gentles for the prayers and guidance throughout the session.

Background and Context

Concerns about the status of wildlife and in particular moose populations in the Cariboo-Chilcotin, and elsewhere in the BC Interior, have been expressed for the past 10+ years. A number of different planning and research initiatives have taken place to begin to address concerns and inform management actions. Quite significant changes in the ecosystem have also occurred in the area (specifically known as the Cariboo-Chilcotin Natural Resource District, more generically referred to as Region 5) over a similar time frame, such as the Mountain Pine Beetle epidemic and the 2017 and 2018 record breaking wildfires. Significant conservation concerns exist for other wildlife species in the region, such as Mountain Caribou. With climate change, uncertainty and variability in the ecosystem will continue. There is a need to integrate resource management for wildlife and habitat in order to reverse declines, restore ecosystems and build resiliency for the future.

The April session was the second meeting of the Moose Solutions Roundtable (MSR). It built upon an inaugural exploratory session in December 2018 that confirmed that setting up a Roundtable was an important step in finding common ground and identifying timely actions for moose recovery and management. From January – March 2019, a Task Group met to develop draft Terms of Reference (TOR) for the MSR. These were presented for discussion and approval at the April session.

While efforts to build a strong process for common understanding and action is important, the Task Group continuously emphasized the need for **timely progress and action**. For this reason, the April session was designed to seek consensus on key short-term solutions, and undertake some initial action planning.

Roundtable Process

The **purpose** of the April meeting was to review and approve draft Terms of Reference for the Roundtable, provide population and habitat assessment updates, identify shared solutions and actions, and seek consensus on next steps.

The session was convened by a Joint Leadership Group involving Indigenous and Provincial representatives from the Cariboo-Chilcotin. Involvement in discussions is solutions-driven among those with direct interests including perspectives from guides, resident hunters, trappers, ranchers, and forestry companies. All discussions were held on a without-prejudice basis.

Meeting Objectives and Key Questions:

In addition to building understanding and renewing relationships among diverse participants, the meeting explored the following key questions:

1. *Do the draft TOR adequately set the Roundtable up for success?* Review the draft TOR and confirm next steps for the Roundtable.
2. *What is our best understanding of the state of moose and moose habitat in the Cariboo-Chilcotin ecosystem? What are some key areas for further inquiry?* Share information on population and habitat status and identify common outstanding questions.
3. *What are some potential solutions?* Explore together the range of solutions related to "what grows them" (habitat), "what kills them" (mortality) and "how we work and learn together to help them" (management and information system).
4. *What are some short, mid and longer term actions to advance solutions/address barriers?* Explore common ground on key actions and priorities

Participants

The 1.5 day meeting had ~55 attendees, and many others who were invited but unable to attend. Most attendees participated on the second day, about half participated in both days, and a few were only able to stay for a portion. Indigenous participants included elected leaders, elders, members and staff from the Tsilhqot'in National Government (TNG), Southern Dakelh Nation Alliance (SDNA) and the Northern Secwepemc Tribal Council (NSTC) and member communities, as well as representatives from the St'at'imc Nation. The Provincial government had representatives from the Ministry of Forest, Lands, Natural Resource Operations and Rural Development (FLNRORD), the Ministry of Indigenous Relations and Reconciliation (MIRR), and the Conservation Officer Service. Forest industry participants included staff from BC Timber Sales, Tsi Del Del Enterprises Ltd., West Fraser Mills Ltd. and Tolko Industries. Non-governmental participants included BC Trappers Association, BC Wildlife Federation, Guide Outfitters Association of BC, Wildlife Stewardship Council and Williams Lake Sportsmen's Association. Appendix 1 provides a detailed participant list.

Confluence Solutions Consulting, in partnership with the Fraser Basin Council, facilitated the meeting.

Key Themes of Discussion

Terms of Reference Refinements

- The TOR were generally well received. They provide a platform for parties to do something different in a new way, and might be a model for elsewhere.
- The approach to developing the TOR was constructive and collaborative and included diverse parties.
- Some areas benefited from clarification /discussion/expansion including:
    - While the MSR has a focus on moose, it needs also to take into account broader ecosystem dynamics and other wildlife and habitat issues.
    - Important to always remember that management in one area (i.e. Region 5) has impacts on other areas. The specific example given was for hunting in Region 3. In some instances, it might be helpful if licensing was done by Region rather than province-wide.

The TOR tries to account for this by including both provincial scale and region specific organizations.

- Some people noted that as the MSR starts to implement, broader political pressures are likely to increase and make finding common ground more difficult. Socio-economic considerations are within the scope of the MSR's discussions but proper preparation and support for this is needed.
- The Planning Group needs to be clear on when giving specific recommendations vs. capturing inputs/ideas for consideration and joint action, and what constitutes each. When it comes to specific recommendations, the MSR will be one of a number of sources of information the Statutory Decision Maker takes into account. This includes the Province's work with First Nations outside this process as well as at government to government tables within the Region. However, it was acknowledged that diverse groups speaking with a common voice has significant influence.
- There was discussion about the importance of being responsive to the timelines of SDM decisions. Part of the incentive for the MSR finding consensus, if it is able, is that it has the opportunity to influence an SDM, but this opportunity is lost if planning of the MSR meetings is not aligned with SDM decision making timelines.
- A key point of discussion was that the MSR can influence not just SDM decisions (such as on harvest allocation) but also, and perhaps more importantly, other government AND non-government/industry decisions that relate, for e.g., to habitat.
- First Nations themselves may/will also have protocols amongst themselves that should be recognized (e.g. Nations seeking permission from one another to hunt in another's territory).
- Taken together, these points reflect the need for the MSR to be alive to how its work has implications for: other Regions, other processes and other species.
- Overall, since action on solutions is broadly desired, the MSR needs timelines for expected deliverables. The TOR could specify timelines, or it could be left to the Planning Group to determine. This requires some more discussion.
- Key early information pieces the MSR needs to address as part of its recovery planning include: root causes of decline; specific benchmark for recovery, habitat carrying capacity. We need to come to agreement on what credible info is, and how to bring participatory info into assessments. It is also important to understand the nature of different decision timelines that the MSR might influence.
- May be beneficial to include local government, especially since socio-economic considerations are relevant. This can be accomplished under the current wording but should not be forgotten.
- Need clarity/confirmation of how TOR will be officially approved by Joint Leadership Group members, and an understanding if the TOR are never formally signed off by these parties.

- Specific refinements to the draft TOR include:

- Improved definition of the respective roles of the Leadership Group and Planning Group. Concerns were expressed about discussion/decisions occurring at Leadership Group not properly taking into account the interests of non-governmental participants of the MSR
- Improve definition of geographic range – focus on Cariboo Natural Resource District, not Region 5. (Region 5 includes Bella Coola/coast)
- Add clear requirement on notice for meeting – 3 – 4 weeks in advance
- Better language on the range of decisions the MSR can influence (ie, SDM and other government and non-government decisions) such as those that relate to "the things that matter the most", such as habitat. This was connected to an overall theme of discussion that while harvest allocation is a sensitive and important topic, reductions in harvest are likely to have comparatively less impact on moose recovery than other measures.

- **Assuming these refinements done, the TOR received support from the group.**

Bridging Different "Ways of Knowing"

Following a brief overview on ways of knowing and its relevance to resource management, and throughout the presentations that followed, the group discussed ways that qualitative and quantitative sources of information/data on habitat or populations could complement one another and together improve the information base to support better decisions. The benefits of including more local/qualitative and traditional sources of knowledge in assessments include:

For Habitat:

- Ground truth habitat suitability model outputs from the Cumulative Effects tool
- Locate/map important wildlife habitat features
- Locate/map non-status roads
- Better understand cover features (security/thermal), eg, to increase Cumulative Effects model sensitivity to these important features.

For Populations:

- Track numbers outside of winter – ie expand assessments temporally
- Track numbers in areas where not able to conduct detailed surveys often, or at all – ie expand assessments spatially
- Enhance assessments in areas that are of high community concern – and use this info to plan detailed assessments in future years to address those concerns
- Ground truth where moose are located, and what habitat they're using. This might affect the design of MUs, and/or affect the scale that assessment info is collected at – ie the size of the Game Management Units are large and assessment at that scale does not reveal internal variability.
- Could be used to increase our knowledge of sensitive/sentinel species – ie other than moose

For Management:

- Builds common information base and knowledge
- Helps to advocate for shared outcomes
- Helps to define mutually acceptable levels of risk. This is currently a key area of difference among parties and developing a common perspective has a key influence on management

- Helps to secure funding, and use limited funding more effectively
- Improves "tracking" monitoring/ evaluation/adapting the impact of different management actions

Overarching themes

Integration – Ecosystem Scale Context

Throughout the session, participants underscored the relevance of the information and solutions/action for large ungulates and wildlife overall, not just moose. Further meetings need to bring this context and understanding forward, while keeping a focus on moose recovery. One participant expressed it as the need for a **vision and plan for wildlife in the region**, in the context of climate change impacts, adaptation and mitigation.

Legislative and Regulatory Change / Compliance

Throughout the meeting, participants underscored the need to restore and reduce impacts on habitat. Some expressed concerns about the planning, management and regulation of industries affecting habitat, especially forestry. They expressed that government was not providing proper direction/oversight to industry, that regulations in place were not being followed, and that practices allowing negative impacts on moose habitat need to be reversed. One example among several provided at the meeting relates to regulatory/legislative levers that could be adapted to ensure funding from forestry more clearly goes back into habitat. Another regulatory lever might be for best management practices for moose to be established as clear objectives rather than voluntary "addendums" to forest stewardship plans. Other examples were given.

Many present expressed strong interest in understanding the regulatory and legislative timetable, in order to determine how best to influence it, and have greatest likelihood of affecting change. It was confirmed that for legislative change to be considered, the first opportunity would be the Spring 2020 house session, and for that agenda to be informed, proposals for change have to be in by June 2019. This is not an option for this MSR table, though other processes are underway (such as ungulate winter range and Wildlife Habitat Area establishment - under FRPA; Wildlife Habitat Feature identification (FRPA); FRPA legislative review; and new SAR legislation). Regulatory changes and GAR (Government Actions Regulation)[2] orders have a 6 month approval timeline.

Another component of this discussion included whether, for specific issues like access management, progress can be made right away (limited only by willingness of all parties) OR if legislative change is required first to drive change. There is no one answer to this question, but the following sections in the report reveal the important value of the MSR, which is to **prioritize solutions for shared action by all parties including industry, not just action by the government**, During the session, some industry reps identified examples of how they could advance actions voluntarily. This was well received.

[2] GAR orders enable government to make specified decisions that affect forest and range practices.

Moose Population Assessments

Provincial Wildlife Biologist Daniel Lirette provided an update on the 2019 Moose Assessment Information. The following is a summary of key points from the Q&A, as well as additional insights /outstanding questions offered by the group.

- Concerns were expressed about the licensed harvest in areas seeing big declines. Provincial staff indicated that the licensed moose harvest in, e.g., the North Chilcotin is 1%, is a small portion of the overall mortality impact, and not contributing to the decline. Participants in the room felt that while the problem is becoming better understood, at least as a precautionary measure, the harvest should be reduced. A related point is when to consider a potential increase in harvest once we're satisfied with the recovery of the population.
- **This highlights a key difference in the risk tolerance among some groups, and the need for thresholds, with ideas to overcome/address this explored in more detail below.**
- Areas with minor logging over last 10 years (ie 15-30-year-old cut blocks) are prime moose habitat. Increased predator rate yet there is more calf retention. Only one CO covering South Chilcotin area monitoring area, might run into a Ranger occasionally, no First Nation interaction
- The northern part of South Chilcotin region has seen decrease in moose. Provincial summary s slide info doesn't jive with First Nations observation (possibly due to large size of GMZ). Increase of hunters visiting from Vancouver. Roads access and lack of monitoring of harvesting needs looked at – only 2 CO's in area. Agreement with the road density survey, but there are a lot of non-status roads being used. An influx of wolves and cougars in the West Pavillion Boiler Creek/Mud Lake area.
- Alexandria area – doesn't really jive with presentation – lots of wolves and predators, less calves, in Fall – not as many moose. Increased predators declining deer and moose.
- Would like to hear more about cow-calf retention next time
- Would like to better understand overlaps with caribou recovery areas, approaches next time
- Sensitive and sentinel species should also be considered since they are an indicator of other species and if we get it right for them, others will be taken care of also

Outstanding Questions

- What is the preferred moose density target? What thresholds should there be for harvest? There is a need to develop common objectives on this.
- Federal report regarding climate change – should it be looked at? Moose moving to higher elevation areas?
- How will habitat suitability for moose change over time with a changing climate?
- Human vs climate changes in eco system will result in moose distribution for future – other species could take advantage of this change such as elk. What are realistic targets? Mid 2000? Can it be same level based on current state of eco system?
- When looking for target numbers what year was a good number for moose? How to get there, can the landscape maintain that target? Should we be managing for elk, and moose? Looking for food/sustenance. Do we move elk? Move on own?

- Do we have community info on what historic moose populations were? Are there events that increased moose population? Are elk and whitetail friendly for moose?
- Dates regarding ideal or target populations – whose habitat are we supporting, comparing dates and species needs to be considered carefully.

Cumulative Effects Assessment

Provincial Habitat Biologist Cheryl Williston provided an overview of the Provincial Cumulative Effects tool. The following is a summary of key points from the Q&A, as well as additional insights offered by the group.

- AAC 4 million out of Nazko – use helicopters to count. Herbicide is being overused and causing habitat to stop growing or lose nutrients. Should be a mandatory re-plant of willow.
- Road deactivation in South Chilcotin jives with surveys and areas heavily harvested by pine beetle and fire have impacted moose population, lots of opportunity for roads to be looked at.
- CO – game warden side – interested in habitat overlay with cut block – access management (road closures won't make difference, needs to be complete deactivation) 3 COs cannot enforce compliance on own. Agreements made need to be enforced respected as well.
- Same topics being discussed in other territories – same observations, province bringing data from 15-20 years ago – but human population, hunters, etc has grown – forestry, weather, predators etc. also changing while moose declining. Dialogue needed with ministries, bands, and others; more on the ground data needed in provincial guidelines.
- There was much discussion about how much licensees use the CE tool and its information. It is not required currently, though it is available to them.
- Some indications are that with higher wolf caused mortality away from roads (and higher human caused closer to roads), moose may be portioning way from wolves to areas with reduced forage.

Outstanding Questions

- How will habitat suitability for moose change over time with a changing climate?
- Can we include future timber harvest plans (i.e., short term, up to 2 years) in CE assessments? We need this in order to prioritize areas for work.
- We need to add 2017, 2018 fires and all roads into the CE tool – why has this not been done?
- Why can we not have a model that uses current data?
- There is access management work underway with TNG and SDNA and BC – this could be shared next time.
- What are "beneficial moose practices" for industry? This has been referred to elsewhere/Peace Region with Canfor developing habitat guidelines for industry. This should be explored further
- Need operational definition of access management, and to track it.

Priority Solutions

In advance of the April session, a summary was made of the key recommendations identified in previous reports, namely Davis 2017; FLNRO 2015; Gorely 2016 and McNay et al. 2013[3]. These reports were determined to be most relevant for moose management and recovery in the Cariboo Region[4]. Preliminary solution scoping at the first Moose Solutions Roundtable meeting in December 2018 was also included in the potential solution and recommendation summary. Further, a visual overview of the recommendations and potential solutions was prepared and summarized under three theme areas: Information, Habitat and Mortality. These materials were considered and further built upon by participants at the April session so that as complete a list as possible formed the backdrop to the priority setting described below. It is also noted that an assessment of other regions/jurisdictions (e.g. Michigan) would be beneficial to determine which management practices have resulted in the most success.

It is emphasized that all the solutions listed below are important and should not be forgotten by the MSR going forward. In the priority setting exercise, and for each broad theme area, participants were asked: *If you were a moose, what actions would you want people to do to make your life better? What will be most effective, and make biggest on the ground difference?*

After preferences were identified by all present, for the solutions receiving the most "votes", the whole group was further asked: *Can anyone not live with this priority solution being identified as requiring more specific action in the coming months?*

The whole group reached consensus on all priority solutions highlighted below, represented in bolded purple boxes. Action Planning was conducted for these priority solutions.

Consensus on the top priorities for action is a key outcome and accomplishment from this session.

Improving our Understanding: Shared information base

This theme area is necessarily related to the solutions identified under the Habitat and Mortality themes, since proper information and common understanding are essential to each. For this reason, in the purposes of this report, points made in the information small group are recorded under the relevant solution in the other theme areas. The points noted below are related to the information system and methodology overall.

[3] See Appendix 3 for references.

[4] The Provincial Framework for Moose Management in British Columbia (2015) provides the management levers by which the recommendations can be applied (MFLNRO, 2015, table 1). Recommendations from previous reports were summarized by management levers, so they could be prioritized according to the management actions that could be undertaken.
The state of knowledge, inventories, technology and policy inform each of the levers and need to be up-to-date, but are not themselves considered management levers.

Top Priority:

Revise Current Methodology for Assessing Populations

- Build off / learn from examples from other locations/studies/trials
- Expand season of data collection using different methods, e.g. by adding in the fall (after leaves fall) use of drones, small crews; more cost effective. Other methods might include: thermal imagery plus photo record to identify
- Select a specific MU to undertake this pilot – e.g. Nazko region, which is a high risk landscape unit
- Identify and implement ways that more information on habitat and access can be collected by workers in the field, especially by forestry workers. E.g., more information is needed on vegetation quality (see solution on "Better Understand Factors Affecting Moose Health" below)
- Part of licensee obligation to fund data collection pre-harvest.
- Assess and consider new method for assessing bull:cow ratios., e.g., Record age class of bulls. Conduct fall counts.
- Support Nation to Nation protocols on data collection
- Good information is the foundation of good public education

Within 6 months
• Develop pilot proposal concept paper for use of new methodologies (e.g. drones). Needs to not just consider methods on collecting population data, but habitat values too • Develop a list of data sources, and determine which data already being collected • Hire an Application (App) developer • Develop data sharing procedures / protocols with App • Confirm location of the pilot; Formalize study protocol • Secure funding for new pilot • Develop a fund a First Nations harvest monitoring and reporting program

Within 12 months	*By 18 months*
• Run new pilot assessment system in fall 2019 • Develop habitat monitoring framework, linking in data from forestry companies • Develop protocols for Indigenous knowledge to be "usable" for government	• Ensure App data/system is streamlined/integrated with centralized data base using standardized methods • Develop systems to monitor outcomes of new management and habitat/predation actions • Identify legislative/regulatory levers that

• Link with work on risk tolerance/thresholds • Define use and users of the information collected • Feed into FRPA update process. Consider option of ONE FSP for everyone? • Determine how we can share data effectively, across all Roundtable groups (what others are doing so not reinventing the wheel) • Develop joint recommendations on survey/project priorities	could/should require consideration of Indigenous knowledge

Other Priorities:

Improve Centralized Access to Enhanced Data

- Develop information platform containing all knowledge types (local, traditional, technical)
- Key issue associated with current data access: public access to survey information
- Include an interactive map
- Hire contractor to develop this centralized, interactive database

Develop New Risk Tolerance Thresholds and Triggers

- Including mechanism for local knowledge to influence assessment of thresholds

Assess and if Appropriate, Re-draw Game Management Zone (GMZ) and Management Unit (MU) Boundaries

- Concept was to utilize geographic features (e.g., watersheds, landscape units (which are based on watersheds), BEC units down to subzones or even site series, or habitat status) as boundaries rather than administrative boundaries to better reflect common habitat elements of a population. Concern with this is whether past data collected by current MU boundaries can then be compared to future assessments if delineations change. Therefore, need clear rationale for changing. This suggestion is tied to population/information topics.
- Initially suggested to pilot in MU 5-5 or 5-6 since there isn't a lot of survey data; but these don't have many moose. Suggested to pilot in MU 5-13A or MU 5-12A

Habitat Planning and Management "aka What Grows Them"

Top Priority:

Access management, especially for non-status roads, combined with forest licensee road deactivation and habitat restoration

Primary concept is to do access management on non-status roads:

- Define the options and standards for access management – whole range of access management from blocking access/gates/tank traps, to fully rehabilitating road surfaces
- Talk to key people/organizations, including but not limited to ranchers, trappers, guide outfitters, all tenure holders (commercial rec, etc.), Rec Sites and Trails BC, First Nations, BC Wildfire Service
- Identify key areas for access management efforts based on (not an exhaustive list) a) where forest licensees/BCTS aren't operating or are done silviculture obligations in near future (x years); b) core moose habitat areas; c) areas with high road density; d) moose population status; e) habitat suitability
- Understand the rationale for maintaining roads in different circumstances (e.g., wildfire suppression, range use)
- Develop shared targets for road density and link to clear measures for monitoring effectiveness for moose.

Secondary concept was access management for current timber harvesting operations, with the goal of minimizing the number of road systems with snow plowing in the winter (since snow plowed roads make it easier for humans and predators to access areas). A "sustainable contractor plan" has been initiated with Tsi Del Del Enterprises; if they know where they will be operating for the whole winter, and coordinate with other licensees and contractors, the amount of plowed roads can be minimized.

Other elements to consider include:

- FLNRORD can expedite authorizations to deactivate non-status roads.
- Archaeological considerations – if arch wasn't done properly when roads built, should be considered before deactivation
- Silviculture deactivates roads yearly – can only physically do so many per year
- Plowed roads – coordinate with municipality, forestry, MOTI. Intent here, as discussed above, is to minimize the amount of snow plowed roads in any given winter, to reduce predator and human access affecting moose.

Within 6 months – lead by Planning Group
• FLNRORD can expedite authorizations for licensees and BCTS to deactivate non-status roads in "no brainer" situations that don't need coordination and planning – if licensees are able to do this, FLNRORD should expedite authorizations for it

- Identify priority areas for access management – work through the following criteria (not an exhaustive list) a) where forest licensees/BCTS aren't operating or are done silviculture obligations in near future (x years); b) core moose habitat areas; c) areas with high road density; d) moose population status; e) habitat suitability
- Review and assess existing access management suite of activities (e.g., access control points, gates, boulders, blocks right through to full rehabilitation/ripping), what's worked well in the past, and what's currently underway in the region (i.e., Ulkatcho, Mackin Creek, South Chilcotin)
- Continue existing access management projects underway
- Develop definitions, standards, protocols for access management, including commitments of zero net gain for road densities and suite of options (rehabilitation, temporary, permanent, access control)
- Initiate discussion about road density thresholds/ceilings for different areas, and whether they should become FSP legal orders
- Collect/gather/share information on status of roads; consider need for inventory of non-status roads (discussion ensued – proper inventory requires driving/ATVing the roads, it can't just be done through remote sensing/satellite images or other methods)
- Start engagement with First Nations, other tenure holders, stakeholders in an area – as well as more general communication out to the public
- If protocols or MOUs exist between different First Nations, FLNRORD should recognize them

Within 12 months	***By 18 months***
• Inventory non-status roads on the ground (in key, high priority areas) • Initiate coordinated access management planning (CAMP – refer back to 1990s processes) – and incorporate elements of "local or regional values" first (e.g., if Jeep Club from Vancouver wants to keep an area open, but local or regional values suggest to close it, local or regional values should trump non-local values) • Encourage licensees and BCTS to close and restore roads in all active areas • Allocate funds large scale mitigation for roads • Leg changes for FRPA, Mines, Oil+Gas for access management standards, road density thresholds for all natural resource	• Road density targets/thresholds/ceilings established by landscape unit • Implement a road density target of 1km per 1km^2 working towards 0.6 k per 1 km^2 • FRPA, Wildlife Act and Species at Risk Act are aligned and revised to effectively manage all section 149 values (biodiversity) (currently there are inconsistencies) • Net zero access creation commitments in place • BCTS & industry do long-term planning that is transparent, plan where they are developing new roads and where they are operating in the near future • Forest tenure change to reflect management unit

industries (not just forestry) • Evaluate if BC is meeting target of protected area • Clarify process amongst licensees, MFLNRORD, others about data management of roads in "the system" (unclear what system; could be RESULTS, or FTA), when roads are deleted – desired outcome is comprehensive, up to date inventory of all roads in region • A Key How is: Licensee obligations for their roads under permit; non-status roads require external funding such as Forest Enhancement Society of BC, Habitat Conservation Trust Foundation.	• Create a "CAMP" Coordinated Access Management Plan

Other Priorities:

"The Big Overarching Plan"

- Discussion here was initiated by the federal report on climate change released on April 1, 2019, the need to model for future habitat types, and the big concepts of ecosystem resiliency. It was noted that there are elements of this created in many documents already (e.g., CE tool, land use plan, natural disturbance types, forest health strategies, climate change strategies) and that a "big overarching plan" would help tie all of them together in a holistic, integrated manner, and connect the previous solutions discussed. Discussion also noted that moose are relatively new in the Cariboo-Chilcotin and elk declined little more than a century ago, and that these could change again

Define Core Moose Habitat Areas

- Use "Dawson's layer" – modelled habitat suitability layers within the Caribou CE tool for moose; core habitat areas include winter habitat, thermal and security cover areas, wetlands etc.
- Planning has to be done.
- Outcome would be core habitat areas are mapped and connectivity between habitats identified.

Forest Management Options in Core Habitat Areas

- Create the "ground rules" for forest management activities in the core habitat areas. Security cover, thermal cover objectives are created. Access management standards created.
- Pilot in MU 5-13A after the core habitat areas are defined

Forest Management Practices and Standards

- Overall purpose is to revise forest management practices and standards to recognize other values other than growing trees for timber. Key item discussed was accepting deciduous as an acceptable species in areas post-harvest, eliminating herbicide use and other methods of killing deciduous; this has multiple benefits (browse/forage, cover, reduced wildfire risk). Also look at mistletoe criteria, reduce need to eradicate mistletoe infested trees where the value of tree cover for other purposes is great.
- An existing tool is to utilize Wildlife Habitat Features under FRPA to protect geographically specific features (i.e., salt licks) and Wildlife Habitat Areas (WHAs).
- The issue was raised about legislative change for forest management – possibilities here are best management practices for moose established as legal objectives (rather than voluntary "addendums" to forest stewardship plans).
- This could be done everywhere in region, but the deciduous issue is most of an issue in MU 5-2 and west of Fraser River

Improving or Protection Existing Habitat

- This was raised as a region wide priority outside of the context of forest management operations. Key concept was it's easier and less costly to protect key features in advance, rather than rehabilitate after damage. Key opportunities discussed: large scale landscape restoration (pilot underway west of Fraser in Quesnel TSA); utilizing traditional Indigenous burning on key ecosystems for improving moose habitat, or other values; looking at timber salvage in wildfire-affected areas differently.

Mortality – aka "What Kills Them" (Human and Natural Causes)

It is noted that we need to look at all sources of mortality and take an integrated, holistic approach to all decisions.

Top Priority:

Address Predator-Prey Interactions, while also Improving Habitat

- Need an integrated vision (and associated strategies and actions) for all wildlife in the region, not just one species. Needs to be based on sound information and knowledge on populations, with very strong monitoring and evaluation.
- Develop predator-prey management model comprised of:
    - Predator population assessment (wolves, bears, etc.)
    - Alternate prey model (moose, caribou, horses, deer, elk etc.) that includes ability to explore competing objectives among prey species. Needs to be about large ungulates, not just moose

    - Insights from predator literature review
- Build in key lessons from past experience from areas where long-term predator removals have been conducted such as the Yukon and Alaska , including: IF conducing wolf removals they need to be:
    - Done over a large area (> 20,000 km^2)
    - Continue uninterrupted for 3-5 years
    - Reduce 80% of the predator population size (for wolves)
    - Define what success looks like from outset, so program can be properly monitored and assessed. For example, provide predicted response of calf/cow ratios after specific years of wolf removals.
- Improve access to information on current wolf collaring program
- Improve understanding of wolf population trends, and ways to influence them
- Select a specific area to focus on that is also suitable for habitat restoration measures. Approach needs to be multi-faceted and integrated. Can't be a stand alone piece.
- Critical "social license" dimension to this work
- MUs with low cow/calf ratios are a good start. Suggested from group is Management Unit 5-12A&B, with 5-13
- Specific local context is key to directing specific actions. Lots of local knowledge, for example, to build on in Tatlayoko area.
- Utilize caribou management levers in short term to address predators in areas of overlap
- For reference, predator (e.g. wolf) removal in Peace Region for caribou cost ~ $100K/yr for 5 years

Within 6 months "Building the Case for Predator Control"

<u>On Planning:</u>

- Define geographic area for predator control. Suggested: 5-12 A&B, and explore possibility of tacking on 5-13A. Align with caribou recovery plans.
- Confirm method and species of predator control
- Develop comprehensive pilot / plan for predator reduction in specified area, with clear objectives. Link predator plan with habitat objectives, including:
- Overlay 2019/20 cut block layouts with moose sensitive areas
- Deactivate roads in priority areas

<u>On Awareness raising and securing support:</u>

- Undertake substantive consultation/comanagement decision making with First Nations and confirm support. In the Peace where First Nations were supportive, predator control happened quickly
- Start process to move this initiative forward. Brief ADM, DM and Minister
- Initiate trapper education. Activate inactive traplines and assess fur returns
- Develop public education campaign, and clear messaging, information sharing

<u>On information/science:</u>

- Study predator numbers. Collect wolf and bear scat

• Update grey wolf management policy, consistent with SAR policy [5] • Establish a value/impact for horses

Within 12 months "Getting Agreement and Funding"	*By 18 months "Maintain and Monitor"*
• Secure funding • Sign off on plan • Undertake predator reduction / Implement plan	• Monitor, assess, adapt, against objectives • Maintain reduced predator density (>80% for wolves) for min 5 years • Undertake bear management • Integrate predator reduction measures with habitat objectives

Other Priorities:

Improve Compliance and Enforcement

- Improve working relationships in order to collaboratively address unlicensed harvest
- Increase capacity of CO service in Region 5

Better Understand Factors Affecting Moose Health, and Develop Health Monitoring System

- Establish monitoring programs to assess effectiveness of actions in reducing mortality factors
    - Monitoring of juvenile moose to identify mortality factors
    - Research to understand relationship between available forage and nutritional value
- Test nutrition status of vegetation in different areas/cutblocks. Leave from example in Peace re collection and anomolies
- Might the source of hay on ranches be contributing to disease transmission, e.g chronic wasting disease
- How might herbicide use be impacting moose health?
- How might competition for forage with feral horses be affecting moose health?
- Build off Yukon, Alaska examples of wolf and bear reductions to benefit moose
- Conduct workshops with guide outfitters, First Nations, etc, to improve tracking of overall condition and obtain voluntary support for providing samples to study/research program.
- Coordinate health monitoring system with compulsory inspection program
- Explore, define, describe link between nutrition and animal health and reproduction

Explore Harvest Management Levers

- Explore regulatory tools for more targeted harvest management, e.g. in space and time.
- In particular there is interest in reducing the number of tags available during the moose rut

Decrease Human-Caused Mortality (Rail / Collisions)

- Build off/partner with BCCF Wildlife Collision Program

[5] BC Procedure Manual "Protecting Species at Risk from Other Species". Vol 4 Sec 7 Subsection 4.01.3

- Obtain information from ICBC, Ministry of Transportation, Railway companies

Predator and Prey Management that is Structured and Objectives-based

- Integrate both fixed/short term predator control approaches in targeted areas with longer term predator/prey maintenance approaches
- Don't forget about alternate prey – critical that this work look at both predator and prey dynamics. There is an opportunity to learn from the Caribou programs. Also an opportunity to consider changing attitudes about bear hunt.

Next Steps and Conclusion

The next steps from the second Moose Solutions Roundtable meeting were:

- The Joint Leadership Group will establish the Roundtable and Participating Organizations will identify their representatives for the Planning Group. TOR refinements will be approved asap.
- Planning Group will advance specific actions on the 3 priority solutions at their next meeting.
- Consideration may be given to have another large MSR meeting prior to summer to further advance actions.
- This meeting summary will be prepared and available publicly.

It was clear from the discussions and the evaluation feedback received that participants felt the session was very worthwhile and should to be continued. A key underlying message, similar to the first meeting in December 2018, was that timely action on solutions is critical.

Appendices

Appendix 1: List of Participants

First Name	Last Name	Affiliation/Organization
Stuart	Alec	Nazko First Nation
Judy	Banas	B C Trappers Association & Wildlife Advisory Committee
William	Baptiste	?Esdilagh First Nation
Lorne	Barron	Williams Lake Sportsman Association
Jessica	Bratty	Confluence Solutions
Mike	Burwash	FLNRORD
Len	Butler	BC Conservation Officer Service
Mauro	Calabrese	West Fraser Mills
Brian	Dack	BC Trappers Association
Larry	Davis	Tsilhqot'in National Government
Sarah	Dixon	FLNRORD
Luke	Doxtator	Tsilhqot'in National Government
Joan	Gentles	Tsilhqot'in Nation
Cecil	Grinder	Tsilhqot'in Nation

Chris	Hamilton	FLNRORD
John	Henderson	BC Wildlife Stewardship Council
Kate	Hewitt	Northern Secwepemc Tribal Council
William	Isnardy	Toosey Band
Jodie	Jim	Tsilhqot'in National Government
Darwyn	John	St'at'imc Government Services
Karen	Kabiski	Southern Dakelh Nation Alliance
Gerry	Kuzyk	FLNRORD
JP	Laplante	Tsilhqot'in National Government
Ken	Last	BCWF Region 5
Daniel	Lirette	FLNRORD
Gail	Lucier	Fraser Basin Council
James	Lulua	Xeni Gwet'in/ Nemiah
Doug	McMann	GOABC
Susan	O'Sullivan	FLNRORD
Gerry	Paille	BC Wildlife Federation
Timothy	Peter	St'at'imc Government Services
Mike	Ramsay	FLNRORD
Devon	Ramsay	MIRR
Dave	Reedman	FLNRORD
Janice	Sapp	FLNRORD
Willie	Sellars	NsTQ / T'exelc / Williams Lake Indian Band
Mike	Simpson	Fraser Basin Council
Linda	Siwallace	?Esdilagh First Nation
Alisha	Skelton	FLNRORD
Danny	Strobbe	Tsi Deldel Enterprises
Kevin	Systma	Tolko Forest Industries
Phil	Theriault	Tsi Deldel Enterprises
Ken	Vanderburgh	FLNRORD
Mitchell	Warne	Tsilhqot'in National Government
Jane	Wellburn	Fraser Basin Council
Shawn	Wiebe	Tsilhqot'in National Government
Cheryl	Williston	FLNRORD
Lindsey	Wood	FLNRORD
Kristina	Zoller	BC Timber Sales

Appendix 2: Roundtable Meeting Agenda

Moose Solutions Roundtable

April 2, 8:30 AM – 5 PM: Solutions and Actions

April 1, 2:30 – 5 PM: Terms of Reference (optional)

Pioneer Complex, 351 Hodgson Rd, Williams Lake, BC

*The **purpose** of this meeting is to review and approve draft Terms of Reference for the Roundtable, provide population and habitat assessment updates, identify shared solutions and actions, and seek consensus on next steps.*

The session is convened by a Joint Leadership Group involving Indigenous and Provincial representatives from the Cariboo-Chilcotin/Region 5. Involvement in discussions is solutions-driven among those with direct interests including perspectives from guides, resident hunters, trappers, ranchers, and forestry companies.

Meeting Objectives and Key Questions:

In addition to building understanding and renewing relationships among diverse participants, the meeting will explore the following key questions:

5. *Do the draft TOR adequately set the Roundtable up for success?* Review the draft TOR and confirm next steps for the Roundtable.
6. *What is our best understanding of the state of moose and moose habitat in the Cariboo-Chilcotin ecosystem? What are some key areas for further inquiry?* Share information on population and habitat status and identify common outstanding questions.
7. *What are some potential solutions?* Explore together the range of solutions related to "what grows them" (habitat), "what kills them" (mortality) and "how we work and learn together to help them" (management and information system).
8. *What are some short, mid and longer term actions to advance solutions/address barriers?* Explore common ground on key actions and priorities

Monday April 1st

2 PM	**Informal Networking** Coffee and light refreshments available
2:30 PM	**Welcome and Introductions** • *Welcome*
3 PM	**The Idea: Moose Solutions Roundtable Background and Draft Terms of Reference** • *Overview* • *Small group discussion and reflection*
4:15 PM	**Feedback and Next Steps** • *Ideas from small groups, and discussion of refinements if necessary* • *For Decision – TOR approval*
5 PM	**Adjourn and Optional Social** • Tables reserved at Oliver's

Tuesday, April 2nd

8 AM	**Informal Networking** Coffee and light refreshments available
8:30 AM	**Welcome and Introductions** • *Welcome – Chief Willie Sellars, T'exelc First Nation*

	• *Opening Ceremony – Cecil Grinder, Tsilhqot'in Nation* • Overview of Day 2 purpose and objectives, logistics
9:15 AM	**Joint Leadership Perspective** • Brief background and outcome of Day 1 • Where ideas from today will go • Brief reflections from Joint Leadership Group (TNG, SDNA, NStQ and BC)
9:30 PM	**Towards Solutions for Integrating Ways of Knowing: A "view from the middle" on bridging technical, local and traditional perspectives** • *Mike Simpson, Fraser Basin Council*
9:45 AM	**BREAK**
10:00 AM	**The Knowledge: Towards a collective understanding of state of moose and moose habitat in the Cariboo-Chilcotin ecosystem** • *Daniel Lirette, FLNROD* • *Cheryl Williston, FLNROD* Small group discussion and observations of trends and distribution. • *How does what you've heard jive with your knowledge?* • *What are some outstanding questions?* • *How might we better integrate knowledge systems?* Plenary highlights and key insights
12 noon	**LUNCH BREAK**
12:45 PM	**The Solutions: What are some? Are there priority solutions?** • Overview of draft background material drawn from previous reports • Small group discussion to add and deepen list of solutions in each theme area. Initial sense of priority solutions
2:00 PM	**BREAK**

2:15 PM	**Summary of Priority Solutions**
	• Plenary report back and discussion
	
	The Actions: What might be done to advance solutions in the short, mid and long term?
	<u>For the top 1-2 priority solutions in each theme area:</u>
	Small group discussion to reflect on barriers, identify actions, and explore areas of consensus regarding:
	• Actions required, considering the who, what, where, when and how:
	  ○ in the short term (in 2019)
	  ○ in the mid term (in 2020)
	  ○ over the longer term (>1.5 years)

3:45 PM	**Quick Break…Hang in there!**
4:00 PM	**Observations and Opportunities** • Plenary report back and discussion • Areas of agreement and disagreement • Clarification of next steps

4:45 PM	**Close**
5 PM	**Adjourn, followed by Informal Networking**

Appendix 3: Referenced Reports

Davis, L.R. 2017. *Chilcotin Moose Recovery Plan*. Davis Environmental Ltd. Prepared for the Ministry of Forests, Lands and Natural Resource Management, British Columbia.

Gorely, R.A. (Al). 2016. *A Strategy to Help Restore Moose Populations in British Columbia*. Triangle Resources Inc. Prepared for the Ministry of Forests, Lands and Natural Resource Operations, Fish and Wildlife Branch, British Columbia.

Ministry of Forests, Lands and Natural Resource Operations, Fish and Wildlife Branch. 2015. *Provincial Framework for Moose Management in British Columbia*. Victoria, British Columbia.

McNay, R.S., G.D. Sutherland, R.K. McCann, and V. Brumovsky. 2013. *Evaluation of Moose Population Trends in the Cariboo Region 1985-2012. Report No. 449*. Wildlife Infometrics Inc., Mackenzie, British Columbia.