

SULPHUR/ 8MILE STONE'S SHEEP PRE-TENURE PLAN REVIEW; THE APPLICATION OF THE SULPHUR/8MILE STONE'S SHEEP PROJECT TO OIL AND GAS PRE-TENURE PLAN FOR THE MUSKWA-KECHIKA MANAGEMENT AREA

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Abstract: With the completion of the Sulphur/8 Mile Stone's Sheep Research, the Stone's Sheep Steering and Science Committees provided a recommendations report on land use options to the Muskwa-Kechika Advisory Board and the BC Ministry of Forests, Lands and Natural Resource Operations. I provide an overview of that report and the committee's recommendation for the identification of a Stone's Sheep Special Zone which excludes industrial tenures to protect the majority of the area identified as critical. The boundaries of a portion of the High Elevation Zone of the Sulphur/8mile pre-tenure plan, where oil and gas tenures and other industrial tenures should be excluded, are identified. Implementation and monitoring recommendations are also included.

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STUDY AREA

The Muskwa-Kechika Management Area (M-KMA) is intended to establish a world standard for environmental sustainability and economic stability, serving as a model that balances human activities such as resource extraction and tourism with conserving environmental values and a wilderness state over time.

This goal is supported by the Muskwa-Kechika Management Area Act (M-KMAA) that is intended to: "*Maintain in perpetuity the wilderness quality, and the diversity and abundance of wildlife and the ecosystems on which it depends, while allowing resource development and use in parts of the M-KMAA designated for those purposes, including recreation, hunting, trapping, timber harvesting, mineral exploration and mining, and oil and gas exploration and development.*"

Achieving the goal of the M-KMA is accomplished through a variety of planning tools deployed in areas where development potential is elevated. Managers must look at the economic values, not in isolation of one another or of their surrounding environment, but rather as part of an integrated whole. All of the values must be managed together to achieve a sustainable future

for all of the values in the M-KMA. Pre-tenure consultation in 2003 identified a concern over potential oil and gas tenures in the Sulphur/8Mile Resource Management Zone (RMZ) of the M-KMA. The Muskwa-Kechika Advisory Board worked with the Ministry of Energy, Mines, and Petroleum Resources (MEMPR) to identify the areas of high oil and gas potential. The Muskwa-Kechika Management Area has considerable undeveloped oil and gas resource potential (Fig. 1).

Sulphur/8 mile is a Resource Management Zone within the Muskwa-Kechika Management Area and created under the M-KMAA in 1998. The M-KMAA regulation states that resource management is to be conducted in accordance with the pre-tenure plan which serves as the oil and gas local strategic plan. Due to concerns about the potential impacts of development on Stone's Sheep (*Ovis dalli stonei*) expressed during the pre-tenure consultations on the Sulphur / 8 mile pre-tenure plan area (S/8MPTP), and specifically the Sulphur/8 Mile High Elevation Zone, MEMPR authorized an agreement stipulating that oil and gas tenures would not be sold in the higher elevation zone of the Sulphur/8 Mile High Elevation Zone until more information about Stone's Sheep was available to inform decisions. In May 2004, the

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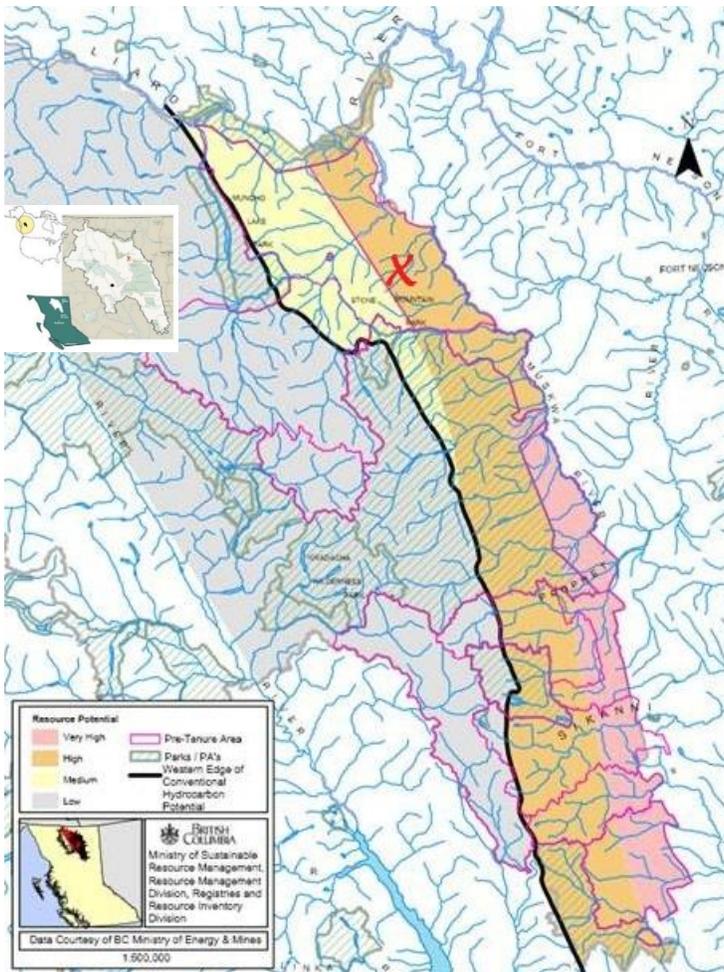


Fig. 1. M-KMAA High Oil and Gas Potential Zone.

pre-tenure plan for oil and gas development in the Muskwa-Kechika Management Area was approved and identified the need to undertake Stone's Sheep research in response to concerns expressed by the pre-tenure advisory group (BC Ministry of Sustainable Resource Management 2004; Appendix A).

The North Peace Stone's Sheep Sustainability Steering Committee ("Steering Committee") was formed to oversee research, raise funds, and support the development of advice for the government to consider when providing management direction to guide the management of Stone's Sheep within the S/8MPTP.

Stone's Sheep studies were initiated in 2005. With the conclusion of the project in 2012, four reports are now available (Scientific and Community Environmental Knowledge Fund 2012). With the increased understanding of the status and needs of Stone's Sheep, the Steering

Committee commissioned a project to explore how the scientific findings might be applied for development planning under the pre-tenure plan for the high-elevation zone. Stone's Sheep studies were initiated in 2004 with a problem analysis (Axys Environmental 2005). Funding issues delayed initiation of field work until 2006 when Pamela Hengeveld, R.P.Bio. and Clint Cubberley, R.P.Bio.) were contracted to undertake field studies on behalf of the Steering Committee. Synergy ecology's project reports (Hengeveld and Cubberley 2012a, b) verified many of the issues identified by the Public Advisory Group (PAG) with one exception: the study found no evidence, current or historical, of sheep populations in the High Elevation Zone north of the Toad River.

METHODS

Hengeveld and Cubberley's work had four components:

1. Prepare a summary of the research components and their potential application;
2. Prepare a suite of proposed guidelines with all potential topic areas and issues to be addressed in a tentative format, with options;
3. Conduct a workshop with the oil and gas industry and other stakeholders to review and brainstorm the topic areas, issues and guideline format and make recommendations on changes/inclusions to the guidelines (Tassell and Churchill 2012);
4. Draft a report with final recommendations for the Steering Committee to forward to the Muskwa-Kechika Board and the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) for consideration of incorporation in pre-tenure plans use by MEMPR and Industry.

I provide an overview of a recommendations report by the Stone's Sheep Steering and Science Committees provided to The Muskwa Kechika Advisory Board and The Ministry of Forest Lands And Natural Resource Operations. This report reviewed the results-based methodology utilized in pre-tenure plans, along with recommendations of the Synergy ecology reports, and further examined existing PTP spatial biophysical mapping (BC

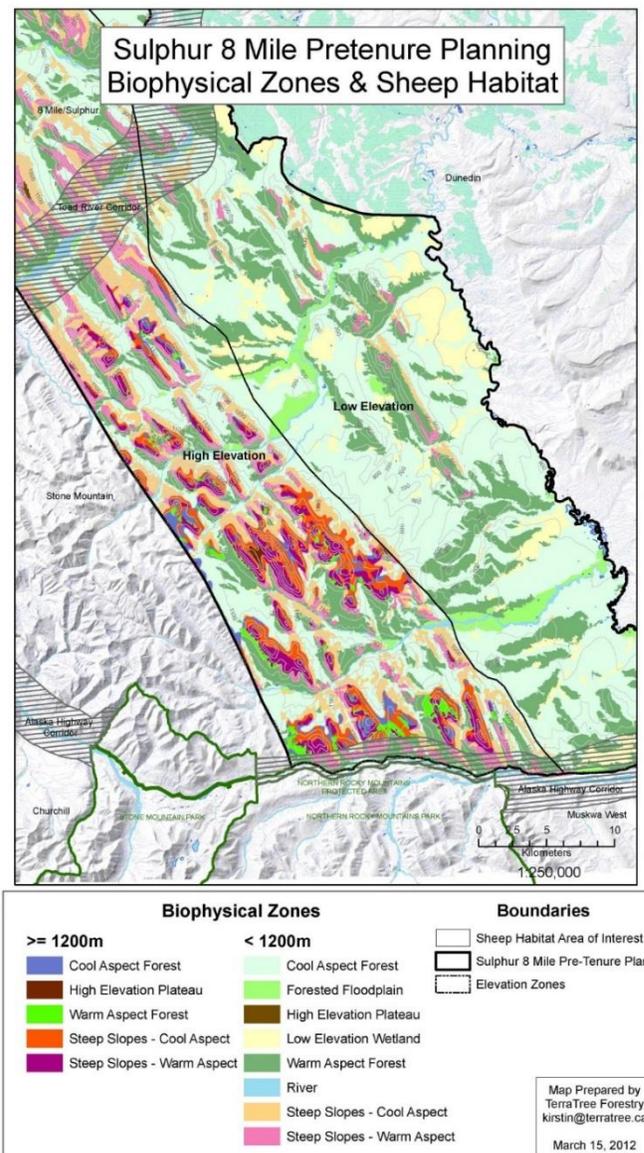


Fig. 2. Biophysical zones of the Sulphur/8Mile High Elevation Zone.

Ministry of Sustainable Resource Management 2004; Fig. 2) to create options to evaluate within the results-based methodology framework identified for pre-tenure plans (BC Ministry of Sustainable Resource Management 2004). I deferred to recommendations from workshop participants in the original consultation group (Scientific and Community Environmental Knowledge Fund 2012) which assessed the implications of the inputs mentioned above, and recommended a Special Stone's Sheep Zone.

RESULTS

From Hengeveld and Cubberley (2012a):

North of the Toad River

No sheep were found in this northern area during capture efforts (winters 2004/2005–2008/2009), except one group of 4 sheep, including a collared female transplanted to the area by the Ministry of Environment in March 2005; these four sheep were observed during the December 2006 and March 2007 censuses.

Reconnaissance flights in November 2007 and July 2008 did not detect any sheep.

A First Nations local knowledge study and a community knowledge study failed to identify historical sheep use in this area.

Sheep absence from alpine ranges is consistent with BC government sheep harvest records.

During this study, GPS-collared sheep in the entire S/8M area did not move beyond the areas of winter census observations and there is no other source of sheep that could utilize this northern area of the high-elevation zone.

South of the Toad River

All age-sex groups use ranges in the S/8M PTP High Elevation Zone south of the Toad River. Core sheep ranges were found on Ram Mountain and other alpine complexes, with female nursery groups residing there year-round.

Density on winter ranges at the Ram Mountain complex in the south S/8MPTP High Elevation Zone was roughly 3.5–4 sheep/km².

Males, particularly young males, use the High Elevation Zone more extensively than females do. This was reflected in higher ratio of males to females in the High Elevation Zone than average across the Stone Mountain range. For the six GPS collared males 86.7% of locations in the High Elevation Zone were above 1,200 m elevation.

During winter census, the ratio of lambs to females was higher in the S/8MPTP High Elevation Zone (55%) than the average for all Stone's Sheep populations (37%).

Only a small group (possibly the result of a sheep translocation done by BC Ministry of Environment in 1996) utilized the S/8MPTP High Elevation Zone area south of the Dunedin River to the Alaska Highway and the North Tetsa River.

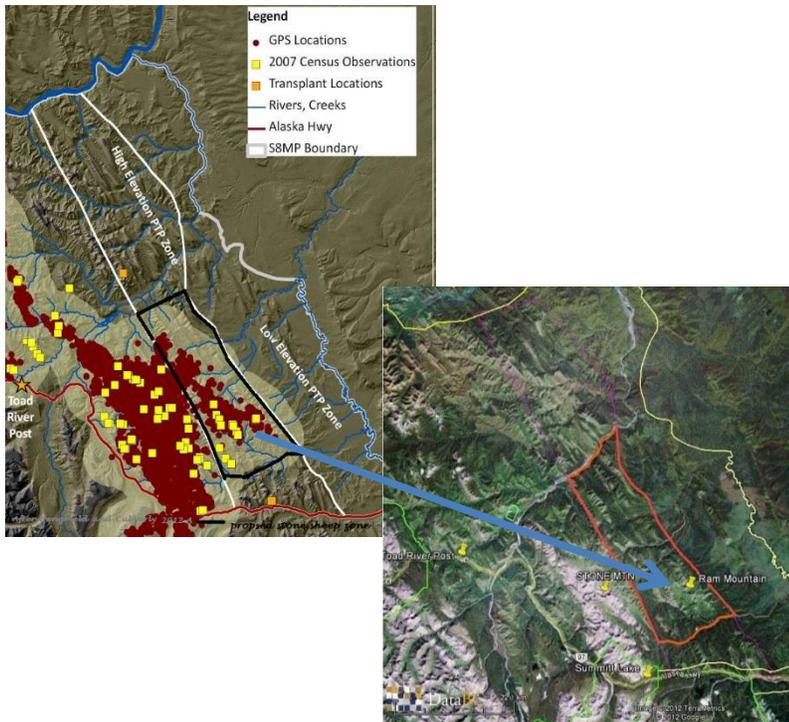


Fig. 3. Special Sheep Zone recommended by Hengeveld and Cubberley (2012a) with overlay of exclusion zone recommended by Stone's Sheep Committee.

The management recommendations identified a Special Stone's Sheep Zone for wildlife sustainability management.

MANAGEMENT IMPLICATIONS

Following consideration of the risk to Stone's Sheep populations, the Steering Committee submitted the following recommendations to the Muskwa-Kechika Board and the Ministry of Forests, Lands and Natural Resource Operations:

1. Divide the High Elevation Zone.
2. For the portion of the High Elevation Zone North of the Toad River implement the pre-tenure directions that are already in place as general measures for Stone's Sheep in the Muskwa-Kechika Pre-Tenure Plan.
3. Muskwa–West (north) Pre-Tenure Planning Zone: implement the same existing direction for Muskwa–West (north) Pre-Tenure Planning Zone.
4. The portion of the High Elevation Zone South of the Toad River: exclude Southern High Elevation Zone from oil and gas tenure (Fig. 3; Table 1).

5. Provide long-term sheep population protection for the southern High Elevation Zone through special designation by either: changing the approved boundaries of the Muskwa-Kechika Pre-tenure Area to exclude this area or create a "no disposition notation order" under the Petroleum and Natural Gas Act.

Additionally the Steering Committee would like to bring to the attention of the Muskwa-Kechika Advisory Board and the Ministry of Forests, Lands and Natural Resource Operations that the restrictions to oil and gas development to sustain Stone's Sheep, if accepted, should apply to all other forms of surface development that may result in similar impacts. Stone's Sheep warrant this level of protection, and require exclusion for other conflicting activities. Options

should include a full suite of regulatory or legislative actions.

To facilitate the implementation of these recommendations, the following changes to the Muskwa-Kechika Pre-Tenure Plan are recommended:

1. A GIS file of the boundaries of the Stone's Sheep Zone has been included with this report.
2. The Muskwa-Kechika Pre-Tenure Plan for oil and gas has been constructed in a loose leaf format to accommodate changes.
3. Change maps (their Figs. 7-1 and 7-2) on pages 7-2 and 7-4.
4. Changes to text of Element 1.1 on pages 7-9 and 7-10.
5. Changes to text on pages 5-9. The resultant text would be:

Stone's Sheep are the rarest of North American wild sheep and the plan area encompasses a sizeable area of critical Stone's Sheep winter habitat. Considerations for Stone's Sheep include: avoidance of sheep winter habitat, minimize stressors in late winter, monitor for sheep trails at any elevation and manage so that wildlife use is not disrupted or impeded, monitor and mitigate

Table 1. Biophysical size comparisons of proposed a) "Stone's Sheep Zone" and b) Sulphur / 8 mile pre-tenure plan area zone/subzones.

a)					
Biophysical zone	S/8M Pre-Tenure zone (ha)	Low Elevation Zone (ha)	High Elevation Zone (ha)	Sheep Zone (ha)	Sheep Zone % OF S/8M Pre-Tenure zone
Low Elevation Wetland	9,668	9,213	455		
Warm Aspect Forest (<45%)	41,830	24,052	17,778		
Cool Aspect Forested (<45%)	91,575	58,473	33,102		
River	1,937	790	1,147		
Forested Floodplain	3,253	2,752	501		
High Elevation Plateau	382	0	382		
Steep Slope - Cool Aspect (>45%)	29,468	2,253	27,215		
Steep Slope - Warm Aspect (>45%)	19,815	1,214	18,601		
Totals	197,928	98,747	99,181	39,760	20.08%

b)		
Biophysical zone	High elevation zone (ha)	Sheep Zone %
High Elevation Plateau	382	28.88%
Steep Slope - Cool Aspect (>45%)	27,215	42.01%
Steep Slope - Warm Aspect (>45%)	18,601	42.14%
Totals	46,198	41.95%

vehicle-related mortalities, limit dust and artificial mineral sources.

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APPENDIX A

Agreement Regarding Stone's Sheep Studies Sulphur / 8 Mile Pre-Tenure Plan Area of the Muskwa-Kechika Management Area.

Due to concerns about impacts on Stone's Sheep expressed in the Pre-Tenure Consultations in Sulphur / 8 Mile Pre-Tenure Plan Area, MEMPR authorized an agreement that would see deferral of Sulphur/8 Mile High Elevation Zone (S/8M-HEZ) from inclusion in the Pre-Tenure planning document (BC Ministry of Sustainable Resource Development 2004) until more information on Stone's Sheep was available.

Agreement Regarding Stone's Sheep Studies Sulphur/8 Mile Pre-Tenure Plan Area

The following outlines a consensus agreement of the Public Advisory Group regarding the High Elevation Zone of the Sulphur / 8 Mile pre-tenure plan area (maps 7-1 and 7-2 of the M-KMA Pre-Tenure Plan show the location of the High Elevation Zone).

There are two components to this agreement:

- 1. Stone's sheep studies and pre-tenure plan management direction.
 - 2. Geophysical activities.
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- 1. Stone's sheep studies and pre-tenure plan management direction:

Whereas the High Elevation Zone contains critical Stone's sheep habitat; and

Whereas there is a need to undertake research and activities to re-build Stone's sheep populations and to take a cautious, scientific approach to the potential for impacts on Stone's sheep; and

Whereas taking reasonable time to collect information and develop appropriate management direction is expected to have little if any negative economic impact;

The pre-tenure plan Public Advisory Group agrees that, for the High Elevation Zone:

- 1. Coordinated²⁰ information / research studies should be initiated immediately on Stone's sheep populations and habitat.
- 2. Management direction to guide oil and gas activities, incorporating the Stone's sheep research, should be written and approved in the pre-tenure plan by December 2009.
- 3. Opportunities for oil and gas tenure sales should take effect upon approval of the management direction.

Related Agreement:

A small portion of high elevation terrain, similar to that in the Sulphur / 8 Mile area occurs in the northwest corner of the Muskwa-West pre-tenure plan area. The above agreement will not apply to the Muskwa-West area, but it is expected that the management direction developed and approved by December 2009 will be applied to this high elevation portion of the Muskwa-West area.



²⁰ "Coordinated" studies includes multi-interest input and participation in the development and oversight of the information / research program.