

## **KBHLPO Variance 4 (Objective 3 Caribou) Implementation Policy 2**

The attached document titled “Caribou Management in TFL #23 Agreement for District-Level Implementation Issues” should be considered guidance for the implementation of the Caribou objective outlined in Variance KBHLP-4. This policy only applies to TFL 23 in the Arrow Resource Management Zone.

## **Caribou Management in TFL #23 Agreement for District-Level Implementation Issues**

As representatives of our respective organizations, we, the undersigned, support the intent of the district-level agreement for caribou management in TFL #23 and commit to the implementation of the outlined procedures. This agreement is in effective between May 1, 2002 and April 30, 2007.

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Date: May 1, 2002

# **Caribou Management in TFL #23**

## **Agreement for District-Level Implementation Issues**

This document represents a District level agreement between Pope and Talbot (P&T), Arrow District Small Business Forest Enterprise Program (SBFEP) and District level staff of the Ministries of Forests (MoF), Sustainable Resource Management (MSRM) and Water, Land and Air Protection (WLAP).

This agreement provides guidance for forest management within the Trout Lake, Halfway and Fish landscape units within TFL #23. The agreement takes effect May 1, 2002 and is intended to remain in effect until April 1, 2007.

### **Goals**

This agreement provides direction for forestry planning and certainty for timber availability within the context of maintaining a viable sub-population of mountain caribou in the Central Selkirks, by:

- spatializing components of the Higher Level Plan objectives; specifically, integration of the most recent caribou inventory with regional caribou and mature/old guidelines at the stand and landscape scales; and,
- providing clarity on district-level implementation issues resulting from the recommendations of the 2000/02 TFL #23 pilot landscape unit planning working group to the Regional Caribou Committee.

### **Objectives**

The objectives of this agreement are to:

1. build trust among, and a framework for, Pope and Talbot, SBFEP and District level agency staff (of the MOF, MSRM and MWALP) to support an adaptive management approach to integrating caribou management with timber harvesting activities;
2. enable regional changes and strategic direction (i.e. creation of the caribou connectivity and caribou special management zones, see map in Appendix 1) to be translated into tactical/operational zonation and spatial planning;
3. support alternative silvicultural systems and innovative forestry practices in the caribou special management zone;
4. integrate planning between tenure holders with the intent to expand successful integration mechanisms to all agencies and tenure holders that affect the caribou population; and,
5. enable a mechanism for adaptive management and any subsequent decision changes into the Higher Level Plan.

### **Overall Principles and Assumptions**

1. In the caribou connectivity zone (see map in Appendix 1), timber harvesting is restricted to:
  - the existing approved P&T block in Alpha, given substantial investment has already occurred;
  - stand improvements that meet the requirements for caribou habitat;
  - one-off issues (e.g. forest health, access to lands that lie beyond) that will be considered based on the provided rationale.

Existing road access within the caribou connectivity zone will remain. but longer term access objectives will be addressed during planning stages.

2. Opportunities for innovative timber harvesting within the caribou special management zone will be identified through a standard assessment procedure (see Appendix 2). A forester and biologist<sup>1</sup> with Central Selkirk caribou experience will jointly conduct the assessment. The Ministries of Forests, Sustainable Resource Management and Water, Land and Air Protection will review the outcomes of the assessment process at two points in the process, including:
  - following completion of the office procedures, which result in the delineation of proposed planning units and early identification of issues, and;
  - via the Forest Development Plan review that outlines proposed development.

Stand-level management and harvesting practices, to be based on the reconnaissance and field levels surveys, are summarized in Appendix 3.

3. In the interim management zone, timber harvesting activities will be deferred for a period of five years. After this time they will become part of the caribou special management zone unless a formal peer review process identifies substantive reasons that would lead to a different decision. Currently approved blocks will continue to be shown in the Forest Development Plans.
4. Management within the integrated resource management zone will be for general biodiversity and other resource values as directed through appropriate policy and legislation.
5. MoF Arrow Forest District is responsible for information extension in order to support integrated planning across resource uses, including coordinated access management planning and effectiveness monitoring.

### **Monitoring and Adaptive Management**

The standard assessment procedures will form the basis for monitoring and evaluating implementation of the agreement. The specific effectiveness monitoring criteria to be recorded and assessed include:

<b>Scale</b>	<b>Desired Outcome</b>	<b>Indicator</b>	<b>Monitoring/Reporting</b>
Coarse	Mature and old growth forest retention for caribou	Amount of mature/old growth	Tabular and graphic summaries of seral stage distribution reported in LU  Tabular and mapping summaries of seral stage distribution in relation to seasonal caribou habitats (ie: capability/suitability mapping, HSI models)
Medium	Important caribou habitat elements and attributes present	Caribou habitat trend	Table and graphic summaries of amount of caribou habitat by capability and suitability class within each LU as % total available
		Caribou habitat elements and attributes	Table summaries of caribou habitat attributes/elements (ie: lichens, structural stand diversity, presence of CWD, blowdown) retained and managed through innovative forest practices

<sup>1</sup> The forester and/or biologist may work in conjunction with a qualified technician.

<b>Scale</b>	<b>Desired Outcome</b>	<b>Indicator</b>	<b>Monitoring/Reporting</b>
Fine	Sustainable caribou population in Central Selkirks	Population trend	Population census and report completed every year during next 5 years
	Sustainable timber harvest	20 year volume forecast 5 year harvest levels Delivered wood cost	Management and working plan spatial deployment of harvesting Forest development plan volumes and spatial deployment of harvesting Quarterly delivered wood costs

Monitoring of plan implementation and effectiveness will be ongoing, with significant issues brought forward by Pope and Talbot for discussion with government agencies as required. A formal evaluation of plan implementation and effectiveness will occur within five years of plan adoption. The formal evaluation will involve a peer review, using suitable experts, to consider the effectiveness of the timber harvesting and silvicultural practices in maintaining or enhancing caribou habitat. The specific terms of reference for the formal review, including defining suitable experts, will be developed jointly by all involved parties. It is assumed the monitoring results will be adapted into the decision-making and operational planning processes as appropriate.

## Appendix 1: Zonation Criteria and Resultant Caribou Zonation Map

Management Zones	Description
<b>Caribou Connectivity Zone (Zone 1 of Variance KBHLP-04)</b>	<ul style="list-style-type: none"> <li>▪ areas with high caribou habitat suitability (HSI results, winter and summer field sampling)</li> <li>▪ known caribou high use areas (telemetry data, flight observations, population census, field assessments)</li> <li>▪ high degree of connectivity to seasonal habitats (telemetry, flight observations, field assessments)</li> <li>▪ low fragmentation</li> <li>▪ full retention of all forest within this zone is recommended (salvage logging for disease and insects permissible with DEO approval)</li> </ul>
<b>Interim Management Zone (Zone 1A of Variance KBHLP-04)</b>	<ul style="list-style-type: none"> <li>▪ areas with medium to high habitat suitability for caribou and/or other key wildlife species such as deer, elk, moose, goat and grizzly bear (HSI results, winter and summer field sampling)</li> <li>▪ known caribou medium to high use areas (telemetry data, flight observations, population census, field assessments)</li> <li>▪ high degree of connectivity to seasonal habitats (telemetry, flight observations, field assessments)</li> <li>▪ deferred from harvest until experimental harvesting trials are reviewed</li> </ul>
<b>Caribou Special Management Zone (Zone 2 of Variance KBHLP-04)</b>	<ul style="list-style-type: none"> <li>▪ medium to high habitat suitability</li> <li>▪ connectivity at drainage level (i.e., valley crossings)</li> <li>▪ known caribou use areas with highest value caribou habitat to retained in concert with Core Caribou Habitat Zone to meet mature plus old biodiversity and caribou forest retention guideline requirements</li> <li>▪ partial harvest with retention of mature/old forest stand characteristics important to caribou is recommended (i.e., maintain appropriate forest stocking levels, old forest attributes and lichen productivity)</li> <li>▪ site assessments involving caribou experts is recommended to identify appropriate silviculture practices to maintain site-specific habitat attributes and caribou movement areas</li> </ul>
<b>Integrated Management Zone</b>	<ul style="list-style-type: none"> <li>▪ generally areas with low to nil caribou habitat suitability (fragmented and/or isolated habitat, poor caribou habitat attributes, low to nil lichen productivity)</li> <li>▪ application of general biodiversity and strategic direction for other resource values is recommended</li> </ul>

## Appendix 2: Standard Assessment and Reporting Procedures for Assessing Caribou Habitat at the Stand Level

### *Stand-level Caribou Habitat Assessment and Reporting*

<b>Office Procedures (<i>Landscape-level</i>)</b>
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#### **STEP ONE: Pre-Planning**

- 1.1 Define Planning Unit (PU)<sup>2</sup>. Locate PU boundary on orthophoto or satellite image (include contour lines). Document rationale for PU selection. Factors to consider when identifying planning units are: logical planning units, topographic features, caribou movement, professional/technical advice.
- 1.2 Proposed PU boundary review and agreement with licensee, MoF, MSRM and MWLAP.
- 1.3 Map Caribou Landscape Unit Planning directions (LUP report and map (2002))
  - caribou connectivity zone (defer from harvest)
  - interim deferral zone (deferred from harvest for five years) – proceed to STEP 2
  - integrated management zone – proceed with direction provided by Higher Level Plan Order (HLPO), Forest Practices Code (FPC), applicable FPC Guidebooks and as directed by MoF, MSRM, and MWLAP

#### **STEP TWO: Inventory Compilation**

- 2.1 overlay and map management zones within planning unit (LUP report (2002)). Tally and map caribou telemetry point location data (denoted by season of use) within planning area (Hamilton *et al* 2000)

Season	Code	Start date	End date
Early Winter	EW	25 October	15 January
Late Winter	LW	16 January	12 May
Spring	SP	13 May	30 June
Summer/Fall	SU/FA	1 July	24 October

- 2.2 map known caribou migration<sup>3</sup> for planning unit (Figure 21, Hamilton *et al* 2000)
- 2.3 record and/or map by BEC (ha) the Duncan/Nakusp caribou sub-populations multi-scale All Seasons Habitat Suitability Index (HSI)<sup>4</sup> results for planning unit (Figure 16, Hamilton *et al* 2000)

<sup>2</sup> **Planning Unit (PU)**: 1000-5000 ha area that considers proposed development area (i.e., cutblocks and roads), bio-physical features, drainage size and caribou habitat inclusive of valley bottom to ridge line. PU size will vary depending on physical drainage characteristics, caribou ecology and extent of proposed development.

<sup>3</sup> Migration routes identified during telemetry monitoring flights, population censuses, winter trailing of caribou and field studies

<sup>4</sup> **Habitat Suitability Index (HSI)**: models caribou habitat related to suitability (telemetry and field sampling).

<b>HSI Code</b>	<b>All-seasons Habitat Suitability Rating</b>	<b>ICH (ha)</b>	<b>ESSF (ha)</b>	<b>Atp (ha)</b>	<b>Other (ha)</b>
p=0-0.25	poor				
p=0.25-0.5	low				
p=0.5-0.75	moderate				
p=0.75-1	high				

- 2.4 record and/or map PEM-based caribou capability/suitability seasonal habitat ratings<sup>5</sup> results by BEC (ha) within planning unit (Hamilton *et al* 2002)

<b>Habitat Rating Class</b>	<b>Habitat Capability/Suitability Rating</b>	<b>ICH (ha)</b>	<b>ESSF (ha)</b>	<b>ATp (ha)</b>	<b>Other (ha)</b>
1	High				
2	moderately high				
3	moderate				
4	low				
5	very low				
6	nil				

### **STEP THREE: Forest and Caribou Inventory Recording/Mapping**

- 3.1 initiate standardized reporting and/or mapping:
- √ planning unit boundary (1000-5000 ha)
  - √ caribou telemetry points/season of use (Hamilton et al 2000)
  - √ LUP management zones (LUP Working Group report and map 2002)
  - √ caribou migration routes (Hamilton et al 2000)
  - √ existing roads/proposed roads (Pope & Talbot)
  - √ existing cutblocks/proposed cutblocks (Pope & Talbot)
  - √ operability line, creeks, lots, etc.
- caribou HSI by BEC/ha (Hamilton et al 2000)
  - caribou capability by BEC/ha (Hamilton et al 2002)
  - caribou suitability by BEC/ha (Hamilton et al 2002)
- 3.2 map above information (√), using satellite image/orthophoto with contour lines, as required for field procedures (see below). Habitat mapping (□) can be mapped separately or viewed as needed using ArcView.

<sup>5</sup> **Capability:** ability of the habitat under optimal natural condition to provide life requisites of a species (RIC 1999)

**Suitability:** defined ability of the habitat in its current condition to provide the life requisites of a species (RIC 1999)

**Rating:** a value assigned to habitat for its potential to support a particular species for a specified season and life requisite (RIC 1999)

**Life Requisites:** basic food/cover (thermal and/or security) and other (reproducing, migrating, etc.) life requisite requirements of an animal for sustaining and perpetuating the species (RIC 1999)

## **Field Procedures (*Stand-level*)**

All field assessments will be conducted jointly by a forester and biologist<sup>6</sup> with Central Selkirk caribou related experience. Upon completion of the Office Procedures, field surveys will be conducted, as required, at two levels:

1. Reconnaissance (1000-5000 ha planning units)
2. Development (cut blocks/roads or stand/timber type)

### **STEP FOUR: Reconnaissance-level Assessment – COARSE FILTER**

- 4.1** review Office Procedures results (Steps 1-3 above) and supplement with a PU overview assessment to identify additional drainage level potential travel routes, seasonal habitats, seasonal use patterns or other important features not readily apparent through existing inventory (potential identified through interpretation of existing mapping, HSI/cap/suit ratings, telemetry data, orthophoto/satellite images, LUP zones, professional experience/knowledge)
- 4.2** Conduct field reconnaissance surveys. Observations to include physical identification of corridors, evidence of caribou use (tracks, trails, and pellets), general habitat characteristics (slope, forest and stand type, lichen abundance) and photo documentation.
- 4.3** Reporting. All reconnaissance field survey results to be transferred to summary report submitted to the licensee, to become part of a standardized database.

### **STEP FIVE: Stand-level Field Assessment –FINE FILTER**

Following or in conjunction with Step 4 (reconnaissance-level survey) stand-level habitat assessment will be conducted for any proposed harvesting within the PU.

- 5.1** Office and Reconnaissance caribou information collated for each stand type/timber type or ecosystem site series grouping.
- 5.2** One caribou field sampling plot will be established within each forest stand type or proposed cutblock within the planning unit. Field sampling to include:
  - Site series classification (Ground Inspection Form FS 212-2 (1) GRE98/5 or Ecosystem Field Form FS882 (1) HRE 98/5)
  - PEM-based wildlife habitat assessment (WHA field form FS882 (5) HRE98/5). The plots will be assessed by a qualified individual having completed Wildlife Habitat Ratings Standards in British Columbia training (RIC 1999).
  - Stand characterization consistent with stand-level harvesting and management practices identified in the LUP report (LUP Pilot Working Group 2002). This information will be entered into the “Comments/Notes” section of the WHA field form. Management recommendations will be provided in the “Management” section of the WHA field assessment form.
- 5.3** Winter surveys *may* be conducted to field verify potential early winter caribou habitat and drainage level migration where such information has been identified through field reconnaissance and/or habitat mapping BUT limited or no telemetry or observed use data exists. Additional winter field surveys (long trailing of caribou) may be conducted to monitor strategy implementation and effectiveness (see Monitoring section).
- 5.4** Reporting. All field-level survey results will be entered into a standardized summary report submitted to the licensee. Information to be part of the caribou database.

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<sup>6</sup> The forester and/or biologist may work in conjunction with a qualified technician.

## Appendix 3: Harvesting and Silviculture Management Strategies

LUP Working Group report (2002) identified stand-level management and harvesting practices to be based on reconnaissance and field levels surveys referred in this strategy. This information is summarized below.

### Proposed Management Strategies for Halfway, Trout and Fish Landscape Unit Planning Pilot Project

<b>Management Zone</b>	<b>Habitat Management Objective</b>	<b>Landscape-level Management Practices</b>	<b>Stand-level Management Practices</b> (to be applied to AC 8 & 9 stands < 80% & < 94 OCL)
Caribou Connectivity	- maintain core caribou habitat	- identification of caribou no harvest zones - locate OGMA's in no harvest zones - forest road and recreational access management	- forest harvesting and other resource extraction prohibited with the exception of addressing forest health, stand improvement (caribou habitat improvement) activities or operational requirements (i.e. access). Existing access through priority 1 areas and approved development (approved CP or blocks laid out and cruised) will remain and will be addressed during the planning stages.
Interim Management	5 year deferral		
Caribou Special Management	- maintain pre-harvest species composition where silviculturally acceptable and in accordance with the SP. - abundant arboreal lichen production in lower and upper forest canopy - snow interception cover in ICH and ICH/ESSF ecotone as part of 30-40% forest retention guideline - maintain low evergreen shrubs in ICH and ICH/ESSF ecotone - minimize visual	- timber management planning and development for species harvest should be directed by caribou habitat considerations - concentrate forest development in areas already largely fragmented (large cutblocks) and therefore having relatively low caribou habitat suitability - apply additional caribou guideline forest retention requirements (e.g., amount required to supplement no harvest zones to meet targets) to unfragmented medium to high habitat capability areas - minimize access this is guided by the silvicultural system and growth rates of the residual stand. This is difficult to	- silviculture and harvesting strategies will be determined by pre-harvest species composition, stand level management objectives for caribou, ecological requirements of the trees and silvicultural obligations and associated liability.  <b>SILVICULTURE</b> - species mix and composition of regenerating stand should mimic as much as possible pre-harvest stand. HOWEVER, stand retention and regeneration should focus, when possible, on mixture of shade tolerant conifer species (balsam, hemlock, and whitebark pine. Shade intolerant tree species (pine, hardwoods) should be discouraged  - maintain significant component of lichen bearing trees ( $\geq$ lichen class 3, low branches) retaining larger diameter lichen supporting trees and clumps of trees - avoid physical obstructions to movement and visual sight distances  <b>HARVESTING</b>  MULTI STORIED STANDS <b>Conventional Harvesting</b> ➤ Maintain late seral forest conditions with trees that support abundant arboreal lichen available as forage. Partial cutting regimes that remove relatively low volumes and

	<p>obstructions  - discourage moose forage production  forest harvesting and silviculture practices to promote caribou habitat structural elements  - forest harvesting in fragmented habitats to consider creation of large contiguous blocks in fragmented habitats with retention of large contiguous forested blocks in unfragmented caribou habitats</p>	<p>track and has no real value.</p> <p><i>General strategies to be applied to age class 8 &amp; 9 stands available for harvest:</i></p>	<p>allow for long time periods between cuts are preferred.</p> <ul style="list-style-type: none"> <li>➤ Harvesting strategies with an objective to retain an RBA of 18 – 24 square metres per hectare in an approximate uniform distribution throughout the block, , the entire area will be recognized as caribou habitat,</li> <li>➤ Harvesting in small groups (approximately 0.5 ha average opening size) with a 66% area retention. The goal is to maintain the stands continuously as suitable caribou habitat.</li> </ul> <p><b>*Uphill Cable and Aerial Harvesting</b></p> <ul style="list-style-type: none"> <li>➤ Partial cutting using either group selection or narrow strips with a retention of 66% of the existing basal area, or retain an RBA of 18 – 24 square metres per hectare in an approximate uniform distribution throughout block. The entire area will be recognized as caribou habitat.</li> <li>➤ Clear cut with internal retention of groups of trees to facilitate lichen retention and future inoculation. Spacing of tree groups should be 75 – 150 m maximum and retained in groups of 10-20+.</li> </ul> <p><b>SINGLE OR TWO STORIED STANDS</b></p> <p><b>Conventional Harvesting</b></p> <ul style="list-style-type: none"> <li>➤ Retain an RBA of 18 – 24 square metres per hectare in an approximate uniform distribution throughout block. . The entire area will be recognized as caribou habitat.</li> <li>➤ <b>harvesting in small groups (approximately 0.5 ha average opening size) with a 66% area retention.</b></li> <li>➤ Clear cut with internal retention of groups of trees to facilitate lichen inoculation. Spacing of groups should be 75 – 150 m and retained in groups of 10-20+.</li> </ul> <p><b>*Uphill Cable and Aerial Harvesting</b></p> <ul style="list-style-type: none"> <li>➤ Partial cutting using either group selection or narrow strips with a retention of 66% of the existing basal area.</li> <li>➤ Retain an RBA of 18 – 24 square metres per hectare in an approximate uniform distribution throughout block. . The entire area will be recognized as caribou habitat.</li> <li>➤</li> <li>➤ Clear cut with internal retention of groups of trees to facilitate lichen inoculation. Spacing of groups should be 75 – 150 m and retained in groups of 10 - 20+.</li> </ul> <p>*Note – attempts will be made to meet these objectives when downhill yarding. However, downhill yarding of partial cuts is much mor difficult and costly, consequently downhill yarding will be evaluated on a stand by stand basis.</p>
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			<i>General strategies to be applied to age class 8 &amp; 9 stands available for harvest:</i>
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