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Revelstoke Caribou Rearing in the Wild Society

Safe Work Procedures for Caribou Capture in and near Avalanche Terrain

1. Introduction

These safe work procedures have been developed specifically to cover mountain caribou capture activities for the maternal penning project taking place in the northern Monashee and Selkirk mountain ranges. These procedures replace the sections of the existing Revelstoke Caribou Rearing in the Wild Society (RCRW) *Safe Work Procedures for Working in Avalanche Terrain* document produced in March 2015 that pertain to caribou capture activities. The procedures outlined in the March 2015 document remain in effect for other field activities such as collar recovery or mortality site investigation.

2. Project Description

The goal of the mountain caribou maternal penning project is to increase caribou calf survival rates. This is accomplished by capturing pregnant caribou cows in late winter and placing them in a predator-resistant enclosure where they bear their calves. The animals are kept in the enclosure for several months to allow the calves to grow to an age where they are less susceptible to predation. In early summer they are released back into the wild.

The caribou cows are captured in their late winter habitat, which is in the subalpine areas of the northern Monashee and Selkirk mountain ranges north of Revelstoke, BC. The capture process involves the following steps:

a. Prior to the capture dates, the general locations of the caribou herds are determined through a combination of census flights and interpretation of VHF radio and GPS collar data from individual animals in the North Columbia population;
b. On the capture day(s) a team will fly to the identified areas to capture the caribou cows. The team will travel to the capture sites with two helicopters, a MD 500 for the capture work and an A-Star B3 for transporting the caribou to the pen. At the beginning of the capture sequence the team will be made up one helicopter pilot, one net gunner, and one wildlife technician in the capture helicopter and one helicopter pilot, one avalanche technician and one wildlife technician in the transport helicopter;
c. Upon finding a suitable group of animals, the capture helicopter flies low over the herd and the net gunner nets the first animal. The capture helicopter immediately lands and drops off the first wildlife technician as close as possible to the first captured caribou to prepare it for transport, then proceeds to capture a second animal;
d. While the capture helicopter is capturing the second animal the transport helicopter lands near the first caribou. The second wildlife technician and the avalanche technician

assist the first wildlife technician with preparing the animal for transport, then load it into the transport helicopter;

e. While the first caribou is being packaged and loaded, the net gunner and the pilot of the capture helicopter will have caught the second caribou and landed nearby. The net gunner and pilot of the capture helicopter then begin packaging the second animal for transport;
f. After the first caribou is loaded, the transport helicopter flies over to the second caribou with both wildlife technicians and the avalanche technician to pick up the second caribou. When this caribou is loaded the transport helicopter proceeds to the pen with the avalanche technician and the second wildlife technician on board. The capture helicopter remains in the field with the net gunner and the first wildlife technician to prepare for the next capture sequence.

The capture process involves a large team of people working on specific tasks both in the field and at the pen site. Due to the complexities of the project, the caribou capture in managed using the Incident Command System, a standardized management hierarchy used internationally for managing emergencies and complex projects. The incident commander for the caribou capture project will be located at the pen site.

3. Avalanche Risk Assessment

The caribou in the northern Monashee and Selkirk mountains live in rugged terrain in the upper treeline elevation band in late winter. This means that the herds are often in or near avalanche terrain during the time frame that the capture work takes place. This creates the potential for capture crews to be exposed to avalanche hazards while completing the capture work.

The RCRW caribou capture work qualifies for Section 4.1.2 of the BC Occupational Health and Safety Regulation (OHSR). Section 4.1.2 allows applicable work activities to be exempt from Section 4.1.1, which requires written avalanche risk assessments and implementation of formal avalanche safety plans. This is because the capture work is carried out intermittently, does not involve stationary work on one area for significant lengths of time, and because there is minimal potential to trigger an avalanche (if the safe work procedures described in Section 4 are followed). However, in order to be compliant with the OHSR, the employer must ensure that safe work procedures are developed and followed to minimize the risks associated with snow avalanches.

Section 4 describes the safe work procedures specific to the caribou capture work. Section 4.4 describes pre-work procedures that relate to avalanche risk assessment.

4. Safe Work Procedures

4.1. On-site Avalanche Professional

A qualified avalanche professional will be on site during the capture work and will be responsible for all decisions regarding avalanche safety for field team members.

4.2. Training

The minimum standard of training for the avalanche professional responsible for field team safety is Canadian Avalanche Association (CAA) Operations Level 2, with professional membership of the CAA. Recommended supplementary qualifications include Association of Canadian Mountain Guides (ACMG) Ski Guide or Mountain Guide certification.

The rest of the field team members, including the pilots, will be provided with a 1-hour training session on companion avalanche rescue techniques on the day before capture operations are scheduled to begin. At this time the field team will be briefed on the Safe Work Procedures for Caribou Capture in and near Avalanche Terrain and an overview of current avalanche conditions and trends will be provided.

4.3. Equipment

Safety equipment for the capture operations includes avalanche rescue equipment, communications equipment, and survival equipment.

All field team members will be equipped with transmitting avalanche transceivers while in the field. The transport helicopter will carry an avalanche rescue pack containing three avalanche probes and three avalanche shovels as well as the avalanche technician's personal pack containing an additional probe and shovel. A smaller pack containing a probe and shovel will also be carried by the capture helicopter if space allows.

Communications equipment that will be used in the field includes aircraft-mounted VHF radios as well as at least two portable hand-held VHF radios carried by team members. In addition, an InReach satellite communications device will be carried in the avalanche technician's pack. Other supplementary communications devices that may be present during the field capture operations include satellite phones, SPOT devices, and satellite aircraft tracking units.

Survival kits will be carried as standard equipment by each helicopter. Additional survival equipment will also be located in the avalanche technician's pack carried in the transport helicopter.

4.4. Pre-Field Work Procedures

Pre-field work procedures are focused on desktop terrain and avalanche hazard analysis.

Prior to the capture day(s), spatial information with the most current location data of the candidate caribou groups selected for potential capture will be provided to the avalanche technician. The location data may be sourced from census flights, GPS collars and VHF collars. The terrain surrounding the location of each candidate caribou group will be reviewed by the avalanche technician with the objective of identifying potential avalanche terrain that may require more detailed assessment in the field, depending on the actual locations of the animals on the day(s) of capture.

For several days leading up the capture dates a detailed daily review of snow and avalanche data from the northern Monashees and Selkirks will be conducted by the avalanche technician with the objective of becoming as familiar as possible with the current snowpack structure and avalanche hazards. The primary data sources include the Canadian Avalanche Association's Industry Information Exchange (Infoex), Avalanche Canada's Public Avalanche Bulletins, and regional weather forecasts. On the first morning of capture a written avalanche hazard evaluation will be conducted for the general area by the avalanche technician to summarize the avalanche concerns and identity any specific mitigation actions.

4.5. Field Work Procedures

An avalanche transceiver function check will be conducted by the avalanche technician as the field team members board their helicopters immediately before leaving the pen for the capture sites.

To ensure crew safety in the field, the terrain surrounding each group of caribou being targeted will be assessed for avalanche hazards by the avalanche technician from the air when they are found, immediately prior to initiating the capture process. In addition to their immediate locations, nearby terrain where the animals could potentially run into will be assessed. The results of this on-site assessment will be communicated via radio to the team in the capture helicopter and will include approval or disapproval to initiate the capture sequence. These communications will also include any other applicable comments or instructions that are specific to the site, such as areas to avoid or areas to "push" the animals towards in order to minimize exposure to avalanche hazards. Visual observations of the capture sequence will be maintained as much as possible by the avalanche technician to ensure operations remain within the approved areas.

4.6. Emergency Procedures

In the event of an avalanche incident, the situation will be immediately communicated to the Incident Commander at the pen site, followed by a companion avalanche rescue response conducted by all available field team members using equipment from the rescue packs. It is expected that the resources in the field would be adequate to deal with a typical avalanche incident with one or two involvements; however, if the incident is more serious an outside response may be required. In this situation the Incident Commander will need to request outside resources such as search and rescue, ambulance etc.

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