



**Forest
Practices
Board**

HELICOPTER AND SNOWCAT SKIING IN MOUNTAIN CARIBOU HABITAT

Audit of Compliance with
Reporting Requirements

DECEMBER 2014

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BOARD COMMENTARY

In 2011, the Ministry of Forests, Lands and Natural Resource Operations (FLNR), the Ministry of Environment and 12 heli ski/cat ski operators signed two memoranda of understanding (MOUs) regarding the management of helicopter and snowcat skiing in mountain caribou habitats. The MOUs, being consistent with government's mountain caribou recovery objectives, include provisions for adapting to caribou encounters, among other things, and reporting this information to FLNR by May 31 each year.

This audit highlights the beneficial aspects of having an industry, with the potential to adversely impact a sensitive wildlife resource, follow agreed upon procedures to manage and minimize wildlife encounters, and to self-report on those encounters.

In the Board's view, for the 2013/14 ski season, the operators participating in this audit demonstrated a high degree of diligence in following procedures in the MOU, designed to avoid encounters with caribou, and reduce potential stress when caribou are accidentally encountered. During individual interviews, the operators also demonstrated a high degree of knowledge of the factors affecting caribou survival and a genuine concern that their activities not contribute to declines in the southern caribou populations.

The MOUs are a positive initiative that potentially benefits both the heli-ski/cat ski industry and the management of mountain caribou in BC. The Board encourages both government and industry operators to learn from the considerable experience documented in the monitoring reports submitted since the MOUs came into effect and to continue to improve on the operating and reporting procedures as necessary to ensure that caribou are not unduly impacted by heli-ski/cat ski activities.

The Board also encourages all operators that found themselves within 500 metres of mountain caribou during their operations, to review their practices to try to minimize, if not prevent, these encounters.



Photo Courtesy of Leo DeGroot

EXECUTIVE SUMMARY

The 2013/14 skiing season represents the third year that members of the commercial helicopter and snowcat skiing sector operating within mountain caribou range have participated in a compliance and effectiveness monitoring strategy to support government efforts to recover mountain caribou populations in British Columbia (BC). This program benefits the sector by providing it with an opportunity to learn from experience and refine practices to ensure they support mountain caribou recovery. This season is the first time the Forest Practices Board has been asked to conduct a reporting conformance audit, the results of which are detailed in this report.

Overall, the 12 operators involved with this self-reporting program performed well. These operators achieved 100 percent conformance with the timeline for submission and 98 percent conformance with data quality requirements associated with the wildlife sighting data.

However, four operators did not conform with government policy to maintain a minimal flying distance from caribou of at least 500 metres. For these encounters, almost half of the caribou sighted (37 of 81), acted concerned or alarmed, with some fleeing the area. This finding was considered a significant non conformance, since the operators did not minimize the risk of displacing caribou.

In addition, seven operators did not sufficiently document their adaptive actions to demonstrate diligence in meeting the no displacement objective. Although the guides and managers interviewed stated they took appropriate action, these actions were not adequately recorded. This finding is considered an area requiring improvement.

With some improvements in maintaining a minimum distance from caribou, and small improvements in quality assurance and information collection details, including recording more detailed caribou encounter adaption information, the operators could achieve 100 percent conformance with the MOU in the future.



BACKGROUND

In 2007, the Province of BC committed to implementing several management actions to support the recovery of mountain caribou (*Rangifer tarandus caribou*) within BC. These actions included managing backcountry commercial recreation activities—specifically those activities associated with the helicopter and snowcat skiing sector.

Managing the commercial helicopter and snowcat skiing sector includes restrictions on the issuance of commercial winter recreation tenures within mountain caribou range, and implementing best practices and standard operating procedures for existing operations to minimize the displacement of mountain caribou from their preferred habitats.

To ensure desired outcomes associated with managing this sector are achieved, the Province developed a sector-based compliance and effectiveness monitoring strategy (CEMS).¹ The objectives of this strategy are to determine the level of conformance with best practices and standard operating procedures so they may be improved, and to allow the sector to be innovative and adapt its practices to improve their effectiveness for mountain caribou recovery.

In 2011, the Ministry of Forests, Lands and Natural Resource Operations (FLNR), the Ministry of Environment and 12 operators signed two Memoranda of Understanding² (MOUs) regarding the management of helicopter and snowcat skiing in mountain caribou habitat. The MOUs, which expired on June 30, 2014, required the operators to work in a manner consistent with provincial mountain caribou recovery objectives³ and CEMS. The MOUs include provisions for conducting staff training; developing an information management system to capture mountain caribou information; adapting to caribou encounters; as well as reporting this information to FLNR each year.

The MOUs include independent audits as an important part of the caribou program, in order to bring about agency and public trust in the process and outcomes. In November 2013, FLNR signed an agreement with the Forest Practices Board, designating the Board as its independent auditor. The Board committed to objectively and independently audit the reporting obligations of helicopter and snowcat skiing operators who are signatories to the MOUs.

The following 12 operators, holding 21 recreation tenures (21 tenure holders), are signatory to the MOUs and participate in compliance monitoring:

- Bearpaw Heliskiing Ltd.
- Canadian Mountain Holidays (holds 10 recreation tenures)
- Chatter Creek Mountain Lodges Ltd.
- Crescent Spur Helicopter Holidays Ltd.
- Eagle Pass Heliskiing Ltd.
- Great Canadian Heliskiing Ltd
- K3 Cat Ski
- MICA Heli Guides Ltd.
- Mike Wiegele Helicopter Skiing
- Mustang Powder Lodge Ltd.
- R.K. Heli-Ski Panorama Inc.
- Selkirk Tangiers Helicopter Skiing Ltd.

¹ [A Proposed Monitoring and Adaptive Management Strategy for Mountain Caribou Recovery Implementation](#)

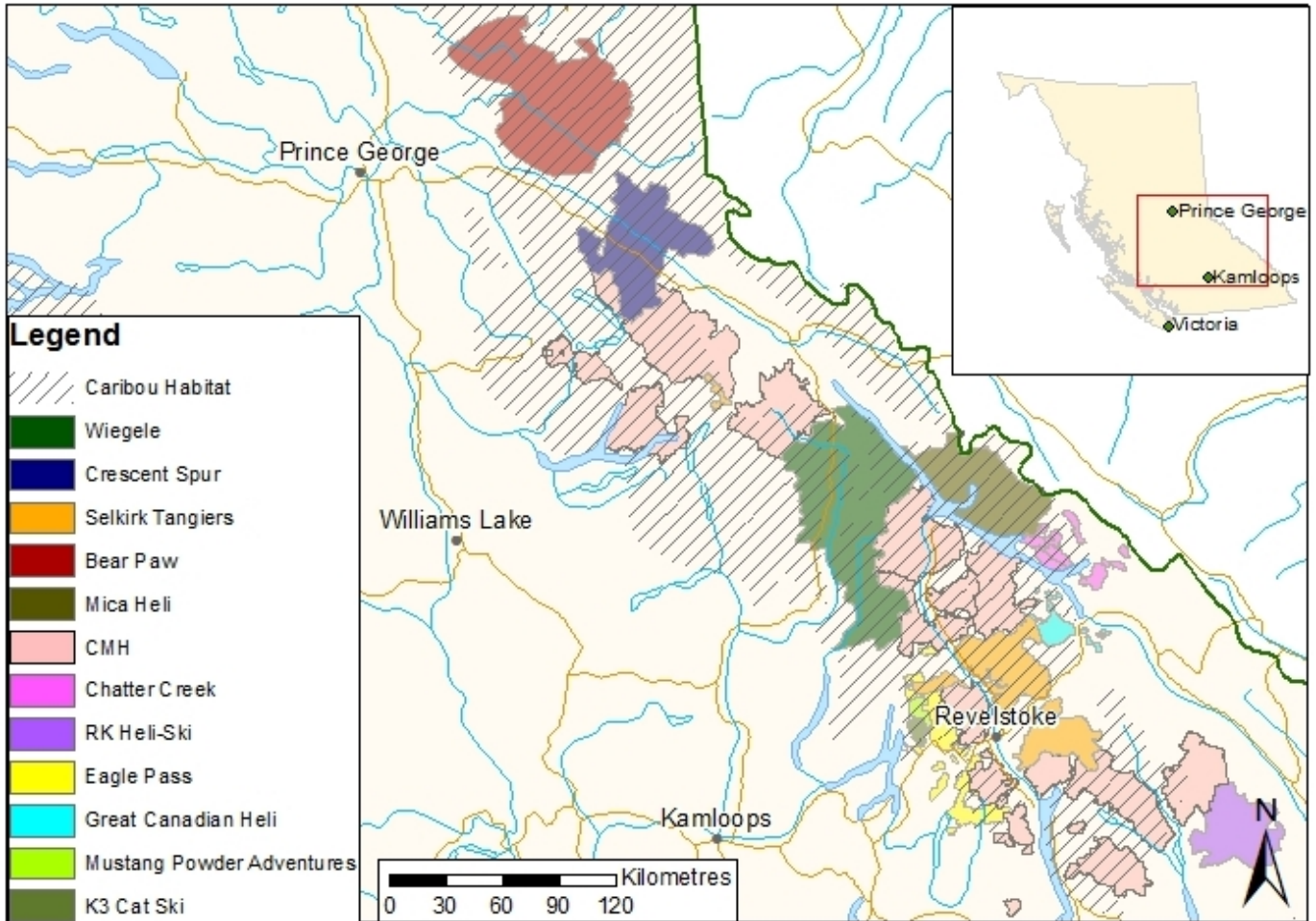
² [Memorandum of Understanding Regarding Management of Helicopter and Snow-Cat Skiing in Mountain Caribou Habitats](#)

³ [A Strategy for the Recovery of Mountain Caribou in BC](#)

All of the operators, except Mike Wiegele Helicopter Skiing, belong to an organization called Heli-Cat Canada (HCC), which among other things, unifies its members in a coordinated approach to developing and implementing standards and guidelines for caribou management associated with their operations.

Under the CEMS, operators are expected to achieve a desired condition of 100 percent conformance with the MOUs data submission requirements for the reporting year. The desired condition of complete data submissions is used to ensure that submitted information is of adequate quality to properly inform management and to allow inclusion in government’s corporate data warehouses, such as the species inventory database www.env.gov.bc.ca/wildlife/wsi/siwe.htm.

Location of the 12 operators and their Recreation Tenures.



AUDIT APPROACH AND SCOPE

Auditors assessed the operators' conformance with the reporting requirements of the Caribou MOUs for the 2013/2014 ski season.

This report has several purposes:

- 1) Determine the level of conformance for the operator information reported for the 2013/14 skiing season.
- 2) Compare information reported during the 2013/14 skiing season to previous seasons to:
 - a. identify reporting conformance trends; and
 - b. identify trends in caribou, sightings, behavior and adaptations.
- 3) Provide feedback to operators to encourage continuous improvement of sector activities.

Auditors assessed individual operator performance and compared it to sector performance as a whole. The sector plans to use the results of the audit in pre-season discussions to inform individual operators of their performance and to suggest areas of improvement.

PLANNING AND PRACTICES EXAMINED

Reporting Items Audited

For all 12 operators, holding 21 recreational tenures, auditors reviewed annual report submissions and training records and conducted operator interviews to assess conformance with the reporting requirements of the MOUs. Specifically, auditors looked at:

- Annual training.
- Annual wildlife sighting reports.
- FLNR submission guidance provided to the operators.
- Annual compliance report cards.
- Adaptations to caribou encounters—auditors reviewed the suitability of wildlife sighting reports to determine if they were useful for assessing conformance of adaptation practices with the requirements of the MOUs and used those portions that were useful to assess conformance.

During the ski season, the 12 operators are required to record wildlife sightings using a standardized wildlife sighting report template (sighting report) and to record operational information using an operating procedures monitoring form (report card). To ensure that data collection and reporting is manageable from the sector's perspective, pre-season meetings and training sessions are held to discuss, and, if necessary modify data collection and reporting standards to accommodate sector business.

Furthermore, submissions are required to meet CEMS and MOU data and reporting standards, to be considered conformant. If operators submit information that has few to no errors, based on government data and reporting standards, they are considered to be conformant. In contrast, if there are major omissions or errors with the submitted data, operators are considered to be non-conformant (see Appendix 1 for examples).

Conformance Criteria

Auditors reviewed sighting reports and report cards to assess whether the reports conformed to the requirements of the MOUs. Specific questions answered by the auditors to determine reporting conformance included:

- Did heli-cat operators conform to the training requirements of the MOUs?
- Did heli-cat operators conform to the annual data submission requirements of the MOUs?
- Did the government conform to the reporting guidance requirements of the MOUs to ensure consistent and timely reporting?
- Did heli-cat operators conform to the annual compliance report card requirements of the MOUs?
- Did the heli-cat operators sufficiently document their adaptive actions, when caribou were encountered, to demonstrate diligence and to improve the effectiveness of the procedures in meeting the no displacement objective.

Conformance criteria are detailed in Appendix 2.

FINDINGS

Conformance 2013/14

Annual Training

All operators conformed with the training requirements of the MOUs.

All operators provided training records and agendas that demonstrated they carried out annual training prior to the 2013/14 ski season and that the training session lasted at least two hours, as required by the MOUs. The larger operators provided staff lists and attendance records to demonstrate that applicable staff were trained (guides and pilots). The smaller operators stated that all staff attended training sessions, therefore individual attendance records were not kept.

In some cases, training was provided by a wildlife biologist and in other cases by a company staff member (guide or manager), with suitable knowledge of adaptive practices gained through experience. HCC has also produced a training module, consisting of videos and a PowerPoint presentation, designed to meet the training content requirements of the MOUs. Operators met the trainer qualification requirements of the MOUs.

Auditors found that the training module content included the required elements: caribou biology, a recovery effort update, operational effects literature and company operating procedures pertaining to caribou management. Training thereby conformed with the MOUs' content requirements.

Annual Sighting Reports

All operators generally conformed to the MOUs' criteria for annual wildlife reporting.

All operators met the submission deadline of May 31, 2014, and submitted their reports in the format required by FLNR.

Auditors found that 72 percent of the forms were completed with no information errors or omissions. There were seven submissions with blank or incorrect entries that were not treated as significant non-conformances because the information was explained in the comments column of the report. For those with information omissions not explained—involving five percent of the caribou sighted or less than two

percent of data entries—entry errors included blank entries for animal distance, aspect, inventory method and number of tracks (Table 1).

Although there were a large number of sightings where the operators did not report the number of animal tracks, the operators reported that they observed the tracks, but could not count the number of tracks due to adverse weather conditions or because the track pattern and density prevented them from counting them accurately. One operator stated that it was more important to report the presence of tracks and take adaptive actions, than to report an inaccurate number with limited interpretive value. Contrary to the intent of the reporting requirement, spending time in a helicopter counting tracks has the potential to increase disturbance.

Table 1. Summary of information errors contained in sighting report submissions.

Tenure Holder	Animal Distance	Aspect of Animal *	Inventory Method	Number of Tracks	Associated Caribou Sighted
CMH-Gothics	1	0	0	0	5
CMH-K2	1	0	0	0	4
CMH-Monashees	0	0	0	3	0
CMH-Revelstoke	0	0	0	1	0
Crescent Spur Helicopter Holidays Ltd.	0	1	1	0	6
Mike Wiegele Helicopter Skiing	0	0	0	38	0
TOTALS	2	1	1	42	15

* The orientation of the slope on which the animal was observed (i.e., north, south etc.).

Auditors found that, while operators conformed to the MOUs’ sighting report requirements, they provided insufficient information on adaptive actions taken in response to caribou encounters, as discussed in the *Adaptations to Caribou Encounters* section of this report.

Auditors found that all sighting reports were submitted on time, in the required format, and despite some minor data entry errors, generally met content requirements and therefore conform to the MOUs’ annual reporting requirements.

FLNR Reporting Guidance

FLNR relies on the operators to self report annually. To assist the operators with accurate and timely submissions, FLNR has provided the operators with contact information, submission timelines and the following information (also available on-line at

<http://www.env.gov.bc.ca/wld/speciesconservation/mc/index.html>):

- Memoranda of Understanding Regarding Management of Helicat and Snowcat Skiing in Mountain Caribou Habitats
- Terms of Reference for Commercial Winter Recreation Component
- Heli and Catskiing Compliance and Effectiveness Monitoring of SOPs
- Heli and Catskiing Operating Procedures Monitoring Form
- Heli and Catskiing Wildlife Sighting Template
- Definitions of Wildlife Sighting Template

In addition, HCC has provided its members a submission review option to help ensure that annual reports meet submission criteria.

Auditors found that FLNR conformed to the agency guidance requirements of the MOUs by providing sufficient information to operators, enabling them to make timely complete and accurate annual report submissions.

Annual Compliance Report Cards

All operators submitted their annual report cards on time (by May 31, 2014), and in the format required by FLNR. Overall, operators generally met the content requirements of the MOUs. All operators provided clear descriptions of how they achieved the elements contained within the annual report card. Where an operator reported that they did not achieve an element, they clearly explained why, with the following exceptions:

- One operator did not clearly explain how it adapted its skiing procedures to a caribou encounter, although the operator clearly described the procedures in its wildlife operating procedures and strategies.
- One operator did not explain how it would maintain a minimum 500-metre flight distance during caribou encounters, although its wildlife management plan does.
- All operators state in the compliance report card that guides and pilots choose flight paths that maintain a minimum 500-metre separation during caribou encounters. However, 4 operators reported coming closer than 500 metres on first encounter. This finding relates to the government policy requirement to maintain a certain distance when approaching caribou from the air and is described in more detail in the *Adaptations to Caribou Encounters* section of this report.

These exceptions were not considered significant, although they should have been clearly explained or the appropriate operating procedures should have been referenced, which addressed these items and had been implemented.

Auditors found that all operators met the submission deadline and report format requirements and generally conformed with the content requirements of the MOUs.

Adaptations to Caribou Encounters

During the 2013/14 ski season, all of the heli-cat operators combined had 2207 days of skiing⁴ (1875 helicopter and 332 snowcat). Of the 20 active tenure holders,⁵ 13 encountered caribou during the season, including 67 days when caribou were sighted and another 63 days when caribou tracks were sighted. A total of 301 caribou and an estimated 180 tracks were sighted during the season. Operators sighted 84 percent of the caribou when flying, 13 percent when skiing and 3 percent from a snowcat (Table 2).

⁴ One operator, RK Heli-Ski, reported no wildlife encounters during the 2013/14 ski season and did not include an account of ski days in his report. Ski days were estimated for this operator.

⁵ CMH McBride was not active during the 2012/13 and therefore did not make any submissions.

Table 2. Summary of caribou encounters by activity.

Tenure Holder	# Caribou Encountered			
	Total	Helicopter	Snowcat	Ski
Bearpaw Heli Skiing Ltd.	8	8	0	0
CMH-Bobbie Burns	1	0	0	1
CMH-Galena	13	12	0	1
CMH-Gothics	30	19	0	11
CMH-K2	28	21	0	7
CMH-Monashees	13	13	0	0
CMH-Revelstoke	3	2	0	1
CMH-Valemount	2	2	0	0
Crescent Spur Helicopter Holidays Ltd.	67	61	0	6
Eagle Pass Heliskiing Ltd.	9	9	0	0
MICA Heli Guides Ltd.	45	38	0	7
Mustang Powder Lodge Ltd.	10	0	10	0
Mike Wiegele Helicopter Skiing	72	68	0	4
TOTALS	301	253	10	38

Maintaining Minimum Encounter Distance

Operators are required to conform to government policy regarding the need to maintain at least a 500-metre distance from caribou when operating helicopters within identified caribou habitat.⁶

In their annual report cards, all operators reported that guides and pilots chose helicopter flight paths to maintain at least 500-metre separation from occupied caribou habitat. However, in the wildlife sighting reports, 4 operators (7 tenure holders) reported sighting distances of less than 500 metres with no explanation provided in the annual report card or the sighting report. Operators reported being within 500 metres of the caribou for 15 of 47 (32 percent) of these encounters, involving 81 of 244 caribou (33 percent) (Table 3).

Table 3. Distance of caribou encountered by helicopter.

Tenure Holder	# Caribou Encountered		Total
	<500m	>500m	
Bearpaw Heli Skiing Ltd.	5	3	8
CMH Galena	12		12
CMH Gothics (distance not reported for 5	5	9	14
CMH K2 (distance not reported for 4 caribou)		17	17
CMH Monashees	13		13
CMH Revelstoke	2		2
CMH Valemount		2	2
Crescent Spur Helicopter Holidays Ltd.	14	47	61
Eagle Pass Heliskiing Ltd.		9	9
MICA Heli Guides Ltd.		38	38
Mike Wiegele Helicopter Skiing	30	38	68
TOTALS	81	163	244

⁶ [Wildlife Guidelines for Backcountry Tourism/Commercial Recreation in British Columbia](#), 2006.

The data submitted supports a correlation between caribou reaction and sighting distance. Operators reported that 46 percent of the caribou, sighted in 4 of 15 encounters, were concerned, alarmed or fled for encounters less than 500 metres, compared to 12 percent for the caribou sighted in 2 of 32 encounters, at a distance of more than 500 metres (Table 4).

Table 4. Reported reaction of caribou to helicopter encounters by distance.

Tenure Holder	Caribou Inventoried by Heli	Caribou Reaction <500m *						Caribou Reaction >500m					
		NR	UC	CU	CO	LA	VA	NR	UC	CU	CO	AL	VA
Bearpaw Heli Skiing	8		5						3				
CMH Galena	12						12						
CMH Gothics	14		5						9				
CMH K2	17							17					
CMH Monashees	13	13											
CMH Revelstoke	2	2											
CMH Valemount	2							2					
Crescent Spur Helicopter Holidays Ltd.	61				14			21	10		16		
Eagle Pass Heliskiing Ltd.	9							9					
MICA Heli Guides Ltd.	38							7	25	3	3		
Mike Wiegele Helicopter Skiing	68		17	2		11		12	26				
TOTALS	244	15	27	2	14	11	12	68	73	3	19	0	0

* Caribou reaction is generally described as: NR = No Overt Reaction; UC = Unconcerned; CU = Curious; CO = Concerned; AL = Alarmed; and VA = Vacated Area

One operator reported encountering 10 additional caribou while operating a snowcat. The caribou were less than 500 metres away and all displayed an alarmed reaction.

Operators reported another 16 caribou encounters (38 caribou) while skiing, of which 10 encounters (29 caribou) were from less than 500-metre away (Table 5). Of the 10 encounters from less than 500 metres, 6 caribou acted either concerned or fled, while none reacted adversely for the 6 encounters from more than 500 metres away. The data indicate that the caribou reacted more strongly to encounters from less than a 500-metre distance.



Photo Courtesy of Leo DeGroot

Table 5. Reported reaction of caribou to skiing encounters by distance.

Tenure Holder	Caribou Ski Encounters	Caribou Reaction <500m						Caribou Reaction >500m					
		NR	UC	CU	CO	AL	VA	NR	UC	CU	CO	AL	VA
CMH Bobbie Burns	1							1					
CMH Galena	1				1								
CMH Gothics	6		1	1	1			2	1				
CMH K2	1				1								
CMH Revelstoke	1	1											
Crescent Spur Helicopter Holidays Ltd.	1							1					
MICA Heli Guides Ltd.	4			1	1		1	1					
Mike Wiegele Helicopter Skiing	1				1								
TOTALS	16	1	1	2	5	0	1	5	1	0	0	0	0

The data may indicate that caribou react more adversely to disturbance from the ground than from the air, as 27 percent of caribou reacted adversely to aerial encounters and 40 percent to ground encounters.

Although the sample size is small, the data indicate that caribou react more adversely to closer, mechanized encounters.

Four operators did not conform to the government policy requirement to maintain at least a 500-metre distance when operating helicopters. The data indicate that the caribou reacted more adversely to those closer encounters. Therefore, the auditors consider this to be a significant non-conformance because the operators did not minimize the risk of displacing caribou, as is required in both the MOUs and the *Wildlife Guidelines for Backcountry Tourism/Commercial Recreation in BC*.

Reporting Adaptations to Encounters

The MOUs require heli-cat operators to develop an information management system that includes requirements to describe the specific operational actions taken by the operator to prevent caribou displacement. Operators are required to sufficiently document their actions to demonstrate diligence and to improve the effectiveness of the procedures in meeting the no displacement objective. To do so, their wildlife sighting reports should clearly demonstrate whether they:

- chose a helicopter flight path that maintains at least a 500-metre distance from occupied caribou habitats
- suspended activities for at least 48 hours, when caribou were in an area, and did not recommence activities until a reconnaissance confirmed caribou had left the area
- changed ski route and/or pick-up/drop-off locations
- grouped and controlled skiers to minimize displacement
- delayed skiing
- notified other ski groups

Auditors reviewed all of the wildlife sighting reports to assess whether they contained adequate information to determine if the adaptation requirements of the MOUs were achieved when caribou were encountered (Table 6). Auditors also interviewed six guides who had reported caribou encounters, in order to confirm their actions during the encounters.

Auditors found that operators who encountered caribou reported a variety of adaptive responses, but they did not describe their response in sufficient detail to demonstrate whether or not they met the adaptation requirements of the MOUs. For example, an operator may have reported closing a ski run on which a caribou was encountered, but did not report whether they alerted other guides, changed helicopter paths or altered their ski program. Of the 7 operators (13 tenure holders) who encountered caribou, only 2 operators described their actions in sufficient detail to demonstrate conformance with the requirements of the MOUs.

Specifically:

- All operators reported sighting distances (with the exception of the nine caribou mentioned in Table 3) for caribou encounters. However, they did not report distance in absolute measures (i.e., less than/greater than 500 metres), so auditors could not accurately correlate sighting distance to caribou response, to aid with future development of adaptive practices.
- While only one operator stated that it closed a run for 48 hours, auditors could review ski zone and ski run records to determine if and when the operator returned to the area. Six tenure holders reported either leaving the area for at least 48 hours or did not return to the area for an extended time period. Six other tenure holders reported they returned to the same ski zone within the 48 hour period, but did not indicate whether they had returned to the same run. In these cases, auditors could not determine whether the run was still closed or whether a reconnaissance had been conducted to determine if caribou had left the area.
- Only three tenure holders reported, for all of their encounters, whether they conducted a reconnaissance to determine if caribou had left the area.
- There were six operators who reported caribou encounters while skiing, of which only one operator clearly demonstrated changes to ski route or pick-up/drop-off locations, grouping and control of skiers and skiing delays.
- None of the operators, for all of their encounters, indicated whether other ski groups had been notified at the time the caribou were encountered. However, notification may not have been necessary, depending on the number of groups planning on skiing in the area on the day of the encounter.
- During interviews, guides stated that they had done more than what was reported and assured the auditors that they followed the wildlife operating procedures, which conform with MOUs requirements. However, the lack of detail in the sighting reports indicates a weakness in recording sufficient information to support conformance with the MOUs' adaptive requirements.



Table 6. Summary of Reported Conformance with Adaptation Requirements of the MOUs.

Tenure Holder	Do Wildlife Sighting Reports Clearly Demonstrate Adaptation to All of Their Caribou Encounters?						
	Heli Sighting Distance?	Area Closed for 48 hrs?	Confirmed Caribou left area?	Apply to Skiing Encounters			Other Ski Groups Notified?
				Changes to ski route or PU/DO * Locations?	Grouping and Control of Skiers?	Skiing Delays?	
Bearpaw Heliskiing Ltd.	Y	N	N	NA**	NA	NA	N
CMH-Bobbie Burns	Y	Y	N	NA	NA	NA	N
CMH-Galena	Y	Y	NA	Y	Y	Y	N
CMH-Gothics	N	Y	Y	N	N	N	N
CMH-K2	N	N	N	N	N	N	N
CMH-Monashees	N	Y	Y	NA	NA	NA	N
CMH-Revelstoke	Y	Y	N	NA	NA	NA	N
CMH-Valemount	Y	Y	N	NA	NA	NA	N
Crescent Spur Helicopter Holidays Ltd.	Y	N	N	N	N	N	N
Eagle Pass Heliskiing Ltd.	Y	NA	NA	NA	NA	NA	N
MICA Heli Guides Ltd.	Y	N	N	N	N	N	N
Mustang Powder Lodge Ltd.	NA	Y	Y	NA	NA	NA	Y
Mike Wiegele Helicopter Skiing	Y	N	N	N	N	N	N
Total Clearly Demonstrated	9	7	3	1	1	1	1

* PU/DO = pick up or drop off locations.

**NA is used when the adaptation requirement did not apply to the encounter. For example, CMH-Galena never returned to the area where it encountered the caribou so did not need to confirm caribou had left the area.

Auditors found that they could not rely solely on the annual sighting reports to determine how the operators adapted to caribou encounters. While all operators demonstrated that they had established a reliable system and procedures to adapt to caribou encounters, their sighting reports did not clearly demonstrate that they followed all of the adaptive requirements of the MOUs in practice. Had they used the format and coding within the sighting reports as they were designed, auditors could have used the reports to determine conformance with the MOUs adaptive requirements. Because operators did not complete wildlife sighting reports in the intended fashion, they did not fully demonstrate whether their adaptation actions conformed to the requirements of the MOUs.

None of the 7 operators (13 tenure holders) sufficiently documented their actions to demonstrate diligence and to improve the effectiveness of the procedures in meeting the no displacement objective. However, they did demonstrate sufficient knowledge of adaptive practices and developed an information management system that captures relevant caribou information, observations and operational decisions arising from caribou encounters. Therefore, the auditors find this to be a practice that requires improvement.

AUDIT OPINION

In my opinion, except for the encounter distance issue identified below, the reporting activities carried out by the 12 operators, who are signatory to the Memorandas of Understanding Regarding Management of Helicopter and Snowcat Skiing in Mountain Caribou Habitats with the Province of British Columbia, for the 2013/14 ski season, conformed in all significant respects with the requirements of the MOUs, as of July 2014.

In reference to conformance, the term “in all significant respects” recognizes that there may be minor instances of non-conformance that either may not be detected by the audit, or that are detected but not considered worthy of inclusion in the audit report.

As described in the *Maintaining Minimum Encounter Distance* section of this report, the audit identified a significant non-conformance related to the helicopter distance when encountering caribou.

Without further qualifying my opinion, I draw attention to the *Reporting Adaptations to Encounters* section of this report, which describes an area requiring improvement.

The *Audit Approach and Scope* and the *Planning and Practices Examined* sections of this report describe the basis of the audit work performed in reaching the above conclusion. The audit was conducted in accordance with the auditing standards of the Forest Practices Board. Such an audit includes examining sufficient reporting practices to support an overall evaluation of conformance with the MOUs.



Christopher R. Mosher CA, EP(CEA)
Director, Audits

Victoria, British Columbia
November 17, 2014

APPENDIX 1

Conformance and Wildlife Encounter Trends 2011-2014

Annual Wildlife Sighting Reports

The operators achieved 100 percent submission rate for wildlife sighting reports, which include all wildlife species and is unchanged from the previous skiing season. There was a significant improvement in the quality of the submitted data when compared to the previous skiing season. These improvements are encouraging and illustrate increased effort and improved performance, and indicate a positive trend in the continuous improvement cycle. While 28 percent of the forms were submitted with errors, the errors represented less than 2 percent of the data entries, and the operators are approaching the conformance goal of 100 percent (Figure 1).

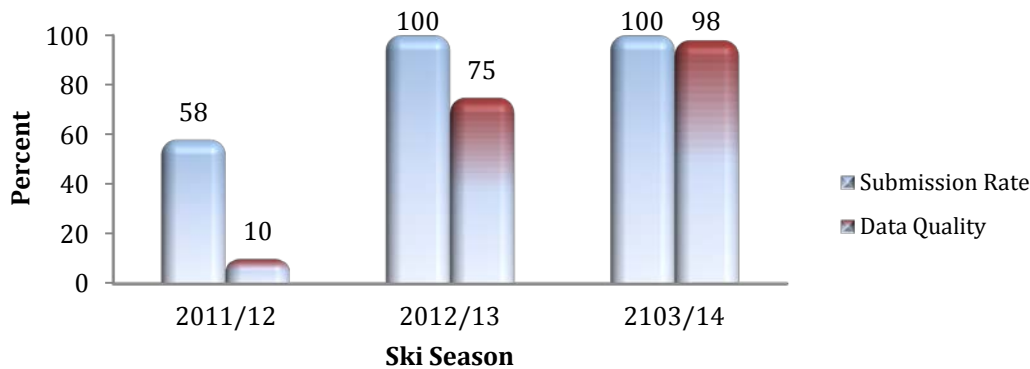


Figure 1. Wildlife sighting report submission rate and data quality.

Annual Compliance Report Cards

The operators achieved a 100 percent submission rate for the compliance report cards, which is an improvement compared to the previous skiing season of 83 percent (10 of 12). There was also a significant improvement in the quality of the submitted data when compared to the previous skiing season. These improvements are encouraging and illustrate improved operator effort and performance. While 9 percent of the forms contained some errors, the total number of errors represents less than 1 percent of the data entries, therefore the reports are approaching the data quality goal of 100 percent (Figure 2).

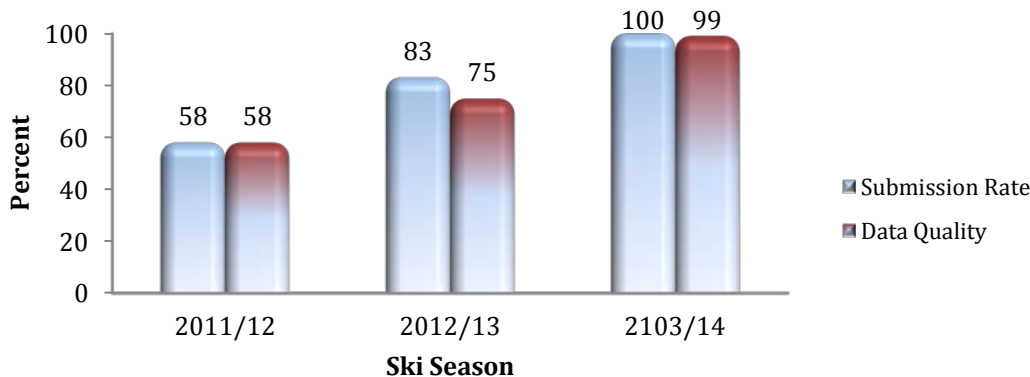


Figure 2. Compliance report cards submission rate and data quality.

Machine Days

During the 2013/14 skiing season, operators used helicopters and snowcat machines on 2207 days (Table 7). Helicopters accounted for greater than 90 percent of the machine days during the skiing season.

Table 7. Ski days by machine type.

Type of Machine	Ski Days ¹	
	2012/13	2013/14
Helicopter	1243	1875
Snowcat	122	332
Total¹	1365	2207

¹ A relative measure of use, as not all operators provided this information.

Wildlife Encounters

For the 2013/14 ski season, operators reported 185 wildlife encounters. When the inventory method was reported, most wildlife observations were made while using helicopters (72%), compared to snowcat machines (less than 1%) and while skiing (26%). (Figure 3) In the previous year, a relatively large proportion (54%) of the observations did not record the method by which the observation was made. There was a significant improvement this year, as operators reported the inventory method more than 99 percent of the time.

Overall, the reporting of all wildlife sightings can provide useful information for provincial biologists, particularly for species of management concern, such as mountain goats or wolverine.

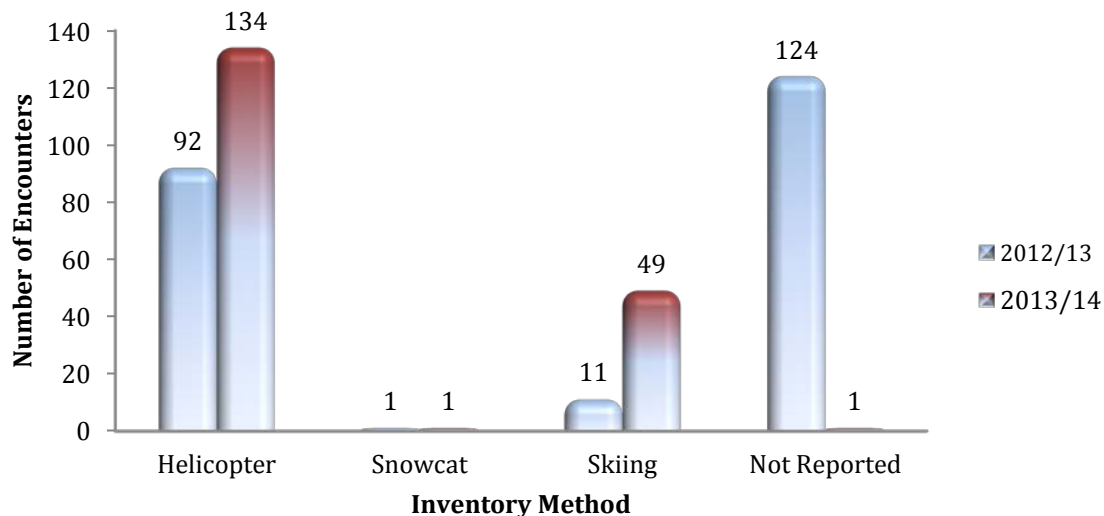


Figure 3. Number of wildlife encounters by inventory method.

Operators reported sighting 514 wildlife during 185 encounters (Tables 8 and 9). Tracks were observed on another 147 occasions, however on 38 (26%) of these occasions, the number of tracks was not recorded. (Although intuitively one would prefer the pilot avoid an area with tracks sighted, in case the animals are still close by, rather than to spend extra time trying to count the tracks, and possibly scattering or stressing the animals). Due to the difficulty in counting individual tracks, operators cannot accurately report the number of tracks observed. The number of wildlife track observations represents 44 percent of the total wildlife observations.

Table 8. Number of wildlife and track observations.

Observations	2012/13	2013/14
Wildlife Observations	229	185
Wildlife with no count ¹	249	0
Track Observations	55	109
Tracks with no count ¹	0	38
Total	533	332

¹ Observations included species name but no count.

Operators most commonly reported sighting caribou (59 percent of animals observed), while mountain goats and moose were also frequently reported, representing 28 and 9 percent of the animals observed, respectively. These are similar to the percentages observed in the previous year (Table 9).

Table 9. Wildlife observations.

Species Count ¹	2012/13	%	2013/14	%
Caribou (<i>Rangifer tarandus</i>)	477	61	301	59
Cougar (<i>Puma concolor</i>)	1	<1	1	<1
Elk (<i>Cervus canadensis</i>)	1	<1	0	0
Grizzly Bear (<i>Ursus arctos</i>)	1	<1	1	<1
Lynx (<i>Lynx canadensis</i>)	1	<1	0	0
Moose (<i>Alce americanus</i>)	34	<1	46	9
Mountain Goat (<i>Oreamnus americanus</i>)	235	30	142	28
Wolf (<i>Canis lupus</i>)	3	<1	2	<1
Wolverine (<i>Gulo gulo</i>)	21	<1	16	3
Flying Squirrel (<i>Glaucomys sabrinus</i>)	0	0	5	<1
Total	774		514	

¹Total minimum count.

Of the 67 caribou encounters, operators reported sighting 301 caribou (Table 2). This is 176 lower than the number of caribou observations recorded during the previous skiing season (Table 10). The number of caribou observed per encounter was similar to 2011/12 levels, at an average of 4.5 caribou.

Table 10. Caribou observations since 2011.

	Skiing Season		
	2011/12	2012/13	2013/14
Caribou encounters	90	82	67
Number of caribou	404	477	301
Caribou/Encounter	4.5	5.8	4.5

In 2013/14, not all operators met the minimum distance requirement of 500 metres, stipulated in government policy. Of 47 aerial caribou encounters, reported by 11 tenure holders, 15 (32%) of them were from closer than 500 metres. Four operators did not always conform to the 500-metre government policy (Table 11). The quality of previous years' data does not support a comparison of this element to previous years.

Table 11. Caribou encounter distance while flying 2013/14.

Tenure Holder	Caribou Encounters (Heli)	Caribou Encounters <500m
Bearpaw Heli Skiing Ltd.	2	1
CMH-Galena	1	1
CMH-Gothics	3	1
CMH-K2	2	0
CMH-Monashees	2	2
CMH-Revelstoke	2	2
CMH-Valemount	1	0
Crescent Spur Helicopter Holidays Ltd.	9	2
Eagle Pass Heliskiing Ltd.	1	0
MICA Heli Guides Ltd.	13	0
Mike Wiegele Helicopter Skiing	11	6
TOTALS	47	15

During the 2013/14 skiing season, there were 49 caribou encounters (244 caribou) while flying, of which 15 (31%; 81 caribou) were at a distance of less than 500 metres (Figure 4). During the previous season, operators reported 65 caribou encounters while flying, of which 15 (23%) were less than 500 metres. However, there is less certainty in the 2012/13 figures as operators did not report a distance for 80 caribou encounters, compared to 2 for the current season. While operators have improved the quality of reporting, they still did not achieve the 500-metre distance requirement. (The quality of previous years' data does not support an accurate comparison of this element.)

Because of the low number of caribou encounter responses reported in 2012/13, auditors could not make reasonable comparisons for flight responses reported in previous years. However, 2013/14 reported responses show that a higher proportion of caribou reacted with an adverse response (28% alarmed (AL) or vacated area (VA)) when the first aerial encounter was less than 500 metres, compared to no adverse response when encountered at a distance of more than 500 metres (Figure 4). Although the sample size is small, the data suggests that caribou react more adversely to disturbance from closer encounters.

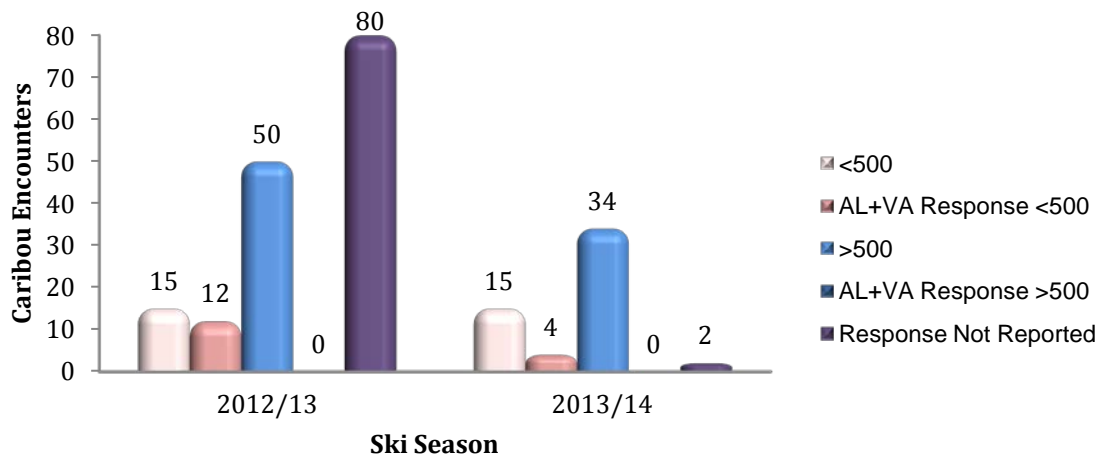


Figure 4. Caribou encounter response by aerial sighting distance (2012/13 data needs verification).

There is insufficient data to report caribou response by inventory method for previous years. However, for 66 caribou encounters in 2013/14, 12 percent displayed an adverse reaction to helicopter encounters, 37 percent to skiing encounters and 100 percent for snowcat encounters (Figure 5). Although the sample is small, the data suggests that caribou react more adversely to closer and mechanised encounters.

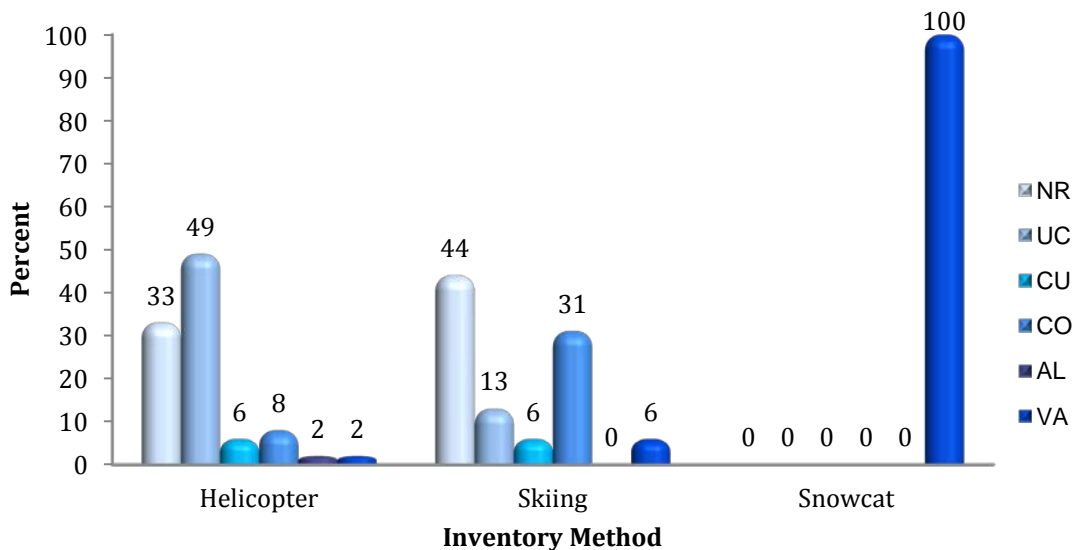


Figure 5. Caribou response by inventory method.

As noted previously, caribou reaction is generally described as: NR = No Overt Reaction; UC = Unconcerned; CU = Curious; CO = Concerned; AL = Alarmed; and VA = Vacated Area - Fled

APPENDIX 2

Table 12. An example of conformance with government standards for reporting wildlife sighting.

Name of Company	Tenure #	Zone	Date (2013)	Species Observed	Animal Count	UTM Zone	UTM (Easting 6 digits)	UTM (Northing 7 digits)	Comments	Animal Distance (m)	Aspect of Animal	Elevation	Animal Reaction	Action Taken	Inventory Method
Heli A	12345	S1	18-Feb		0	11									
Heli A	12345	S2	19-Feb		0	11									
Heli A	12345	S3	20-Feb	M-ALAM	1	11	430328	5963832	Bedded down	< 100	N	Below Treeline	Vacated Area	Avoided Drainage	Flying
Heli A	12345	S2	21-Feb		0	11									
Heli A	12345	S3	22-Feb	M-RATA	8	11	430111	5932456	Herd was grazing	800	N	Below Treeline	No Reaction	Closed Run	Flying
Heli A	12345	S1	23-Feb	M-RATA	2	11	431232	5982637	Grazing	200	SE	Below Treeline	No Reaction	Avoided Run	Flying
Heli A	12345	S2	23-Feb	M-RATA	8	11	432348	5963524	Bedded down at valley bottom	1000	W	Below Treeline	No Reaction	Changed Landing	Flying
Heli A	12345	S2	24-Feb		0	11									
Heli A	12345	S2	25-Feb		0				No flying due to weather						
Heli A	12345	S2	26-Feb		0	11									
Heli A	12345		01-Mar		0				No flying due to weather						
Heli A	12345	S3	02-Mar		0	11									
Heli A	12345	S2	03-Mar	M-RATA	4	11	436245	5972990	Bedded down	400	NE	Treeline	Concerned	Closed Run	Flying
Heli A	12345	S1	04-Mar		0	11									
Heli A	12345	S2	06-Mar		0				No flying due to weather						
Heli A	12345	S1	07-Mar		0				No flying due to weather						
Heli A	12345	S2	08-Mar	M-RATA	1	11	439843	5962626		100	N	Below Treeline	No Reaction	Closed Run	Flying

Table 13. An example of non-conformance with government standards for reporting wildlife sightings.

Name of Company	Tenure #	Zone	Date (2013)	Species Observed	Animal Count	UTM Zone	UTM (Easting 6 digits)	UTM (Northing 7 digits)	Comments	Animal Distance (m)	Aspect of Animal	Elevation	Animal Reaction	Action Taken	Inventory Method
Heli B	123456		05-Feb	Caribou		11U	390300	5821221							
Heli B	123456		09-Feb	Moose		11U	407000	5821221			W	Below Treeline	No Overt Response	No Change	
Heli B	123456		10-Feb	Caribou		11U					W	Below Treeline		Avoided Run	
Heli B	123456		20-Feb	Moose	2	11U	391500	5821221			W	Below Treeline	No Overt Response	No Change	
Heli B	123456		10-Feb	Caribou		11U									
Heli B	123456		11-Feb	Caribou		11U	400000	5821221							
Heli B	123456		11-Feb	Caribou		11U	390300	5821221			SE	Treeline			
Heli B	123456		14-Feb	Moose		11U	390300	5821221			W	Below Treeline		No Change	
Heli B	123456		20-Feb	Moose	2	11U	391500	5821221			W	Below Treeline	No Overt Response	No Change	

Note, missing records and fields, inappropriate use of codes, etc.

APPENDIX 3

MOU Requirements and How They Were Assessed

Annual Training

- Have operators met the training requirements of the MOUs?
 - Operators provided staff lists and training records, including timing, duration, content, attendance and instructor information, which auditors used to assess conformance with the MOUs training requirements.
 - Assessment criteria were:
 - Was training conducted prior to the 2013/14 ski season?
 - Did the training last for at least 2 hours?
 - Was the training provided by a qualified person?
 - Were all applicable staff trained (i.e., guides and pilots)?
 - Did the training module content include:
 - relevant aspects of caribou biology
 - an update on current recovery efforts
 - scientific and management literature relating to the effects of helicopters, snowcats and skiing on caribou behavior
 - company operating procedures including office and field procedures designed to minimize the probability of caribou displacement, actions taken during caribou encounters, procedures for recording encounters and adaptations and roles and responsibilities of guides, pilots, snowcat operators and other staff

Annual Wildlife Sighting Reports

- Have operators met the sighting report requirements of the MOUs?
 - Annual sighting report submissions were provided by FLNR. Auditors assessed the submissions for conformance with the timeliness, format and content required by the MOUs.
 - Assessment criteria were:
 - Was the report submitted to FLNR prior to May 31, 2014?
 - Was the report submitted in the format required by FLNR?
 - Did the report meet all the content requirements?⁷

FLNR Guidance

- Has FLNR provided the operators with the correct contact and format information to ensure consistent and timely reporting?
 - Operators were asked to provide any guidance provided to them by FLNR to ensure that submissions were timely and to the standard required by FLNR.
 - Auditors assessed whether FLNR had provided operators with adequate guidance to be able to comply with the MOUs reporting requirements, including up-to-date contact information, submission deadlines and submission formats.

⁷ To illustrate compliance/non-compliance associated with the content of submitted wildlife sighting data, examples are provided in Appendix 1.

Annual Compliance Report Cards

- Have operators met the annual report card requirements of the MOUs?
 - FLNR provided the auditors with annual report card submissions. Auditors reviewed the submissions for timeliness, format and content required by the MOUs.
 - Assessment criteria were:
 - Was the report submitted to FLNR prior to May 31, 2014?
 - Was the report submitted in the format required by FLNR?
 - Did the report meet all the content requirements?

Adaptations to Caribou Encounters

- How did the operators adapt to caribou encounters, if any, during skier transportation or skiing?
 - Auditors reviewed annual sighting reports, annual report cards, wildlife operating procedures and interviewed six guides who had reported caribou encounters during the 2013/14 season, to assess whether operators sufficiently documented their actions to demonstrate their diligence in conformance with the adaptive requirements of the MOUs. Auditors relied on the accuracy and completeness of operator reports in order to assess whether they met MOUs requirements.
 - Assessment criteria were:
 - When there was an encounter, did the wildlife sighting report clearly explain how the guide or pilot adapted to the encounter, including:
 - choosing a helicopter flight path that maintains at least a 500-metre distance from occupied caribou habitats (adhering to the requirement to comply with government policy regarding the need to maintain at least a 500-metre distance from caribou when operating helicopters within identified caribou habitat (Province of British Columbia 2006)
 - suspending activities for at least 48 hours, when caribou are in an area, and not commencing activities until a reconnaissance can confirm caribou have left the area
 - changing ski route and/or pick-up/drop-off locations
 - grouping and controlling skiers
 - delaying skiing
 - notifying other ski groups



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