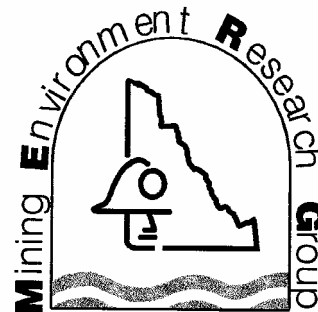


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Flying in Sheep Country: How to Minimize Disturbance from Aircraft

By Leberge Environmental Services

MERG is a cooperative working group made up of the Federal and Yukon Governments, Yukon First Nations, mining companies, and non-government organizations for the promotion of research into mining and environmental issues in Yukon.



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Title page:

MINIMIZING IMPACTS FROM AIRCRAFT WHEN FLYING IN SHEEP COUNTRY

BACKGROUND

Aircraft disturbance of Dall Sheep and other wildlife has been a growing concern in the Yukon over the years. Mineral exploration often occurs in remote mountainous regions where the only access is by aircraft, usually helicopter. The aircraft based tourism industry, either sight seeing or accessing remote areas for outdoor adventures, has steadily increased in recent years. These areas are often in, or on route to year round ranges of sheep or goats. Generally these activities take place during the summer months but the sport of heli-skiing can influence these areas in the winter as well. Disturbances to wildlife from aircraft range from interrupted eating to fleeing for long distances, ultimately causing undue stress to the animal.

Since 1995, the Department of Renewable Resources, Government of Yukon, has funded several research projects investigating the impacts of rotary and fixed wing aircraft disturbances on Dall Sheep. The papers produced from this research are available from the Government of Yukon, Fish and Wildlife Branch. Both the Branch and the author of the research papers acknowledge that the field work was limited, but feel that the findings are significant and contribute to a better understanding of what people can do to minimize the effects of aircraft on Dall sheep populations. Results of these studies indicate that helicopters create more disturbances to sheep than fixed wing aircraft.

In the Yukon, studies to date have concentrated on Dall Sheep only, however the information and guidelines would generally apply to mountain goats. Except for studies on the effects of military jet overflights in the Arctic, there have been no studies on aircraft disturbance to caribou. Some guidelines pertaining to caribou have also been included, based on general observations and local knowledge.

Who should read this booklet?

The information offered here is for:

- pilots of rotary and fixed wing aircraft
- wilderness and ecotourism operators
- mineral exploration companies
- mining companies
- outfitters
- owners of remote lodges
- management boards
- anyone interested in sheep

What is Disturbance?

Disturbance is any activity that interrupts the regular behaviour and routines of animals. Sheep display a variety of reactions. They include:

- Being vigilant: The animal interrupts its activity, such as foraging, and stands with its head above its shoulders and scans the surroundings.
- Discontinue eating: The animal will stop eating and usually at this point will become vigilant.
- Un-bedding: The animal will get up from a lying position. They usually ruminate (chew their cud) when they are bedded.
- Escaping: The animal will walk and/or run a distance from their pre-disturbance position. The distance can range from a few steps to over a kilometre, depending on the degree of disturbance.

Each of these reactions costs the animal energy. After the disturbance, sheep tend to remain vigilant until they are convinced that the threat has past, and then they resume their previous activity; foraging or bedding. It appears that bedding is the activity which when disturbed, causes the most stress to the animal. Studies have shown that when this behaviour was interrupted, it took sheep up to three times longer before they would re-bed or forage, than if they were disturbed while standing or foraging. This disruption could affect rumination which in turn affects the amount of energy that is being assimilated.

The number of animals in a group appears to affect the reaction to the disturbance. As the size of the group increases, there's a greater chance that one member of the group will spot the helicopter from a greater distance. When this sharp-eyed sheep runs, the rest of the group take the cue and run also, even if they haven't seen the helicopter.

GUIDELINES

The following guidelines are recommended to reduce impacts when flying in sheep country. Although preliminary studies have been conducted on Yukon sheep only, these guidelines are also applicable to mountain goats. Some reference is also made to caribou.

1. **Plan the route to avoid known ranges and sensitive areas.**

If the aircraft is beyond audio or visual range, the animal obviously will not be disturbed.

Sheep: Avoid known lambing cliffs and mineral licks from May 1 to June 15.

Caribou: Avoid known calving grounds during the last week in May, and rutting areas from Oct 1 to 15. If it is not possible to totally avoid a rutting area, maintain as high an altitude as possible to minimize or eliminate disturbance.

2. **If it is necessary to fly near the sheep range, keep the distance from the aircraft to the sheep greater than 3.5 km.**

The more space put between the aircraft and the sheep, the better. The closer the aircraft gets to the sheep, the greater the disturbance that is created and the faster and farther the sheep will flee. If at all possible, maintain a minimum distance of 3.5 kilometres from the sheep. Even if the helicopter can be heard but is not within view (behind a ridge for example), sheep seem to be less disturbed than when the helicopter is in direct line of sight, although the distance from the aircraft and the sheep for both situations may be the same.

3. **Maintain an altitude that is situated below the sheep.**

If flight must be conducted within the 3.5 km range, it is best to fly below the level of where the sheep are positioned on the mountain slope. Sheep will flee upslope, which is a much safer route for them. When sheep are forced to flee downslope, they are more prone to falls resulting in broken bones and/or death.

This also applies when flying near caribou calving grounds. Woodland caribou generally calve at higher elevations and by flying below their location, they will not be forced down to the valleys before they are ready.

4. **Minimize the number of flights**

If a route must be flown frequently (when installing a camp for instance), and the flight path is close enough to sheep to cause disturbance, try to minimize the total number of flights to be conducted. If more than one aircraft is used, fly together rather than on separate occasions. Habituation is a term used when animals become so used to non-lethal human activity that the activity no longer appears to bother them. However, there has been no evidence of habituation of sheep to helicopter overflights. Each subsequent disturbance generally seems to affect them as much as the first disturbance. A high rate of disturbance may affect feeding and digestion, and could ultimately affect body weight and reproductive success, particularly during times of poor quality range. Helicopter disturbances may also cause sheep to shift habitats, that may have a poorer quality of forage. These shifts may be short term, however, if the disturbance persists, they could become long term.

5. **Fly during the sheep's active periods**

Flights conducted early in the morning disturb sheep less than in the afternoon. Sheep usually forage in the morning but by afternoon they have usually bedded and are ruminating. Studies have shown that when the bedding behaviour was interrupted, it took sheep up to three times longer before they would re-bed or forage, than if they were disturbed while standing or foraging. If scheduling allows, flights should be conducted during the active periods and avoided during the resting periods from 11am to 3pm.

6. **Fly at an angle when approaching sheep areas**

Try to avoid flying directly toward the sheep. The sheep perceives the aircraft as a predator

that has detected it and intends to capture it. It then responds accordingly and flees to escape. Approaches on an angle, especially from below, disturb them less.

7. Maintain a Fly-By path and do not hover or circle the sheep

In fact, this guideline is applicable to any species of animal, be it a furbearer or an ungulate. When one is out sightseeing, one always wants to get a better look. Except for biologists conducting wildlife surveys, wildlife viewing should be done from a distance. Binoculars and telephoto lenses will enable closer views. Circling and following the animals creates a great deal of stress for the animals and should be avoided. When an overflight lasts less than five minutes (from the time the aircraft is heard and sighted until it is out of range), most sheep display disrupted behaviour for up to 10 minutes. Depending on the interrupted activity, it can take up to 45 minutes for sheep to resume their pre-disturbance activity. If the overflight lasts longer than five minutes, it is suspected that the disturbance and subsequent reactions will be far greater.

In summary, when flying in the Yukon wilderness, use common sense and respect the animals.

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