UTILIZING COMMON RADIO CHANNELS IN HIGH-USE AVALANCHE TERRAIN

INTERNATIONAL SNOW SCIENCE WORKSHOP 2016 IN BRECKENRIDGE, CO

Matt Steen[1]*, Bruce Edgerly[2]

[1]Telluride Helitrax, Telluride, CO, USA
[2]Backcountry Access, Inc., Boulder, CO, USA

ABSTRACT: Winter backcountry travel is increasingly more popular, especially adjacent to ski areas and common-use trailheads. The increase of winter recreation use in these frequently traveled and avalanche prone areas creates a need for advanced communication. Thought out and clear communication can aid in avalanche prevention, rescue response and safety. Communication is important between partners, with parties using the same areas and in certain cases, professionals. Over the course of the 2014-2015 and 2015-2016 winter seasons, the Telluride backcountry community tested the use of common backcountry radio channels to increase and streamline communication in their high-use areas. This program has proven beneficial in the effectiveness to communicate in high-use areas. We have compiled stories and survey results to prove that advanced communication in high-use avalanche terrain should be considered in various ski communities around the world.

KEYWORDS: radio communication, backcountry safety, group management, rescue

1. INTRODUCTION

Backcountry winter recreation and travel is on the rise. Easily accessed areas like trailheads and lift-accessed terrain are becoming increasingly popular and sometimes crowded. In an effort to increase the safety of users, common-use radio channels have the ability to streamline communication between group members and adjoining user groups. The goal is to enhance safe travel protocols through increased communication, ideally cutting down on close calls and increasing the efficiency of rescue if needed. Common radio channel use in avalanche terrain creates a platform to communicate in these high-use areas, promoting a safer environment when traveling with other users in complex and avalanche prone terrain.

* *Corresponding author address:*
Matt Steen, Telluride Helitrax,
Telluride, CO 81435-2771;
tel: 970-596-0408; fax: 970-728-4987;
email: mh44steen@gmail.com

2. AREAS OF USE

High-use backcountry areas include zones near popular trailheads, easily accessible mountain passes, terrain located adjacent to ski resorts and popular backcountry zones. Each area of use differs and has unique terrain management challenges.

3. RADIO USE IN AVALANCHE TERRAIN

The use of two-way radios by recreationists has changed greatly over the last two decades. Use of these devices grew dramatically with the introduction of the low-power (0.5 Watt) Family Radio Service (FRS) channels in 1996. This resulted in the introduction of the Motorola Talkabout and other brands of FRS radios. Some of these radios also began using higher power (1 Watt) General Mobile Radio Service (GMRS) channels, which require a license from the FCC (this is rarely enforced).

Usage of FRS/GMRS radios, however, decreased dramatically over the last decade, due to the proliferation of mobile and smartphones–and improvements in cell service coverage.

While cell phone technology is highly useful for emergency situations in the backcountry–

assuming coverage exists–it cannot replace the real-time, group (versus one-on-one) communication that two-way radios provide. Consequently, a new generation of FRS/GMRS radios are now available specifically designed for winter recreation, with long-lasting batteries, glove friendly controls, easy channel selection, and remote speaker microphones that can be mounted on the users' backpack for immediate access. The widespread adoption of this new style of radio has opened up better opportunities for communication–not only within a party, but also between separate parties in the backcountry.

In general, high-use backcountry terrain is potential avalanche terrain. Radio use in avalanche terrain has the potential to create a safer environment and thus cut down on close calls and accidents. In the event an avalanche does occur, it can establish a faster and more efficient rescue.

Radio use in avalanche terrain allows for better communication in the following ways:

- Increase and ease in communication among group members
- Communication is possible when you are out of talking/hearing distance of your partner(s)
- Communication is possible when you can no longer see your partner(s)
- Increase and ease in communication among different groups using the same avalanche terrain
- Communication is possible between parties in avalanche terrain and rescue workers in the occurrence of an incident
- Communication of snow and avalanche information becomes real-time for those that are listening

Essentially, radio use increases the ability to communicate in avalanche terrain. A high level of communication among group members, between groups and among safety professionals is undoubtedly a safer alternative to current, conventional communication methods.

4. TELLURIDE CASE STUDY

The Telluride backcountry has experienced an influx of usage over the past decade. The popular Bear Creek drainage, which is located adjacent to the Telluride Ski Resort, is currently open to backcountry users via backcountry gates located along the ski area boundary.

The Bear Creek drainage offers a wide variety of terrain including below and above tree line descents including cliffs, couloirs, exposed and rocky terrain, tree zones, open bowls and convex pitches with limited safe zones and often times, out-of-sight routes.

User numbers in the Bear Creek drainage have been dramatically increasing over time (ironically even during periods of closures). It is not uncommon to have groups traveling directly on top of other groups. Concurrently, groups are often times in visual distance of each other, but out of an effective distance to communicate.

The Telluride Backcountry Radio Program was launched during the 2014-2015 winter season in an effort to aid in the safety of backcountry users in Bear Creek. The program was launched in conjunction with the Telluride Mountain Club (TMC) to reach the appropriate audience throughout the Telluride community. Details of the program were communicated via the local newspaper, the Telluride Daily Planet. Additionally, details of the program were shared via social media, newsletters and word of mouth.

The program allowed members of TMC to purchase Backcountry Access BC Link radios at a discounted rate at Jagged Edge Mountain Gear, a local gear shop. The goals were to increase the usage of radios on a common radio channel, and encourage and increase communication in Bear Creek. Since inception, 64 radios have been sold through Jagged Edge Mountain Gear.

The Telluride Backcountry Radio Program was originally aimed to encourage use of a single channel (4-4) that all backcountry users would utilize when traveling in Bear Creek. Backcountry

users have been encouraged to monitor the common channel before and during their descent of a chosen line. It is also encouraged that the common channel be scanned before and during travel in and out of Bear Creek. In the event of an avalanche incident or other rescue scenario, this channel would be utilized for self and group rescue if needed. The local Sheriff's office, the entity in charge of rescue in Bear Creek, has adopted this program and encourages backcountry users follow suit. Additionally, the Telluride Ski Resort Ski Patrol unofficially monitors the same common channel.

5. CLOSE CALLS

5.1 January 2014

A group of six skiers were traveling in a flat, above tree line area in Bear Creek and collapsed a weak layer en route. They noticed a small R1D1 sized avalanche from this collapse, but no others within sight. Moments later a radio call from a second party below tree line made a call that they witnessed a large R4D3 avalanche in an area they just skied. The first group was above the avalanche and the second group was below the avalanche. With the use of radios, information was readably established between the two parties (even though the 2 groups did not see each other). It was quickly established that there was a low probability that anyone else was involved in the incident outside of these two parties. A few moments after the two groups had discussed the incident, the Telluride Ski Patrol made a call on the common radio channel to notify travelers in Bear Creek that they received a phone call regarding a large avalanche in the area. The two groups were able to communicate with the Telluride Ski Patrol, relaying information of no burial or further involvement. The result was no outside resources or search was needed. The common radio channel allowed the various groups to communicate with each other and mitigate need for a greater search of the area.

5.2 April 2016

A group of two (Group 1) was hiking to ski a narrow couloir with a mandatory rappel in Bear Creek. They passed another group of two (Group 2) that were also planning to ski this same couloir. Group 1 had a set of radios while Group 2 did not. The two groups established that Group 1 would call, via cell phone, Group 2 when they were clear of the rappel and the couloir, and in a safe zone. When Group 2 did not hear from Group 1, after what they assumed was reasonable time to travel through the couloir, Group 2 started their descent. The first person in Group 1 was on rappel in the couloir when a loose-snow avalanche came down on both skiers in Group 1. Group 2 had triggered this loose-snow avalanche above Group 1. The second member of Group 1 was able to wrap his arm around the rappel anchor to hold on, but the first person on rappel was swept down the rope by the avalanche and tumbled down off the end of the rope, sustaining a wrist injury. If both parties had used a common radio channel to communicate, this incident would likely not have occurred.

6. PROTOCOLS

The idea of streamlined communication between parties to create a safer environment has been established in professional organizations such as ski patrols, guiding organizations and search and rescue groups. Similar standards were introduced for the Telluride Backcountry Radio Program and include:

- Radio communication when you and your group have plans to descend a line or area
- Radio communication when you and your group are clear of a given line or area
- Radio communication between partners at areas of safety
- Radio information between members of the same group or between two groups regarding current snowpack conditions
- Route selection
- Warnings, hazards and dangers
- Rescue communication
- General communication (i.e. equipment, photo opportunities, etc.) Consider using a non-common channel

7. SURVEYS

In the spring of 2016, the Telluride Mountain Club hosted a survey to capture data surrounding the Telluride Backcountry Radio Program. Out of an unknown number of radio users in Bear Creek, there were 15 respondents, all of which are active backcountry users and use radios while in backcountry terrain. Here is a breakdown of the survey results:

How often respondents ski/snowboard in backcountry terrain:

- 3-7 times per week: 40%
- 1-3 times per week: 26.67%
- Less than 1 time per week: 33.33%

How often respondents use their radio to communicate in the backcountry:

- 100% of the time: 40%
- Around 75% of the time: 40%
- Around 50% of the time: 6.67%
- Around 25% of the time: 13.33%

The results found most users of the Telluride Backcountry Radio Program use the common radio channel to monitor Bear Creek before they drop into a line or particular area. Once they are descending, they often switch to another channel to accommodate chatter among their group. 100% of our respondents use their radio to communicate. Below is a breakdown of the communication types from most to least popular:

- Letting your group know you are at a safe zone
- Route selection
- Snowpack and safety comments
- Snow conditions
- Other: photos and videos, rescue scenario, equipment issues, etc.

60% of respondents use their radio to communicate with people in a separate group. This type of communication covers route selection, letting others know you are entering a specific ski line, letting others know when your group is clear of an area and simply just checking in with other groups.

While 66.67% of our respondents have not had to use their radios in an emergency, 33.33% have. These emergencies included avalanches, lost skiers and communicating with local Search and Rescue groups.

Overall, respondents of the Telluride Backcountry Radio Program believe that use of radios is helping make Bear Creek a safer place. Backcountry protocols should always be practiced, and radios should never solely be relied upon.

During the same time period, radio manufacturer Backcountry Access, Inc. (BCA) hosted another survey, to gauge interest in establishing common radio channels. Of 901 respondents, all of which were backcountry skiers, snowboarders or snowmobilers, 62% indicated that they use two-way radios in the backcountry, the majority of which were FRS/GMRS radios. Nearly all indicated that they use these radios for communicating within their group, with another 18% stating they use them for communicating with other parties. However, when asked if they would use them for this purpose if there were a common radio channel, that number rose to over 50%.

Those who don't use radios mainly cited expense and lack of necessity. Those who do use radios often cited "chatter" as a major concern if common radio channels were to be widely publicized.

The most commonly used channel among respondents was channel 4, privacy code 20 (4-20). This was followed by 9-11, 10-4, 5-10, 7-11, 4-10, and 8-10. However, these answers could be skewed, as several of these are pre-set channels on the BCA BC Link radio.

Based on the Backcountry Access survey results, if a common channel were established, the most likely candidate would be 9-11: It is an FRS channel–so doesn't require a license–and it is already being used by numerous authorities to monitor for

recreationist emergencies. While FRS channels have less range than GMRS channels due to their lower power, the tradeoff is that there is less “chatter” on those frequencies.

8. CONCLUSIONS

Introducing advanced communication through the use of radios, and specifically a common radio channel in high-use avalanche prone areas, is a way to aid in efficient avalanche prevention, safety and rescue. Use of radios increases the orderliness of communication among group members, between groups, and between groups and safety professionals in high-use backcountry terrain.

Radios are a logical tool to increase and maximize communication for accident prevention and response. Clear communication has the potential to save lives in avalanche prone areas. Backcountry protocols are the backbone of safety in avalanche terrain. Radios can aid with these already established protocols.

Via the two surveys and numerous verbal accounts of utilizing radios to communicate in avalanche terrain, the number one complaint was excessive radio noise, or “chatter”, with a multitude of user groups using the same channel. An advanced radio with screening capabilities, such as a scan function, would help eliminate the excessive noise. If a common radio/rescue channel were introduced to other high-use areas, would users listen? Can our most popular recreational radios be upgraded to have scanning features? Is it possible to use common rescue frequencies or a rescue/data channel? Would local groups, authorities and rescue organizations adopt this program?

In the case of the Telluride Backcountry Radio Program, public and group communication ultimately reduced the amount of outside resources needed to perform unnecessary searches. Communication within a group and communication between groups cleared up many, otherwise unknown, close-calls, near misses and self-rescues. It was also concluded that if radio use had been utilized, outside-resourced rescue efforts would have been prevented.

The use of radios in high-use avalanche terrain has the ability to increase safety through clear communication of its users. Additionally, a common radio channel enhances communication, and the ability to streamline communication between all users and potential rescuers.

CONFLICT OF INTEREST STATEMENT

Co-author of this paper, Bruce Edgerly, is co-founder and marketing vice president of Backcountry Access, Inc. (BCA), manufacturer of the BC Link radio.

ACKNOWLEDGEMENTS

We would like to acknowledge and thank the Telluride Mountain Club for taking on the Telluride Backcountry Radio Program and survey, to encourage safer travel protocols in the Bear Creek drainage adjacent to Telluride Ski Resort. We would also like to acknowledge and thank Jagged Edge Mountain Gear for supplying radios at a discounted price to members of the Telluride Mountain Club.