avalanche.ca

The journal of Canada's avalanche community

PATTERNS OF DEATH

THOUGHTS ON THE BC CORONERS REPORT ON THE SNOWMOBILE FATALITIES OF 2008-09

NATURE'S HAZARDOUS GENIUS

REPLICATING SURFACE HOAR

TEACHING TEACHERS

THE CAA LEVEL 1 EDUCATORS COURSE

Remembering 1910,
Avalanche Awareness Days,
New Danger Scale and more!

Volume 92 Spring 2010
Cdn Publication #40830518

Cover shot: Around 1600 metres on Mt Hall, south of Revelstoke, on February 22 of this year. The surface hoar stayed that size (way bigger than a toonie!) until about 1800 metres, then started to get a bit smaller. Photo: Jeff Scott

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This journal is the official publication of the Canadian Avalanche Association (CAA), the Canadian Avalanche Centre (CAC) and the Canadian Avalanche Foundation (CAF). The CAA and CAC are non-profit societies based in Revelstoke, BC, serving as Canada's national organizations promoting avalanche safety. The CAF is a registered charity formed to provide a tax-deductible fundraising mechanism for the support of public avalanche safety initiatives. The CAF is based in Canmore, AB.

The goal of *avalanche.ca* is to keep readers current on avalanche-related events and issues in Canada. We foster knowledge transfer and informed debate by publishing submissions from our readers. Responsibility for content in articles submitted by our readers lies with the individual or organization producing that material. Submitted articles do not necessarily reflect the views or policies of the CAA, CAC or CAF.

We always welcomes your opinions, teaching tips, photos, research papers, survival stories, new product announcements, product reviews, book reviews, historical tales, event listings, job openings, humourous anecdotes and, really, anything interesting about avalanches or those people involved with them. Help us share what you have. Please send submissions to:

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Turning Point

By now, all of us know how close the Boulder Mountain accident came to being a disaster on an almost unimaginable scale. A rare combination of good luck and quick response prevented that from happening, for which we are all grateful. In the aftermath, as the public at large recognizes the factors that contributed to the accident—gathering largely unaware people in avalanche terrain, ignoring warnings of high hazard—we are sensing a change within the snowmobiling community.

At the CAC, we've enjoyed a small but steady grassroots support from snowmobilers for a few years now—contributions from events, donations from clubs, fundraisers from individuals touched by avalanche tragedy. Since Boulder Mountain, that trickle has become a stream. The Association of BC Snowmobile Clubs recently donated $5000 in memory of their founder Terry Watt, challenging their member clubs to contribute as well. Individual donations are coming in at an unprecedented rate, along with challenges to other snowmobilers to "meet or beat" the sums contributed.

These are just some of the initiatives currently benefiting the CAC. While we are always grateful for funding support, we also need commitment on another level from the snowmobiling community. To put it plainly, we need them to work with us, to buy in to the culture of avalanche awareness. On that front there seems to be some change, and it appears the Boulder Mountain avalanche accident of March 13 is proving to be the watershed event.

The words we're reading and the messages we're getting have a different tone from those in the past. There's a feeling of togetherness, a sense that sledders want to pull in the same direction, that we're all in this together. There is an increased awareness that any cuts to CAC programs and services affects them too. Above all, there is increased recognition within the sledding community that these sorts of preventable accidents have to stop.

Change spurred by tragedy is not new. Our history as a community is marked by similar milestones. We have often said that if we can, we would like to help the snowmobiling community avoid a similar, painful learning curve. We've had riders in our corner for many years now. Lori and Randy Zacaruk and Amber Wood have all done some great work in building avalanche awareness in the snowmobiling community, and continue to be leaders. Now we're attracting other riders, like Jeremy Henke, who recognize the work that needs to be done and want to be ahead of the curve.

The sharply rising trend in snowmobile fatalities spurred the BC Coroners Service to form a Death Review Panel. As you can read in the article starting on page 18, these panels are a relatively new addition to the Coroners' authority, designed to bring experts together to study a specific problem and make recommendations to resolve it. The report from this particular panel's discussion is an excellent piece of work, giving us no shortage of good ideas for moving forward. We're calling it our "roadmap" but, as author John Kelly points out, without significantly more funding we can't put it to use.

Despite our current funding issues, the CAC is in a good place right now—bolstered by purpose and clarity. The value of the prevention services supplied by the avalanche safety community is underlined by this simple fact: compared to previous years of the event associated with this accident, participants avoided Boulder Mountain in droves. Yes, according to reports, there were a couple of hundred people there. In other years, the Big Iron Shootout easily attracts thousands. Many riders heeded the danger rating, heard the special avalanche warning, and stayed away. That, in itself, is success and gives us a renewed sense of purpose.

We also have a very clear challenge ahead of us. We have identified some behaviour in the mountain snowmobile sector that we are pushing hard to change—groups stationary in avalanche terrain and thoughtless terrain selection. These are clear messages that we hope can be communicated within the community, from riders who want to make things better.

Change is upon us and we're ready to embrace it. You'll see in this issue that we continue to have great projects on the go, and continue to attract bright people with solid experience and good ideas. This journal continues to be the forum for those ideas and information exchange, and that's something we hope never changes.

Wren McElroy

To the Editor,

I am writing to you at this time to express my profound disappointment at your most recent 'Flakes' cartoon that appeared in Volume 91 of avalanche.ca. While it may have been an attempt at humour, I feel given the current circumstances, the pejorative nature of the cartoon was inappropriate for a professional journal that represents itself as the voice of the avalanche community and CAA members. To choose to portray only a select portion of the CAA membership (guides) as you did, particularly when that group is becoming more vocal in the direction the industry is going and at times in disagreement with the CAA, was inappropriate, insulting and sadly lacking in professionalism.

Why you would choose to portray heli-ski guides as 'squareheads' or 'blockheads', as the cartoon suggests, is beyond me. A quick check on these two terms suggests they are less than flattering. 'Square' or 'Squarehead' has been typically used as a disparaging or belittling reference, particularly towards certain nationalities that are part of the heli-ski guiding community. 'Blockhead' is intended as a 'humorous' synonym for the word idiot. Other choices might have included addlehead, bonehead, dimwit, dope and dummy. Continuing further through the usage search, an idiot is typically defined as a mentally deficient person or as an individual with overall bad judgment. In psychology, idiot is an historical term for the state or condition now referred to as 'profound mental retardation'. As I said, I can't see why I should find this portrayal of myself and my peers the least bit humourous under the circumstances.

At the very least, I believe an apology is in order and would like to see such in the next issue of 'avalanche.ca'. I'd also like to suggest that 'digs' like this have no place whatsoever in the voice that presents itself as the professional record of our community. Editorial power necessitates a certain amount of judgment, and sadly, I feel this was sorely lacking in this instance.

Sincerely,

Derek Holtved
ACMG Ski Guide
CAA Member

Mary Clayton replies,

I am sorry if this cartoon offended any of our readers. While it's never our intent to insult, the objective of all good editorial cartoons is to encourage dialogue. As all of us who travel fine lines for a living know, it can be easy to go too far. This was obviously the case for this reader, and perhaps others, so I apologize for that.

As anyone who knows me can attest, I have nothing against guides. Some of my best friends are guides. I showed this cartoon to a wide range of them (including Matt Peter, whose article on guiding and helmets inspired the image) and the reaction was universal—laughter. Of course I know that's no defence; one could say that guides who are friends of mine are, by definition, lacking in judgment.

I knew this was an edgy cartoon but, as we all sometimes take liberties in humour with our closest friends, I saw it as a good "inside" joke. Most of the CAA's ITP instructor pool and a substantial portion of its board and committees are comprised of ACMG members. Because of that fact, I thought it would be seen as poking fun at ourselves. I let it run because I saw it highlighting the strength of the relationship between the CAA and the ACMG, not any weakness. I am especially sorry if I was wrong about that.

Relationships and Rewards

During the ISSW in Switzerland this year, there was a meeting on the last day of the conference between the CAA/CAC and the Swiss Federal Institute for Snow and Avalanche Research (SLF). It was held in the forecasting room at the SLF offices, a room not altogether dissimilar from the forecasting office at the CAC—albeit a little more organized, as can be expected of the Swiss!

In attendance were John Kelly, Steve Blake, Brian Gould and me from the CAA/CAC; from the SLF were Hans-Juerg Etter, Jacob Reiner, Thomas Stucki and Reto Keller. Why such a meeting? The two organizations wanted to get to know each other a little more, share resources, learn from each other's successes and help each other with our challenges.

We both recognized the value in more collaboration. The SLF's interests are in our training and our integration with the front-line professional. For our part, we're interested in the Swiss forecasting program and their computer systems and tools. We talked for some time about options and ideas and in the end, a seed was planted. Both organizations wanted something more formal that would allow for more open sharing of information, knowledge, technology and expertise.

A few months later a Memorandum of Understanding was signed between the CAA/CAC and the SLF. The basis of this MOU is open sharing of resources, ideas and expertise while protecting each other's significant investments in people, technology and curriculum. These things take time and over the winter we've enjoyed increasing communication. This culminated in a three-day visit to Revelstoke by SLF Senior Forecaster Hans-Juerg Etter, who is also the Chair of the Avalanche Commission for ICAR.

Our conversations were broad in scope and encompassed many topics, and there was a lot of discussion regarding the similarities and differences in avalanche risk management in each of our countries. In Canada we are currently challenged with the rising trend and characteristics of snowmobile-related avalanche fatalities. In Switzerland it's the snowshoer—a rapidly growing backcountry user group with little knowledge of the avalanche safety infrastructure in place, such as public bulletins, and whose accidents often involve poor terrain choices. Sound familiar?

The issue of scale was also prevalent in our discussions. The entire country of Switzerland would fit inside the CAC's North Columbia Bulletin region. In Switzerland, local rescue agencies pride themselves on a 15-minute response time no matter where you are in the country. In Canada, just traveling to a point to call a rescue agency could take hours or even days, depending on your location and mode of travel. Clearly there are similarities in how each country approaches public avalanche safety, danger ratings, search and rescue, and prevention. Scale is what sets us apart, and that's a very important thing to remember when thinking about the future in Canada.

The truth is that nowhere in the world will you find as wild and remote a place as Canada with the level of avalanche safety infrastructure we enjoy. This has been achieved through a holistic, collaborative approach to solving our fundamental problem—the mountains in winter are a dangerous place to be. Despite the challenges of scale, and of funding, what has been achieved in Canada is remarkable.

So, in celebration of this fact, I propose that 2011 will mark a milestone in our community's history. A year when we celebrate the past, learn from our history, meet the challenges of the present face-on and pave the road to tomorrow. 2011 marks a confluence of unique events and a remarkably symmetrical list of anniversaries:

- 40 year, December, 1971—the first Avalanche Operations Level 1 course was held.
- 30 year, December, 1981—the CAA was formed
- 20 year, December, 1991—the InfoEx started its first full year of operations and Canada's first public avalanche bulletin was issued.

To celebrate these anniversaries, and learn from the stories and experiences of others who face similar challenges, the CAA will host the Avalanche Rescue Commission of ICAR's first-ever field session in North America. Tentatively scheduled for late March, 2011, this three-day conference will address the following with the member countries and Canadian experts in attendance:

Avalanche search and rescue in large regions

- profiling the professional and volunteer avalanche SAR capacity in western Canada and learning how other countries approach similar challenges

Training and education in avalanche safety

- professional and recreational approaches in Canada and abroad

The challenges of tomorrow

- the emerging or long-term challenges, learning from each other

While we continue to face numerous challenges in avalanche safety in Canada—be it government funding for public safety or the implications and costs associated with government regulations—we need to remind ourselves that what we've worked so hard for over the past 40+ years has been worth it. Professional standards for avalanche risk management in Canada are ever-evolving and internationally respected. Canadian citizens and tourists to our country have a public avalanche safety net including a search and rescue system that works on scales unimaginable to most European countries.

Is there more work to be done? Always. But we can and should be proud of what we've been able to accomplish. The 2011 ICAR field session will give us the opportunity to profile what we have in Canada, and learn from other Alpine nations on how they, individually and collectively, have approached similar challenges. This makes the next decade in our community' s future just as promising as [illegible]

Ian Tomm and Hans-Juerg Etter establish a new relationship between Canada and Switzerland, with the exchange of ideas and information on avalanche risk management and training.

Mary Clayton

Last Words

For my final instalment I thought that after six years on the boards of directors maybe a retrospective was in order. With my memory being what it is (good but really short) I decided to dig through my old files and see if anything I had written in the past had any relevance today. So I've high-graded some quotes from my previous instalments and added a few editorial comments in italics. Many of the challenges we faced six years ago remain but others have been resolved. One thing for sure, the workload is ongoing!


Steve Blake collection

"I do know, however, that your Boards of Directors consists of some excellent, enthusiastic individuals who will enlist your participation in answering the big questions facing us all." (Fall 05) *Still true in 2010!*

"And for those that missed the elections I am very pleased to point out that there were actually elections this year. It may be the first time in our history that member votes rather than simply an acclamation process decided multiple board positions. (Summer 2006) *A strong and healthy organization should have many capable nominees for each of the various board positions.*


Mike Mortimer

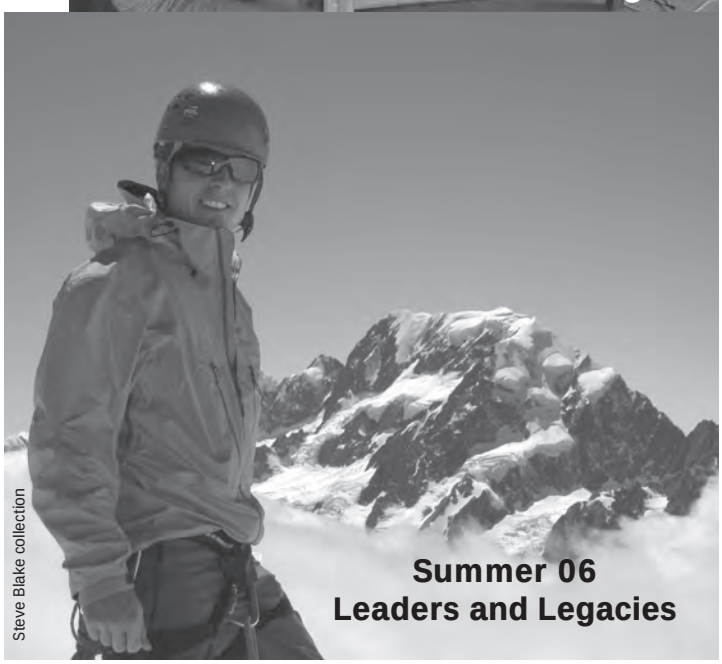
Fall 05
Fine Tuning

"At the board level we are committed to using our best judgement to provide clear direction to the Executive Director and to make principled decisions that will benefit the CAA and CAC now and in the future. Let us know how we are doing because there is no 'us and them' in this scenario, just us." (Fall 07)

"Simply stated, be innovative, look forward, set clear goals, establish tangible performance measures, and meet your customer's and member's needs." (Summer 06)

"First the board is accountable for the governance as well as the management of the association. While there must be a division of labour between the ED and the board, the buck stops with the board." (Summer 2009)

"What of distinction between the CAA and CAC? Who cares? I am not trying to be flippant here but who out there really understands the differences between the corporate entities let alone cares about them?" (Winter 05) *This question needs to be asked in context of 2010's socio-political landscape. Ian and I refer to this discussion as the "separation of church and state" and while many things have changed, the question, rephrased in 2009 remains.*


Steve Blake collection

Summer 06
Leaders and Legacies

". . . can training, certification, public safety, professional membership, fraternal membership and regulatory body exist under one umbrella?" (Fall 2009)

"We also recognize that in the Canadian avalanche community there is much more going on than simply the

activities of the CAC and CAA. With that in mind we welcome interested contributors from the avalanche community. We hope to see contributions from the ACMG, CSPS, PEP, CSGA, to name a few and any other individual or organization with an interest in reducing risks related to snow avalanches." (Fall 06)

"After extensive consultation, including the 'Senators Summit' and the Canmore Industry Partners meeting, a draft document has been created that outlines the qualifications that we feel avalanche workers should possess." (Winter 07)

"Over the years the CAA has proudly presented itself as principled organization that does the right thing for the right reasons. As an organization we strive to serve an important societal interest, empowering others to deliver high quality avalanche safety programs that protect the life and property." (Summer 08)

"The CAA and CAC have a vision statement, 'To be a world leader in avalanche awareness, education and safety services. That's the point on the horizon that we are steering for. It is important to have this vision statement as a lasting target but there's an associated question: 'Is it in the public interest?'" (Fall 08)

"Clair believed with the highest of conviction that even our best is barely adequate when it comes to our knowledge and understanding of avalanches. With that as our take home message, we offer a heartfelt thank you to Mr. Israelson for his dedicated years of service."(Spring 09)

"The influence we've earned is a direct dividend of the professionalism that our association and our membership have exhibited over the years. The development of the CAA has not been ad hoc; it has been responsible, responsive and strategic." (Fall 08)

"We believe the public avalanche safety is in a better place with the Avaluator than without it." (Fall 08)

"It never ceases to amaze me, the enthusiasm and energy that our members bring to the AGM week in Penticton. The learning, networking and social opportunities are second to none." (Summer 08)

"Successful organizations of today and tomorrow work hard to foster open content and knowledge sharing. We too, must capitalize on the wealth of wisdom inherent in our membership. . . Membership is recognized as our most valuable form of capital." (Winter 08)

"We're in the safety business but playing it safe is too risky. We need to be remarkable. We need to be noticed. We may be the recognized voice of avalanche expertise in Canada but we don't need one voice, we need a thousand voices." (Winter 09)

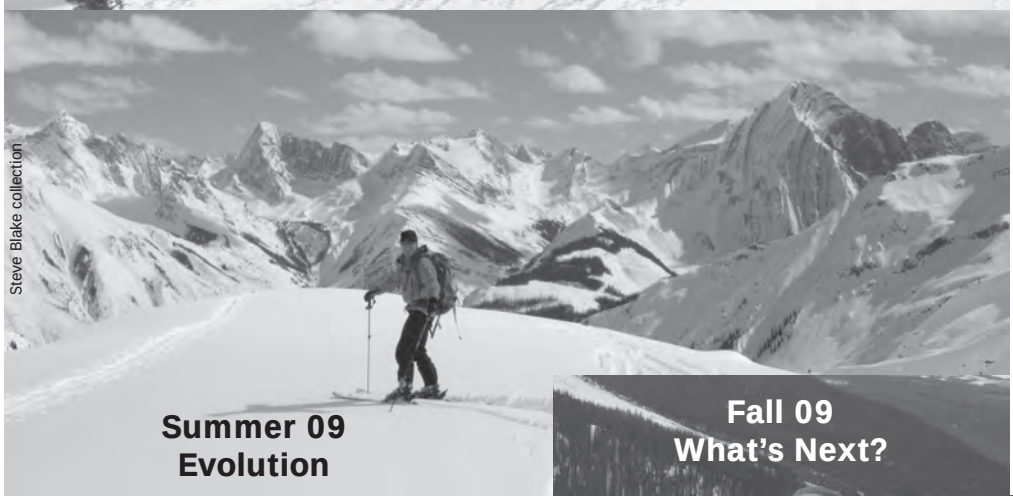
The next chapters remain unwritten but I think we are on the right track. I foresee that the values, the professionalism and the collective wisdom of our membership will continue to guide our evolution. Good luck to the authors, architects, artists, designers and engineers who accept the challenge of leading the CAA and CAC into the future.

With that I'll sign off. The time has flown by and I'll always consider this as a highly interesting and challenging period in my life. Thanks to all of you for the opportunity to work alongside some of the most dedicated, creative, professional people I've had the pleasure to meet. Be proud of the CAA and CAC and all we've accomplished together. I know I am.

Best regards,

Steve Blake collection

Spring 09
Changing of the Guard



Steve Blake collection

Summer 09
Evolution

Steve Blake collection

Fall 09
What's Next?

Steve Blake collection

Winter 09
Making a Difference

L-R: Back: Dave Smith (ACMG/CAA ITP), Eric Stebenne (RCMP), John Buffery (MOT/CAA ITP), Dr. Mike Inniss, Kevin Maloney (MOT), Stu Malcomsen (Whitewater), Robb Andersen (MOT/CAA ITP), John Wylie (MOT), Front: Wren McElroy (Whitewater/CAA ITP), Andre Laporte (MOT), Asa McLaurin (Whitewater), Robin Beech (Red Mountain), Brian Steeves (Red Mountain) and "Buddy"

John Tweedy

The Next Step

A mid-winter CPD session at Kootenay Pass furthers avalanche rescue skills with a realistic look at on-site victim treatment

By Wren McElroy

Any time a group of professionals gather to discuss their work, the dialogue and exchange is beneficial. When the focus is on a specific topic to practice or learn, the benefits are great. Avalanche rescue is a topic in our community that has seen significant changes over the past few years. No longer is it good enough to just be fast with the transceiver, and this is being reflected many ways in our community.

The CAA Level 1 Ski Operations Courses now have a companion rescue exam that includes organization, technique of both transceivers and effective spiral probing, and the candidate has to be able to give direction for the conveyor shoveling method. The CAA is also offering specialized courses on avalanche rescue with Manuel Genswein and the medical aspects of rescue with Dr. Renata Lewis. This holistic approach to avalanche rescue is much more realistic and necessary in terms of the reality of an actual event. One always needs to ask, "What is the next step?"

We know that professionals know what to do if they are caught in a slide. This is so well practiced and so ingrained that the instinct to react kicks in, and the professional is acting without having to analyze the situation. We know that practice works. Practicing new techniques and refining methods are what best practices are made of.

In February, John Tweedy from MOT Kootenay Pass invited a group of local avalanche workers to participate in a CPD session with Dr. Mike Inniss of Nelson. Dr. Inniss presented a discussion on triage assessment as it relates to multiple avalanche victims.

Following up on Dr. Lewis' work with the CAA, a morning classroom session covering triage with some focus on specific orthopaedic injuries was followed by an excellent outdoor practical session. Mike brought up "Buddy" a realistic mannequin with cuts to face, fully dressed in ski attire including boots, helmet and goggles. A hole was dug and Buddy placed in it, on his side with one leg severely angulated. This session wasn't about locating with a transceiver; it was about the next steps.

Working on the conveyor shovel method.

Wren McElroy

Jonothan Wong

Wren McElroy is a Professional Member of the CAA. This winter she has been teaching CAA Level 1 courses, working as a Curriculum Specialist and Ski Patrolling at Whitewater Ski Area.

Starting with the probe in, a group assembled and commenced with conveyor shovelling, first locating a boot, then finding the had, getting the snow away from the head and checking the airway. This is the point where many scenarios stop, but ours was just beginning.

Mike announced that the patient wasn't breathing. A pocket mask was assembled and we kept going. To follow a full burial scenario as authentically as possible has many benefits. It was very educational to see how much snow falls on to the patient's face while other rescuers continue to extricate. Assisting ventilations while lying on our side in the snow is a much more realistic and specialized practice. We completed the scenario by rolling Buddy on to a rescue toboggan, removing his helmet, applying a hard collar and initiating transport.

As avalanche professionals we practice our rescue skills and we practice our first aid skills, yet there has been a disconnect between the two. The work of Dr. Renata Lewis, Dr Jeff Boyd and others has helped to identify issues specific to Canada, issues that are vastly different than what our European peers face. Now it is time to practice and integrate these skills.

The benefits of this session at Kootenay Pass were multi-facetted. The group included highways MOT Staff, ACMG guides, Ski Patrol from Whitewater and Red Mountain, an RCMP Dog Handler and CAA ITP Instructors. Any time a group of avalanche professionals get together for meaningful discourse, CPD occurs. It can be done anywhere, on any avalanche-related topic. As John Tweedy said, "It's all about the sharing of knowledge, reflecting growth and understanding between operational groups."

Teach One, Reach Many

A professional-level avalanche course for educators

By Emily Grady

Brent Strand

To say that conditions were primed for avalanches would be an understatement. Fifteen CAA students were witnessing a scene they'll never forget—complete with several size 2.5 helicopter-controlled avalanches, whumphing with every step, shooting cracks as far as the eye can see, and numerous skier-controlled size 1. Given that many of these students had never witnessed an avalanche before, this was a life-time experience.

This unforgettable event took place during the week of February 14 – 20, when the CAA successfully hosted its first Operations Level 1 – Educators course. A year in the making, the idea for an educator's course began in the 2008-2009 season. As part of its continuing outreach to educators, the CAC had surveyed educators on numerous topics and received huge positive feedback to the idea of a course specifically for educators. From here, the CAC's Youth Program Coordinator, Bridget Daughney worked with interested educators and the CAA to make the dream of professional-level avalanche training with a focus on the educational elements into a reality.

The intention behind an educator-specific Level 1 course was to create an environment where educators could step out of their comfort zone and learn more about avalanches and avalanche safety. In addition, the course created a forum where educators could connect with other educators and discuss youth in the backcountry in the winter with the help of the course instructors. Furthermore, there was an emphasis on transferring important avalanche-related information to youth and others that those in an educational role might interact with.

The task of delivering this one-of-a-kind Level 1 course was put to CAA instructors Ian Tomm and Wren McElroy, along with help from Brent Strand and Rob Turner. The content and examination process of the course was equivalent to a standard Operations Level 1 course. Students were especially enthusiastic about the following highlights of this Revelstoke-based course:

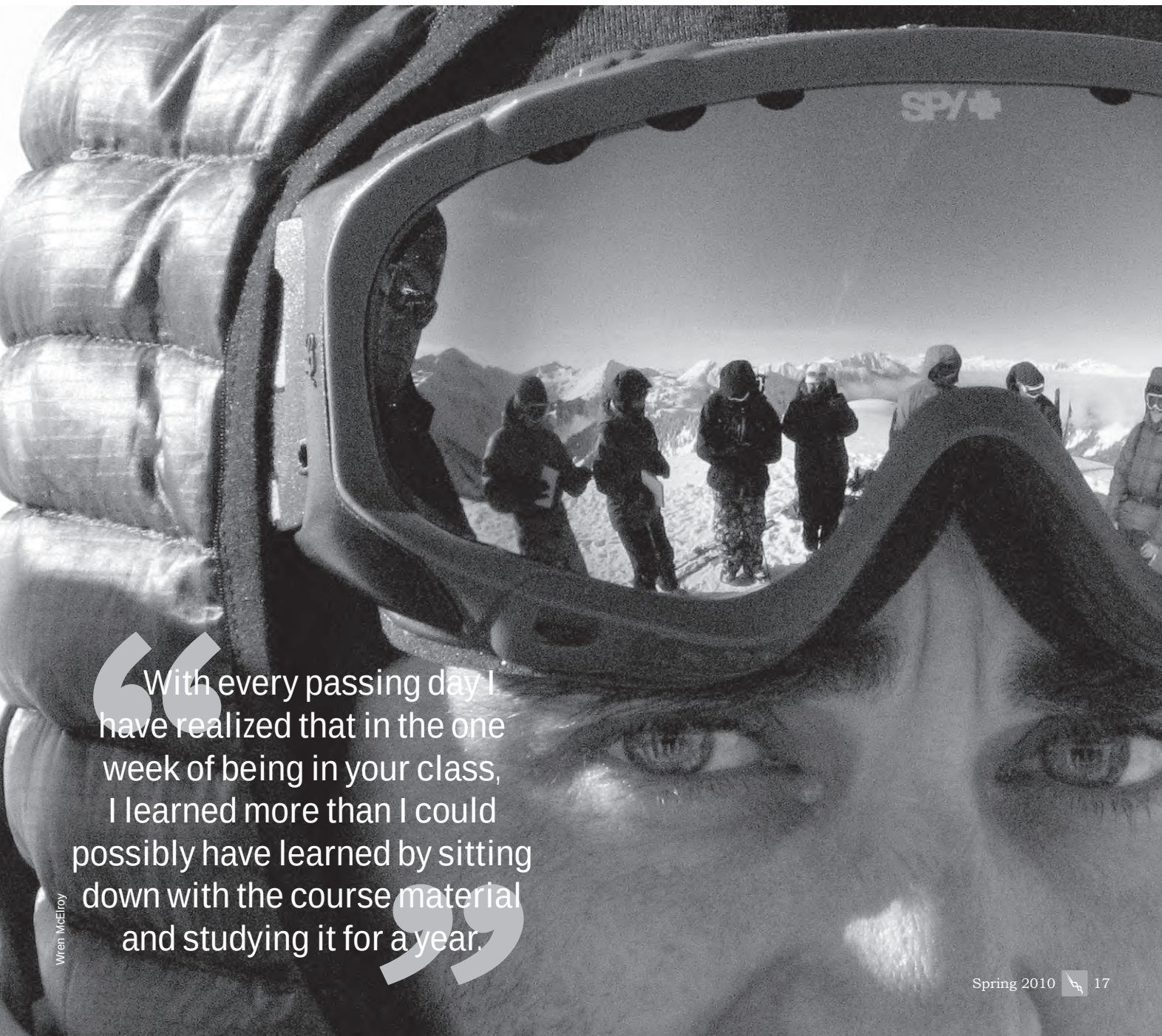
- Participating on an avalanche course during a widespread avalanche cycle (considerable to high hazard rating in the backcountry)

- Receiving a helicopter lift from Selkirk Tangiers Heli Skiing
- Witnessing helicopter remote avalanches
- Skiing on, in, and around fresh avalanche debris
- Having a like-minded group of educators taking the same course and being able to discuss its applications in an educational setting
- Having an opportunity to push into terrain beyond where instructors will be taking students

With keen educators enquiring already and overwhelmingly positive comments, the CAC/CAA is excited to be offering this course again next year. As this was the first course of its kind, the instructors' learning curve is as important as the students' feedback, as we plan for next year's course curriculum. As the course evolves, we are looking into whether the Level 1 curriculum can be re-profiled in the context of leading students.

The greatest strength we see from this course is that by teaching one, we will be reaching many. Each educator will have their own trickle-down effect. Through their jobs, they are able to spread youth avalanche education on a far wider scale than we can reach alone.

>>Emily Grady is the CAA's Industry Training Program Manager



"With every passing day I have realized that in the one week of being in your class, I learned more than I could possibly have learned by sitting down with the course material and studying it for a year."

Wren McElroy

“The measure of the snowmobile community, the search and rescue system, and the public safety infrastructure of BC will be taken in future years by how we adapted to the lessons learned at Boulder on March 13.”

Ian Tomm

Patterns of Death

A review of the report from the BC Coroners Death Review Panel on avalanche-related snowmobile deaths of 2009/10

By John Kelly

The British Columbia Coroners service is paying attention. In terms of how much contact I have had with the Coroner's Service, avalanche accidents have never been higher profile than they have in the last two years. The reason for this level of interest is not surprising. Avalanche fatalities involving snowmobilers rose sharply in 2007-08, and again in 2008-09. When deaths from specific causes increase, the Coroners Service takes note.

It is not hard to dissect the pattern further. While self-propelled backcountry skiing fatalities were zero in Western Canada in 2008-09, snowmobile fatalities reached more than twice the previous highest number, totalling 19. It is always dangerous to imply trends from one year of data, especially when talking about avalanche fatalities; the variations year over year can be huge. But when you look at the five-, ten- and 30-year statistics it is clear that snowmobile avalanche fatalities are on the rise while the other categories are steady or declining.

Looking at patterns in deaths is increasingly of interest to the Coroners Service. New legislation introduced in 2008 created a mechanism for the Coroner to investigate groups of deaths with similar causes. This mechanism is designed to look at causes of death, and also identify ways to prevent similar deaths.

Focusing on the snowmobile avalanche fatalities of 2008-09, the Coroners Service convened the fourth-ever Death Review Panel to investigate causes and make recommendations on how to prevent similar accidents in the future. The panel met in November, 2009 and the final report was published on January 29, 2010. This cadence is impressive when compared to the often slow-moving gears of government, and an indication of the urgency the Coroners Service places on the problem.

The 16 panel members represented various sectors of the snowmobile and avalanche safety community. The full report is an excellent piece of work and is recommended reading for a lucid, concise and thoughtful overview of the problem. Fifteen recommendations are made to a variety of agencies (see sidebar) ranging from increased information on avalanche terrain to increased contribution to core avalanche safety services funding. For the purposes of this article I offer my between-the-lines interpretation of a few of the more meaty parts.

The panel was interested in the information available to snowmobilers when they come to recreate in popular sled areas of BC. While bulletins are well established and relatively well known, they only talk about the danger posed by the snowpack. The risk to the individual depends also on whether the terrain they are entering is prone to avalanche activity and to what degree. Avalanche professionals know there are many ways to evaluate the component of risk posed by terrain. In particular the Avalanche Terrain Exposure Scale (ATES) is an appropriate classification scheme for backcountry recreation areas already in extensive use in Canada.

However, a gap in the implementation of ATES ratings exists for popular snowmobile sites. The panel concluded that popular sites for snowmobiling, where we (British Columbians) are actively inviting people from far and wide to come recreate, should have good information on what kind of terrain users can expect when they get to the top of the access road. The recommendation invites land managers to participate in the classification of terrain as well as to share ratings with snowmobile users.

From my perspective, this is a very important step in public avalanche safety. The review panel has validated the use of terrain ratings for recreation and invites land managers to do the same. If implemented, information on terrain allows the avalanche centre to direct people to match their trip destinations to what is appropriate for the conditions of the day. This is a current priority of the CAC and part of our action plan to address snowmobile avalanche accidents (as we have noted in our Snowmobile Action Plan). In particular it brings the potential of avalanche decision support tools such as the Avaluator to life.

The report also recommends decreased bulletin area sizes, more regions and more frequent avalanche forecasts. Interestingly, this recommendation is not made to the organization that creates the bulletins—the CAC. Instead it is made to the Canadian Avalanche Roundtable, the body composed principally of agencies that fund the CAC.

The fact the recommendation is directed to the collective of bulletin funders is not by chance. The panel members were likely aware of long-standing CAC goals to provide more frequent bulletins for more areas. If this is to come to pass, stakeholders need to invest more money. The recommendation underlines this by referring in the accompanying text to European countries and the standards they have set for optimal bulletin size. In most alpine nations the average bulletin regions are about ten percent of the area of the largest Canadian bulletin regions.

Another interesting series of recommendations is made to the snowmobile community. The Canadian Council of Snowmobile Organizations is asked to commit to support for core avalanche awareness programs including forecasts and public warnings, as are the four manufacturers of mountain snowmobiles: Polaris Industries, Arctic Cat Inc., Bombardier Recreation Products and Yamaha Motor Canada. The snowmobile club organizations are asked to sit on a permanent CAC committee to deal with snowmobile avalanche safety issues.

In my opinion, these recommendations are a prompt to the sled community to buy into the concept of the CAC as a community effort that includes them. In an article I wrote last year, *The Year of Sledding Dangerously,* I made this observation:

"It has been a difficult sell to the snowmobile stakeholders on the need to bring money to the table for avalanche safety programs. Because they are not versed in the culture and background of the Canadian avalanche safety community it is hard to make them appreciate the impressive collective efforts that supply a foundation to public avalanche safety."

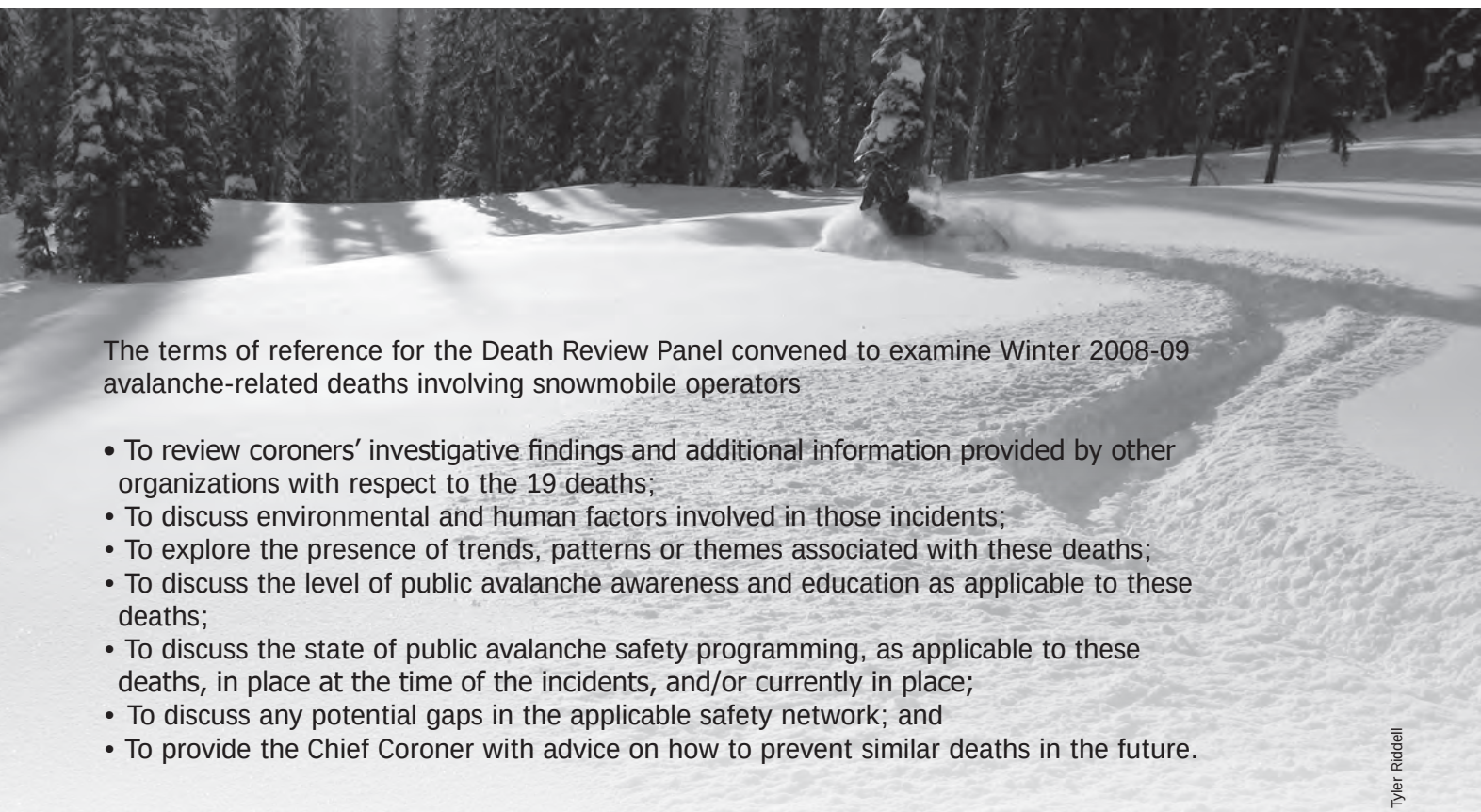
If we can move to a situation where the clubs, manufacturers and administrators of snowmobile activities invest in the CAC and participate in its activities, then I believe there is a great opportunity to be more effective at developing an avalanche safety net for their sport. Let's remember that high-risk sledders, a group we find hard to reach with bulletin information, is paying very close attention to the latest models of sled, their performance parameters and who is doing what in the new "in" spot in the backcountry. This is a targetable group and some of the snowmobile community have forged businesses based on the ability to reach them. They can and they must help us to reach that group too.

A notable feature of the report's recommendations is the number addressed to the CAC. Nine of 15 recommendations include the CAC as co-named. At first glance it would seem to be loading on significant additional work and responsibilities on the CAC. However, by including other organizations, there is a clear path to dialogue on the important matter of value of services rendered. It offers us the opportunity to show provincial government partners what has been accomplished for very modest investment in the range of $150,000 or less, and then to pursue the conversation of what public avalanche safety goals they want to accomplish for additional amounts.

Let me be clear on this. The CAC intends to tell government and private funders alike that current investments in avalanche safety programs are vanishingly small when compared to their revenues from the same activities. Nor are the public and media confused about the cost-benefit analysis of prevention services when presented with million dollar bills for avalanche rescue activities relating to incidents that could have clearly been prevented.

In summary, the themes identified in the recommendations are not surprising to anyone who has any familiarity with public avalanche safety programming: more education, more information and more community involvement. The CAC heartily endorses these aims.

Bringing this article up to the present day it is impossible to write anything pertinent about snowmobile avalanche accidents without integrating the event from Boulder Mountain earlier this year. Over 60 holes dug in the snow, 30 injuries, two deaths and a price tag of over $1million. This accident will, along with Harvey Pass from the year before, define snowmobiles and avalanches in Canada for years to come. The measure of the snowmobile community, the search and rescue system, and the public safety infrastructure of BC will be taken in future years by how we adapted to the lessons learned at Boulder on March 13.



The terms of reference for the Death Review Panel convened to examine Winter 2008-09 avalanche-related deaths involving snowmobile operators

- To review coroners' investigative findings and additional information provided by other organizations with respect to the 19 deaths;
- To discuss environmental and human factors involved in those incidents;
- To explore the presence of trends, patterns or themes associated with these deaths;
- To discuss the level of public avalanche awareness and education as applicable to these deaths;
- To discuss the state of public avalanche safety programming, as applicable to these deaths, in place at the time of the incidents, and/or currently in place;
- To discuss any potential gaps in the applicable safety network; and
- To provide the Chief Coroner with advice on how to prevent similar deaths in the future.

Tyler Riddell

The report's 15 recommendations are aimed at the following agencies:

The BC Coroners Service
BC Provincial Emergency Program
Canadian Avalanche Centre
Insurance Corporation of BC
Government of Alberta
Canadian Avalanche Roundtable
Canadian Council of Snowmobile Organizations
International Snowmobile Manufacturers Association
Arctic Cat Inc.
Ski-Doo/Bombardier Recreational Products
Polaris Industries
Yamaha Motor Canada Ltd.
BC Ministry of Tourism, Culture and the Arts
BC Ministry of Public Safety and Solicitor General
BC Ministry of Transportation and Infrastructure
BC Integrated Land Management Bureau
Alberta Snowmobile Association
Association of BC Snowmobile Clubs
BC Snowmobile Federation
BC Commercial Snowmobile Operators Association

It is interesting to consider the links between the Death Review Panel on last season's accidents and the intense public and media scrutiny on the stunning accidents of this year. What causes this focus on the avalanche safety problem? Why do these avalanche incidents grab the public imagination and ignite so much passion? Read any newspaper article on the Boulder event and check the comments or letters to the editor. These events resonate on a national and even international scale. This seems congruent with the fact that the BC Coroner deemed these deaths important enough to investigate with the extraordinary power of a Death Review Panel.

I have thought long and hard about why the keen interest surrounding these accidents. After all, *many* more people die yearly on the highway, and those deaths may also involve patterns of similarity. On snowmobiles, more people die from drowning under thin lake-ice, than die in avalanches every year. The International Snowmobile Manufacturers Association is fond of pointing out to the CAC that avalanche fatalities only account for a fraction of total deaths on snowmobiles and therefore they need to focus prevention efforts elsewhere before turning to avalanches.

Here are three specific reasons why that reasoning may be wrong, and why the prevention of avalanche accidents merits extra attention, resolve and resources from all involved.

1. This is a relatively new trend, and there may be a chance to counter it before certain risky behaviours become entrenched.
2. These are preventable accidents; many tools exist to at least reduce the numbers involved in each incident. This means that the cost-benefit equation is quite favourable. Dollars invested in prevention activities for snowmobile avalanche accidents may save the most lives, even if avalanches do not cause the most deaths.
3. The people who profit from snowmobiling are seen by the public to be leveraging the appeal of some of the highest risk activities in order to increase sales.

The public has an appetite to see the people who benefit from snowmobiling, share in the costs when something goes wrong. This includes shouldering a share of the cost of prevention. This brings us in a roundabout way to what has happened in the wake of the report. Recommendations are one thing, but do they get acted on?

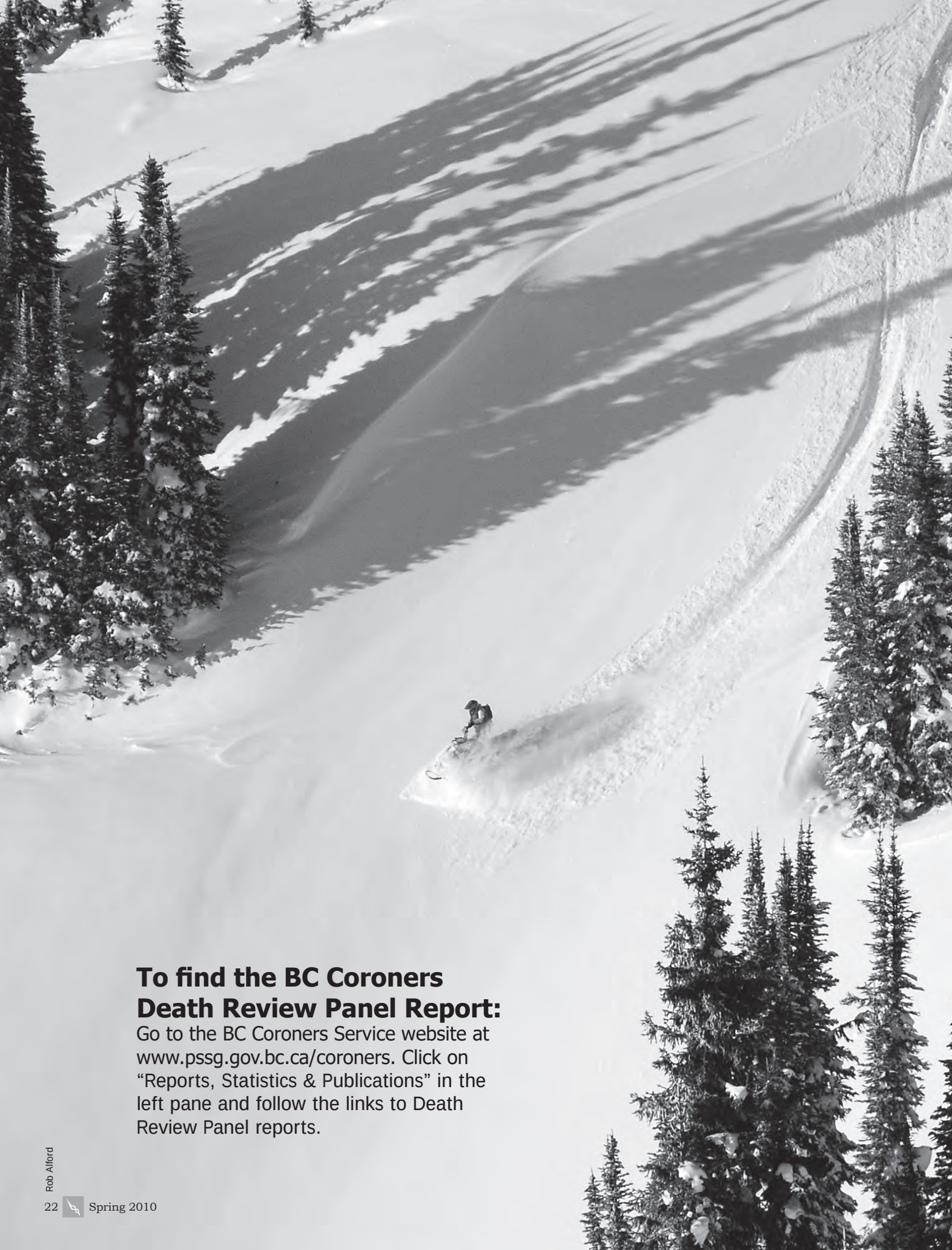
Each organization named was requested to respond to th coroner concerning the specific recommendations directed to them. Without reviewing all of the responses available in the report I can summarize the highlights. While there are some slightly evasive replies, in general the responses are positive. There is a reasonable level of commitment to take action. This is heartening in itself, as Coroner recommendations are not always adopted. The Integrated Land Management Bureau of BC, the Ministry of Tourism Culture and the Arts, and Service Alberta, among others, commit to specific actions in a set time frame. Chief among these is a green light to develop more terrain ratings in popular snowmobile areas. This is good news indeed.

A keen eye will perceive that the manufacturers, although addressed directly, chose to respond only through their representative organization, the International Snowmobile Manufacturers Association (ISMA). The formation of ISMA in 1995 is concurrent with the withdrawal of snowmobile manufacturers from funding the public avalanche bulletin program in Canada. Prior to that, snowmobile manufacturers contributed 30% of total funding for the bulletin program. When ISMA came on the scene, the CAA (and the CAC after 2004) was invited to apply to that organization for funding rather than going to the manufacturers directly. To date, ISMA has never contributed to public avalanche safety. I am not yet convinced that this will change.

The time frame for rapid implementation is short. At the time of writing, we have sent letters to our co-named partners in the recommendations to inform them that we need to have plans and budgets in place by our annual meeting in early May in order to start implementing new programs next season.

In some cases, the problems are more urgent than ever before. Lately we have been struggling with the knowledge that in spite of well-known good practice to the contrary, snowmobilers are congregating in avalanche-threatened terrain. This is not just in reference to the Boulder Mountain accident; other incidents, close calls and observers at popular sledding areas have reported the same. It may be too late to avoid some measure of regulation in backcountry snowmobiling activities. The scope and extent of what those regulations may look like will depend on how the snowmobile community reacts to the events of the last two years, including this death panel and its report.

>> John Kelly is Operations Manager of the CAC.



To find the BC Coroners Death Review Panel Report:

Go to the BC Coroners Service website at www.pssg.gov.bc.ca/coroners. Click on "Reports, Statistics & Publications" in the left pane and follow the links to Death Review Panel reports.

Rob Alford

Mary Clayton

Television cameras train their lenses on a spectacular demonstration of cornice control by the Fernie Alpine Resort's snow safety team.

Avalanche Awareness Days 2010

National Event, Fernie Alpine Resort

By Jennifer George

We want to thank Canadian Pacific for sponsoring this very important safety event. Avalanche Awareness Days is one of the CAC premier outreach events and most effective way of reaching our audience in their own backyards. Each year this event grows with more communities participating and larger audiences in attendance. Due to its popularity, each season we have had the luxury of having to choose among multiple venues requesting the national event This event would not be possible without the financial support from Canadian Pacific.

This season our National Avalanche Awareness Days Event was held in Fernie, BC, January 8 – 10. Our theme this year was "community," to bring recognition to the fact that avalanche safety is a community effort. The CAC community now includes all levels of government, private industry stakeholders, sponsors and our public audiences, skiers, climbers and snowmobilers. We planned events in Fernie to target both skiers and snowmobilers. The main national event was hosted by Fernie Alpine Resort and, in conjunction with the Fernie Snowmobile Association, we hosted a movie night in downtown Fernie targeted to the local riders.

On Friday, January 8, the Media Day schedule kicked off with early morning avalanche control work at Fernie Alpine Resort. With clear skies, the media and attendees had a bird's eye view from the Lost Boys Café of a picture perfect heli-bombing demonstration for cornice control. Following the control demonstration, we held a brief news conference featured speakers from the CAC, City of Fernie, Canadian Pacific and Fernie Alpine Resort.

Fernie City Councillor Bernie Palmer presented the CAC with a cheque to help sponsor a Youth Avalanche Safety Program in Fernie. CAC guest speaker and avid snowmobiler Jeremy Hanke spoke for a few minutes about his avalanche incident and how it changed his view on playing safe. Also, Breanne Feigel spoke on behalf of CP about their long-standing commitment to avalanche safety and two historically significant dates for 2010: the 125th anniversary of Last Spike and the 100th anniversary of the 1910 Avalanche accident in Rogers Pass.

Media attendance was less than hoped for but cameras from CTV and Global were there, which resulted in local and regional TV coverage. We also did a number of phone interviews with print and radio outlets.

The news conference was followed by live demonstrations including a mock rescue, CARDA demonstrations and a snowpit presentation with Bruce Jamieson and Cora Shea from the University of Calgary's ASARC team. Later in the afternoon, Fernie Ski Patrol instructors presented their youth avalanche safety program with students from the Fernie Academy in grades 4 – 6. All of the demonstrations ran smoothly thanks to the professional and organized Fernie snow safety and ski patrol team.

Public field events and demonstrations were held at Fernie Alpine Resort on both Saturday and Sunday, January 9 – 10. Activities included beacon basin, snow pit demos, CARDA dog, and beacon races for youth.

The fundraiser party was held at the ever-popular Griz Bar. It featured a live and silent auction of gear donated by our sponsors. Kevin Giffin, the Fernie Ski Patrol Supervisor, was a highly entertaining emcee and auctioneer who kept the crowd bidding. We raised over $3,500 in the auction. Proceeds from the Kokanee beer sales were also donated to the CAC, thanks to Columbia Brewery.

Our movie night took place at the Best Western in downtown Fernie. The evening featured segments from a couple of popular sled flicks intermingled with avalanche safety presentations, question & answer sessions, and great conversation. Attendance and reception exceeded our expectations. The CAC presented two Beacon Checkers as a gift to the Fernie Snowmobile Association to be used at their popular trail access points. The Beacon Checkers were kindly donated by Backcountry Access. Attendees poured in donations to the CAC. Feedback from the attendees and our co-host, Fernie Snowmobile Association, was very positive.

Although we have seen a decline in media interest in our national events over the past two years, the community events continue to grow. We often conclude that we have reached saturation point with cultural awareness of avalanches in some of the mountain communities that have an experienced backcountry crowd and a host of CAA professionals residing and working in the community. However, after many close calls and rescues in our own backyard this season, we are reminded this season that avalanche awareness needs to be continual.

>>Jennifer George is the CAC's Sponsorship Coordinator

Kevin Giffen and Jeni Sugiyama of Fernie Alpine Resort ran the auction during the fund-raising evening at Fernie's Griz Bar. The two did a great job of encouraging bids from the very receptive audience.

Mary Clayton

Avalanche Awareness Days Community Events

Panorama Patrol picked a very steep and realistic location to practice several scenarios. In this picture the team is making its way up the hill after locating two beacons and an additional buried subject without a beacon.

Jamie Hurschler

Panorama Mountain Village
Submitted by Greg Longtin
Avalanche Technician, Panorama Mountain Village

This year's events were once again held at the summit entrance to our Taynton bowl. We held beacon races as well as a walk-in snow pit that allowed our guests to see close up the wonders of our Rocky Mountain snowpack.

Many patrollers were on hand, as well as members from the Columbia Valley Search and Rescue team, who helped our guests understand the difference between our ski area boundary and permanently closed areas, and the importance of having the right knowledge to travel safely in the backcountry. On Saturday night the Panorama ski patrol presented a viewing of "The Fine Line" where over 75 people attended. It was the perfect opportunity to answer questions and hand out prizes that were graciously donated by the CAC, Panorama Mountain Village and Syndicate Board Shop.

All in all the weekend was a great success in public education and outreach. We love the opportunity to interact with our guests in other ways than in a patient/care giver manner. Avalanche Awareness Days are an integral part of our season and we will continue to uphold the standards set by the CAA, CAC and other ski areas in British Columbia and Alberta.

One of the free demonstrations put on by local experts at Mt. Washington.

Angela Farquharson

Mt. Washington Alpine Resort
Submitted by Angela Farquharson
Events Coordinator, Mt. Washington Alpine Resort

Though coastal conditions generally make for a very stable snowpack, the threat of avalanches on Vancouver Island are as prevalent as any alpine area. Boasting one of the deepest snowpacks in the world, Mount Washington is diligent in providing opportunities for education and training about avalanche safety. Avalanche Awareness Days took place at Mount Washington Alpine Resort on January 9-10. This event was free and open to any member of the public who would like to expand their knowledge of alpine safety.

Over the course of the weekend Mount Washington provided free introductory demonstrations for public of all ages, including beacon use, canine searches, probing and snow study, all led by local experts. We also hosted the ever-popular silent auction, where patrons were able to round out their backcountry safety quiver with items such as shovels, probes, base layers, backpacks and literature. All proceeds from the auction were donated to the Canadian Avalanche Centre to support education and resources that work towards keeping all skiers and snowboarders safe!

Castle Mountain Resort
Submitted by Darrel Lewko
Pro Patrol, Castle Mountain Resort

CARDA dog Huck proves that a metre deep burial is no problem for an eager searcher.

Darrel Lewko

Castle Mountain Resort had a very full schedule on Saturday, January 9. We had many events on the hill, one of which was an instruction day in the Backcountry Access Beacon Park. Pro Patrollers were on location to assist many eager to learn skiers/snowboarders about the skills necessary to search with a beacon; approximately 100 went through the park that day. Probing was taught and a discussion on shoveling was part of the day.

Castle Mountain has two CARDA teams (Darrel Lewko with Huck, and nBree Korobanik with Kali). Another event was the CARDA team recovery of two live "burials" under one of our most used lifts, the Huckleberry Chair, which accesses intermediate terrain. Bree and Kali recovered the "lives" in less than seven minutes. Another dog demonstration in the same location was of the recovery of two scented articles to demonstrate to the viewing public the tenacity of avalanche dogs digging. This was done by Darrel Lewko and Huck in one metre of snow.

Probably the most viewed event was the explosives demonstration on a chute called Lightning Bolt. We used a 12.5 kg bag charged with Pentex. All of the communication was relayed via radio to the viewing public to inform them of the importance of safety and communication during this process. There were many viewers as the demonstration was visible from the base area as well as on the mountain. The viewing schedules were posted in many locations throughout the ski resort. A size 2 avalanche was the result of the blast.

During the day we had a booth in the day lodge providing information about AST courses available at Castle and demonstrations on beacon operation, probe assembly, shovel assembly and "V" formation shoveling. We also had our CARDA dogs at the booth in the day lodge with many questions from young and old, mostly pertaining to how do they do it and how long does it take to train an avalanche dog. The video "The Fine Line" was played all day with a huge amount of interest from all ages. At the end of the day after the lifts closed we had a huge raffle with prizes donated from local businesses and ski mountain businesses attended by about 350 people.

Avalanche Awareness Days 2010 was a huge success at Castle Mountain this year and is growing with each year as we learn what people want and need for information. Maybe Avalanche Awareness Days should be every day.

Jasper National Park
Submitted by Garth Lemke
Warden JNP

The Pieps provided a musical finish to Jasper's Staying Alive event.

Darlene Skehill

The Jasper National Park Avalanche Awareness Program was a great success this winter. The program started off early with a Public Safety Specialist staffing the avalanche information booth at the Jasper ski swap on November 9. Young people were keen to know more about AST courses offered in the Jasper area. A couple of weeks later on November 29, a Public Safety Specialist used the avalanche booth while attending the CAC Backcountry Avalanche Workshop in Grande Prairie and assisted other CAA professionals in reaching out to the local

sled community. The avalanche information booth again was used at the "Jasper in January" street party on January 16. The main street was closed to traffic and local businesses placed info booths in the street and facilitated games for kids. This event was well attended by the community.

January 30 was the last day for "Jasper in January." With Marmot Basin at full capacity, it was a great time for Parks Canada and Marmot Basin to host Avalanche Awareness Day at the hill. Along with the avalanche information booth in the day lodge, Public Safety Specialists and Marmot Basin Avalanche Control staff hosted a variety of demonstration events for the public. The Backcountry Access beacon basin provided the beacon training and hand-charges were thrown demonstrating the use of explosives. Jeff Andrews, Marmot Basin's Director of Public Safety, and Park Warden Darian Sillence, utilized their CARDA dogs in a mock avalanche search.

On February 3, Jasper National Park in cooperation with local businesses, Marmot Basin ski hill, and the Canadian Avalanche Centre held the fifth annual Staying Alive event at the D'ed Dog Pub in the Astoria hotel. The pub was filled to capacity with 180 people, two-thirds of them young adults who were new to the community and under 30 years old. Darlene Skehill, marketing coordinator for Jasper National Park and lead organizer of this event, coordinated with local businesses to include advertisements in all their pay cheques in the weeks leading up to the event.

At the Staying Alive event there was an avalanche safety gear table and a variety of speakers, including Greg Hill as a special guest speaker on "risk and how to apply it." Many local businesses donated door prizes, the Astoria Hotel served up a free buffet of pasta and Columbia Breweries donated a keg. The evening wrapped up with a special performance from the band "The Pieps," singing local favourites such as "Don't Duck that Rope" and "Buried up to Your Balls." The evening was a huge success for 2010 due to the effort of the local community and individuals. Many thanks go out to all those involved. Parks Canada would like to thank Marmot Basin, the CAC, plus the multitude of contributing sponsors. Their coordinated efforts ensure the future success of the Jasper National Park Avalanche Awareness program.

Grouse Mountain
Submitted by Sandra Ferguson
AdventureSmart Coordinator

Collaboration between Grouse Mountain staff, the Canadian Ski Patrol System, the CAC's North Shore Avalanche Forecaster and AdventureSmart team members allowed visitors to chat one-on-one with outdoor safety educators and professionals in the field. All mountain safety personnel on site offered a variety of safety tips, demonstrations, knowledge and invaluable hands-on experience.

Demonstrations in the use of avalanche transceivers, probes and shovels were given, allowing participants an opportunity to learn more about the importance of the gear and how to use it while also testing their safety knowledge.

Hundreds of enthusiastic mountain visitors, skiers, boarders and tourists stopped by to learn valuable, potentially lifesaving tips and techniques. Many of them took the "AdventureSmart Challenge" and tested themselves while learning about safe winter activities in the mountains. Some were rewarded with prizes for their efforts as part of a fun approach to providing lifesaving information.

One of the enthusiastic visitors reaches for a prize after taking the AdventureSmart Challenge at Grouse Mtn.
Keri Laughlin

Sunshine Village
Submitted by Brendan Martland
Sunshine Village Snow Safety

Sunshine Village's annual Avalanche Awareness Weekend was another success this year, with nice warm weather and a good turnout of public, staff and media. On each day we lit up a big charge on the North Cornice, which always provides

CARDA Dog Bear does not give up until the victim is pulled out of the snow.

T. Haggerty

a dramatic powder cloud over the cliffs below, and gets people talking and asking questions about avalanches and control work. We staffed a snow profile demo area each afternoon, displaying the various layers of concern in our snowpack and demonstrating the different tests performed to monitor these layers. The December 29 surface hoar layer made for perfect displays of the CT, PST and ECT.

The profile area was across from our BCA Beacon Basin, where we demonstrated transceiver use and held time trials for prizes in various categories. New this year was a large pile of firm snow used to demonstrate and practice the conveyor shoveling method, which proved to be popular. The CARDA dog demo was a big hit again, with Mike Henderson and Atar, Jay Pugh and Laddie, as well as our own Pete Grumme with Bear, who's in training.

Our dog training area allows the dogs to search for and find multiple "buried" volunteers, giving the hounds an added challenge and the public lots to cheer about. We ended the weekend by attending the Banff Centre's Avalanche Awareness Evening, which was well attended and is always a good chance to catch up with our colleagues in the Bow Valley.

Whitewater Ski Resort
Submitted by Robyn Mitz
Human Resources, Whitewater Ski Resort

For our Avalanche Awareness Days we held a three-day AST course, which was full with 12 participants. We also held a beacon demonstration, where guests could come and practice their beacon searches. We ended the day with a mock avalanche rescue scenario where our ski patrol played out a multiple search situation which the public could watch.

We like to think that every day at Whitewater is an avalanche awareness day with eight one-day courses and eight AST courses fully booked each year. We also have a beacon practice area where the general public can go and practice their beacon searching skills any day of the week.

Red Mountain Resort
Submitted by Jim Markin
Snow Safety, Red Mountain Resort

Avalanche Awareness days at Red Resort was a great success this season. Over 50 participants came through the workshops put on by the patrol and Rossland Search and Rescue. We had an increase in snowmobile participants

Beacon demonstration at Whitewater Ski Resort.

Robyn Mitz

this year as well as a large number of youth; even some of the "Old Powder Bastards" took part.

The patrol team hosted two workshops entitled "Self Rescue" and "The Avalanche and the Abacus." They also showed training films throughout the day. The self rescue demonstrations focused on touring parties of two to five with an emphasis on rescue organization, beacon use, probing and shoveling techniques. Shoveling techniques seemed to be the big revelation for most participants.

"The Avalanche and the Abacus" was an innovative way to increase awareness of the CAC and CAA websites and all that they have to offer. These classes were very well received and the participants had many good comments. Participants were pleasantly surprised at the extent of the trip planning page and the weather page and its links were a hit. Next year we may add a weather session as much discussion on weather followed. The training videos also had good turnouts.

Jim Markin

Self rescue demonstrations at Red Mountain focused on beacon use, probing and shoveling techniques

The community was receptive and I feel we will get more involvement from local businesses in the future as we put on a very high quality, informative weekend. Some feedback from local businesses has led me to believe that they would like to be associated with Avalanche Awareness Days next year.

All and all, it was a very successful weekend. Special thanks to Backcountry Access, High Country Sports, CAC and Red Mountain Resort for all their support and help. Also, many thanks to the small number of highly motivated professional and volunteer patrollers who did an excellent job to see this weekend succeed.

Shames Mountain
Submitted by Jupiter MacDonald
Mount Remo Backcountry Society

Mount Remo Backcountry Society (MRBS) hosted an Avalanche Awareness Day on January 10th at the Shames Mountain ski hill. There were a number of events throughout the day including a terrain choice talk, snow pit demo, and CARDA dog rescue demo. We facilitated simple and advanced beacon searches out of our info tent at the top of the ski hill with prizes for the best time in the advanced search. Near the end of the day we showed a short avalanche awareness video while drawing prizes for those who attended.

We were sponsored by volunteer time from a number of MRBS members and Northern Escape Heli Skiing, CN Rail, Ministry of Transportation and Infrastructure, Shames Mountain and the Canadian Avalanche Centre. The attendance was decent (25-30) considering the mild temperatures and rainfall throughout the day. We hope to have an even better event for next season with potentially an additional day or evening in town to reach a larger audience, particularly snowmobilers.

Kicking Horse Mountain Resort
Submitted by Ian Gale
Mountain Safety Team, KHMR

On January 9 and 10, the Kicking Horse Mountain Safety team, with help from the Big Mountain Centre and the events staff, held Avalanche Awareness Days. It was the biggest it's ever been and the whole event was centred out of the base area, which proved to be the busy hub of Avalanche Awareness Days. With all the presentations, informative displays and ski demo tents available information abounded.

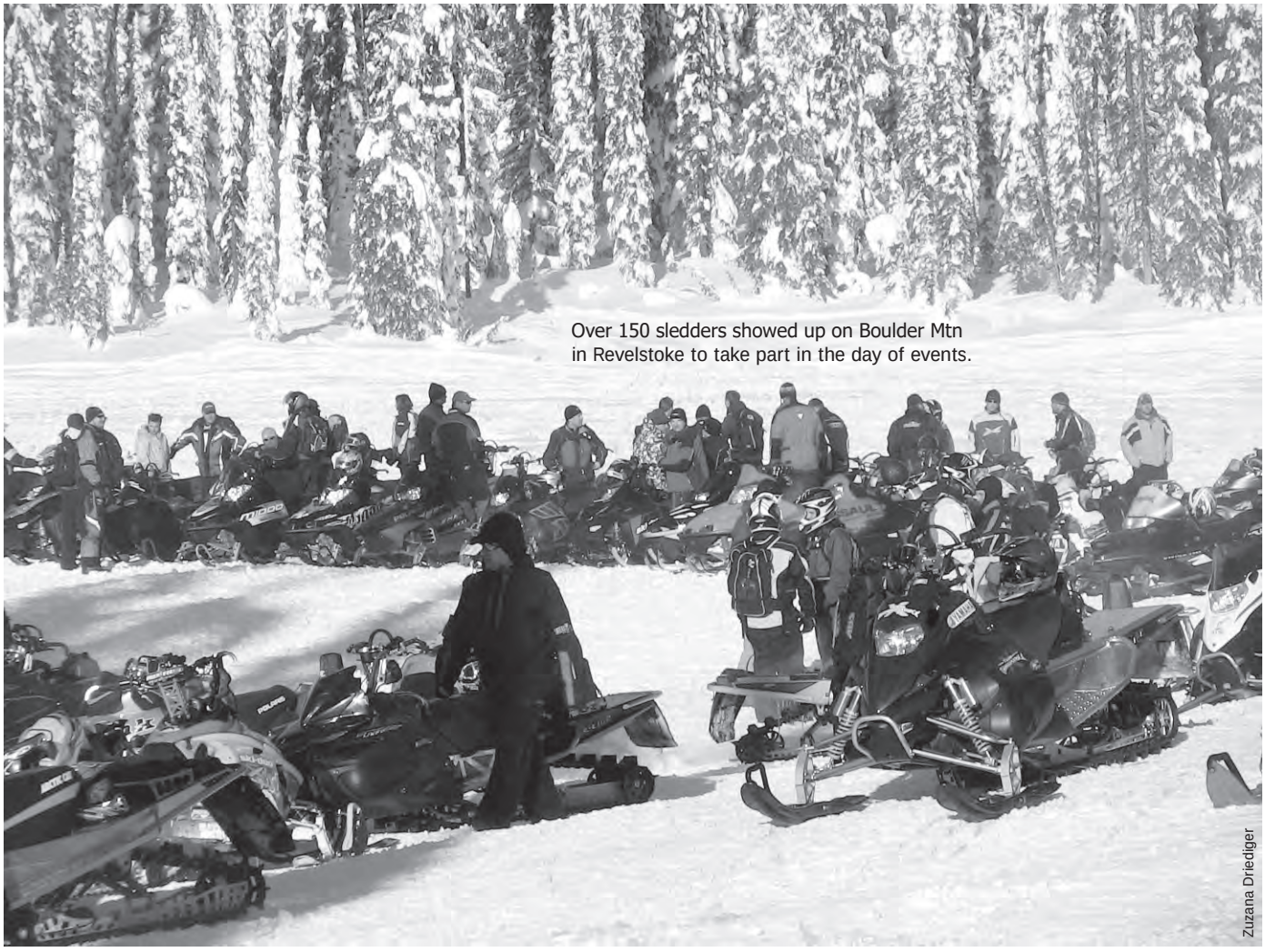
The weekend was a great success and turnout was quite high for most of the presentations, some of the favourites were the explosive demo, CARDA presentation and a guided tour with terrain discussion. The highlight was a companion rescue scenario where contestants searched for and dug up a groomer-buried life-size dummy. We would like to thank all the volunteers, sponsors and participants for helping make Avalanche Awareness Days so successful.

Boulder Mountain, Revelstoke
Submitted by Brent Strand
Publications and Properties Manager, CAA

The CAC, Revelstoke Snowmobile Club, Snowmobile Revelstoke Society, Ministry of Forests and Revelstoke Search and Rescue invited sledders to join them for Avalanche Awareness Days on Boulder Mountain, featuring a mock rescue, CARDA demonstration and "what's in your pack" station. The event coincided with the third annual Snow and Mud Mountain Mania, which helped draw in over 170 people.

At the mock rescue, participants worked at finding buried dummies using their beacons, probe and shovels. Revelstoke Search and Rescue had a rescue toboggan and its contents on display. Ministry of Forests hosted the "what's in your pack" station to give riders an idea of the basics to carry out in the backcountry. CARDA team Zuzana Driediger and Hero did live demonstrations during the day as well.

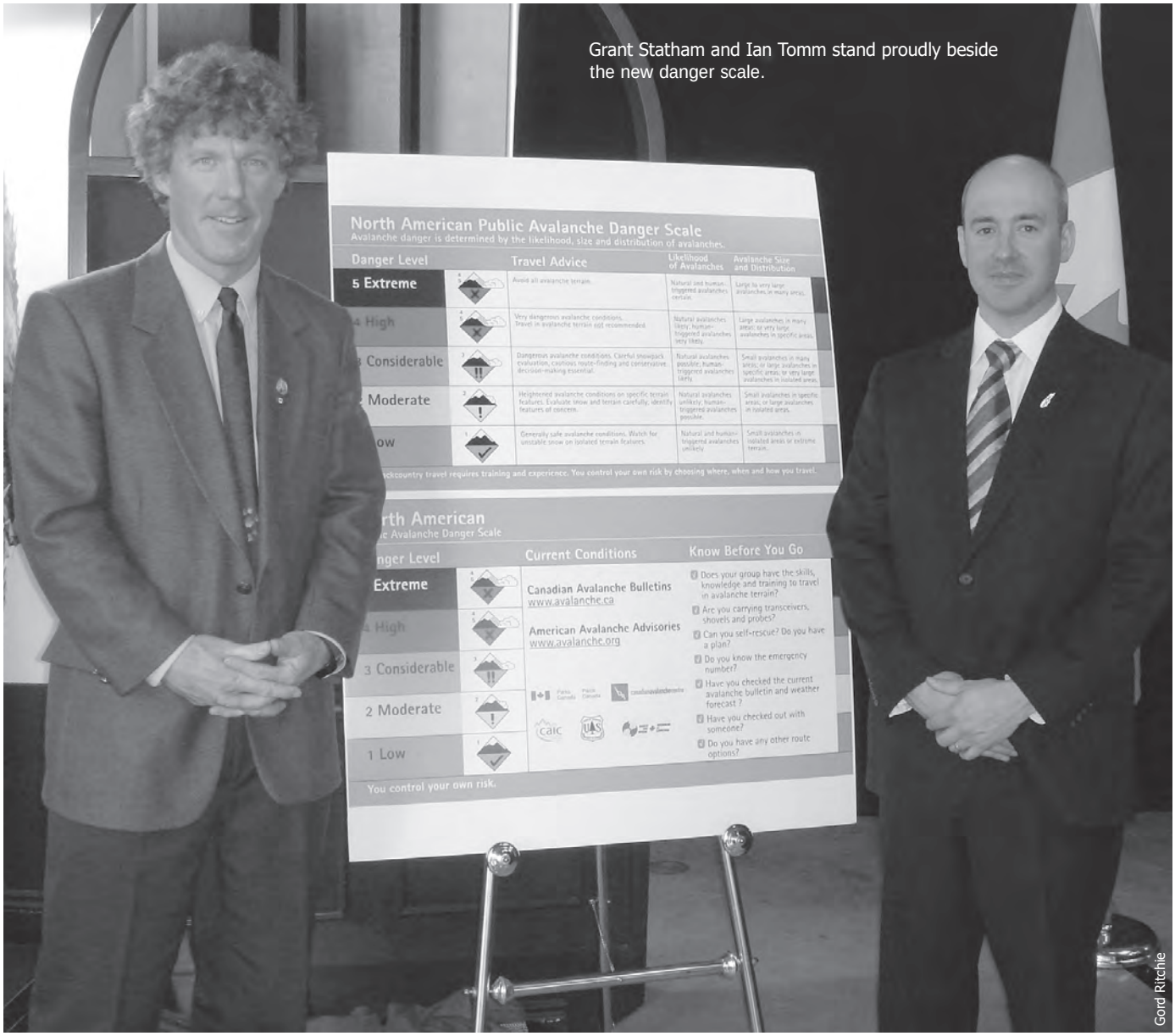
The folks behind the popular snowmobiling website Snow and Mud.com hosted an evening banquet which most participants attended. They had many auction items and two major presentations were donations to the CAC from Snow and Mud.com and Grassland Trailer and Sleds. This was followed up by the auction of a full Klim Gore-Tex snowmobile suit, which was donated by Yamaha Motor Canada. It was a fun day followed by a fun evening, and it's always good when we can work together on events with the local snowmobiling community.



Over 150 sledders showed up on Boulder Mtn in Revelstoke to take part in the day of events.

Zuzana Driediger


RIGHT NOW THE VIEW IS SPECTACULAR.
Kokanee
GLACIER FRESH BEER
*TM/MC Columbia Brewery
IT'S ALL ABOUT NOW.



Grant Statham and Ian Tomm stand proudly beside the new danger scale.

Gord Ritchie

New Danger Scale

On March 17, The Honourable Jim Prentice, Canada's Environment Minister and Minister responsible for Parks Canada, unveiled the new North American Avalanche Danger Scale during a news conference held in Calgary and covered live on CBC News Network. CAC Executive Director Ian Tomm also spoke at the news conference. The new danger scale will be implemented across North America for the coming winter of 2010/11.

Mark Seland

North American Public Avalanche Danger Scale

Avalanche danger is determined by the likelihood, size and distribution of avalanches.

Danger Level		Travel Advice	Likelihood of Avalanches	Avalanche Size and Distribution
5 Extreme		Avoid all avalanche terrain.	Natural and human-triggered avalanches certain.	Large to very large avalanches in many areas.
4 High		Very dangerous avalanche conditions. Travel in avalanche terrain not recommended.	Natural avalanches likely; human-triggered avalanches very likely.	Large avalanches in many areas; or very large avalanches in specific areas.
3 Considerable		Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.	Natural avalanches possible; human-triggered avalanches likely.	Small avalanches in many areas; or large avalanches in specific areas; or very large avalanches in isolated areas.
2 Moderate		Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify features of concern.	Natural avalanches unlikely; human-triggered avalanches possible.	Small avalanches in specific areas; or large avalanches in isolated areas.
1 Low		Generally safe avalanche conditions. Watch for unstable snow on isolated terrain features.	Natural and human-triggered avalanches unlikely.	Small avalanches in isolated areas or extreme terrain.

Safe backcountry travel requires training and experience. You control your own risk by choosing where, when and how you travel.

Parks Canada led the development of the new scale, which is one of the goals of the CAC's ADFAR 2 project. Along with the icons, the scale incorporates some concepts of consequence within the descriptions of avalanche size and distribution.

Federal Environment Minister Jim Prentice and CAA/CAC Executive Director Ian Tomm take questions from the media during the news conference.

Gord Ritchie

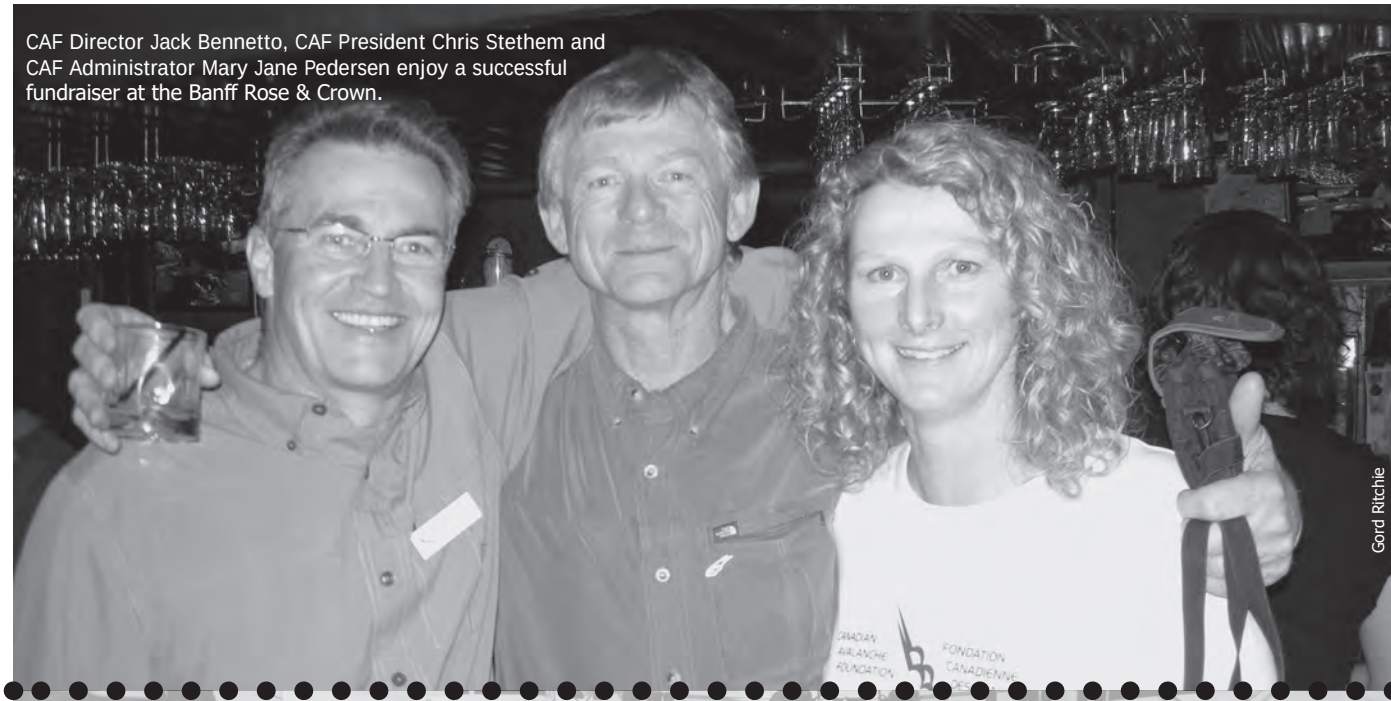
On behalf of the users of our public avalanche safety services, we thank Teck Coal for its ongoing commitment to the activities of the Canadian Avalanche Centre. This year, Teck Coal increased its annual contribution to $10,000. One hundred percent of this funding is applied directly to supporting the CAC public safety programs. Thank You Teck Coal!

Rockin' For a Good Cause

The evening of March 19 offered a great opportunity for anyone in the Bow Valley to enjoy a good party and raise money for a good cause. Close to 100 people gathered at the locals' favourite pub for the fundraiser. Local band "Hard Drive" provided the music and, at the end of the night, close to $2500 had been raised.

"The evening was not only about raising funds for the CAF but also to raise an awareness amongst the many avid backcountry recreationists who live in the Bow Valley," reports Mary Jane Pedersen, administrator for the CAF. "My personal favorite moment of the evening was when we drew for the Backcountry Access door prize, which consisted of a beacon, shovel and probe. As the young man who won picked up his prizes, he mentioned to Chris and I that he really needed this gear as he had just completed an AST course. That's a great example of the demographic we are trying to reach in Banff."

The Banff Rose & Crown was an enthusiastic supporter and offered their venue, live music and delightful staff for the event. A very big thank you also goes out to CAA Professional Member Rowan Harper for his efforts in gathering so many amazing prizes and selling tickets. Thanks to the support of the Banff Rose & Crown and the local mountain community, the CAF has an annual event, Don't miss it next year!



CAF Director Jack Bennetto, CAF President Chris Stethem and CAF Administrator Mary Jane Pedersen enjoy a successful fundraiser at the Banff Rose & Crown.

Gord Ritchie

Special thanks to:

Rocket Miller
John Thornton
Chris Moseley
Craig Sheppard
Lynn Martel
Backcountry Access
Banff Lake Louise Tourism
Brewsters Transportation Group
Cariboo Properties
Castle Mountain Resort
Fairmont Resorts - Banff Springs & Chateau Lake Louise
Maple Leaf Grill
Monod's Sports
Mt. Norquay
Patagonia Banff
Rocky Mountain Soap Company
Selkirk Tangiers Heli-Skiing
Ski Banff, Lake Louise, Sunshine
Sunshine Village
The Banff Centre

Gord Ritchie

Gord Ritchie

Enjoying a very special evening and celebrating the end of another successful CAF fundraiser. From left: Dave Broshko, Gord Ritchie, Ian Tomm, Donna Broshko, Grant Statham, Debbie Ritchie, Breanne Feigel (Media Relations Advisor, CP Rail), Mark Seland (Director of Public Affairs & Corporate Communications, CP Rail), Chris Stethem.

Calgary Gala Dinner

Thanks to the generosity of CP, this year's CAF fundraiser was aboard the historic dining car pictured above. This particular rail car has hosted such luminaries as Winston Churchill, Queen Elizabeth II, and John and Jackie Kennedy, so the CAF is in good company. CP was outstanding as the "host sponsor" for the event, held in the evening of March 17. CP catered an exclusive five-course dinner aboard the historic dining car for Federal Environment Minister Jim Prentice and his wife Karen, the CEO of Parks Canada Alan Latourelle, and other CAF sponsors.

The fundraiser was preceded that afternoon by the Parks Canada news conference where Minister Prentice announced the new international avalanche danger scale. CAC Executive Director Ian Tomm also spoke at that event. The CAF Calgary event raised close to $50,000, and a very special thank you goes out to sponsor and host CP for an absolutely outstanding evening.

Thanks to these donors to our silent auction:

Canadian Mountain Holidays
WestJet
Charlie and Louise Locke
Wesley Clark (wesleyclarkfineart.com)

The CAF thanks the following sponsors:

Gowling, Lafleur Henderson LLP
Blake, Cassels & Graydon LLP
Mancal Energy Inc
Bank of Montreal Capital Markets
McDaniels and Associates Consultants LTD
Canadian Pacific Railway

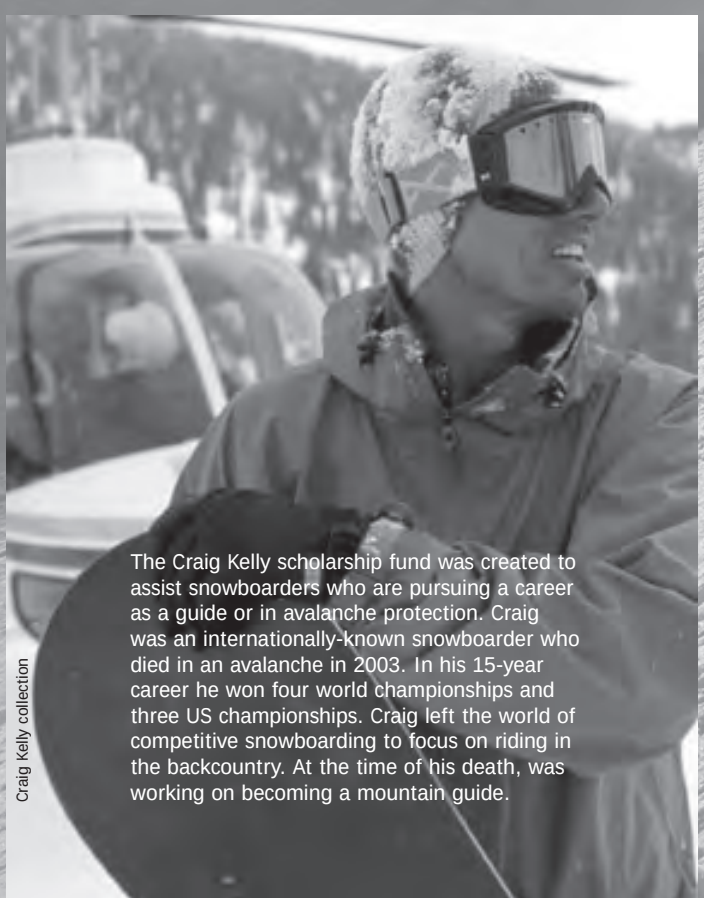
The CAF Craig Kelly Scholarship Winner: Tyler Mills

Golden-based Tyler Mills is the most recent winner of the CAF Craig Kelly Scholarship, an award that has helped to pay the costs of his CAA Level 2 courses this past winter. "It's awesome," he says. "I'm not just a part time snowboarder. I'm committed and headed for the guiding track on my split board."

Tyler has already begun to establish a career in the industry, working in avalanche hazard management with Storm Mountain Technical Services and tail-guiding at Baldface Lodge. In fact, it was at Baldface that he first heard of this scholarship. In addition to being one of the early investors in Baldface Lodge, Craig Kelly was also associated on a deeper level. "He was involved spiritually," explains Tyler. "We have a cross there and a couple of runs named for him." Having a Baldface employee benefit from the Craig Kelly legacy seems especially fitting.

Tyler's future plans include starting a business catering to split boarders. Currently, he's working on his application for the ACMG assistant ski guide course. "I'm hoping to get accepted for next year, and training like crazy," he says. Two people have passed that famously challenging course on a split board, he notes. If the stars continue to align, perhaps Tyler Mills will be the next.

Tyler Mills collection



Craig Kelly collection

The Craig Kelly scholarship fund was created to assist snowboarders who are pursuing a career as a guide or in avalanche protection. Craig was an internationally-known snowboarder who died in an avalanche in 2003. In his 15-year career he won four world championships and three US championships. Craig left the world of competitive snowboarding to focus on riding in the backcountry. At the time of his death, was working on becoming a mountain guide.

COOL SCHOOL

The Palisades Stewardship Education Centre offers high school students a unique outdoor education opportunity in a high-tech, historic setting

By Jeanine D'Antonio

Deb Joly

On these beautiful bluebird days of February, I think back to my time at high school and the winter days spent behind a desk under glaring artificial lights. Daydreams would flash—skiing in the backcountry, snowshoeing across alpine lakes, and real sun on my cold face. Then, harshly, I would be pulled back to the reality of racking up high school credits so that I could finally get out and actually DO stuff.

All that has changed, and the high school students of today can ski, snowshoe, take an avalanche course AND get credits. Parks Canada offers these opportunities based at a historic ranch in Jasper National Park called the Palisades Stewardship Education Centre (PSEC). The winter program aims to reach a multitude of audiences through programs delivered in partnership with Marmot Basin Resort and Grand Yellowhead Public School Division.

At the Centre, students in Grade 9 – 12 from across Canada can participate in week-long residential programs. As well, the Marmot Learning Centre, a high-tech classroom in the mid-mountain chalet, enables the Palisades staff to reach a wider audience of school groups coming to Marmot to ski. Students can sign up for free avalanche awareness sessions or learn about species at risk without ever leaving the ski hill. Marmot Basin also hosts a ski instructor training course called the Canadian Rockies Academy and part of their education program for the last three years has been a Palisades-led avalanche awareness course.

PSEC lies 16 km north east of Jasper townsite, surrounded by open montane landscape and framed by towering mountains. Its coloured history goes back a century to its start as a pioneering homestead, then ranch, motel, conference centre and training facility. In 2006 Parks Canada realized the potential of this place for reaching youth and turned its focus to education.

Today, this landmark project contributes to Parks Canada's plan in targeted education activities for youth, urban and new Canadian audiences. Students sleep on site in dorm-style rooms with home cooked meals served in the dining room. The Centre features the largest grouping of authentic log structures in Western Canada. Now, all the buildings have been modernized and boast technologies such as SMARTboards, wireless Internet and videoconferencing equipment while still retaining their rustic charm.

Five outdoor learning classrooms cluster in the short grass prairie meadows on the property, enabling the students to be IN the environment they are learning about. It hammers home a lesson about wildlife management when the elk herd you are watching scatters in front of an oncoming train, or you reach under your bench to grab a handful of snow to show a facetted crystal.

The five-day Winter Travel course was developed to expose youth to the season that drives most teenagers inside. The courses focuses on Grade 10, 11 and 12 and each is worth three credits with eight hours of classroom time outside of their Palisades adventure. As well as learning the skills associated with downhill skiing, snowshoeing, cross-country and alpine touring, the students make trip plans and route cards and learn how to navigate by the stars, map, compass and GPS.

They brag of their survival skills after lighting fires with flint and building quinzees that they may or may not spend the whole night in. They also progress through a comprehensive avalanche course, first with an awareness program based at Marmot, then on to an Avalanche Skills Training (AST) course delivered in the backcountry. All avalanche safety gear—beacons, shovels and probes—is provided by PSEC.

Our partnerships enable the students to meet exemplary role models from organizations such as the Association of Canadian Mountain Guides, Marmot Basin Ski Patrol, Canadian Avalanche Centre and Parks Canada's Public Safety Program. They complete the course as more informed, confident and aware individuals, competent winter travellers with heads brimming with ideas of alternative career paths.

JoJo Miller, Natasha Buck and Julien Rodgers learn the basics of probe and shovel work.

Terry Winkler

As a complement to the Palisades Centre, the Marmot Learning Centre (MLC) has proven to be an outstanding outreach facility, unique in the National Park ski resorts. Located in the Paradise chalet at mid-mountain of Marmot Basin Resort in Jasper, the classroom has many perks. Besides having the best classroom views in the west, the MLC is equipped with a SMARTboard, internet access and videoconference capabilities.

An extension of the classroom is Marmot's Beacon Basin, located at the top of high speed quad, where kids can practice their beacon skills. The beauty of the classroom is that students can come off a run, do an interactive terrain exercise online at www.avalanche.ca, videoconference to a public safety specialist in Parks Canada or the Canadian Avalanche Centre, eat lunch while watching The Fine Line movie, then back to the powder.

The Palisades Staff offers one- to three-hour sessions free of charge to any school group coming to Marmot Basin. Winter 2010 has seen an increase in numbers of students, with over 300 student hours of these sessions and almost 1000 student hours in the MLC during the Winter Travel program. Jasper National Park and Marmot Basin continue to lead the ski industry in their innovative approaches to education and partnership.

For the last three years, the Palisades has also partnered with Marmot Basin to provide avalanche awareness training to their ski instructor program, as part of an integrated mountain park education program. The Canadian Rockies Academy sends 100 – 160 mostly British skiers and snowboarders to Marmot ski school to get their CANSI Level 1 and 2 ski instructor certificates.

As an enhancement to their course, they must participate in nine hours of avalanche training.

In January and February you could have found any number of Brits in their tell-tale black jackets, digging around in the Beacon Basin, studying crystals in snow pits or competing in a multi-casualty burial time trial. Though it wasn't their main focus, they embraced the course whole-heartedly and many went on to take an AST course from a local provider.

As Parks Canada's only residential outdoor education centre, PSEC is in a position to reach a multitude of Canadians through varied and innovative programming. The overarching aim of all these programs is to provide gateway opportunities for youth. Those kinds of opportunities that stimulate a person's lifelong learning and connect them in tangible ways to our distinct Canadian landscape. As our experience and network of partners grows, PSEC will continue to fulfill its potential for educating youth. At the very least, their Palisades experiences will give them real fodder to dream about back in their high school classrooms.

James Bartram

Taking a bearing - learning about map and compass at the Palisades Centre.

Jeanine D'Antonio collection

Jeanine D'Antonio works as the Education Coordinator at the Palisades Stewardship Education Centre in Jasper National Park. She has worked for nine years as a Parks Canada warden, including taking time away to raise a family and volunteer for CUSO in the Solomon Islands.

Members of the 1910 Commemoration committee and many volunteers help carry the spectacular "bridge" of origami cranes through the streets of Revelstoke in preparation for the ceremony.

1910 – 2010 *Commemorating a tragedy, celebrating progress*

By Nancy Geismar

Rob Buchanan

Marking the centennial of this event spurred a partnership of local agencies within Revelstoke. The Friends of Mt. Revelstoke and Glacier National Parks, Parks Canada, Revelstoke Museum and Archives, Revelstoke Railway Museum, the CAC and the CAA all played roles, along with some dedicated volunteers. Thanks to everyone who helped create these very special memories.

Rob Buchanan

The Yamaji family travelled all the way from Japan to be a part of the ceremony. Their ancestor, Mannosuke Yamaji, was one of the victims of the 1910 avalanche.

Rob Buchanan

One hundred years ago this past March, a colossal avalanche swept down the slopes of Avalanche Peak at Rogers Pass. It was shortly before midnight on March 4, and a crew of railway workers was in its path. Fifty-eight men died that night, a tragedy that struck at the heart of the community of Revelstoke, and sent shock waves to many countries around the world.

Commemorating this terrible event and recognizing the remarkable gains in avalanche safety made since then, was the purpose of the Memorial Service held in Revelstoke on March 4, 2010. Some 800 people turned out for the evening service, a visual feast with many moving moments.

More than half of the victims of that avalanche were Japanese. A century ago, their cultural and religious traditions were not observed, nor were they given the same respect as the victims of European descent. In this centennial event, Buddhist and Christian traditions were blended, with United Church Minister Rev. Ken Jones speaking for the Revelstoke Ministerial Association and Socho Orai Fujikawa, Bishop of the Jodo Shinshu Temples of Canada, officiating over the Buddhist service.

Many disparate threads wove together to create this visual and auditory tapestry. Guest speakers included Julie Lawson, grand-daughter of John Anderson, one of the very few survivors of the avalanche. The Yamaji family traveled from Japan to be part of the service, honouring their ancestor Mannosuke Yamaji, who was killed in the avalanche. Consul Yoichi Ikeda, Chief of the Consular Affairs for the Consulate General of Japan in Vancouver spoke a few words of remembrance and gratitude for the service, and local musicians performed a song written about William LaChance, one of the few workers who survived the avalanche.

Special mention must be given to Tomoaki Fujimura, a ski patroller at Revelstoke Mountain Resort and a researcher in his "spare time," who did a speaking tour of Japan in the fall of 2009, showing The Fine Line movie, raising avalanche awareness, and bring attention to the 2010 commemoration project. Tomo's dogged research uncovered new threads and biographical information about the 32 Japanese victims, and made the connection with the Yamaji Family, who only three years earlier had learned of their ancestor's death at Rogers Pass.

Tomo's wife, Yuko Fujimura, was inspired to create the "Origami Crane Project" which turned into an event that has spanned the globe and engaged people of all ages. The Crane Project stemmed from the Japanese belief of folding 1000 cranes and making a wish. For this event, the wish was that a disaster of this magnitude would not happen again.

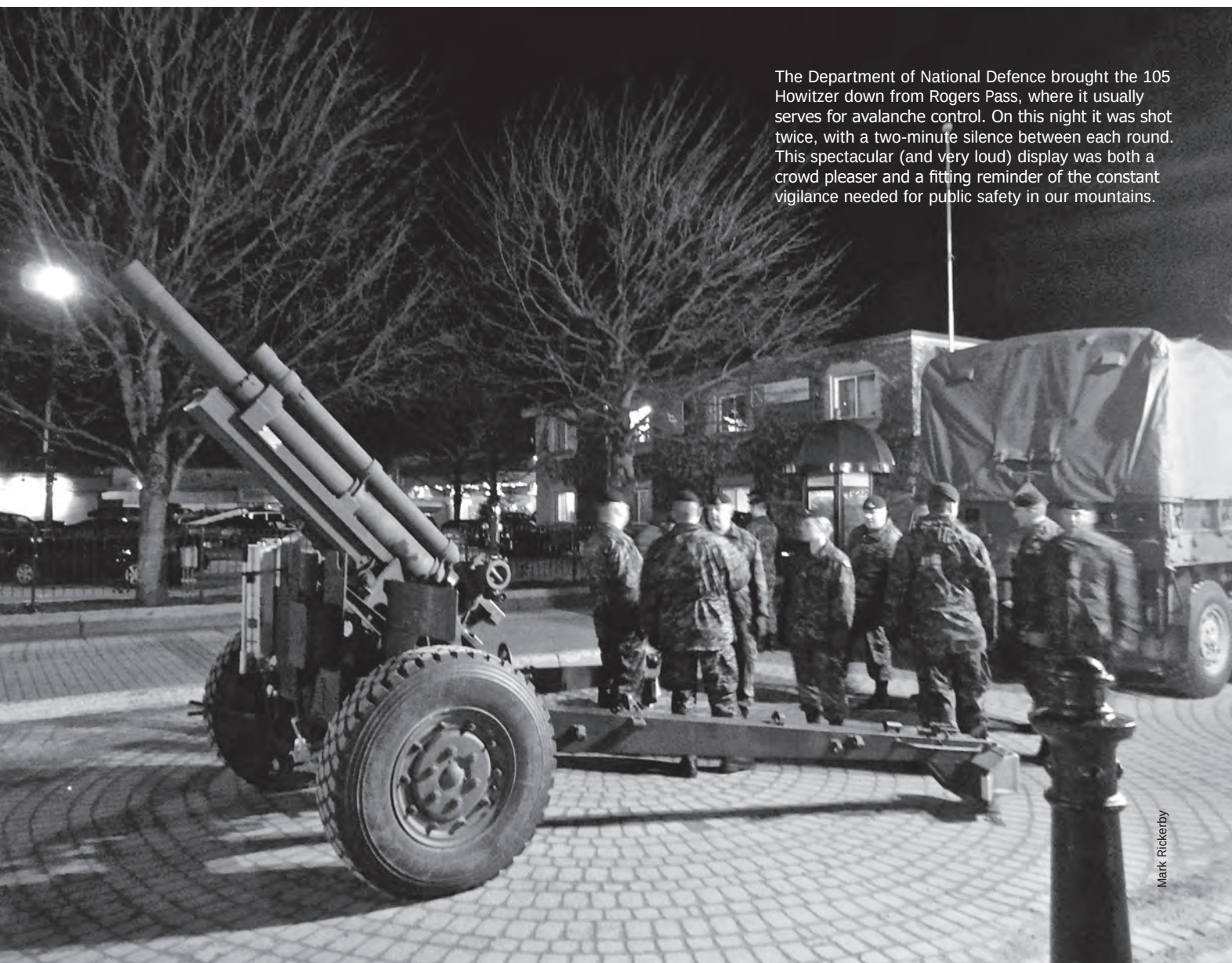
Local high schools students, working with Parks Canada, created a wonderful stop-animation short video describing the project and posted it to YouTube. Parks Canada-led local initiatives with schools, seniors, organizations and businesses throughout Revelstoke to get as many people involved as possible. The result? Over 10,000 colorful origami cranes were created, many of them sent from far away as people became aware of the project through YouTube.

Rob Buchanan of Parks Canada headed up the job of setting the scene for the evening. His vision to string the origami cranes between the stage where the memorial service took place and the CAA/CAC office created a metaphorical bridge between past and present. He and his crew did a fantastic job of lighting this mult-coloured creation, so it glowed throughout the service. Fifty-eight large, white origami cranes were also created for the stage itself, one for each avalanche victim. Lit with white lights, and marked with each victim's name, they formed a beautiful backdrop for the ceremonies.

As part of the 1910 commemoration, the CAC created an exhibit to showcase the evolution of avalanche safety, science and education over the past 125 years (when the Canadian Pacific Railway was completed). Though a major goal of the service was to commemorate those who died in 1910, an equally significant message was to convey how we learn from these tragedies, how we move ahead and how, through partnerships, science and education, enable more people to travel through avalanche terrain safely.

The 1910 commemoration will continue through the summer with events in mid-August at Rogers Pass and new exhibits opening in both the Revelstoke Museum and Archives and the Revelstoke Railway Museum. Plans are in place to mark the site of the tragedy in a ceremony this summer, that will tie in to Revelstoke's Railway Days.

>>Nancy Geismar is the Program Services Coordinator for the CAC.



The Department of National Defence brought the 105 Howitzer down from Rogers Pass, where it usually serves for avalanche control. On this night it was shot twice, with a two-minute silence between each round. This spectacular (and very loud) display was both a crowd pleaser and a fitting reminder of the constant vigilance needed for public safety in our mountains.

Mark Rickerby

Avalanche Awareness Beyond the Boundaries

A home-grown program targets avalanche safety for teens in the West Kootenays

By Kirk Jensen

Avalanche Awareness Beyond the Boundaries is a non-profit society, founded in the spring of 2009 by a group of Nelson ski industry and business professionals concerned about the increase in the number of teens venturing out into the back country without any avalanche and mountain safety training. Thanks to the generosity of the many donors who have supported the effort, the society provided free CAC-approved Avalanche Skills Training courses to 30 Nelson and area youth between the ages of 13-18 this ski season. We have also provided five one-day Avalanche Awareness Courses for approximately 75 youth aimed to raise awareness and prepare these youth for the AST 1 courses.

The fundraising efforts for the society kicked off at the 2009 Kootenay Coldsmoke Powder Festival held at Whitewater. Through a silent auction, the initial seed money of $5,000 was raised. The AABBS was named as beneficiary for the Travis Steeger Memorial Fund set up after his tragic death last February and donations on his behalf have been on going over the past year.

In the fall, the Nelson & District Credit Union stepped up to the plate with a cheque for $2,500, the first of our large corporate donors. A gear swap last fall raised $775, as well as the Avalanche Rescue Seminar this past December hosted by Whitewater and instructed by Manuel Genswein raised a further $650.

Furthermore Whitewater's forgotten pass funds and donations from the use of Whitewater's Beacon Training grounds have contributed another $135. Ongoing funding will be raised through the AABBS membership drive and private donations. The Kootenay Mountain Culture magazine's popular Backyard Booty Film showcase donated all the proceeds from the night's bar to the fund and there were some thirsty filmgoers!

Fund raising for AABBS will be ongoing for the 2011 winter season and has again been kicked off with the Kootenay Coldsmoke Powderfest on March 5 – 8, 2010. A flower sale in the spring will be followed by our second annual gear swap in the fall. The board is planning to pursue more corporate sponsorship through the various trusts, foundations and community events in the area.

Our goals for the 2011 winter is to deliver a slightly modified version of the CAA approved AST 1. We will draw on the instructors' experience and the feedback from the teens in the course this season to make it more interactive and engaging for the youth that participate.

We also found it was difficult for the teens to access the necessary equipment required for the AST course. The society board would like to see safety packs made available for the course participants to use and will be pursing that as well. The AABBS website and logo development are also on the list of summer projects. If you are interested in making a donation or volunteering to help the AABB society meet its goals, please contact me at Kirk@skiwhitewater.com

>> Kirk Jensen is the Outside Operations Manager at Whitewater Ski Resort

Wren McElroy

Search!

Part 6: The Advanced Course—Training for Reality

By Jay Pugh

Zuzana Driediger

As the CARDA Handler evolves and gains experience after the first validation, he or she become eligible for enrollment in the advanced course to attain "Senior Dog Handler" status. This is an invaluable opportunity to increase the required skills and to move out of the comfort zone of routine training.

The Advanced Course is offered most years; though slightly shorter in duration it is far more intensive in logistics and instruction. It is often in a remote area, such as Stewart, BC, and involves being in the backcountry over a period of several days. There are two instructors; one an RCMP dog handler and the other an ACMG Alpine Guide.

As anyone who has been involved in an avalanche knows, it is rare that it will be a pristine site, uncontaminated with the scents of other dogs or rescuers as is the case for the validation test. The main point of the advanced course is to expose the handlers to more complex aspects of avalanche responses. Over the years the course has developed to the point where it is common to see helicopter time, mass responses on ski hills involving a full search and rescue party, and the necessity of lowering the dogs down cliffs to work a debris field. Here the handlers practice working together in large slides where they find out how the dogs interact with each other and how to deal with chaotic situations. In all cases the training is based on reality.

During the course, two elements are pushed. They are the team's ability to travel in avalanche terrain and the dog-handling skills. Alpine Guides are the main instructors for assessing the team's travelling skills. It is possible, especially with ice climbing and other winter extreme sports, that the victims may end up in an area not accessible by skis. Furthermore, the team might find itself traveling across glaciers and/or having to stay on site overnight. During the course the teams practice dealing with these difficult aspects. The dogs find themselves roped to the handler, lowered in harnesses down excessively step terrain and having to sleep outside with the other dogs instead of their comfortable kennels.

These scenarios challenge the dog-handling skills, and this is where the RCMP dog handler is the main instructor. It's important for the handler to know how their dog is going to react to these new stresses and how their searching is affected. Knowing how one's dog interacts with the others is crucial. Real-life situations involve several dogs on the same site often working side by side. It must be insured that the drive to search overcomes the natural dominance and play drives of the dogs. The last place one wants a dogfight is in the back of a helicopter on the way to a real event.

Under the direction of the RCMP Instructor, the handlers are divided into groups with someone appointed as the leader. The other group will create a scenario that is realistic and challenging. It may involve multiple burials, misleading or incomplete information, or maybe unhelpful, would-be rescuers. There can be deliberately scented holes where the dogs will have to distinguish between surface scent and a real find. It could be all the above. After all no one said it shouldn't be fun.

Potential students should refer to the glossary for a list of suggested "curve balls." That said, the handlers are always aware of the potential seriousness of the training. The recent tragic slide on Boulder Mountain is a prime example of what a CARDA Handler may have to deal with. The dogs rode together in the close confines of a helicopter and were faced with a massive slide path, an unknown number of victims and a heavily contaminated search area, littered with clothing, equipment, snowmobiles and even some food. There were a great many people probing and shoveling and treating the injured all over the scene.

Despite these challenges the dogs did their jobs and worked well together. Three of the four CARDA Handlers involved have taken an advanced course and were as prepared as humanly possible by the training, which is based on tragedies of the past. In turn, they will relate their experiences and all future handlers will gain from it.

Terms used by CARDA

Senior Avalanche Rescue dog Team • This status is earned after the successful completion of an advanced course. It designates the handler as capable of co-coordinating several dog search teams at once.

Alpine Guide • The advanced instructor responsible for teaching the skills to access difficult and dangerous avalanche terrain.

RCMP • The instructor with the dog expertise. Arguably the best dog people on the planet, CARDA is privileged to gain from their knowledge. These instructors are characterized by a generally outgoing nature, the occasional outrageous accent and a skiing style that can loosely be described as strong, efficient, comical and reasonably stable (rarely as beautiful).

Dominance Drive • The natural instinct of the dog to assert its place in the pack. This can be a problem when in a multiple dog search.

Play Drive • The natural instinct for a dog to socialize/play with other members of its perceived pack. While not aggressive, it can be a problem on multi-dog searches, especially when another dog is being praised for a find.

Contamination • Anything on a search site that produces a distracting smell. This includes food, previous burials and finds, clothing, equipment, animal or other dog scents and occasionally machinery. Snowmobiles pose an added problem as gasoline can temporarily shut down the olfactory nerves of a dog's nose.

Surface Scent • A contamination on the surface that can be caused by as little as where a rescuer put their skins on. It is vital that a handler knows the difference in the dog's interest between buried and surface scents.

Curve Balls • The tricks applied by dog handlers to screw up their counterparts on an advanced training exercise. Suggestions for future handlers:

- Unreliable witness: gives false info and/or presents a language barrier (the author has discovered most of the different cultural backgrounds of CARDA members through this method). Sometimes the witnesses will not stay in the immediate vicinity or even start off buried themselves.
- Double burial: burying one simulated victim directly beneath another.
- Deep burial: some burials will be down as far as seven feet. (Note to Eastern Rockies handlers, don't forget to leave yourself a way out when digging this one).
- Distractions: loud noises, loose dogs and shoveling snow frantically are all major distractions for the dogs.
- Witness stands on top of simulated victim: this is a good one for trust. The dogs will be digging hard at the witness's feet while the handler is asking the questions.
- Wrong search area: very nasty but designed to increase the time the dogs spend searching
- Tough terrain: setting the scenario up in terrain involving steepness, horrible snow conditions, trees, huge debris and the occasional open stream.
- Payback: What every handler should be aware of when utilizing the curve balls.

Outreach

Thanks to Backcountry Access, CAC Operations Manager John Kelly presents a new BCA Beacon Checker to Paul Kramer of the Fernie Snowmobile Association during the 2010 Avalanche Awareness Days events in Fernie. Dwayne Paynton of Backcountry Access was also on hand to explain how the unit works and to help deliver the safe sledding message. Thanks to BCA for their continued support!

Mary Clayton

From the Inbox:

The staff at the Canadian Avalanche Association deserve a somber but thoughtful round of praise from myself and my colleagues. Your report "Boulder Mountain Avalanche Accident, March 13, Preliminary Report" was exceptionally respectful and professional. The talk around the campfires and coffee rooms of my backcountry skier and climber friends has leaned strongly to the pejorative regarding this incident. Your tone reminded us that even "piston-heads" have mothers, and we won't get our sledder brethren into the avalanche-respect fold by trash-talking them after a tragedy like this. Respect and politeness are always wise actions. Thank you for reminding us by demonstrating those actions.

Schedule of Coming Events

April 19 – 23, 2010
Western Snow Conference
An annual tradition since 1932, this international forum is for individuals and organizations to share scientific, management and socio-political information on snow and runoff. This year's theme is: "Adaptive water management in a changing climate; data, products and tools for practical application."
Where: Logan, Utah
Info: www.westernsnowconference.org

May 2, 2010
HeliCat Canada Annual General Meeting
Where: The Delta Grand Okanagan Resort, Kelowna BC
Info: Phone 250.542.9020 or e-mail info@helicatcanada.com

May 3 – 7, 2010
Canada West Ski Areas Association Spring Conference
Where: The Delta Grand Okanagan Resort, Kelowna BC
Info: Phone 250.542.9020 or e-mail office@cwsaa.org

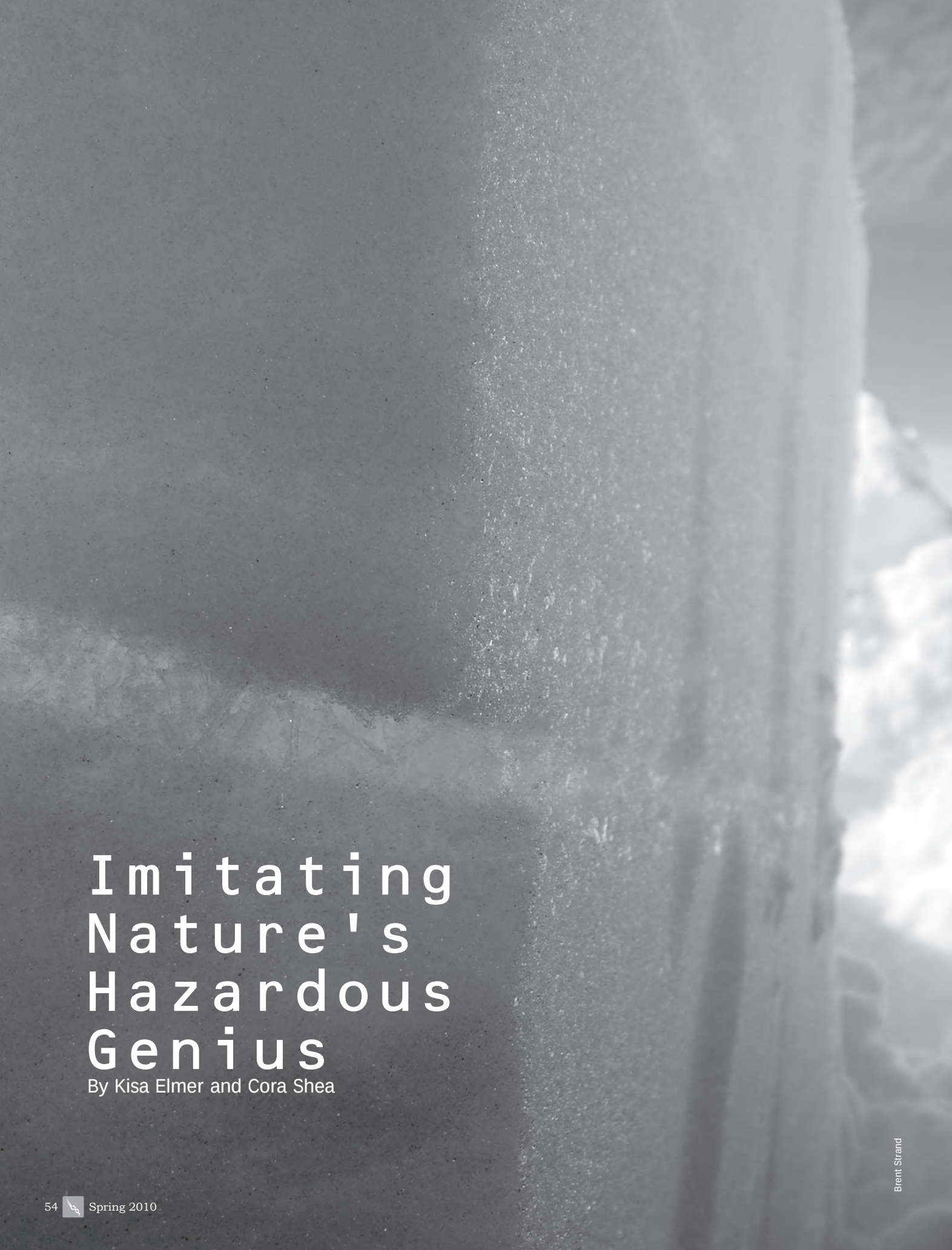
May 3 – 7, 2010
CAA & CAC Annual General Meetings and Spring Conference
Where: The Ramada Inn & Suites, Penticton, BC
Contact: Call Kristin Anthony-Malone at 250-837-2435 or e-mail kmalone@avalanche.ca

September 12 – 16, 2010
Canadian Permafrost Conference
Where: Calgary, Alberta
Info: www.geocalgary2010.ca

Oct 17 -22, 2010
International Snow Science Workshop 2010
Join your snow safety colleagues at this biennial international conference celebrating "A Merging of Theory and Practice." The deadline for abstract submissions is April 30, 2010.
Where: Lake Tahoe, California
Info: www.issw2010.com

October 14 – 16, 2010
Wilderness Risk Management Conference
This annual conference focuses on risk management and practical skills for the wilderness adventure and education industry.
Where: Colorado Springs, Colorado
Info: www.nols.edu/srmc

Jeremy Hanke



Imitating Nature's Hazardous Genius

By Kisa Elmer and Cora Shea

Brent Strand

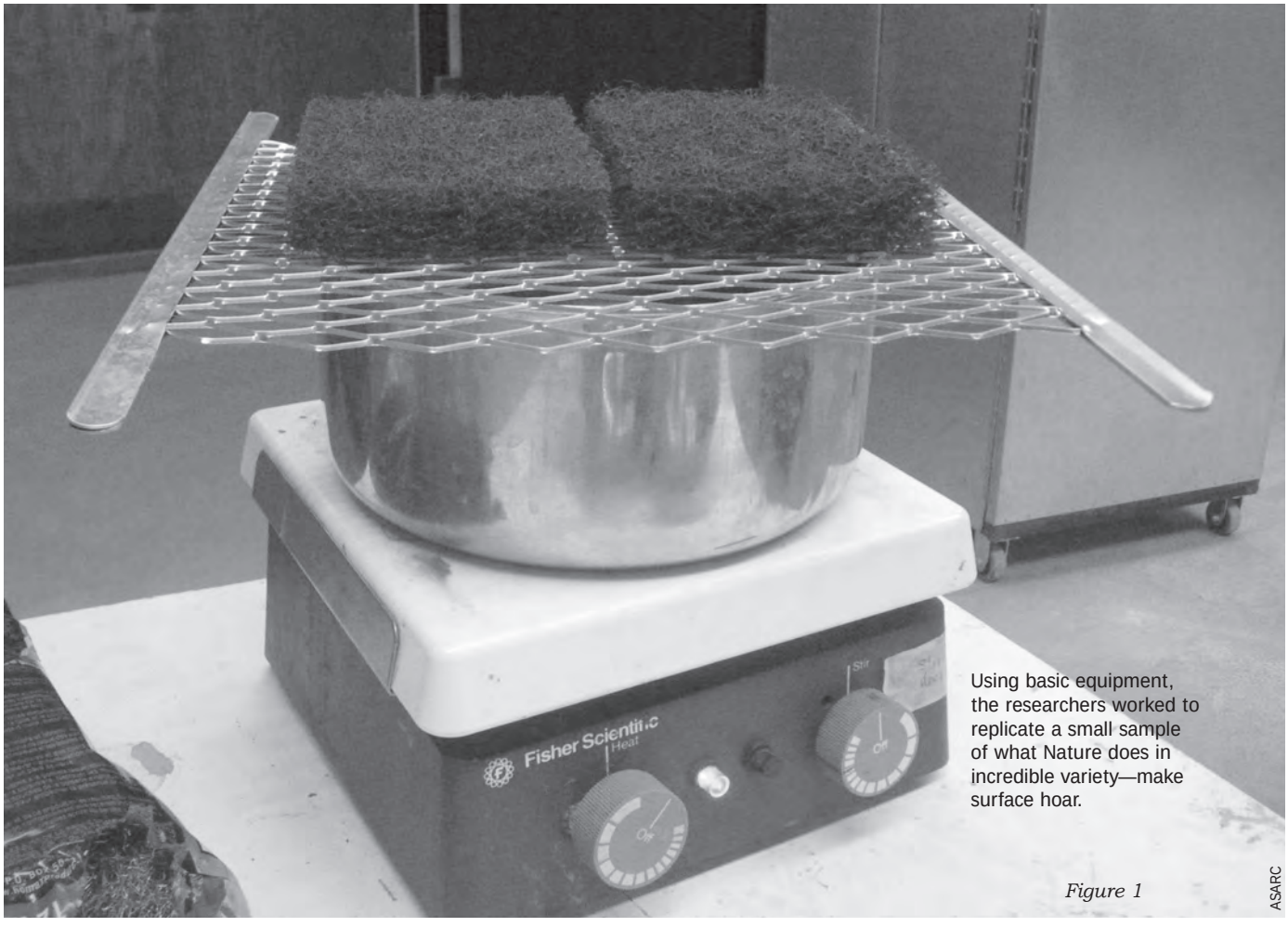
For those of you who have ever stopped to peer down at a single surface hoar crystal, the beauty of self assembly has already been revealed to you. The ability of water vapour to self-assemble into tiny ice sculptures still has scientists and curious observers searching for answers, and winter recreationists dodging avalanche trigger zones.

As avalanche safety workers reflect on the tragedies of past winters, surface hoar formation and the persistent weak layer that follows its burial appear to be poorly understood. So a research group like ASARC asks itself, what can we contribute to industries and recreationists? Two contributions are a better understanding of avalanche triggering mechanics and improved methods of identifying risk. One area of ongoing research is predicting and mapping surface hoar formation.

Surface hoar formation has been a difficult, yet essential research topic. Difficult because the natural processes behind crystal formation—such as wind and humidity—are near impossible to model at the scales relevant to surface hoar growth. Essential because, once buried, the surface hoar layer creates an ideal failure plane.

In the summer of 2009, the Applied Snow and Avalanche Research group at the University of Calgary hired a research assistant to help with the grunt work of research. That assistant was me, Kisa Elmer, a civil engineering student from the University of Saskatchewan. During the first month of my summer research position with ASARC, I worked with Cora Shea analyzing wide angle photos of the sky above surface hoar samples at the Fidelity study site in Glacier National Park. The objective was to understand the relationship between crystal size and sky view, a term defined as “the amount of open sky available for snow surface longwave radiation losses at night.” (Shea and Jamieson, 2009). This was my introduction to the curious subject of surface hoar formation. The next few weeks were full of lunch time discussions on the effects of temperature, wind, radiation and humidity on crystal growth.

After helping analyze the photos and comparing crystal sizes to sample locations, a new task presented itself. It had not been done before and neither Cora nor I knew if it would be successful. We were going to grow our own surface hoar in the cold lab—an unlikely place for surface hoar to grow. One reason is that the cold lab is closed off, which means that air flow and radiation losses are limited. A second reason is that there was no snow available for the crystals to grow on, so a proper surface needed to be found.



Using basic equipment, the researchers worked to replicate a small sample of what Nature does in incredible variety—make surface hoar.

Figure 1

ASARC

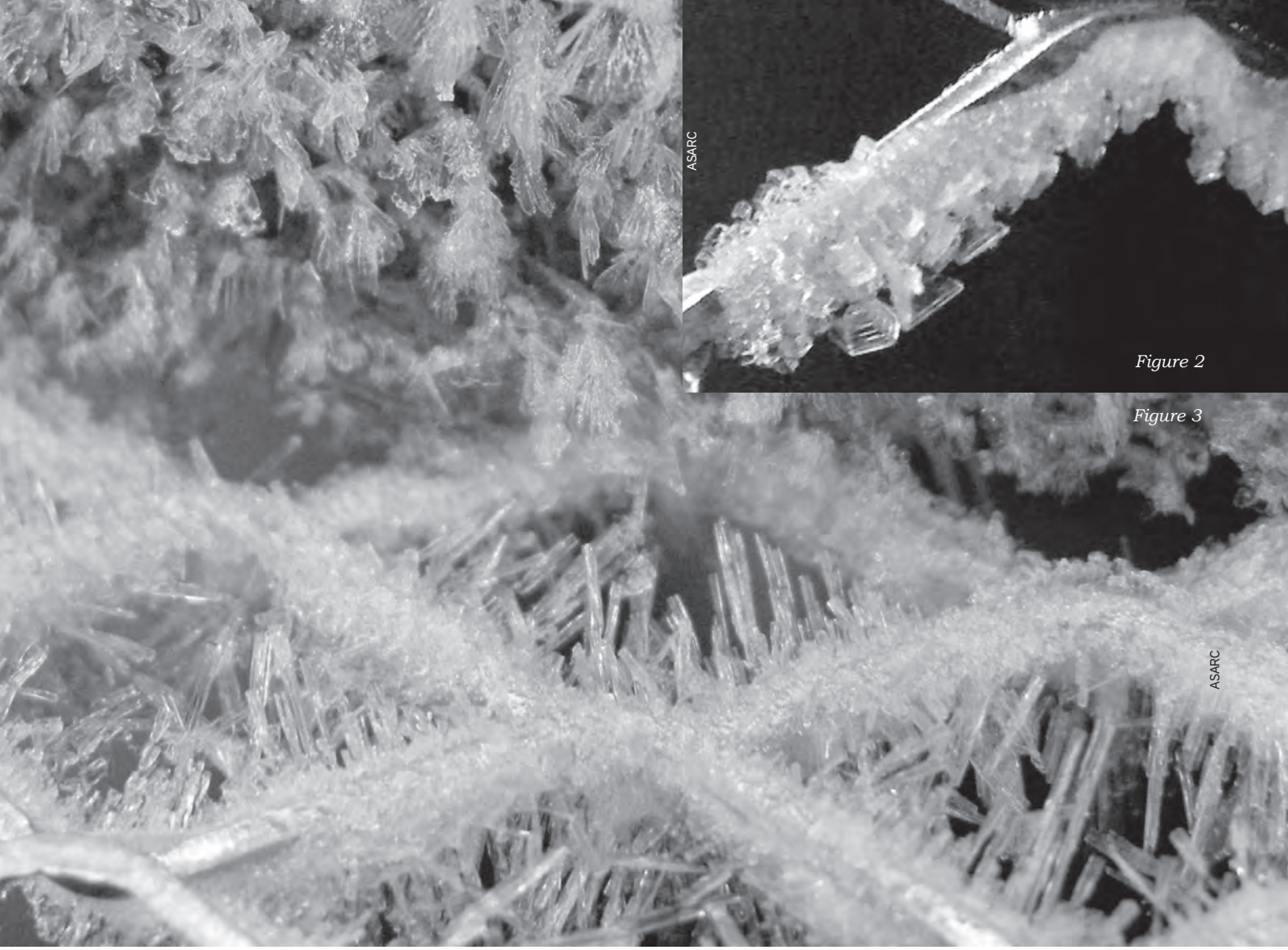


Figure 2

Figure 3

The Experiment

On July 14, jumping head first into the experiment, we decided to do the intuitive thing; boil water, move it into the cold lab, trap it with a plastic container and simply let the natural phenomenon of self assembly take the reins. You can see the simple apparatus consisting of a pot of boiling water, a steel paint strainer, and two plastic paint strippers in Figure 1, all to be covered by a plastic bin. The apparatus was not sophisticated; there was no delicate thermocouple wires dedicated to providing temperature readings or expensive gadgets measuring relative humidity, yet, it was successful. After leaving it overnight in a dark cold lab, devoid of sky view and significant air flow, tiny ice sculptures appeared on the underside of the steel paint strainer.

At different temperatures there would be, inevitably, different formations occurring. Plates formed at an ambient cold lab temperature of -7 ºC (Figure 2), while needles and feathery structures formed at -12 ºC and -13 ºC (Figure 3). A transition zone producing stretched plate structures was also observed from -9 ºC to -11 ºC. To give you an idea of size, the plates measure on the scale of a few millimetres while the needles grew to a maximum of one centimetre.

Here's how we thought it would work, in theory. The air trapped under the bin would soon become saturated and condense around the equipment. As the steel paint strainer cooled with its surroundings, the condensation began to freeze around its edges, creating a good base for surface hoar growth. However, this is not exactly what happened.

There was an inconsistency in the temperature. Outside the bin was cold (sometimes down to -13ºC). Inside the bin the air was kept warm from the hot pot of boiling water. In the same way our body reacts to cold, the extremities of the experiment cooled first, and because the edges of the bin were the first to reach freezing temperatures, vapour molecules began moving away from our nicely laid out landing pad and towards the plastic bin. The unruly vapour collected itself onto the unintentional surface, forming a less interesting layer of frost.

While humidity is an important factor in the formation of surface hoar it is not the only cause of crystal growth. Wind and sky view are two other contributors to their growth. If humidity were the only factor, we would have seen a more uniformly spread collection of crystals. Instead, the crystal growth was concentrated near the openings between the paint strippers and the edge of the pot, growing towards the vapour source. By positioning the paint strippers in a way that constricted steam flow through the strainer (Figure 1), an environment offering saturated air flow was created.

Conclusion

The imitation hoar grew under different circumstances and through a different process than natural surface hoar crystals. Simply put, natural surface hoar is formed when the snow surface cools enough at night to attract nearby water vapour molecules from the air. The imitation surface hoar grew because of highly saturated air flow. Our questions about the relationship between sky view and crystal growth still remain, as new questions were generated on the underlying physical processes governing the phenomenon of self-assembly. Perhaps this small experiment created more questions than it answered.

Now, after wrapping up the project and heading back to university, I still think about how to improve the experiment for future trials. Maybe I can try different surface materials such as natural snow, a different set up, or a different procedure. What factors can be controlled and manipulated other than temperature and what will be the result? When starting the experiment I wasn't sure whether any relevant results would be possible. Ice and frost were a given, but surface hoar? I wasn't sure. After observing the outcome, I wonder if this is the beginnings of a new way to study surface hoar formation and what it might mean to practitioners in the future.

Acknowledgements:

Thanks to everyone involved, including all members of ASARC. Specifically, thanks to Cora Shea and Bruce Jamieson for all of their advice. Thank you to the Civil Engineering Department staff at Schulich School of Engineering who provided all the necessary equipment. I would not have been able to do this without the help of Terry Quin.

Reference:

Shea, C. and B. Jamieson. Predicting surface hoar spatial variability in sparse forests using shading in satellite imagery, International Snow Science Workshop, Swiss Federal Institute for Forest, Snow and Landscape Research WSL., Davos, Switzerland, p.102-106 (2009)

ASARC

ASARC

Cora Shea is studying surface hoar formation over terrain for her PhD with the Applied Snow and Avalanche Research group (ASARC) at the University of Calgary. When not attempting to mimic winter with cold labs, plastic bins, and paint strippers, she may be found skiing with an excessive amount of chocolate.

Kisa Elmer is a fourth year Civil Engineering student at the Unversity of Saskatchewan. She is originally from Prince Albert, SK and has developed an appreciation for the Rocky Mountains through many years of alpine racing.

Burn, Baby, Burn

By John Brennan

Necessity, they say, is the mother of invention. Certainly that sentiment held true during the early stages of explosive engineering. In the 14th century, seaside forts were concerned over static predetonation of their black powder caches.[1] And the mining industry in the 1800s was plagued by accidents surrounding the ignition methods for their black powder blasts.

William Bickford had no immediate connection with the mining industry. His financial well being was attributed to his career as a currier and leather merchant. Nonetheless, he was keenly aware of the accidents occurring in the tin mines in England during the early 1800s and he set out to find a solution.

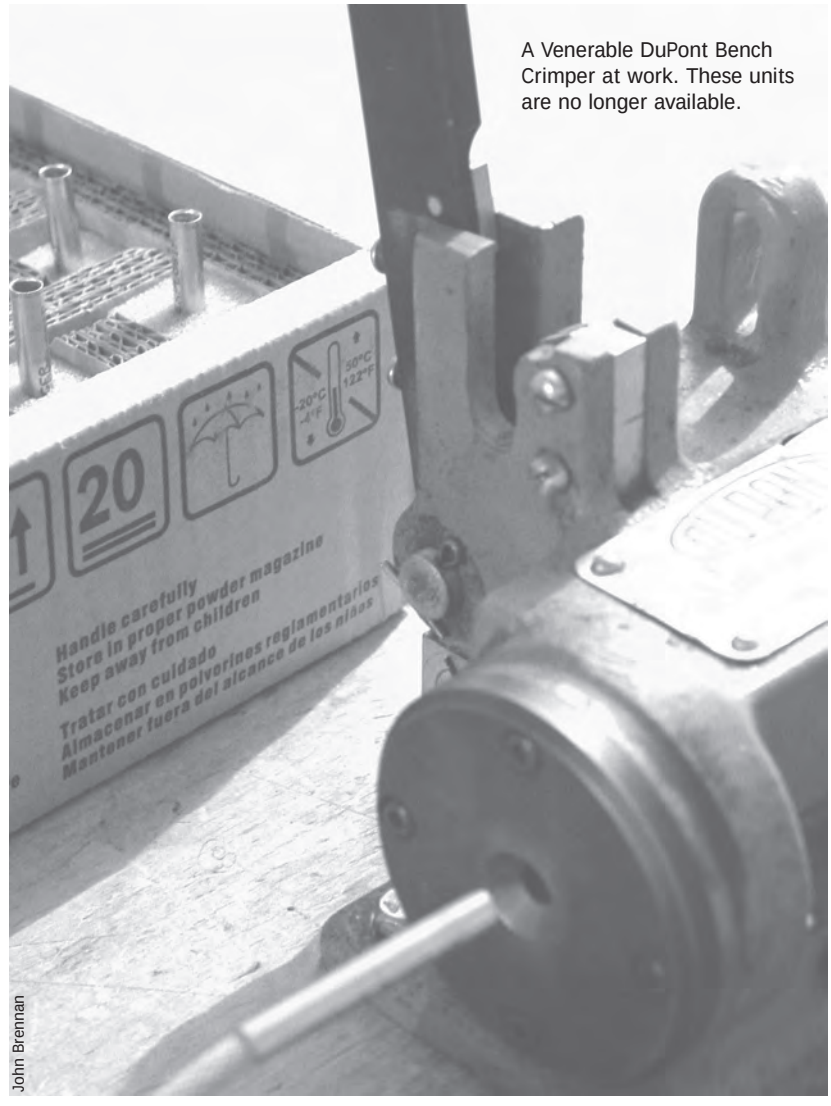
During this period, the black powder shots were ignited by crudely fashioned fuses made of goose quills or paper straws filled with black powder. After some initial failures, Bickford found providence when he saw a rope-making machine in action around 1830. He soon fashioned a machine that wound jute, a plant fibre, around a core of gunpowder. To complete the process, a varnished outer sheath was added to waterproof the assembly.

In an unfortunate twist of fate, Bickford perished in 1834—just prior to the opening of his first safety fuse factory. The factory was situated in the village of Tuckingmill, in the historic mining region of Cornwall, England. It would have made the ingenious Bickford proud to know that in his factory's first year, almost 45 miles of his invention was produced.

Several years after opening the first commercial safety fuse factory in the world, the corporation took their business overseas to the United States. It was at this point the company became Ensign-Bickford, with its headquarters relocated to Connecticut.

As an avalanche and explosive specialist, I have heard many times that safety fuse is an old and antiquated technology. While the former is certainly true, I adamantly disagree with the latter. From its humble beginnings, safety fuse saw immense growth over the many decades that followed. The simplicity of use, cost effectiveness and reliability are several of the factors that can be attributed to its continued success.

Reliability of safety fuse cannot be understated. In his excellent article, *In Defense of Safety Fuse*, published in the International Society of Explosive Engineering's Journal, Fred Hynes states: "As a field employee of the Du Pont Company and, later, the Ensign Bickford Company, I investigated many safety fuse accidents, mostly fatalities, and never once was there any evidence of fast burning fuse, although fast burning fuse was always the claim of the survivors. I realize that what I am going to say hereafter flies in the face of old, treasured mining folklore, but it needs to be said in order to convince the younger generations of miners, most of whom have never seen safety fuse, that safety fuse is just that, it is safe; it never burns faster or slower than it is designed to burn. However, safety fuse is only as safe as the man who is using it, and that is where the problem lies."[2]

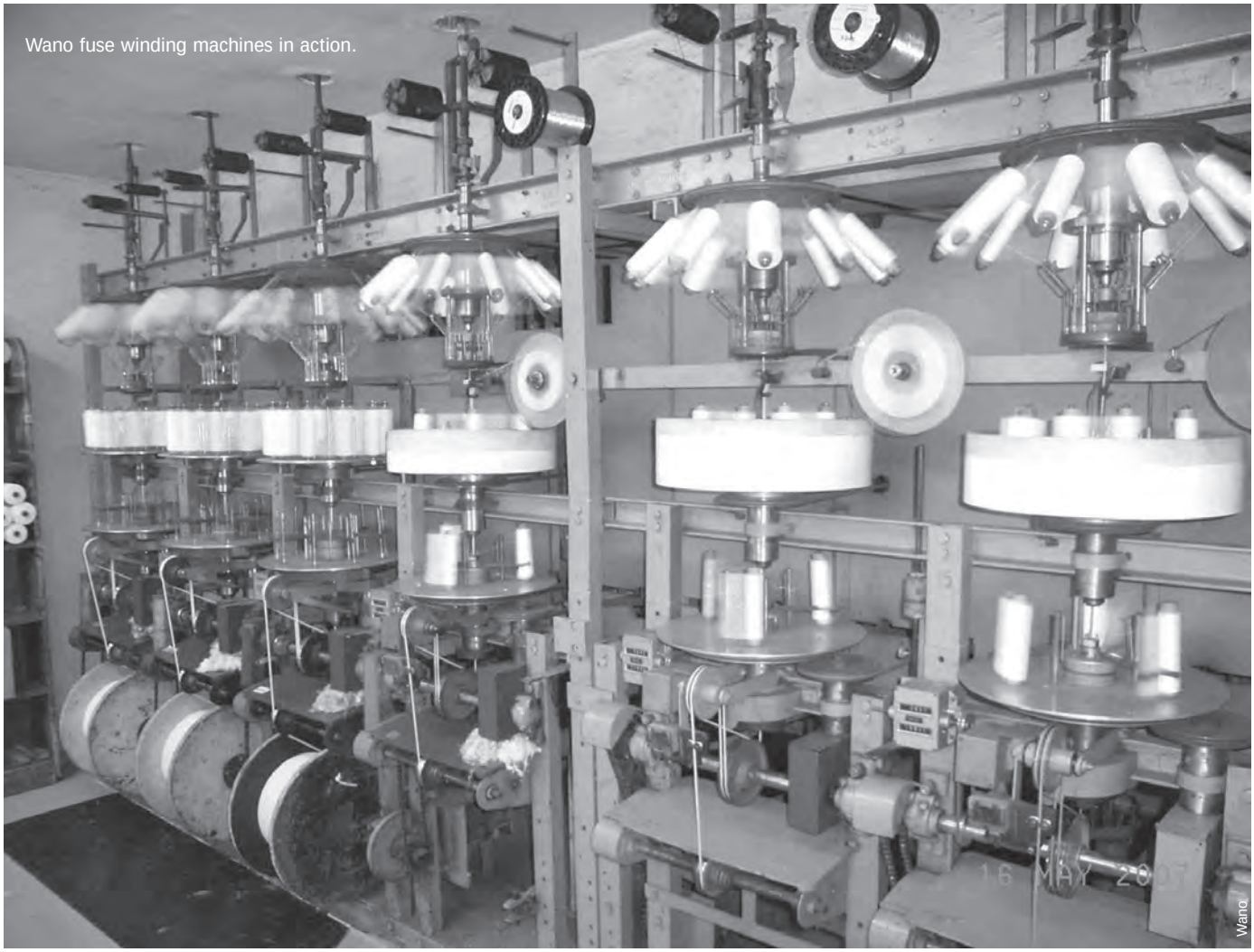


A Venerable DuPont Bench Crimper at work. These units are no longer available.

John Brennan

[1] Electrostatic Discharge Association, http://www.esda.org/

[2] "In Defense of Safety Fuse," International Society of Explosive Engineers, March/April 1985


Wano fuse winding machines in action.

Wano

One of the world's largest producers and users of safety fuse in recent years is in Africa. In an ironic twist that would see old Bickford grinning proudly from the grave, a used Tuckingmill fuse fabrication machine was sold to the African explosive behemoth African Explosives Limited (AEL) in the early 1960s. AEL not only began production of safety fuse, but they also manufactured their own black powder for their product. This seems to be a typical trait of fuse manufacturers. Wano, a fuse manufacturer from Germany, has been making black powder since 1682!

During AEL's fuse plant's heyday in the mid 1980s, over 1.4 million metres of fuse were spun each day! At this point, it took 182 fuse manufacturing machines to meet the market demands. While production has slowed at AEL to about 700,000 meters per day, it can clearly be seen that safety fuse is in no imminent danger of extinction in Africa.

Indeed, aside from the geocentric philosophy of most US explosive users, safety fuse manufacturing is still alive and well in many other countries around the world. India is a major manufacturer, with numerous producers of black powder and safety fuse. Annual country wide production numbers are in the hundreds of millions of metres. Peru deserves mention at 60 million metres a year. And, while Germany manufactures a quality fuse, their production numbers are only in the 1000 kilometre a year range.

Bulk fuse is currently imported into North America through Petro Explo Inc. in Arlington, Texas. Their staple fuse products from Tec Harsheim in Chile were recently cut as that factory, most recently owned by Dyno Nobel International, shut their doors in 2003. They now import similar products from Mexico.

The majority of USA bulk fuse users are now using the Dyno USA owned Compania Mexicana de Mechas Para Minas fuse sold under the trade name "Cobra Fuse." Previously, Tec Harseim produced a military spec fuse that found favor with avalanche control programs who liked its hotter spit and burning characteristics. While Compania Mexicana produces a similar product, contractual agreements with Ensign Bickford Aerospace make it unavailable for commercial use until at least 2012.

Despite the staggering amounts of safety fuse still being produced worldwide, users should resist being lulled into a false sense of product availability. Shock tube initiating systems are drastically cutting into the safety fuse market. Several countries, such as Russia and the US, have prohibited the use of safety fuse in some mining applications.

AEL, the largest manufacturer of safety fuse in the world, has invested heavily in the manufacturing of shock tube—a thin plastic tube lined with a dusting of high explosive. When initiated, the detonation signal is passed through the tubing at 6500 feet per second without rupturing it. The tubing is an inexpensive, highly reliable and safe way to initiate a blast. Unfortunately, it is a system that doesn't lend itself readily to avalanche control. The need to couple the blaster to the explosive charge is an obvious challenge, as is the need to collect the spent tubing.

An interesting characteristic of the core of some safety fuse is its ability to carry a static charge—a phenomenon that Canadian authorities feel could cause predetonation. Because of this concern Canada, and only Canada, has mandated the use of pre-manufactured blasting cap/ safety fuse assemblies installed with a shunting staple. This staple provides a preferential pathway through which the static charge grounds itself. It is important to note that blowing snow can generate in excess of 20,000 volts of static electricity.[3]

Quite a bit of commercial interest in the cap and fuse market exists in North America and around the globe. A better educated consumer can ask their explosive distributors about the availability and cost of other international product alternatives. It is Avalanche Mitigation Services' aim to be apprised of the safety fuse options available. Please contact us with your comments and concerns. jb@avalanchemitigationservices.com

Related reading:

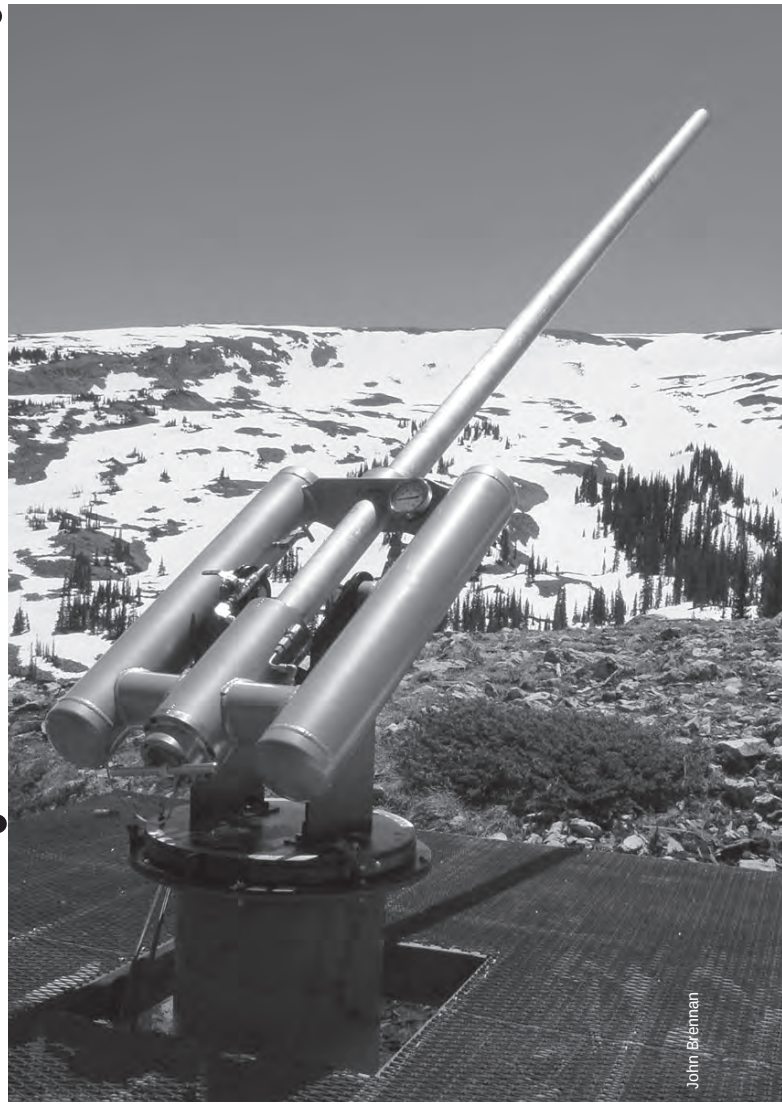
Increasing Explosive Safety, John Brennan, 2002, http://www.avalanchemitigationservices.com/articles.htm

In Defense of Safety Fuse, Fred Hynes, ISEE, March/April 1985. Contact John Brennan for copies of the article

[3] Personal communication with R.A. Schmidt, 2/02

This just in: New Avalauncher now available in BC

Just before press time, John Brennan of Avalanche Mitigation Services in Colorado received word that his Falcon GT Avalauncher has met all the requirements specified by WorkSafeBC and it is now available in BC. John writes, "I've been working for about a year and a half on getting my Avalauncher okayed for sale in Canada. Seems that WorkSafeBC has required extensive hoop jumping for a fair amount of folks in the Canadian avalanche community and I'm quite proud to have met their requirements." Included in the official Inspection Report are these words: "WorkSafeBC wishes to thank this US manufacturer on their continual cooperation to this review process within BC, and their ongoing commitment to worker safety within this jurisdiction." Good job John!



John Brennan

Snow, Trees, and Miracles

As yet another avalanche fatality touches his circle of friends—this one a tree involvement near Park City, UT—the author resurrects an article he wrote to try and get trainee guides to tone it down a bit.

By Wayne Bingham

To a good skier, there is nothing more exhilarating than a fresh powder run in deep snow through the forest. Skiers love to ski powder, and often the best powder is at treeline, or in the trees and glades just below. We think of skiing in the trees as being safe; that the trees anchor the snowpack, and if there are trees then there can't be avalanches occurring in the same place.

Avalanche researchers have found there are far fewer trauma-related fatalities in Europe than in North America, and it seems this anomaly is due to different terrain. Most European skiing, and hence avalanche fatalities, are in the open slopes well above treeline, and rarely do victims get slammed into forest cover. In North America, much backcountry skiing is done in the trees, and we have a far higher percentage of trauma related avalanche deaths.

The dichotomy of tree skiing is this: skiing in the trees may be safer overall for reducing numbers of avalanches, but the price is far higher when one occurs.

Let's look at the reality of an avalanche in the trees. A downhill racer skis at speeds close to 100 km/hr (60 mph). An avalanche travels at roughly 150km/hr (90 mph). Imagine a downhill racer going 150 km/hr, faster than he has ever gone before. He comes around a corner, without losing speed, and skis into the dense forest. Think for a minute—what do you suppose his chances would be?

Imagine this same racer, in the same place, at the same horrific speed, except now he has his eyes blindfolded, and his mouth full of snow, and he is doing uncontrollable cart-wheels and somersaults. Now what do you think his chances are? Hold that thought, because it gets worse!

Let's look at the terrain now. A small avalanche, 30 m across, 50 m long, and 1 metre deep is moving down the mountain. This is 1500 cubic metres of snow. Each cubic metre of snow has a mass of approximately 250 kg, (550 pounds), so in this small avalanche there is 375,000 kg of snow (775,000 pounds). This volume of snow is the same as roughly 200 mid-size cars, and remember that these cars are all going at 150 km/hr.

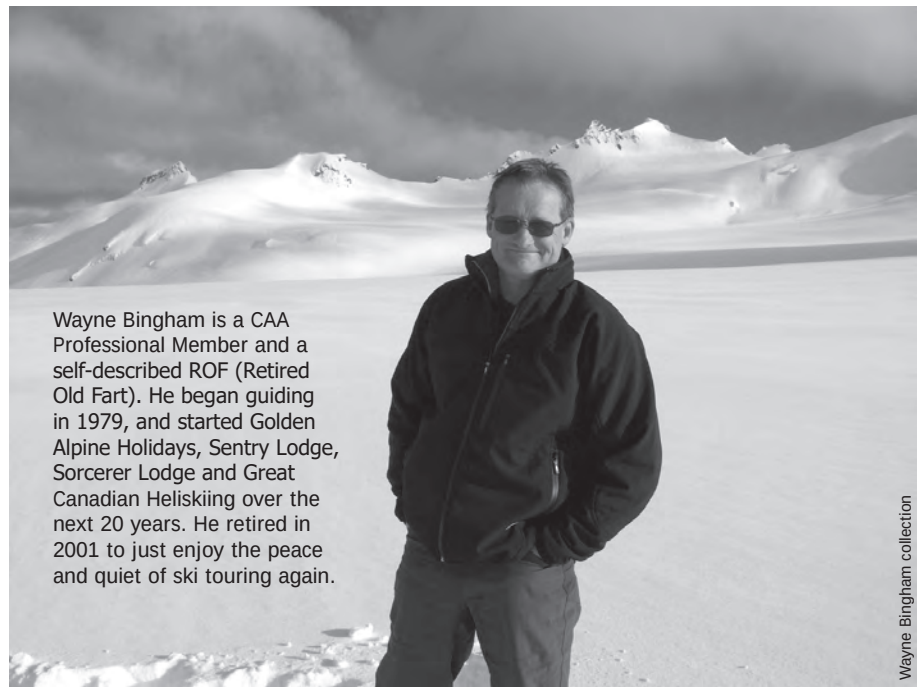
Now let's go back to our skier—the downhiller, the one going 150 km/hr in the trees, blindfolded, cart-wheeling, and with a mouth full of snow. Not only is he doing this, but also 200 speeding out-of-control cars are chasing him. And every one of those cars is waiting for him to come to a shattering crash into a tree, so they can then slam into him as well! This is the reality of being in an avalanche in the trees.

Think very carefully about where and when you choose to ski the trees. Just how good is the stability? Just how much of a chance is there you can be pushed into the trees? What if you are wrong about the snowpack?

Remember—it doesn't matter how good your group is at finding you with a transceiver, or how fast they can dig, or how close the helicopter is, or if you have an Avalung, or even an airbag!

If you have been caught in an avalanche in the trees, the only way you will come out alive is if you, the blindfolded, choking, cart-wheeling, 150 km/hr skier, miss every single one of those trees, and not one of those speeding cars catches you while you do it.

In other words, you will need a miracle!



Wayne Bingham is a CAA Professional Member and a self-described ROF (Retired Old Fart). He began guiding in 1979, and started Golden Alpine Holidays, Sentry Lodge, Sorcerer Lodge and Great Canadian Heliskiing over the next 20 years. He retired in 2001 to just enjoy the peace and quiet of ski touring again.

Wayne Bingham collection

Skiing Tracks

Disturbing surface layers before they disturb us! The author ponders the effectiveness of ski compaction in the backcountry.

By Larry Stanier

Ski tracks on the bed surface of a size 3 in the Monashee Mountains. This avalanche was triggered by a snowcat pushing snow onto the run from above.

Grant Statham

This may be old news to some readers so please feel free to flip me the bird early and get back to your more elevated literature. For those of you willing to hang in, I want to soap box about the idea of trying to disturb future persistent weak layers in moderate and steep terrain. This is an issue facing mainly the mechanized ski and ski touring industry but probably has some application throughout the avalanche patch.

There is a long history of bed surfaces with ski tracks plainly visible in them and a painful litany of them from this past winter of 09/10. In the past we have talked about ski compaction. This is obviously a good thing and a big part of what allows many ski areas to open and maintain all that great, steep terrain in-bounds.

In the backcountry touring and mechanized industry, I think we have often resisted the idea of real ski compaction, as that is certainly not what our guests have traditionally been paying to ski. We have instead relied on ski tracks to make a difference to the layer properties. My main point is that the application of ski compaction and layer disturbance MAY work better in steep terrain.

Many of us have always been bothered by this problem: do old ski tracks actually change layer properties in mellow terrain? If so, by how much? If the tracks are put in early, when the weak layer is forming, they are probably close to useless as the surface hoar/facets will simply form through the tracks. Perhaps a useful PhD project would be to argue the details of how much this now-uneven layer affects the propagation potential. We certainly know from experience that too often, the effect is not enough.

Can one or two passes of even well-timed, spooned, shallow, fat-ski tracks on a slope of somewhere between 20-40 degrees make a difference? It must make some difference but again, experience shows us that too often, it isn't enough. How do you forecast given the new micro-spatial variability of that layer? Snowpack test results on the layer will probably vary greatly, even through the radius of a ski track and even more so between tracked and untracked samples.

This past winter, I worked part-time at K3 Cat Skiing, in the western Monashees, just north of downtown Malakwa and across the Craigellachie Creek from The Gorge ski touring area. Within the K3 tenure they have a slightly bowl-shaped ridge called Skinny Ridge. Skinny Ridge is about a kilometre long with a fairly sustained N-NW face to it. It all starts with some fairly steep and planar terrain that averages 100 metre vertical, with various sections consistently between 35 and 50 degrees. It is broken by some vertical bands of trees and cliffs but offers a lot of fairly steep treeline and below treeline skiing.

Because of the slight bowl shape of the ridge and drainage, all these steep lines funnel into a somewhat limited number of exit pitches to the pickups. The guides made a concerted effort this winter to keep skiing this terrain, especially during the droughts. At times we were definitely making multiple passes over old tracks and personally, I sometimes thought the skiing sucked. The guests however, seemed to consistently enjoy the chance to ski some steep terrain in relatively soft snow. Bumps didn't form and the end result was that we had some exciting terrain to use all winter long.

What inspired this article for me was seeing how much more effective skiing on steep terrain (40+ degrees) was at disturbing the potential future weak layers. Sloughing, crashing, big buttery turns, side slipping—it all shatters and sprays the surface hoar/facets all over the place. I am absolutely certain this is an entirely different process than the gentle pressing of weak layers in fairly narrow strips by skiers on moderate angle terrain.

I am certainly going to play around this coming winter with trying to manage some bigger pieces of steep terrain in this manner. Especially steep terrain that is easy to get to frequently, such as bread-and-butter terrain, home runs and jump runs. I am hopeful it will allow for at least some safe and exciting skiing if and when the next time PWL's are trying to drive us all nuts.

The biggest issue I see is how to record the traffic and maintain the history of use so that we are making well-informed decisions based on the disturbance of the weak layers. We could easily get bit hard in the ass if we have been inconsistent with the ski traffic or allow a PWL to be buried on a particular pitch or slope without noticing it.

I am thinking of experimenting by making cheap prints of run photos and shading in the skied area with a pencil each time we make a pass during a drought. Ideally, the features being farmed and observed would eventually be shaded in enough, so that when the drought ends and the storm starts we could be confident that the potential future PWL is not an issue for that feature.

I would highly recommend that if any operations go down this road, they start with a relatively small, well-defined piece of terrain. Make it abundantly clear to all guiding staff what the plan is for using and managing the terrain, as well as observing and recording its use.

Skiing steep terrain with guests is obviously fraught with hazards. Nasty falls, hitting trees, rocks, slough management, scaring the guests, or simply losing control of the terrain during a big storm. The first pass on that steep terrain after a big storm is always going to be "engaging."

Skiing the steep terrain also can't possibly work for every group or every guest. However, my personal experience from cat skiing over the past few years is that, as a gross generalization, the guests are skiing WAY better than they were years ago. Big skis, ski movies, new ski resorts, have all made a difference. I plan to take full advantage of that as part of our toolkit for providing safe skiing in all conditions.

Not every tenure will be lucky enough to have the right piece of terrain or the appropriate clientele to make this work. Me, I work in two operations with potential and I plan to take full advantage of it. I am going to pester my co-workers to at least try talking about layer disturbance as well as ski compaction. And I might even learn how to ski properly after all those laps on steep terrain.

Afterthoughts:

I think three winters of really persistent and reactive surface hoar layers have left us all feeling a little harried and/or hunted. It has been hard on guides, forecasters, owners, operators and customers. We obviously need to start thinking outside the proverbial box for a variety of solutions and methods for dealing with this in the future. It has always been an issue but three years in a row at the same time as WorksafeBC's involvement has to be taken as a hint. Airbags, mechanized ski operations where every guest carries a probe and shovel, the Daisy Bell, etc. are all steps in the right direction.

I was walking home very late last night thinking how I would have loved to be sitting in the middle of a huge, 35 degree north-facing surface hoar crop around January 23 of this year, while a Bell 212 slowly flew over me just above the snow surface. I would be very keen to see how much surface hoar that windy beast could destroy in 10 minutes in a particularly important start zone.

User Alert

Even the best technology won't help if you don't use it correctly. The author reports on some recent errors with the AvaLung.

By Dale Atkins

Two recent uses, or to be more accurate, non-uses of AvaLungs have come to my attention, which I feel are important for avalanche educators to know about. For years I have heard suppositions that a user when caught in an avalanche might not be able to insert the mouthpiece. (Crowley et al. addressed this concern and others in our 2002 ISSW paper: An AvaLung-associated avalanche survival.) For years, it seemed people got the mouthpiece in, until recently.

The AvaLung was invented and patented by Denver doctor Tom Crowley in 1996, which he then (I believe) licensed to Black Diamond Equipment. BDE sponsored and conducted rigorous testing of the device as well as several product refinements. Since becoming commercially available just over 10 or so years ago, I know of more than a dozen successful uses of the AvaLung (though few have been documented) including a recent January burial in Switzerland. I suspect additional uses have gone unreported.

This winter however, for the first time I heard of incidents where AvaLung-equipped users caught in avalanches did not or could not get the mouthpiece in their mouth. Both incidents occurred in Colorado—on February 26 near East Portal and March 3 on Berthoud Pass. In the East Portal incident, the user was completely buried and found by his companions using transceivers. The user at Berthoud Pass was "covered" by snow but was able to "shake loose" and stand up.

Prior to these incidents the only other issues with the AvaLung that I'm aware of both occurred in 2006. In one case (Alaska, April 18) the mouthpiece became disengaged from the user's mouth after the user collided with something during the slide. The skier was buried, found with a beacon and survived. The other case occurred in New Zealand on August 14 of that year, when a ski patroller complained about almost biting his tongue getting the mouthpiece into his mouth. He was not buried.

In the two recent Colorado incidents both avalanches were relatively small (~60 vertical metres) and both users had bandolier-type AvaLung IIs. In one incident I spoke to the user, and in the second incident an experienced mountain rescuer queried the user. One user has owned an AvaLung for about five years, but did not think to try and get the mouthpiece into his mouth even though he carries his device "all the time" and attends yearly trainings where use of the AvaLung is discussed. In the second incident the user thought about it but could not get his hands to his AvaLung. In both cases the subjects said that when the avalanche released "It/things happened too fast..." to react. On both cases it is unknown exactly where the mouthpiece was positioned and if either user had seriously practiced getting the mouthpiece into their mouth.

For me, a couple of important take-home message arise from these two incidents. The messages are not new but serve as reminders. When caught in an avalanche, some victims do not have the time or the ability to make deliberate actions like reaching for their mouthpiece. As educators we have to make students aware of the differences between the classroom and the real world. Actions that are easy to describe indoors may not be do-able in actual avalanches, and this notion leads to my last point, which deals with practice.

Most AvaLung users do not or have not practiced inserting the mouthpiece in a difficult and pressured setting. To reach up and insert the mouthpiece a few times in the comfort of the indoors or standing on the trail does not constitute practice. If anything such action may be worse than not practicing as it can reinforce false confidence for protection. For years I have encouraged AvaLung users to practice by rolling or tumbling down a snow slope. Those few that have actually done it have a different but more realistic awareness for how to use their device and of their own abilities.

In no way does my message imply anything negative or adverse about the AvaLung. I was fortunate to have been involved—not paid—in some of the early development and commercialization of the AvaLung, including being a buried subject (both with and without the AvaLung) in tests done by BDE. I am a firm believer in the AvaLung and applaud BDE's efforts and support they provide to our avalanche community. If you have any questions about these incidents or past ones, please ask.

>>Dale Atkins is the US Representative to the Avalanche Rescue Commission of ICAR.
He can be reached at dale.atkins@recco.com

VOLUME 5 PHOTO CONTEST

Do you have a great photo of an avalanche in action or an avalanche involvement? Enter the Volume 5 Photo Contest and you could win: Marmot Twilight two-person tent, Marmot Eiger 65 backpack, $500.00 and your photo on the cover of Avalanche Accidents in Canada Volume 5!

Each entry must include the date and location of the photograph and details of the incident. No fatal accidents please.

Entry Deadline: Due to the extended production date the new deadline will be April 30, 2010.

Photo Formats: High resolution digital (minimum 3 MB in size). No digitally altered images will be accepted. Images must be JPEG, TIFF or RAW format only; all other formats will not be accepted. Digital images may be received on CD, DVD and e-mail bstrand@avalanche.ca (please put "AvAcc photo contest" in title).

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Avalanche Centre Offers Home for Unemployed Olympic Sidekick – MukMuk

February 27, 2010, Revelstoke, BC. The Canadian Avalanche Centre has officially contacted the Vancouver Olympic Organizing Committee to offer a home for MukMuk the Olympic sidekick after the close of the Vancouver games.

"MukMuk is an alpine creature and a great fan of backcountry sports. Having him as a champion for Avalanche Safety is a natural fit," says John Kelly, Operations Manager of the Canadian Avalanche Centre. "MukMuk is a natural and compelling public speaker, and would be a great ambassador for us," continues Kelly. "Moreover, we have ongoing programs and could offer a stable home for him for many years to come."

The plight of mascots after the glitter of the Olympic Games ends can be tragic. Past Olympic mascots have not fared well after the spotlight is turned off. "We see it time and time again, from Amik the beaver to that cowboy and cowgirl from Calgary – what the hell were they called?" says Ookpik, founder of Fuzzy Haven, a home for retired, down-and-out mascots located in Montreal. "Mascots are lauded, celebrated and lionized during the event. But afterwards they quickly find themselves abandoned, forgotten, and even their marketability in new projects is completely destroyed due to type-casting. We see it time and time again. A downward spiral after the event that ends in depression, homelessness and much worse"

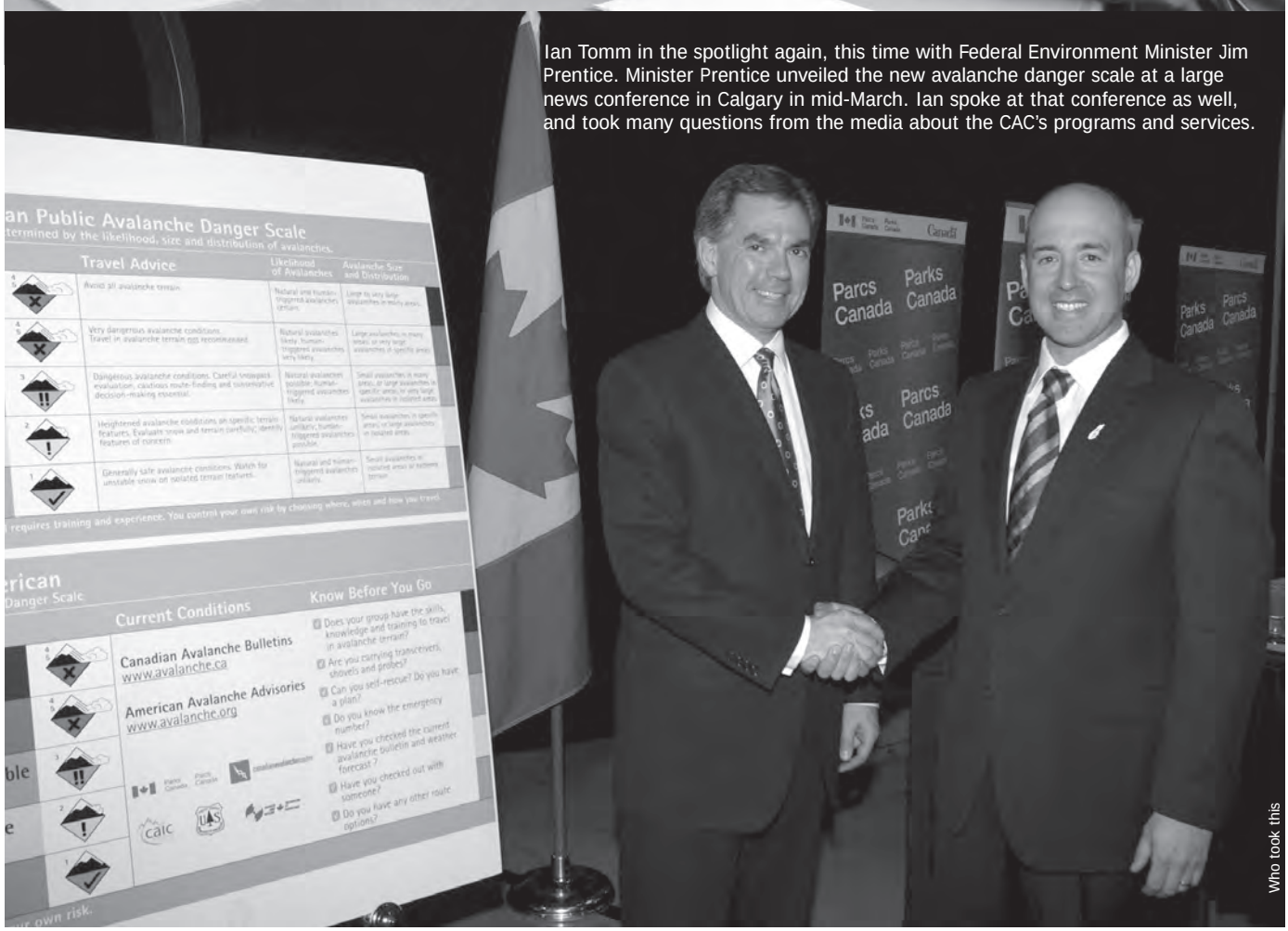
Ookpic speaks from experience. Vaunted icon of Expo 67 in Montreal, it took many years for him to recover from the post-Expo hangover that left him penniless and addicted to drugs in the streets of Montreal before he started his Fuzzy Haven project with the help of the Olympic legacy program and the SPCA.

The Canadian Avalanche Centre is working with Fuzzy Haven to prevent similar fates for the Vancouver Olympic mascots. The Canadian Avalanche Centre is a non-profit, non government organization that supplies public avalanche safety services and products in Canada.

Photo Ops

Mary Clayton

BC Environment Minister Barry Penner (second from right) visited our office after the Boulder Mt accident. Forecasters Mark Bender, Matt Peter, Greg Johnson and Executive Director Ian Tomm gave him a quick overview of the CAC's public avalanche bulletin service.



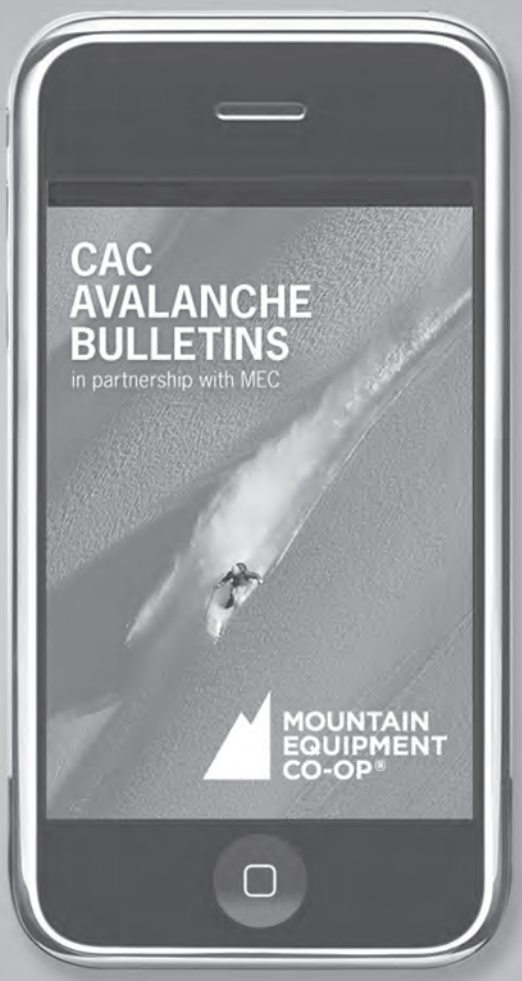
Ian Tomm in the spotlight again, this time with Federal Environment Minister Jim Prentice. Minister Prentice unveiled the new avalanche danger scale at a large news conference in Calgary in mid-March. Ian spoke at that conference as well, and took many questions from the media about the CAC's programs and services.

Who took this

Flakes

The latest in on-site avalanche warning systems - SCARE-SNOWS

"NOW I CAN CHECK THE CONDITIONS BEFORE I SKIN UP."



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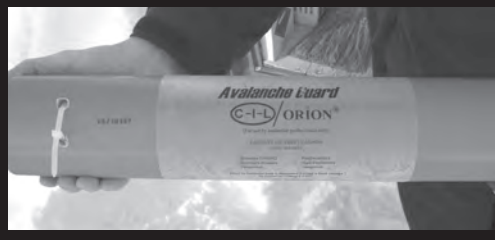

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