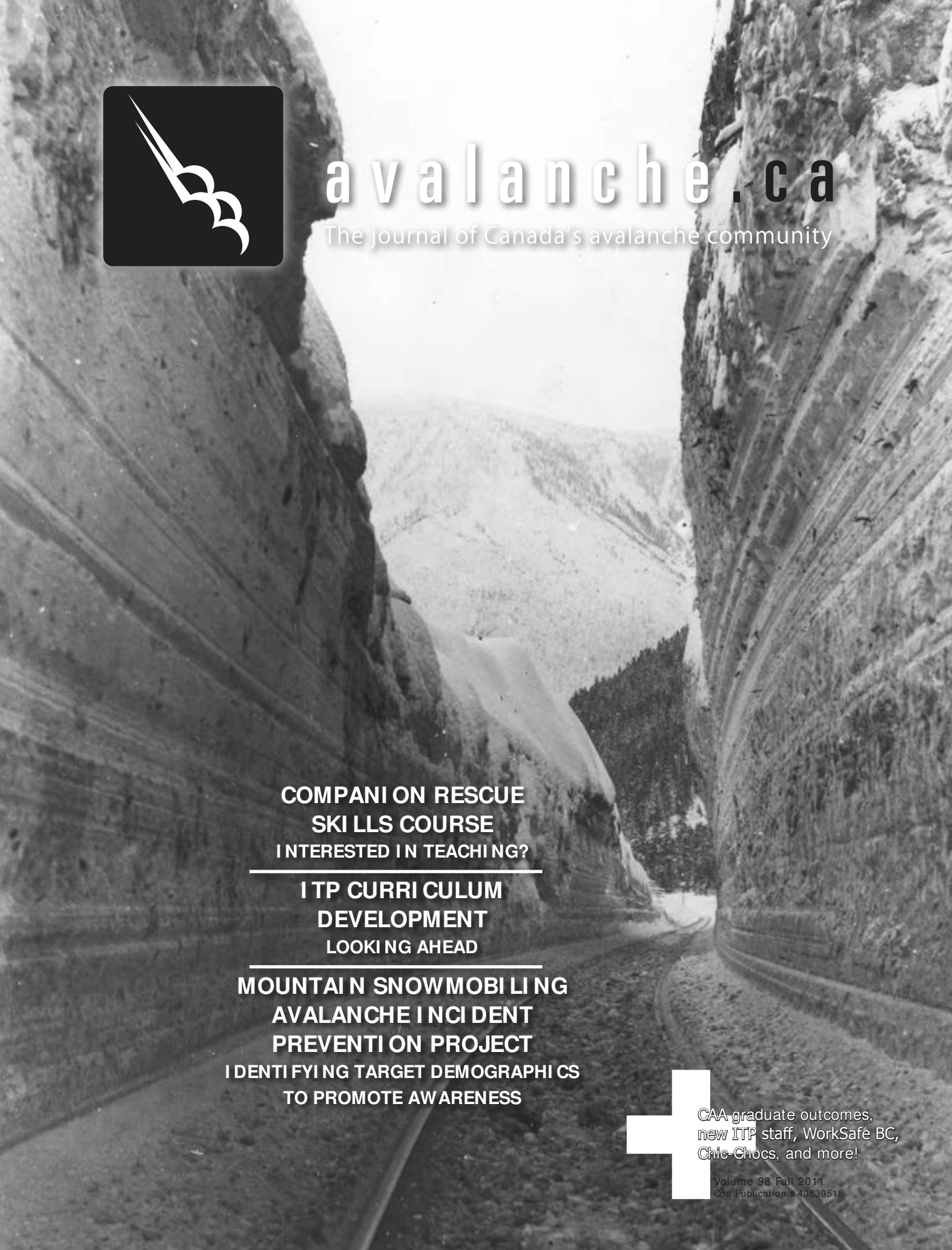

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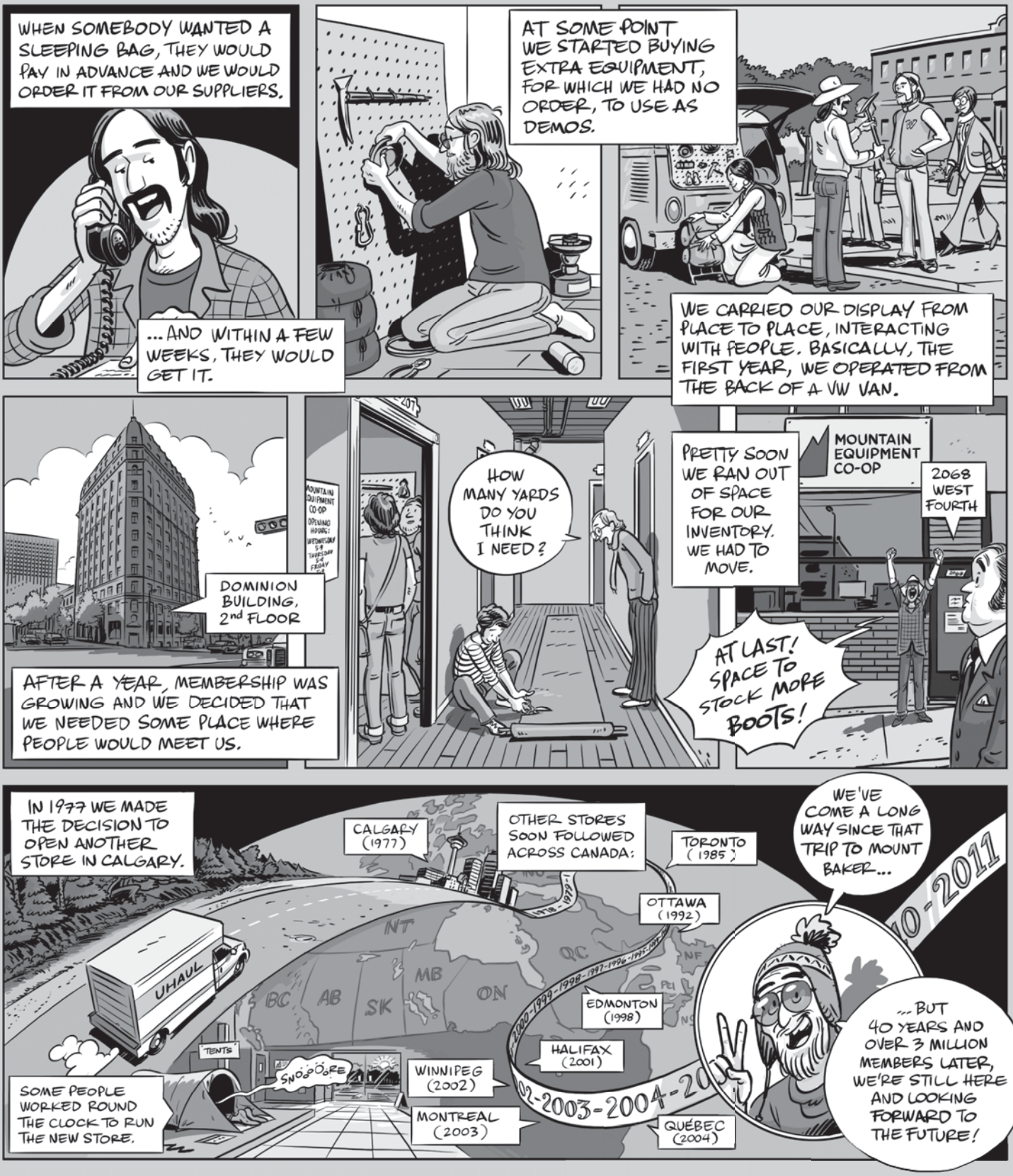

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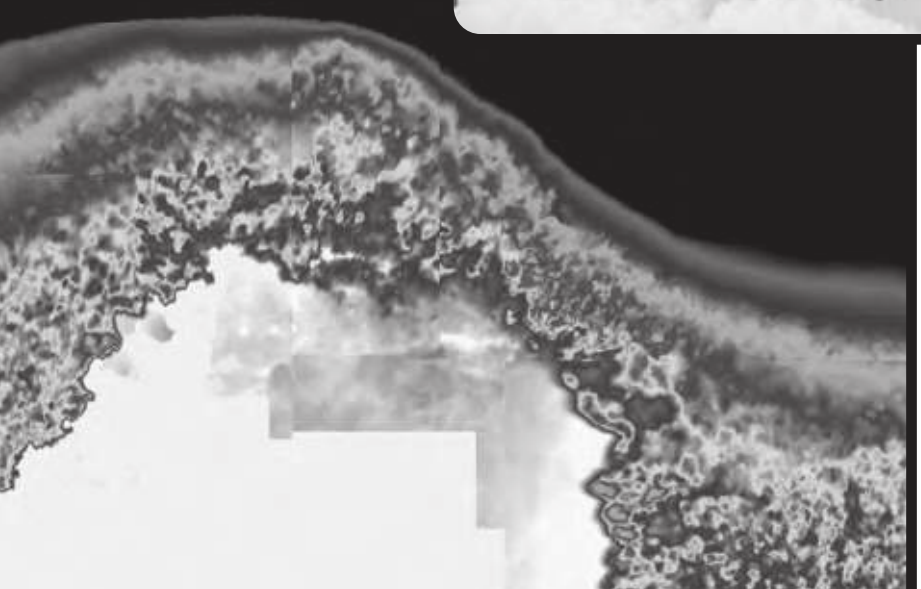

CONTENTS

On the cover: Avalanche debris on the railway tracks near Rogers Pass at Illecillewaet. Deposit was approximately 1500 ft long by 57 ft deep. Photo Revelstoke Museum and Archives.
This page: Level 1 students dig snowpits during a course in Lake Louise during the 2005 season. Photo CAA Archives

ITP Archives

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The journal of Canada's avalanche community
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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 welcome 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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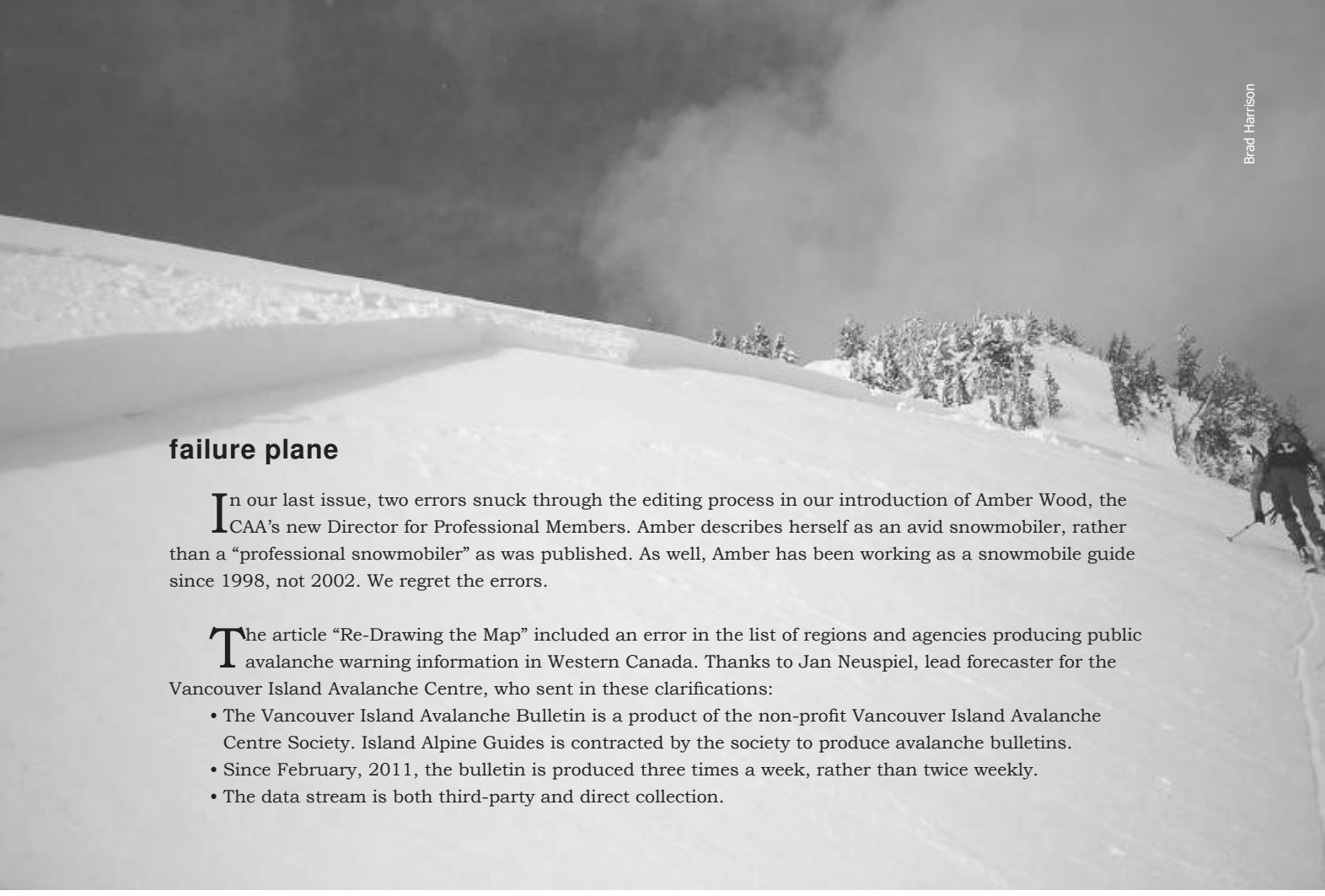
Our vision:
To be a world leader in avalanche awareness, education and safety services.


Brad Harrison

failure plane

In our last issue, two errors snuck through the editing process in our introduction of Amber Wood, the CAA's new Director for Professional Members. Amber describes herself as an avid snowmobiler, rather than a "professional snowmobiler" as was published. As well, Amber has been working as a snowmobile guide since 1998, not 2002. We regret the errors.

The article "Re-Drawing the Map" included an error in the list of regions and agencies producing public avalanche warning information in Western Canada. Thanks to Jan Neuspiel, lead forecaster for the Vancouver Island Avalanche Centre, who sent in these clarifications:

- The Vancouver Island Avalanche Bulletin is a product of the non-profit Vancouver Island Avalanche Centre Society. Island Alpine Guides is contracted by the society to produce avalanche bulletins.
- Since February, 2011, the bulletin is produced three times a week, rather than twice weekly.
- The data stream is both third-party and direct collection.

CHANGE IS GOOD

This is my last editorial for this journal. No, I'm not leaving but I have given up my editor's hat. As you see below, Karilyn Kempton is taking over the reins and I'm sure you will enjoy the new voice and fresh ideas she brings to the table. I will still be around to oversee editorial policy and help out when needed but you can be sure the journal is in good hands.

It's fun for me to look back at my collection and see how far this publication has come. I began as editor in the spring of 2004 with volume 68, back when it was stapled together and under the banner of Avalanche News. At that time our community was still reeling from the tragic winter of 2002/03 and, as I leaf through that issue, the topic of a new National Avalanche Centre was front and centre. It was an exciting time to be coming on board.

Since then I've seen close to 30 issues sent to the printer, on a quarterly rhythm that has helped to shape my life here in this office. I'll miss working with Brent Strand who does such a great job of the layout. Together, we've grown and together, we've made this journal better. But now it's Karilyn's turn and I know you're going to see even more improvements. It's been great. Thanks for reading.

This is my first issue as Managing Editor of the journal, and I look forward to many more. Please feel free to contact me at any time at kkempton@avalanche.ca. I am always open to comments and ideas, and welcome submissions of articles, events, photographs and research. Your contributions are the backbone of this journal—you are the experts, and the breadth of knowledge among CAA members is inspiring.

While Mary took the time to look back at the history of the publication, I'll look toward the future. You will notice some modifications to the journal in the coming issues, but change is good. As Mary mentioned in the last edition, we are ready to give the journal a new name. We will also update the design for a more modern look and feel as we approach our 100th issue next spring. This has been a year to celebrate milestones!

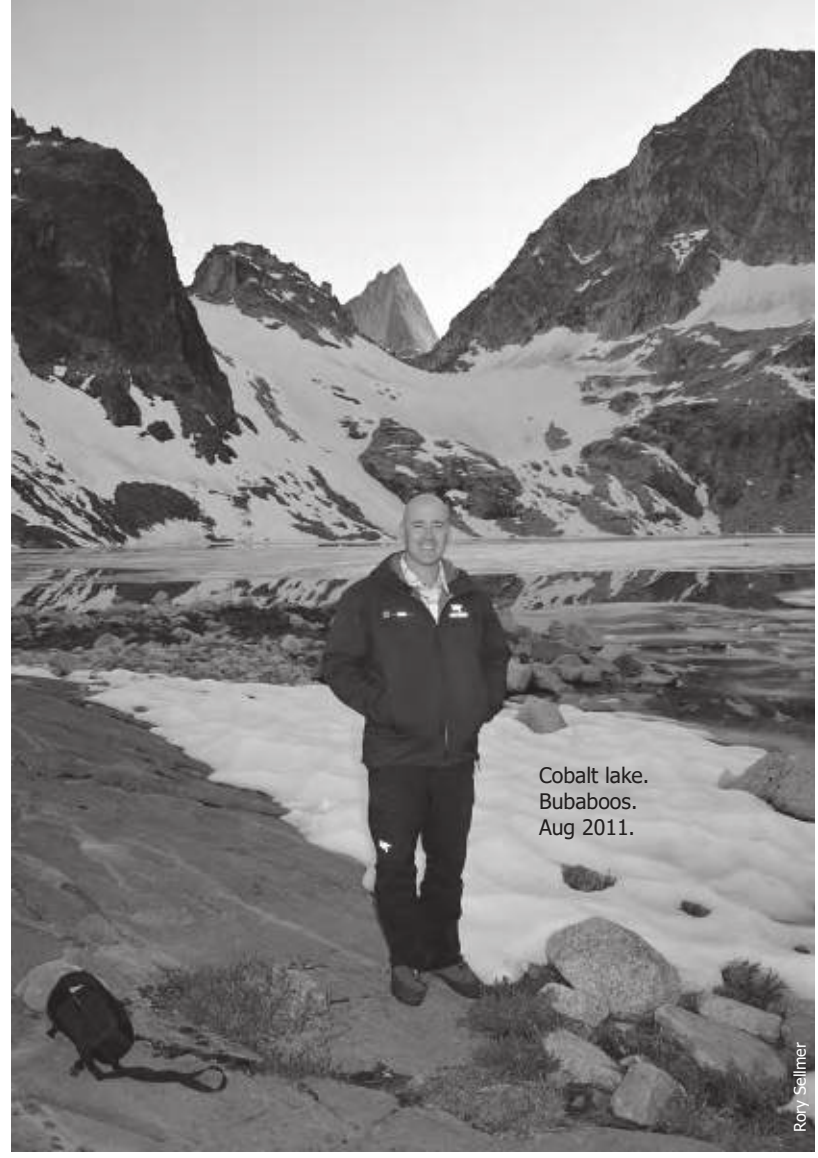
We hope you enjoy our first experiment publishing in colour, and I warmly thank Bruce Jamieson and the University of Calgary for the generous donation to make that happen. Make sure to ooh and ahh over the images in his and Cora Shea's article "A New Thermal View."

I feel privileged to join the team at the CAA, and I look forward to getting to know more and more CAA members throughout the coming seasons.

Brent Strand

BACK AT THE TABLE

This summer, the CAA and its stakeholders worked with WorkSafeBC to address concerns regarding the full implementation of 4.1.1 of the BC Occupational Health and Safety Regulation. WorkSafeBC recently signed a VP Directive stating that it will not enforce 4.1.1 until Dec 31, 2013 or earlier if adequate regulatory review and stakeholder feedback can occur. Some may not know the full context of the discussions or the outcomes, and I will do my best to summarize the issues.


Cobalt lake.
Bubaboos.
Aug 2011.
Rory Sellmer

Implementation of the Qualified Avalanche Planner credential

In 2007 and 2008, CAA members, stakeholders and employer representatives worked together to develop the QAP Qualification Matrix, ratified in May 2008. The CAA's Board, working with members, consultants and others, has implemented bylaw changes over the last few years to address the ongoing evolution of the CAA. We adopted the QAP as a bona-fide membership category in the CAA because of regulatory requirements in BC, but CAA members have spoken loud and clear that this change affects all CAA members. Ramping up CAA programs and services to address QAP needs—application processing and training—has been a monumental undertaking, allowing for a renewal of our membership processing procedures and brand new programs brought from concept to course in very short timelines. WorkSafeBC considered stakeholder feedback and decided a VP Directive was the best course of action to allow for additional regulatory review and stakeholder feedback.

Interpretation of Worksites

As WorkSafeBC Safety Officers began inspecting safety plans and risk assessments last winter, interpretation challenges emerged. One example of the interpretation challenges is roads built by snowcats in cat skiing areas were designated 'transportation corridors,' and according to 4.1.1 wording, risk assessments and safety plans could only be signed off by a Qualified Registered Professional. There were also challenges about the definition of wilderness, and with the fact that many avalanche paths affecting public highways in remote regions of BC are closer to 'wilderness' than some skiing operations it created some challenges.

The Role of the Qualified Registered Professional

Amendments made by WorkSafeBC in February 2011 brought the longstanding issue of the role QRPs in avalanche work to the forefront again. The amendments removed what many thought was a reasonable solution by WorkSafeBC in 2008 to recognize the various skills and knowledge that QAPs and QRPs brought to the table, and it put sole responsibility in the domain of QRPs. Many asked exactly how employers were going to be in compliance with the regulation, and while the CAA and its stakeholders have provided input and perspective to WorkSafeBC over the last few years on this issue the VP Directive was chosen by WorkSafeBC as a best course of action to allow for additional regulatory review and stakeholder consultation.

I have made efforts to establish better working relationships with the organizations of QRPs. In June, I made a presentation to the interior section of APEGBC in Kamloops. Among the many engineers in attendance was Jeff Holms, current Vice President and incoming President of APEGBC. My presentation '100 years of Avalanche Safety in Canada' focused on the professional evolution of avalanche risk management over the last century, culminating in the regulations developed. Only one person in attendance had any experience with snow avalanche hazards, and they outsourced their avalanche related work to CAA members anyway. Furthermore, none in

attendance had any colleagues involved in avalanche work, and none wanted anything to do with it; they saw avalanche risk management as a core function of CAA members. I took this feedback to heart and at the end of the meeting Mr. Holms and I agreed that we would work together to clarify the roles of the QAP and QRP, the need to establish clear guidance on the roles and expectations for QRPS and QAPs is a long standing issue, it seems that now may be an opportunity to bring some long needed clarity to the issue. Discussions are ongoing, and I will work closely with the CAA board, stakeholder organizations and others to try to put this 30-year discussion to bed. Lofty goals, but the CAA is compelled to bring some clarity to a very unclear issue. Doing this will help our work with WorkSafeBC over the next couple of years to bring in an updated and enhanced 4.1.1 in time for the 2013-14 winter, or earlier if discussions are productive and efficient.

What is a Risk Assessment?

Another challenge surrounding the full implementation of 4.1.1 was the lack of a common understanding about what an avalanche risk assessment truly was. The CAA *Land Mangers Guide to Snow Avalanche Hazards in Canada* and *Guidelines for Snow Avalanche Risk Determination and Mapping* were commonly referred to as the 'CAA Guidelines' in the regulation, which did not provide the clarity needed to industry or the regulator on risk assessment expectations. To add to the confusion, literal interpretations of 4.1.1 were that any risk assessments done prior to 2011 would have to be redone, or at the very least, reassessed and brought into compliance with both the Land Mangers and Risk Determination guidelines. The BC Ministry of Transportation had many challenges with this as 1400 avalanche paths, most of them assessed well before the development of the guidelines in 2002, were faced with a monumental re-evaluation. Thankfully, the VP Directive was a response to these types of concerns. Over the next two years it will be vitally important for the CAA to further refine the frameworks for avalanche risk assessments, something our newly-formed Professional Practices Committee will work on this winter.

As a parting though, please remember that employers remain obligated to ensure a safe worksite. Other areas of the OHSR in BC still highlight the need for employers to know and assess risks, and have plans in place to manage and mitigate those risks. A CAA Member Email on September 1, 2011 clearly outlined the perspective of WorkSafeBC and you can find additional detail on our website. Please do not hesitate to contact us with questions; we are here to assist and represent your needs and interests.

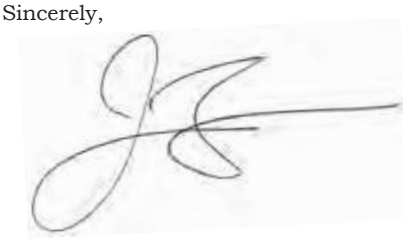
The Evolution of Excellence

I want to highlight a key milestone about to occur for the avalanche community in Canada. When the CAC was incorporated in 2004, few knew what it would become over time. Public avalanche safety in Canada has grown and diversified since its humble beginnings in 1991, then supported entirely through industry. Working alongside the CAA and the professional avalanche risk community, the CAC has developed world-class programs and services. Government commitments to public avalanche safety have been renewed, funding streams are stronger than ever, and CAC programs continue to expand. The CAA empowers excellence in professional avalanche risk management, and the CAC has, in partnership with its stakeholders, increasingly become a centre of excellence in public avalanche safety. Based out of Revelstoke, a satellite office in Vancouver, and regional activities in areas like the Elk Valley, the Yukon and other areas BC, the CAC has grown up and the time for governance renewal has come. New bylaws for the CAC renewing the makeup of the board of directors were approved at the Special General Meeting in Revelstoke on September 16. This approval allows the CAA and CAC boards to separate so that each board can focus on their unique mandate: the CAA on professional avalanche risk management, and the CAC on public avalanche safety. I look forward to writing more about it in the next edition of the journal.

I'd like to take a moment to recognize the exceptional work and dedication of John Kelly, CAC Operations Manager. John has taken a two-year leave of absence to attend a graduate program at Simon Fraser University. John will focus his course work on studying the CAC and its role as provider of public safety services. His Masters in Public Policy will look into various aspects of public avalanche safety that will help the CAC and its stakeholders continue to offer some of the world's best public avalanche safety programs. On behalf of the board, CAC members and our stakeholders, I wish John the very best over the next two years and look forward to the insight his education will bring to the CAC.

La Nina is knocking at the door; it's time to get ready. Have a great fall, and feel free to call, drop by or send me an email. I'm here to support you no matter your work in avalanche safety—professional or public.

Sincerely,



Ian Tomm
Executive Director

EVOLUTION

Snowmobile incident investigation in Hope-Goodfellow Creek basin, north of Golden up Kinbasket Lake.

Mike Rubenstein

On Friday September 16, 2011 in Revelstoke, 26 members of the CAC met at a special member meeting to vote on three bylaw changes. These changes were unanimously approved and have changed the face of the CAC's Board of Directors. Since its incorporation in 2004, the CAC board has always included five key positions appointed from the board of the CAA. The two organizations have always shared a President, Vice-President, Secretary/Treasurer, Membership Director and Director-at-Large. Since September 16, that has changed and new CAC Bylaws allow for a total of five elected directors, two appointed directors from the CAA and one appointed director from the CAF. This allows the CAC to look further afield to find individuals with specific skills and representation to assist in the mission, governance, and objectives of the CAC. It will also help the CAA Board of Directors focus on the CAA.

When the bylaw changes were voted in, it created vacancies in the CAC board. The CAC used Bylaw 5.6 that provides guidance on how to fill vacant director positions to appoint three CAC Members to the board in an interim basis until full elections at the next AGM in May 2012. The bylaw changes also allow those eight directors to appoint up to four more board members, including members of the general public, when and where they deem it necessary. Thank you to the CAC members who participated on this important occasion, and helped to move the CAC towards the next step in its development.

This change is a very important step, as many of us know. As more than one president has over the years, I find myself using the word "evolution" when referring to the future of the CAA and CAC. We are managing an ongoing process in the avalanche community where public safety remains our focus. As past President Steve Blake put it so appropriately, the question of "is it in the public interest?" must be applied to all our decisions.

The boards of the CAA and CAC see these changes as a very positive and necessary direction for both organizations as they carry out their respective mandates. Separate but still closely aligned boards will allow each a better capacity to manage and focus on their core missions and objectives, while remaining well connected and integrated in order to work together where mutually beneficial and essential. Furthermore, occasions when there are conflicting perspectives will now be better handled.

Following the CAC special meeting, directors for both the CAC and CAA met together for two days on a collaborative board development session. These board face-to-face sessions have occurred annually now for a number of years, and consist of focusing on board-related development needs. This year's session involved both organizations and boards, and focused specifically on a review of governance structures of the board—top, down, and sideways. Helen Hayward, a senior director and consultant from Western Management

Consultants, led the two-day workshop. With more than 30 years involvement in government, not-for-profit organizations, and business governance and management, she fully engaged board members.

Key governance practices and committee framework elements were reviewed, including how the board functions best with essential member committee support and the management-staff interface. Director responsibilities and accountabilities were reviewed for both seasoned and newly-elected directors. The development of a comprehensive, organization-wide risk management framework for both the CAA and CAC was discussed and new initiatives planned for the months ahead to meet the needs of both maturing organizations.

So where do we go from here? Onwards, of course, towards yet another step in our evolution. Both organizations have no shortage of critical to-do lists with key ongoing requirements to progress, and a number of new projects to undertake. An excellent team of staff at the CAA and CAC joint offices supports the collaborative boards, and one of the key next steps will be conducting a transition from one executive director for both organizations into two.

In discussions and review with board members over the summer, the Board and Ian Tomm have come to the agreement that he will move into being the full-time Executive Director of the CAC. With John Kelly's two-year leave to attend a graduate program and Ian's move to full¬-time ED, the current plan is to flatten the upper management structure at the CAC, and manage without an operations manager. The CAC is currently well supported by program managers and staff looking after a number of departments. With Ian as a dedicated ED, the board is confident that this streamlined management structure will succeed.

It is very important to recognize the exceptional work that has been carried out by Ian over the past three years, on behalf of both the CAA and CAC. It is also important to highlight Ian's predecessor and mentor, Clair Israelson, who carried the lion's-share of organizational development work when the CAC was first formally established in 2004. Also working closely with both Clair and Ian over many years was John Kelly (JK), who many have known as the operations manager and day-to-day face and voice of the CAC since 2004. As Ian explains in his report in this issue, JK has taken a leave to pursue a Master's degree in public policy. This means that larger adjustments at the CAC and CAA offices will occur in the weeks ahead.

For the CAA, this fall will be an important time in conducting a hiring process for a new dedicated CAA Executive Director. Ian has committed his full support during this significant period of change for the benefit of both organizations. Both boards appreciate his outstanding commitment and dedication to the avalanche community in this role and period. At the same time, the board will work with members over the next year on reviewing our governance and committee structures, which our recent development workshop has highlighted as a key time for re-establishing the essential function that members contribute via committee involvement in their association.

Look for updates on this in member emails and communications over the fall and winter ahead. Ian has also spoken in detail regarding the discussions between the CAA and partner organizations since the spring regarding the WorkSafeBC status of regulation 4.1.1. The fall and winter period ahead will be an important time for member engagement and collective approaches to working with everyone involved with managing avalanche risks and ensuring worker and public safety. Together, we have succeeded for many years in finding good solutions to a wide range of challenges in our field and community, and I am certain that we will collectively continue to do so. Please let me and the board know if you would like to help.

Fall is here, and the firewood pile should be stacked. Keep an eye on the snowline, and we will soon see how another winter begins to shape up. Let's hope for great snow, a strong structure, and good riding for everyone. Keep up the skills training and knowledge development—it is a continuing professional development process.

All the best to everyone in the hills; and president@avalanche.ca email will find its way to me.

Phil Hein
CAA President
CAC Past President

Introducing the new CAC Board of Directors

Mike Boissonneault
John Heatherington
Dan Markham
Curtis Pawliuk
Ross Cloutier
Scott Hicks
Jim McAllister
Kevin Seel

Bridget Daughney Joins CAA as Interim ITP Manager

CAC Youth Program Coordinator feels her roles "complement each other in many ways"

While Emily Grady embarks on a maternity leave journey, Interim ITP Manager Bridget Daughney will be filling her shoes. Bridget may be familiar to some as she also holds the position of CAC Youth Program Coordinator.

Bridget is confident the two roles will mesh well together as "both deal with the implementation of curriculum through various forms," and both involve supporting and educating instructors and teachers. Coming from a field instructor background herself, Bridget feels up to the task of understanding and supporting the dynamic CAA instructor team.

She and Emily have been working side-by-side all summer to ensure a smooth transition, and they are confident that members will not be impacted by the change. She is enjoying "meeting and working with professionals in the industry and learning about the CAA's education standard." She is confident about the skill set she brings to the table as Interim ITP Manager, which includes knowing "how to work through the busy times," she laughs.

Bridget hydrating during a bike trip in Mongolia last year.

John Simms

Thank you to the following Professional Members:

Education Committee:
Marc Deschenes
John Buffery
Cam Campbell
Sylvia Forest
Janice Johnson
Bob Sayer

Membership Committee:
Richard Miller
Mike Rubenstein
Mark Austin
Rod Gee
Yvonne Thornton

The Professionalism/Ethics Committee has recently evolved into the Conduct Review Committee as per CAA bylaws, and the CAA Board struck a new Professional Practices Committee in the spring focusing on standards and issues pertaining to professional practice. The CAA Board would like to thank the members of the P&E Committee for their dedication to the CAA during this transition, and we look forward to further refining the Conduct Review Committee's role. CAA Committees are always looking for members. If you are interested in volunteering, please contact Executive Director Ian Tomm at itomm@avalanche.ca or President Phil Hein at president@avalanche.ca.

Professionalism/Ethics Committee:
John Hetherington
Rupert Wedgewood
Peter Amann
George Field
Brian Gould
Ilya Storm

Thank you for your hard work. Committee work is voluntary and your time is gratefully appreciated.

Silas Patterson

ITP Curriculum Development Project Gets a Boost

Curriculum Specialists and Subject Matter Experts blend industry experience with curriculum know-how

At summer's onset, five individuals were hired for a year-long curriculum development project. The goal of this project is to standardize curriculum across the Industry Training Program (ITP) board, and to revisit individual course objectives and goals to ensure that we continue to meet industry needs.

The combination of skill sets brought to the table is ideal: we have professional educators working alongside subject matter experts and CAA course instructors. We are very excited to have such a good mix of contributors, with veteran CAA instructors like James Blench and Mark Bender, and new energy and ideas from Peter Marshall and James Floyer. Finally, Janet Lemieux, a Revelstoke resident with many years of adult education and instructional design, is a perfect addition to round out this team.

"Needless to say, we're looking forward to the end results from this project and anticipate implementation of some new curriculum in the winter of 2012-13," says Industry Training Program Manager Emily Grady.

Mark Bender and Janet Lemieux have been hired as Curriculum Specialists, and will be collaborating with the ITP curriculum development project's Subject Matter Experts to ensure the educational validity of the work being produced. They will be "helping to create a common structure for all CAA ITP courses," says Bender, and "re-establishing the links and congruency between all ITP courses."


Mark Bender

Bender has a long history of involvement with the CAA, and he jokes that he is happy to have solid summer and shoulder season employment that keeps him close to home. He has been an instructor with the ITP program since 2001, and has been helping with curriculum development initiatives since 2005. In 2008-09, he coordinated curriculum development for the CAA's eTraining for Mountain Operations Project, which produced three best practices manuals dealing with Organized Avalanche Search and Rescue and a face-to-face Avalanche Search and Rescue Responder course.

In 2010, Bender finished the Provincial Instructor Diploma Program at Vancouver Community College. He is currently developing a one-day, field-based Companion Rescue Skills course for the CAC to be taught this winter.


Janet Lemieux

Janet Lemieux has worked in the field of post-secondary education for eighteen years as an instructor, administrator and instructional designer. Janet has worked with Subject Matter Experts to develop curriculum plans for a wide variety of subjects. Janet comes armed with a Masters in Distance Education from Athabasca University, an Advanced Graduate Diploma in Distance Education Technology, a Diploma in Adult Education, a Certificate for teaching English as a Second Language, and undergraduate degrees in English and Biology.

Janet looks forward to developing curriculum that "allows students to master the content in an engaging manner," and is recognized across the board for its quality.

Janet is happy to start delving right into the CAA's philosophy and working on a needs analysis so that she can help strengthen the foundation of the ITP and "assist with the endeavor of making the backcountry that much safer for its users."

CAA Welcomes Three New Subject Matter Experts

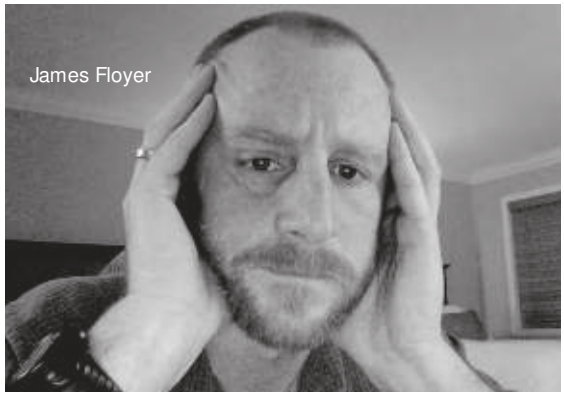
James Blench, James Floyer and Peter Marshall joining the ITP curriculum development project

James Blench, James Floyer and Peter Marshall have joined the ITP Curriculum Development project as Subject Matter Experts. Blench is the Operations Level 1-3 Subject Matter Expert, and Floyer and Marshall will be working on Mapping, Weather and CPD courses.


James Blench

James Blench will be reviewing all content and materials from the Levels 1-3 courses, "ensuring that it is up to date an consistent with industry needs and current best practices," says Blench, and confirming that there are instructional materials to support each course. Blench has been involved with the CAA ITP for more than two decades and has recently been involved in upgrades to the Level 2 program and the development of the Level 3 course: "[t]his project provides me the opportunity to complete those projects and contribute back to the avalanche community," he says.

A UIAGM Mountain Guide, Blench has worked in the climbing, ski touring and mechanized skiing industries since the early 1980s. He got his first taste of research working as a technician on a Bruce Jamieson project in the early 1990s, and as years go by he has devoted more focus to providing technical assistance for film and industrial projects.


James Floyer

James Floyer, PhD, will be focusing his energy on Mapping, Weather and CPD courses. He calls it "very exciting to be involved with a project that ensures avalanche workers in Canada receives the best possible training." He will strive to ensure that course content is comprehensive, balanced, and up to date. He plans to connect with a wide range of industry representatives, who he calls "the real subject matter experts."

Floyer has been involved in the avalanche industry for ten years. He also brings university experience in research and teaching, and knowledge from his previous career in mineral exploration.


Peter Marshall

Peter Marshall will be wearing a few hats with this project: he will be working as a Curriculum Specialist on the Intro and Advanced Weather courses and the AvSAR course, and assisting James Floyer on the Mapping and Blasting courses. Marshall's primary goal is to standardize the CAA course curriculum, create student and instructor resources for the weather courses, and create course evaluations for weather and AvSAR courses.

Marshall sees this "as an opportunity to use my skills in a positive and progressive environment," he says, and views the standardization and updating of CAA courses "a very large-scale and exciting project." Marshall has been a Public Avalanche Forcaster at the CAC for four years, and has also worked for Alpine Solutions Avalanche Services (ASAS). He has also been involved with North Shore Search and Rescue for over a decade. He looks forward to the opportunity to "enhance my skills through working with other highly skilled and experienced avalanche professionals."

We welcome each of the new Curriculum Specialists and Subject Matter Experts to the ITP team, and look forward to the positive contributions each will make.

BREAKING DOWN THE DUES PROCESS

When are my dues due? What does it mean to be a "member not in good standing"? What if I don't want to be a member anymore? Many members have questions about how this works, so here is our chance to give members the inside scoop. Take a behind-the-scenes look at the Membership Renewal Process, which should make it more transparent and easier to understand.

Membership Renewal Admin Process

November 15th

Members are invoiced for the coming year.
Your invoice is mailed.

Membership is based on the calender year.
You pay for January to December.

June 1st

If you have not paid, you status becomes Member Not In Good Standing.
Your account is put on hold.

Once an account is on hold, that member will not be able to purchase anything from the CAA or CAC, including registering for any ITP course or buying AST materials.

September

A reminder letter with statement of account is mailed to you.

January of the following

If you still have not paid, your member benefits are stopped.
You will not be listed on the website and you will not get the member email or the journal.
Your invoice for next year is created but not mailed.

March

Your final notice letter is mailed.

June

Your membership is cancelled.

The CAA bylaws state that a member has to be Not In Good Standing for 12 consecutive months before membership shall cease.

At any point if a member becomes In Good Standing by paying their outstanding dues, all benefits are restored and account is taken off hold.

It is a member's responsibility to keep their contact info up-to-date with the CAA. We will investigate returned mail to the best of our ability.

If a member wishes to resign from their membership they must do so in writing prior to December 31. If done after December 31 that year's dues are owing.

Members contracted by the CAA will have their dues deducted from their pay if their account is in arrears.

A list of members Not In Good Standing is to be forwarded to the ED, Operations Manager and Chair of the Membership Committee at the completion of the annual June mailing.

If a membership is cancelled, that member will not be considered for re-instatement until all overdue accounts are paid.

up to date as of August 2011

Professional Avalanche Training in Canada

Positive feedback and helpful recommendations from employers will help guide curriculum development project

By Emily Grady

In order to gauge how the Industry Training Program is doing in the eyes of avalanche industry employers, managers and supervisors, an industry-wide survey was launched in the spring of 2011. This survey has been a long time coming, given that it has been ten years since the last comprehensive review on professional level avalanche education.

Approximately 60 respondents contributed their feedback with representation from all industry sectors:

- Alpine ski resorts
- Mechanized wilderness guiding
- Non-mechanized wilderness guiding
- Highways, railways, buildings, forestry and construction ops
- Government and NGO "public service" programs
- Snowmobile wilderness guiding

Overall, feedback was positive and indicated considerable support for what we are doing and how we are doing it. I was also pleased to read the number of recommendations on what we can do to make it better. Detailed survey results can be found at http://www.avalanche.ca/caa/members/members-only.

One of the strongest messages that came out of this survey was the need to clarify graduate outcomes for each of the Avalanche Operations courses, including the Resource and Transportation Avalanche Management course. By comparing learning objectives and evaluation standards for both students and employers, there is a clearer understanding of skill sets that can be expected of a course graduate. A draft summary of graduate outcomes can be found on page 20-21.

This message particularly pertained to the Resource & Transportation Avalanche Management (RTAM) when compared to the Avalanche Operations Level 1 course. The RTAM course is oriented towards supervisors and technicians from transportation, utility and resource sectors such as forestry, mining, and railways, who are involved with the management of winter operations and avalanche hazard programs. Since 2004, this course is not equivalent to the Avalanche Operations Level 1 in that is does not have the same examination standards in snow profiling, standard weather plot observations, or hazard analysis; it is also shorter in duration at five days rather than seven or eight.

Based on responses, industry also stressed the need for a higher level of training for Level 1 students in terms of route-finding, time spent travelling in terrain, and group travel. As a result, we are exploring the possibility of creating an on-line preparatory component to the Level 1. The idea is that students are introduced to and examined on more theory before the course, leaving more time to spend in the field during the course.

The timing of this survey coincides with a year-long curriculum development project, focused on standardizing curriculum and re-visiting course objectives and goals for all CAA courses. A great deal of the feedback and recommendations from the survey has been put directly into the project work plans so that we continue to stay on course to meet industry needs.

Overall is seems as though the Industry Training Program is on the right track and the constructive feedback that we have received has provided valuable insight into how we can continue to meet the evolving needs of industry in Canada.

WHAT CAN YOU EXPECT OF A CAA COURSE GRADUATE?

A comparison of RTAM, Level 1, Level 2 and Level 3 graduate outcomes

By Emily Grady

The question of what you can expect of a CAA course graduate was voiced repeatedly in both an industry-wide survey and a meeting with the curriculum development project steering committee. Clearly there is a missing link in the Industry Training Program – that of providing clarity in terms of what students and employers can expect of course graduates.

Both survey respondents and committee members expressed the need for a clear outline of what skills students can be expected to have following successful completion of their CAA courses. Following this article is a draft chart companing the outcomes of Avalanche Operations Levels 1 to 3 and the Resource and Transportation Avalanche Management courses.

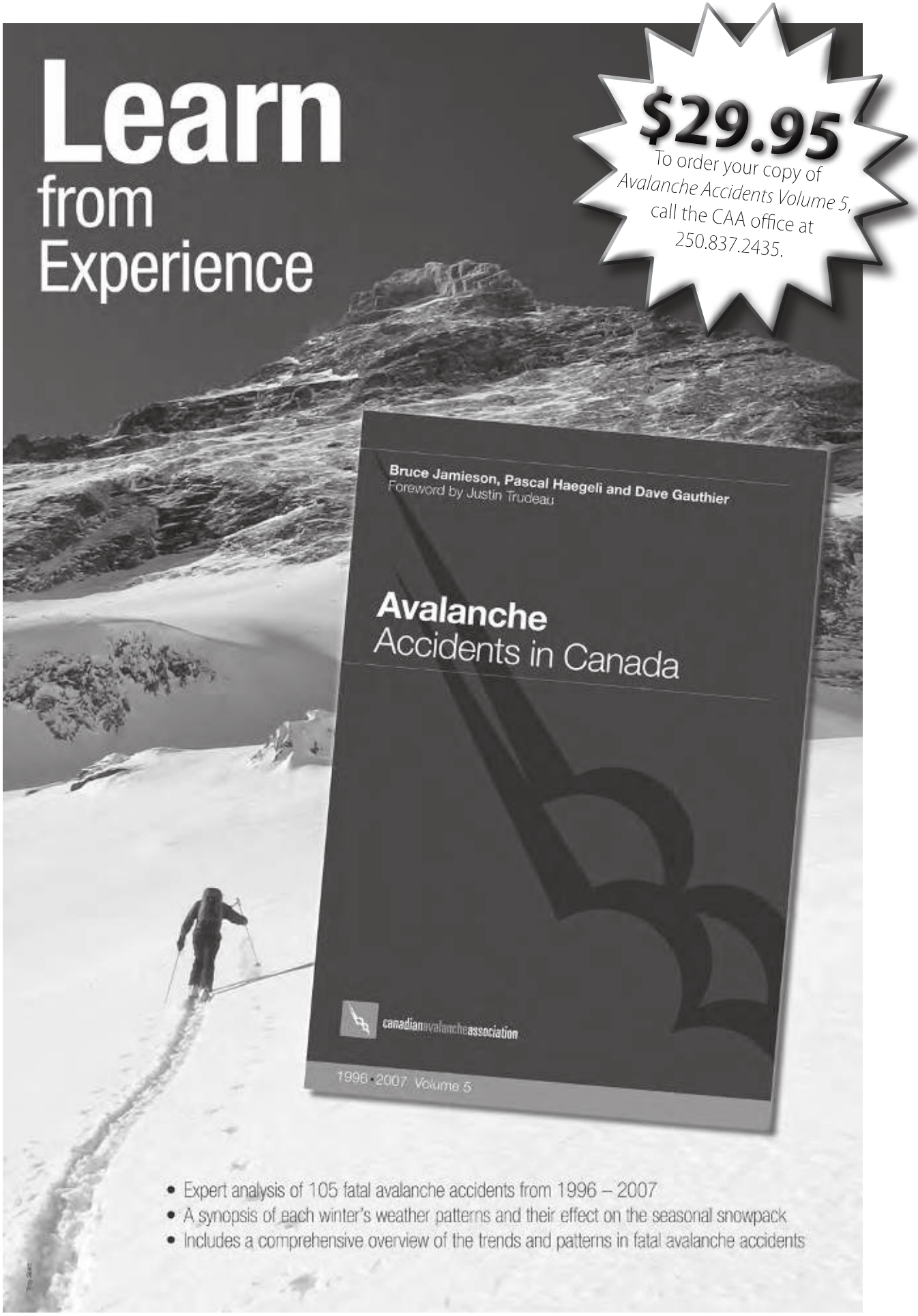
This chart is still very much in draft form and we are now looking to you, the membership, to provide feedback on how we can improve it. Based on the chart, can you understand the differences between each course in terms of what is being taught and examined? Are you clear on what you might be able to do if you were to successfully complete the Avalanche Operations Level 3 course? For each level of training, can you identify the skill sets and knowledge base you might expect of CAA graduates?

Please send your thoughts and comments to bdaughney@avalanche.ca or 250-837-2435. We hope to have a final version compiled by summer 2012.

	Course Name			
Learning Objectives	**Resource Transportation Avalanche Management**	**Avalanche Operations Level 1**	**Avalanche Operations Level 2**	**Avalanche Operations Level 3**

	• State the nature and formation of avalanches and the hazards involved
	• Identify avalanche terrain and safe areas
	• Apply safety measures and survival techniques themselves and to those under supervision
	• Standard risk reduction measures
	• What to do if caught in an avalanche
	• Describe procedures required to implement preventive closures
	• Recognize appropriate level of training and frequency of training require for their operation
	• Describe procedures used in collecting snowpack data
	• Collect weather data
	• Assist with the collection of avalanche activity data
	• Describe procedures used in evaluating avalanche hazard
	• Conduct search and rescue
		• Describe the properties of the mountain snowpack (formation, metamorphism, spatial/temporal variation)
		• Observe and record weather, avalanche and snowpack data
		• Complete a full snow profile
		• Describe and classify avalanche terrain
		• State the factors and methods used in avalanche hazard evaluation
		• Describe personal and group safety in avalanche terrain
		• Demonstrate proficiency in companion rescue practice
			• Collect and evaluate weather, avalanche activity and detailed snowpack data
			• Evaluate and forecast snow stability trends and avalanche hazard levels
			• Evaluate terrain including its capacity to produces avalanches in terms of frequency, magnitude and type
			• Travel safely in avalanche terrain
			• Apply effective communication skills
			• Demonstrate effective participation in a team
			• Develop concepts of risk management in the workplace
			• Model professionalism
			• Demonstrate advanced companion rescue skills
			• Recognize limitations of their training
				• Understand components of hazard & risk
				• Apply a structured process to assessing risk
				  • Analyze exposure and vulnerability
				  • Apply risk assessment both quantitatively and qualitatively
				  • Apply an operational risk band
				  • Define appropriate documentation
				• Apply a structure to analyze, assess and forecast hazard
				  • Determine strength and weight of data
				  • Identify data gaps
				  • Address confidence and uncertainty
				• Link decision modes and avalanche risk management
				• Identify cross sector options for risk management and apply benefit/cost
				• Communicate hazard and risk in workplace and public forums

	Course Name			
Evaluation Standards (* items indicate a mandatory pass element – failure of one of these elements requires the student to retest. Failure of 2 or more mandatory elements results in complete failure of the course)	**Resource Transportation Avalanche Management**	**Avalanche Operations Level 1**	**Avalanche Operations Level 2**	**Avalanche Operations Level 3**
	Weather Observations • Field Weather Exam: demonstrate field weather observation skills	*Weather Observations** • Study Plot Exam: demonstrate standard weather observation skills • Field Weather Exam: demonstrate field weather observation skills • Weather Comprehension Written Exam • Complete set of standard weather observations in field book	*Data Collecting and Record Keeping** • Field book (see details below) • Time profile • Daily AM/PM hazard forms	*Written Report** • Demonstrate knowledge and application of hazard and risk concepts in written form
		*Snow Profile** • Complete profile weather observations & headers • Site selection & craftsmanship • Temperatures: air + snow • Identification of significant layer boundaries and significant layer properties • Compression test & deep tap test	*Snow Profile** • Complete headers • Site selection & craftsmanship • Structural properties of snowpack (layers, hardness, temps, grain type, density) • Snowpack tests and analysis	*Oral Presentation** • Defense of written work • Demonstration of understanding of key concepts • Organized and well-delivered
	Terrain Recognition • Field identification of avalanche terrain • terrain photo exam	*Hazard Assessment* • Terrain recognition, safety measure, situational awareness • Terrain photo exam	*Stability Exercise*	
	Companion Rescue • Probe 2 buried transceiver targets and recover both targets in an area 30m x 30m in <15 minutes using sound search and extrication techniques	*Companion Rescue** • Probe 2 buried transceiver targets and recover both targets in an area 30m x 30m in <15 minutes using sound search and extrication techniques	*Field Trip Skills** • Participation, teamwork + leadership • Terrain analysis	
	Written Exam • technical comprehension	*Written Exam* • technical comprehension	*Written Exam* • advanced technical comprehension	
	Field Book • completeness, legibility, accuracy	*Field Book* • completeness, legibility, accuracy	*Field Book* • completeness, accuracy, additional informal snowpack observations	
	Snow Stability Problem • written stability problem testing understanding of factors affecting snow stability *Rescue Problem* • Understand general components of organized rescue in an industrial setting *Risk Reduction Measures* • Risk reduction written exercise	*Snow Stability and Hazard Analysis* • significant factors identified • ratings reflect factors identified	*Snow Stability and Hazard Evaluation or Analysis* • completeness • relevant factors, significant changes • hazard + risk concepts incorporated into operational plan • integrates weather forecast into future hazard trend	
CAA Membership Eligibility	Affiliate member (refer to Membership Application and Approval Process for further requirements)	Active Member (refer to Membership Application and Approval Process for further requirements)	Professional Member (refer to Membership Application and Approval Process for further requirements)	Professional Member (refer to Membership Application and Approval Process for further requirements)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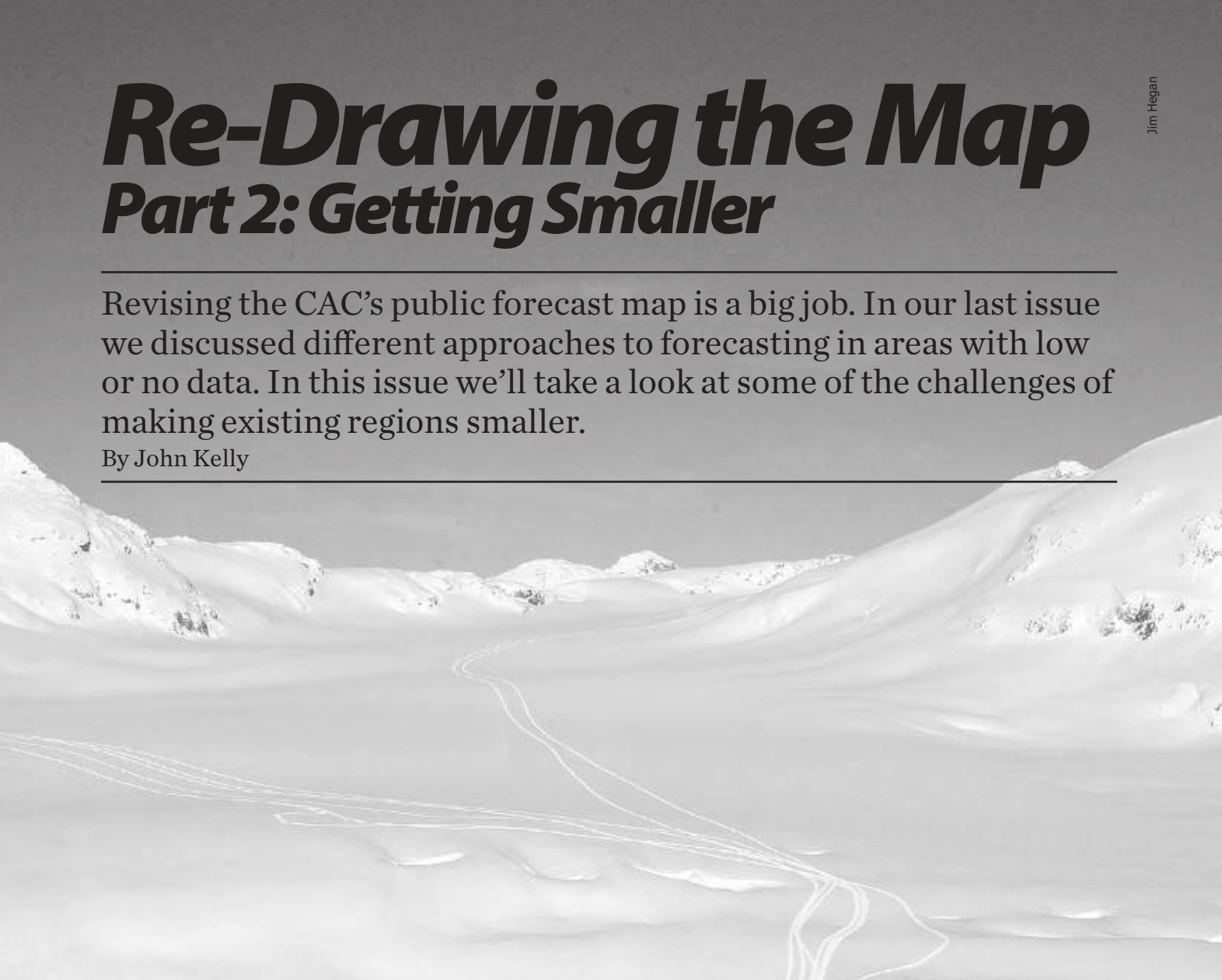
• A synopsis of each winter's weather patterns and their effect on the seasonal snowpack
• Includes a comprehensive overview of the trends and patterns in fatal avalanche accidents

Re-Drawing the Map
Part 2: Getting Smaller



Jim Hegan

Revising the CAC's public forecast map is a big job. In our last issue we discussed different approaches to forecasting in areas with low or no data. In this issue we'll take a look at some of the challenges of making existing regions smaller.

By John Kelly

A multi-year analysis by the University of Calgary and Parks Canada found that the CAC's regional bulletins correlate well with local avalanche danger. A further conclusion of this study shows that accuracy improves for smaller forecast regions and daily updates. These results, though not surprising, provide evidence-based support for evolving our avalanche forecast regions towards smaller size and increased frequency.

Case Studies

Over the years, our forecast map has evolved, due to a range of different needs and priorities. Let's take a look at three forecast regions that have been split off, each of which highlight different approaches to this evolution— Kootenay Boundary, North Shore and Vancouver Island.

The Kootenay Boundary avalanche forecast region was split off from the South Columbia region in 2003. The Kootenay Boundary area encompasses the South Monashees, South Selkirks and South Purcells in an irregular triangle from the town of Osoyoos on the west to the Columbia River from Kimberley to the US border on the east.

The topography of the region is substantially different from that of the South Columbia region further north. Kootenay terrain is well known for its treeline slopes and mountains without much alpine character. Moreover, weather systems passing through the interior plateau of Washington State often affect the Boundary area, bringing different weather than the rest of the South Columbia region.

Knowledgeable stakeholders in the Kootenay area pointed out the inadequacies of the South Columbia bulletin for their area. The decision to provide a new regional bulletin was based, in part, on the following factors:

- High use and sufficient data to produce a reliable bulletin
- Tangible, large-scale geo-climactic differences
- Historical incidence of avalanche accidents

Over time the Kootenay-Boundary bulletin has become a successful bulletin product with high readership and good data flow. Looking back, it's difficult to imagine our public warning system without this region.

The North Shore of Vancouver has a small mountain range characterized by some unique features. The most impressive

of these is the huge user group of novices who can obtain immediate access to avalanche-threatened areas by means of public transit. Another characteristic is the combination of elevation and proximity to the ocean that means winter weather alternates suddenly between copious snow and drenching rain. The North Shore region is extremely small compared to other CAC avalanche forecast regions, covering an area of less than 300 square kilometres.

Stakeholders in the region came together following a high profile avalanche accident in 1998. They formed a loose coalition called the North Shore Avalanche Advisory (NSAA) whose mission was to provide public safety information to suit the unique public safety needs of local recreation, including information about avalanches and slippery conditions.

The NSAA published reports on current conditions for several years drawing on volunteers, casual information, and intermittent data collection by stakeholder operations. In 2007, the NSAA approached the CAC with concerns of quality assurance and public responsibility for the product, as well as a desire to provide an improved product that would be consistent with other public forecast products. In particular the group was worried about the qualifications of people who were preparing important public safety information and the potential risk management consequences for the members of the NSAA.

Several stakeholder panels held with the CAC arrived at these conclusions:

- The small region size was not in keeping with existing CAC forecast regions. The CAC public warning system was focused on providing baseline regional forecast services for high priority areas.
- The CAC would not consider taking on full responsibility for the NSAA without comparing needs in other high priority areas, but would consider an experimental shared responsibility approach.
- The product had unique values, not the least of which was an engaged grassroots community.
- Best practice consensus is that public avalanche information should be directly supervised by avalanche professionals (CAA professional members).

An experimental operating agreement was developed whereby the CAC engaged to support the NSAA avalanche report and develop it into a forecast. Stakeholders agreed to provide baseline data and in-kind support for information gathering, and direct funding was split three ways—the stakeholders, the CAC and the province of BC.

To assure the quality of the product, the agreement stipulates that a CAC forecaster signs off on all public avalanche information published. Both the NSAA group and the CAC are aware that the development of the North Shore avalanche forecast is being examined as a model for the creation of similar small scale and/or local products. All parties are very pleased with the success of the arrangement.

The third public warning region with a unique operational basis is the Vancouver Island bulletin. This product is produced three times a week by the non-profit Vancouver Island Avalanche Centre Society and covers a local area of several hundred square kilometres. The area has a thriving and growing backcountry user group, but there is no historical record of avalanche fatalities, and the avalanche climate is considered relatively forgiving.

In 2009, the Vancouver Island Bulletin asked the CAC to carry the product on the avalanche.ca website, and an agreement was struck to provide a portal in exchange for assurances that the bulletin is produced by qualified avalanche professionals who have access to sufficient data to assure a consistent product. This bulletin can be compared to the NSAA; in many ways they share a similar development and evolution, though the VI bulletin was initiated by CAA professional members and as such did not have share the same concerns regarding the qualifications of the people delivering the bulletins. The bulletin founders recognized there are many needs for expanded public avalanche warning products in Western Canada and that their particular area was not likely to be the recipient of scarce public resources through the CAC. In both cases, a grassroots local initiative was necessary.

Currently the CAC maintains loose collegial links with the Vancouver Island Bulletin that includes hosting the product, occasional forecaster exchange and contacts regarding avalanche conditions and special warnings. There is, however, no exchange of financial or in-kind resources, and no allocation of public funds for its support. How this warning product develops, whether it follows the development of the NSAA, becoming more aligned with the CAC as it matures, or whether it remains an independent regional product, are unresolved questions pertinent to the strategic development of a public warning network in Western Canada.

Strategic Directions

The CAC's experience in developing public warnings since 2003 provides a foundation for future development. Reflecting critically on this history generates important questions about how to proceed and why. Fortunately, it also provides some answers. First, as far as answers go, the above cases allow us to distil some obvious strategic directions:

1. The CAC is primarily focused on baseline regional forecast products over wide areas. The needs in this regard include expanding coverage to regions not currently covered by public avalanche forecasts. The prime candidate is the North Rockies Region.
2. Some existing regions can be optimized with good results, using the Kootenay Boundary region as a model—based on good data availability and local cost/benefit analysis.
3. Quality assurance, continuity and risk management are important considerations in the development of public avalanche warning information.
4. Local forecast products can be developed at low cost through collaboration with local stakeholders, while maintaining a high expectation for quality assurance. The North Shore is an example of this.

However, questions remain. Currently, the CAC is both the producer of avalanche safety products and the coordinator of third-party public avalanche products. This can create a challenge in determining how and where to spend public

money. Investment in public avalanche warnings should be governed by principles that target the most additional benefit to harm reduction per dollar invested. In economics, this concept is often called maximization of marginal benefit. While simple in theory, this concept can be difficult to implement.

As an example, compare regional warning products versus local. With their wide extent and large user groups, there are clear benefits to expanding regional bulletin programs. However, supporting local forecast products produces healthy relationships and engaged stakeholders—a benefit best stated as "buy-in." Buy-in is a good thing, especially considering the alternative. The question is how to decide where investment benefits the whole of avalanche safety in a way that promotes harm reduction, transparency, and fairness.

The establishment of the CAC has created a natural focus for public funding of avalanche warning programs. The CAC has governance, mission and a mandate from a wide variety of public and private stakeholders. It also maintains a core of highly competent technical staff, and the ability to provide detailed transparent reports on the use of resources. These attributes encompass the skills necessary to make decisions on behalf of the public interest. They also provide the kind of management that publically accountable stakeholders need.

Moreover, being a single point of contact facilitates good reporting relationships and management of standards. This is especially important for government funding agencies that may not have easy access to subject matter experts, capable of evaluating the efficacy of public avalanche warning programs. Thus, the CAC is well positioned to be the recipient of public funds.

However, if the CAC is going to continue to support local forecast initiatives, in addition to its core competency of producing public forecasts, clear boundaries are needed to determine how to allocate resources. The goal is to provide a framework for decisions on investment in public warnings that are transparent and defensible. A structured approach is needed to keep the CAC positioned as an honest broker in the avalanche safety community. Staff, board members and stakeholders are all contributing to this process and if you have input, please feel free to send it to our Executive Director Ian Tomm. As CAC programs mature, this is clearly the next step.

Troy Grant

Mountain Snowmobiling Avalanche Incident Prevention Project

Riders in the Renshaw area near McBride, BC considering the avalanche conditions and visual clues as they plan the next part of their riding day.

Three-year project aims to identify target demographics to better promote awareness

Article and photos by Carole Savage

Earlier this year, Emergency Management BC (EMBC) successfully acquired funding from the National Search and Rescue Secretariat New Initiatives Funding program for the three year Mountain Snowmobiling Avalanche Incident Prevention Project. The CAC worked closely with EMBC in the project proposal development and is implementing the project on behalf of EMBC.

While it has been clear to many that there has been an increased interest in and awareness of avalanche safety by mountain snowmobilers, current avalanche safety programs and services still seem to be missing the mark for many within the snowmobiling community. Many of us have been scratching our heads asking questions: What is the demographic of our target audience? Is there one culture or several subcultures within this recreational group? Why are we missing the mark in reaching these individuals? What can we do to better reach those individuals? This project aims to close that gap and reach new levels of mountain snowmobiler avalanche awareness over the next three years.

The project commenced at the International Snowmobile Congress in Calgary, Alberta in June 2011, where a kick-off meeting of snowmobile stakeholders from throughout North America gathered to hear more about the project and provide feedback to the CAC regarding goals and aims.

The project is based on two general objectives. The first objective is to improve the understanding of how the mountain snowmobiling community perceives mountain risks, and of how they make decisions in avalanche terrain. This objective will be met through a detailed research component undertaken by Dr. Pascal Haegeli. The research will include analysis of snowmobile-related avalanche accidents to determine key contributing factors; interviews with individuals and organizations within the snowmobile community; user intercept surveys at major snowmobile staging areas in BC; and an online survey for snowmobilers to complete.

The second objective is to expand and enhance existing snowmobiler avalanche awareness, education, and outreach initiatives using the following strategies:

- **Immediately developing a targeted advertising campaign focused on existing programs and services of the CAC.** We have hired a professional marketing firm to implement this portion of the project and are very excited to carry out the media plan and associated media for the campaign.
- **Extending existing awareness materials and resources, and developing new advertising and other initiatives to reach the mountain snowmobiler.** This portion of the project will occur after the research component has been completed so that we capitalize on the research findings when formulating new materials and resources. A variety of avalanche safety materials and resources will be created based on the research findings.
- **Further developing technical avalanche expertise within the snowmobiling community.** As part of this project, the CAC is attempting to further facilitate the development of technical avalanche expertise within the snowmobiling community by use of a 'train the trainer' approach. Helping key members of the snowmobiling community develop professional level avalanche risk management expertise will enhance the distribution and absorption of avalanche awareness from within the snowmobiling community through peer messaging. This will also empower the snowmobile community to take a more active role in meaningful avalanche safely initiatives that reach the target audience more effectively.

The numerous positive outcomes of this project will help to increase avalanche awareness and safety for mountain snowmobilers recreating in the mountainous areas of western Canada. However, other jurisdictions around the world may be able to use and adapt the outcomes from this project to their specific challenges with mountain snowmobile avalanche safety.

Snowmobiler high marking fresh powder in the North Rockies.

Terrain Rating for Sledders

Pamphlets Coming to Select Snowmobile Clubs Around BC

This winter, snowmobile clubs in the Revelstoke, Eagle Valley and Golden areas of British Columbia will participate in a pilot project to distribute terrain rating pamphlets to snowmobilers riding in those locations.

These pamphlets are the first in a project that may lead to terrain rating pamphlets for all managed riding areas around the province of BC. Funded by Recreation Sites and Trails BC, a department of the Ministry of Natural Resource Operations, the local clubs will be responsible for circulating the information to club members and visiting recreationists.

The CAC Snowmobile Committee, the British Columbia Snowmobile Federation (BCSC) and the Association of BC Snowmobile Clubs (ABCSC) all had a hand in developing the concept. The Golden Snowmobile Trail Society and Golden Snowmobile Club, the Snowmobile Revelstoke Society and Revelstoke Snowmobile Club and the Eagle Valley Snowmobile Club and Grooming Society, along with CAC staff, the RSTBC and a graphic designer, worked together to develop and review the finished product.

The terrain rating pamphlets are double-sided folded brochures. The double-sided pamphlets will feature a CAC avalanche safety and terrain information side, and a side dedicated to specific club information and advertising. A goal of the project is to create a standardized template that can be used by most clubs within the province of British Columbia.

The terrain rating pamphlet contains terrain map information within each club's riding area. This information came from the ATES project, and will feature local names for terrain areas. Also included on the front side of the pamphlet is an Avalanche Danger Rating Card, the Avaluator Trip Planner card, slope evaluation information, basic avalanche safety information and a disclaimer.

The reverse side of the pamphlet is club specific, and may include information about the local club, community information, acknowledgments, fee information, other riding areas not pictured, emergency information, GPS locations, key messages, and more. The project was created with the idea of collaborating with clubs to ensure relevant, local information is included with avalanche awareness information.

Recognizing that RSTBC is an important stakeholder and their mandate includes integrated resource management, the message that recreationists are sledding within working forests will also be included.

Fast-Tracking Public Forecasting in the Yukon

Collaboration between the Yukon Avalanche Association and CAC brings public avalanche forecasting to the Yukon

The first public avalanche forecasts in the Yukon could start as early as December, thanks to a collaborative effort between the Yukon Avalanche Association and the Canadian Avalanche Centre. Last spring, the Yukon Avalanche Forecasting and Education Initiative was granted funding from the National Search and Rescue Secretariat's New Initiatives Fund. A goal of the two-year pilot project is to develop the first forecast region in the White Pass/Wheaton Valley area this winter, and the CAC will be producing and publishing avalanche forecasts using observations from two new field technicians in the Yukon.

The Yukon Avalanche Association was founded in 2010 to promote avalanche safety and education. Over the last twenty years, there have been six avalanche fatalities in the Yukon and backcountry usage has steadily increased, highlighting the need for heightened public awareness. YAA President Kirstie Simpson is thrilled at their progress since inception: "[t]he Yukon Avalanche Association's partnership with the Canadian Avalanche Centre, as well as our collaboration with Parks Canada and the professional avalanche community in the Yukon, is fast-tracking a grassroots avalanche forecasting initiative into a technically robust public avalanche safety program," says Simpson.

The CAC committed to providing in-kind services and support for the next two years, lending expertise from senior staff to help set up the YAA forecasting program. "By partnering with the Canadian Avalanche Association and the Canadian Avalanche Centre, the Yukon backcountry community is benefitting from 30 years of experience with public avalanche safety programs in BC and Alberta," Simpson notes gratefully.

Data collection is currently a top priority for the forecasting project. "The YAA is organizing an effort to get local stakeholders/supporters who have data to provide it to the CAC," says Karl Klassen, CAC Public Avalanche Warning Service Manager. These include Yukon Government agencies, resource companies and commercial recreation operators in the Yukon and British Columbia, US government agencies and Alaskan commercial recreation operators.

In partnership with the YAA, the CAC will hire a two-person field team to gather observations to submit to the CAC Public Avalanche Warning Service office in Revelstoke, who will use it to create and validate forecasts for the region. Two new YAA weather stations will also provide weather information the CAC; that weather data will be available to the public and other organizations that may have a use for it.

Klassen visited the Yukon in June to meet with stakeholders, explain the forecasting process and check out the proposed forecast region. The CAC plans to send a senior forecaster or a PAWS manager to the Yukon several times over the winter to train field techs, work with local stakeholders, and validate forecasts. "It has been immensely helpful to be able to rely on both the expertise and support of the staff of the Canadian Avalanche Centre in developing a public avalanche forecasting program for the Yukon," says Simpson.

Claude Vallier

A Bigger, Better PAWS

By Karl Klassen, Public Avalanche Warning Service Manager

The CAC is happy to report some updates and expansions of procedures, products and services as we approach the winter season. Ilya Storm has moved from Senior Forecaster to Public Avalanche Forecast Coordinator. This means that there will now be a manager or supervisor available every day for close to the entire winter, which improves our ability to handle extraordinary events, gives us better capability to effectively manage extra work (such as media requests), and provides better forecaster support than ever before. All of this means greater reliability and improved effectiveness of all our warning service products and services.

We are hiring a new public avalanche forecaster to cover the additional work of new forecasts getting introduced this winter. In collaboration with the YAA, the White Pass/Wheaton Valley forecast region is being introduced along the Yukon/BC border, with forecasts slated to begin this winter. Please see "Fast-Tracking Public Forecasting in the Yukon" on page 30 for more information. The Purcells have also been upgraded to a full forecast region.

In an organizational structure change, CAC field teams who gather observations in the Yukon and South Rockies have been moved into the warning service department, which will more fully integrate them into the forecasting process.

In partnership with Parks Canada, the Public Avalanche Warning Service is involved in developing and implementing new public avalanche forecasting software and a revised avalanche bulletin format. This will improve forecaster efficiency and enhance the accuracy and effectiveness of avalanche information provided to the public. I believe that the new software puts Public Avalanche Forecasting in Canada at the forefront of avalanche hazard analysis and forecasting worldwide.

An improved bulletin map is also planned, which will be a much more informative and interactive portal to PAWS products and services. We hope to have some improvements ready by winter's onset, followed by incremental upgrades over time.

All of these upgrades and improvements to the team and its services have meant a busy fall, but add up for a more reliable, efficient product for the public.

Wren McElroy

CAF 2011-12 Grant Recipients

The Board of Directors of the Canadian Avalanche Foundation are pleased to announce their decision to approve more than $135,000 in funding in support of public avalanche safety initiatives in the 2011-12 fiscal year. In keeping with the Foundation's mission, funding will be directed towards operational programs, research, and public outreach activities.

This year's granting decisions include:

- $68,000 to the Canadian Avalanche Centre for ongoing operational support of Public Avalanche Safety Bulletins and Special Public Avalanche Warnings.
- $20,000 to the Applied Snow & Avalanche Research Chair at the University of Calgary.
- $10,000 to the Centre d'avalanche de La Haute-Gaspésie for ongoing operational support.
- $20,000 to the Canadian Avalanche Centre for start-up funding of a stand-alone Public Avalanche Bulletin for the Purcell Mountains.
- $11,450 to Dr. Pascal Haegeli for statistical analysis of avalanche hazard assessment expertise at the Canadian Avalanche Centre.
- $6,300 to Dr. Keith Nicol for ongoing support to avalanche awareness outreach in Newfoundland.

Since its inception in 1999, the Canadian Avalanche Foundation has distributed grants totalling more than 1.2 million dollars. This remarkable achievement is due solely to the generous support of the Foundation's many donors, volunteers & patrons. Thank you, everyone.

CAF Supports Participants at ISSW 2012 & 2014

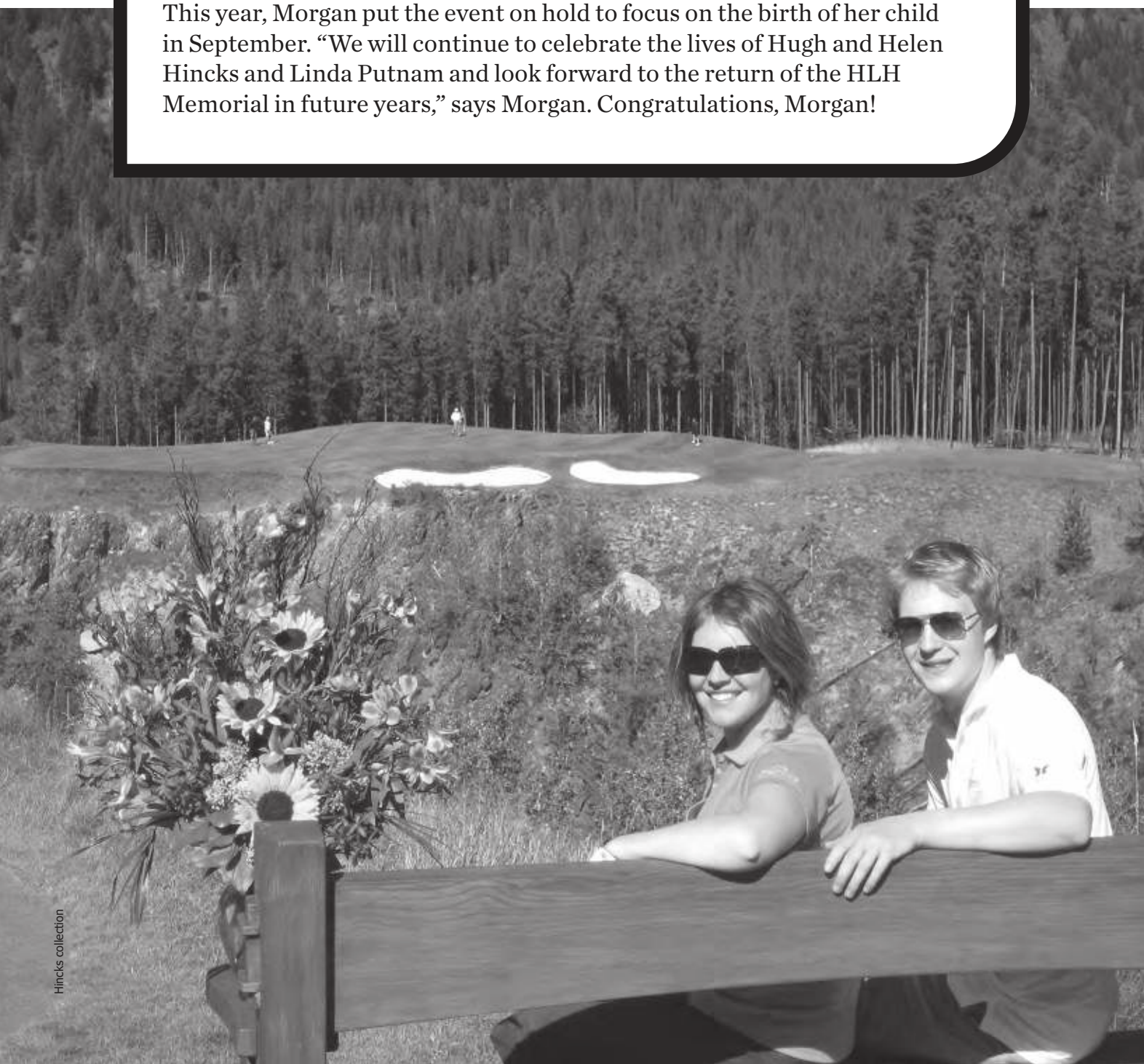
The Canadian Avalanche Foundation's ISSW Fund supports the preparation and presentation of applied avalanche research and innovative field work at the International Snow Science Workshops held every two years in Canada or the United States. The ISSW Fund is intended to assist aspiring participants, particularly practitioners and others with limited financial resources, cover part of their expenses such as those associated with paper/poster preparation, travel and accommodation.

ISSW 2012 will be held in Anchorage, Alaska in September 2012 and ISSW 2014 is planned for Banff, Alberta in the fall of 2014. The CAF encourages members of the Canadian avalanche community to think about making an ISSW presentation, particularly for Banff, a readily accessible and attractive Canadian venue. You have time now to develop ideas and gather and analyze data for presentation.

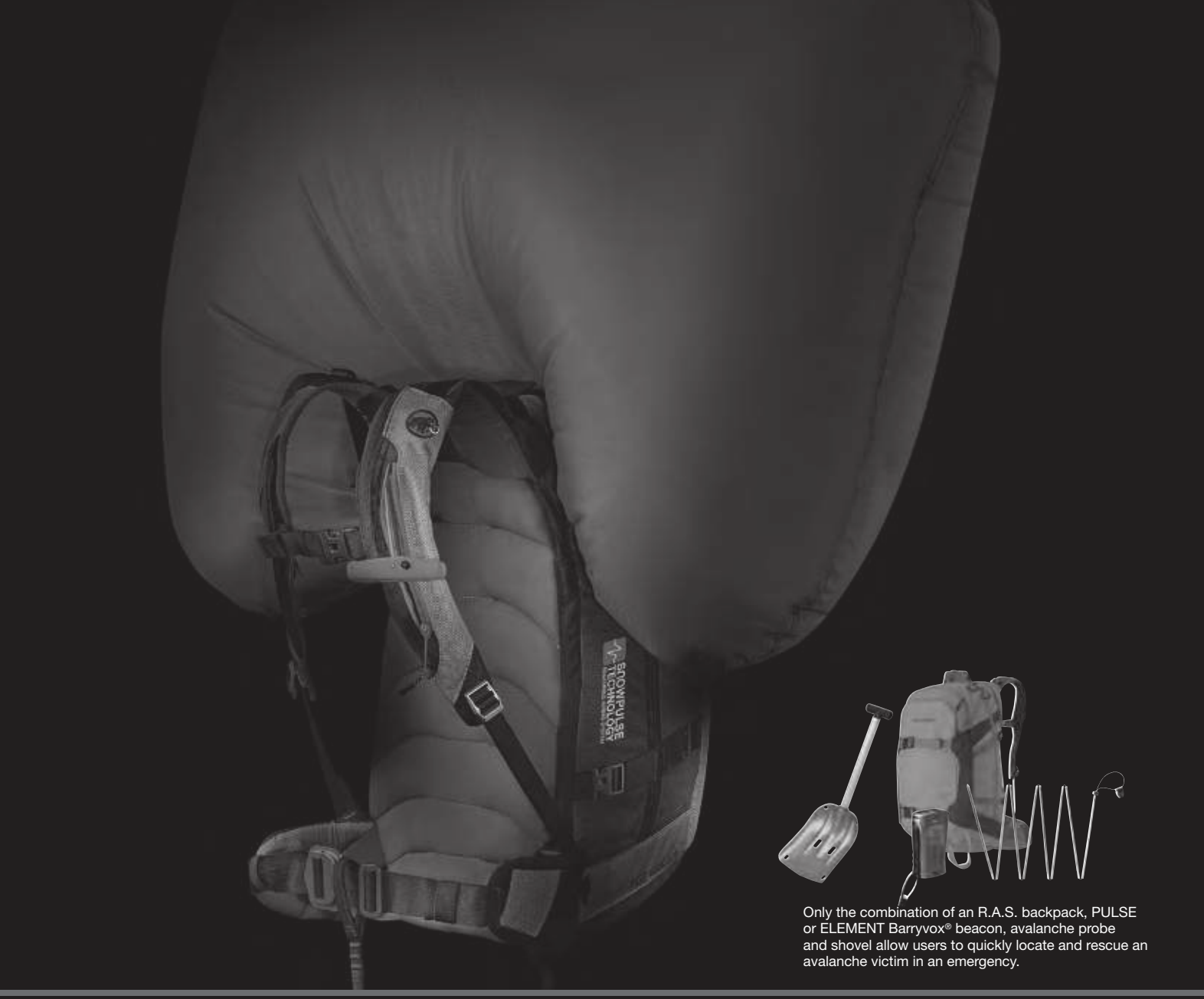
For more information visit http://www.avalanche.ca/caf/programs/ or contact the Canadian Avalanche Foundation office at info@avalanchefoundation.ca or 403-678-1235.

HLH Memorial Golf Day on Hiatus

For the past six years, the HLH Memorial Golf Day has been celebrated at Greywolf Golf Course and featured in the fall edition of the journal. This year, Morgan put the event on hold to focus on the birth of her child in September. "We will continue to celebrate the lives of Hugh and Helen Hincks and Linda Putnam and look forward to the return of the HLH Memorial in future years," says Morgan. Congratulations, Morgan!



Hincks collection



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A New Thermal View

Finding unusual temperature results using a thermal camera

By Cora Shea and Bruce Jamieson
ASARC - Applied Snow and Avalanche Research, University of Calgary

"What do you think will happen?" In 2006, Dave Gauthier wrote those words in this journal. At the time, ASARC was developing and testing the Propagation Saw Test, and he was at the forefront. With these words, he captured the essence of research: if you don't know what will happen but really *want* to know, you might actually be on to something.

On the surface, it might seem like times have changed. The number of snowpack tests currently in development by ASARC is zero. That is unsettling to some of us in ASARC. But maybe, just maybe, the next way to figure out what the snowpack is doing involves thinking outside the box.

Most of you have likely heard of ASARC's use of a thermal camera in the field. I am not saying the thermal camera is necessarily the next new thing. But I am saying that it is outside the box, and it gives us interesting results we have never had before and do not yet know what to do with.

During the 2010-11 winter, Bruce and I used a thermal camera to closely follow temperature gradients around a crust in the Rocky Mountains. We measured some very interesting temperature gradients, both in structure and duration, which have not been observed before.

In January, on the first day the crust was buried, the crust edges had temperature gradients of more than one degree Celsius across a distance of less than two millimetres. We knew that something interesting was going to happen. But we thought—incorrectly—that we had a handle on things.

On that day in January, the crust appeared to be warmer than the snow above and below. Based on a theory by Richard Armstrong for buried wet layers, as the heat in the crust leaked out into the snow around it, water vapour would go along for the ride and facets would grow at the crust boundaries.

We expected to see the crust gradually cool over time and see facets grow above and below. Sure enough, two days later the crust was cooler than the snow above and below, and stayed cooler for three days after that. We figured that was the end of it: the heat is gone and the crust is done growing facets. But three days later, the crust was relatively warm again. Three days after that, it was cool. Then warm. Then still warm. Then cool. "What

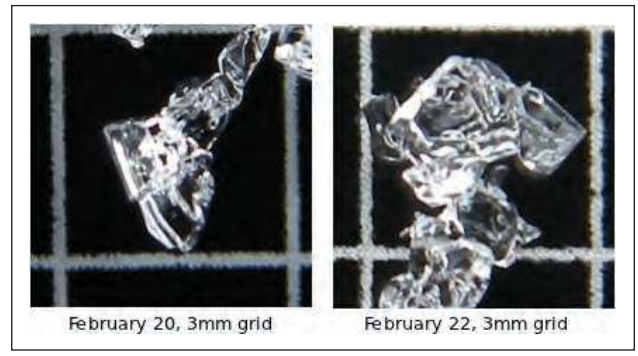


Figure 1: Typical facet growth above the buried crust between February 20 and 22.

temperature do you think the crust will be today?" It was a simple question with no obvious answer.

Our bafflement turned into a bet of coffee each day. Bruce would guess the relative crust temperature—warmer or cooler—and if he was right, I bought him coffee. If he was wrong, the coffee was on him. We really wanted to know the following: does a relatively warm crust mean future facet growth above and below? Does a

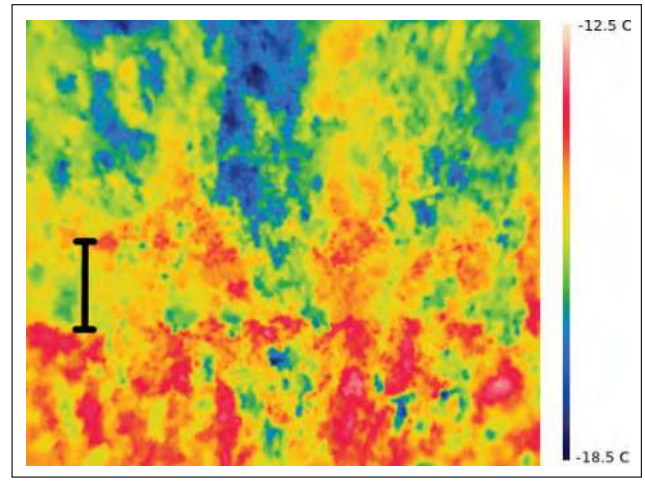


Figure 2: Saying the crust is relatively warmer or cooler than the surrounding snow doesn't capture half the complexity. The 1.5 cm thick crust can be seen on the pit wall in this thermal image, and it is marked by a black line. On average, the crust is warmer than the snow immediately above and below, but this is certainly not obvious, and the complex structure of the temperature gradients might play a larger role than just relative warmth or coldness.

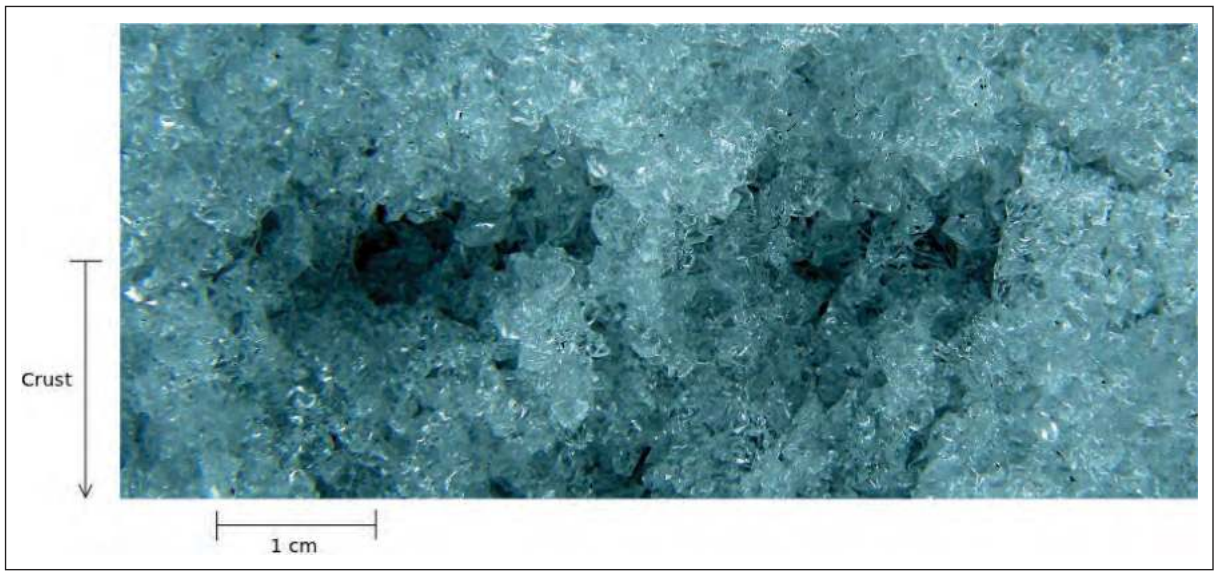


Figure 3: The top boundary of the crust on March 16. The crust is displaying what we call pinning and gapping, which refers to the vertical connections to the crust at the photo's centre and sides, and the gaps between them. The pins are actually polycrystals, oriented vertically. This type of lateral variation could affect how likely the facets are to initiate and/or propagate cracks.

relatively cold crust mean that the crust is itself faceting out? Though we gave scientific reasons for our guesses, I think we were both just blindly guessing and drinking a lot of coffee.

For a time, we thought it might be the camera showing us large gradients that did not really exist. We spent a lot of effort correcting the thermal images for various types of error, and we also did a lot of thinking, and worrying, and pencil chewing. At that point, Karl Birkeland joined in and gave the two of us some much-needed perspective, direction, and support. In the end, when we compared the big gradients we were seeing using the thermal camera to macro photographs of the actual crystals, the crystals were certainly changing. *Something* was going on.

Figure 1 shows, as an example, the crystals above the crust on February 20 and 22, almost a month after burial. The average temperature gradient measured by the thermal camera at the top crust edge on February 20 was 0.4 °C across the pixels above and below. Those pixels spanned a distance of 0.75 mm. Scaling up, this works out to about 50 °C per ten centimetres. But pushing thermometers in above and below the crust on February 20 would not have shown this gradient, as the snow temperature above and below the crust were, on average, about the same.

These temperature gradients we saw with the thermal camera, hidden between typical thermometer spacing, were big. And big facets often followed. We took this to mean we were measuring something interesting, even if we could not intuitively guess what we would see before actually pointing the thermal camera at the snow.

In March, Karl suggested that the three of us try a different tack. Since we were not getting answers by waiting a day or so between visits, we should try measuring these temperature gradients as often as possible.

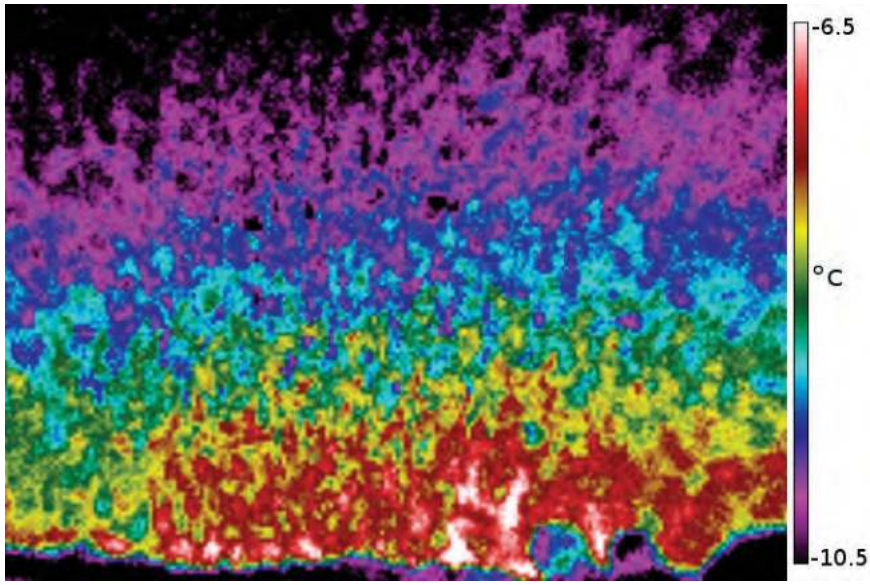
So, I performed the perfect graduate student job—staying overnight and digging a lot of snow. Twenty-five fresh pit walls dug over twenty-one hours later, we still had no firm answers. During a period of sky clearing and cooling in the morning, not only did strong temperature gradients appear around the crust, they also reversed and then disappeared in a matter of hours.

Temperature gradients of the magnitude seen in these daily and hourly visits can strongly affect the structure of the snow crystals. Some of the large gradients we observed have the ability to move a quarter of the ice they cross in two to three days. Which, by Figure 1, is certainly realistic.

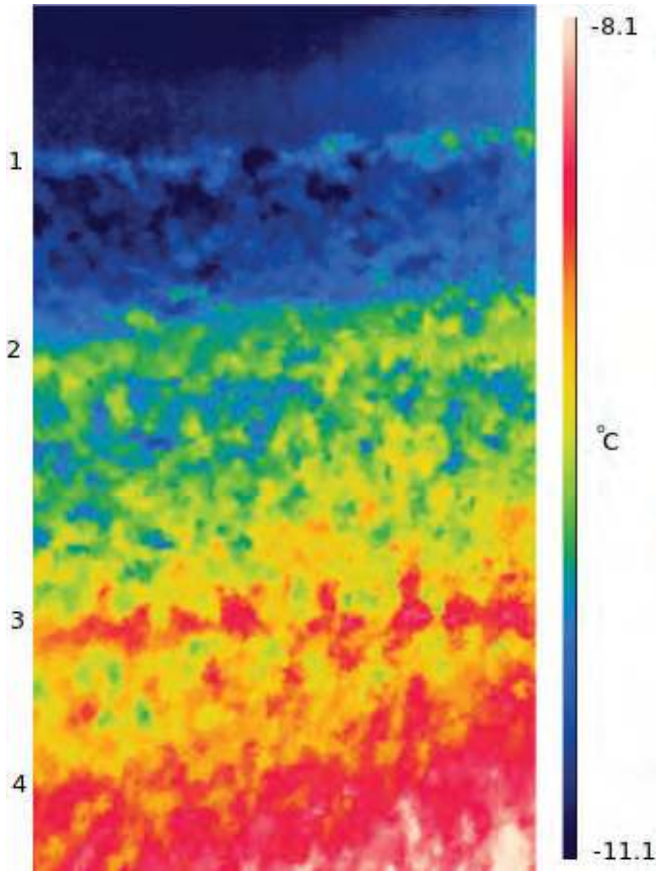
Not only did facets form, but the overall crust entirely rebuilt itself. It formed crystals that were no longer small and randomly oriented by melt, and were instead large, long and aligned vertically with the heat flow like a parking garage (see Figure 3).

To quote Dave Gauthier again, "I know what I *think* this means." I also know what we all hope it means: that we can start doing things like really predicting when facets will grow around thin layers, what crusts will do after burial, and how weak layers will become laterally supported (or not) over time. Will the thermal camera actually give us those abilities in the future? I really don't know. But there are more winters—and coffee—in the future for us to find out.

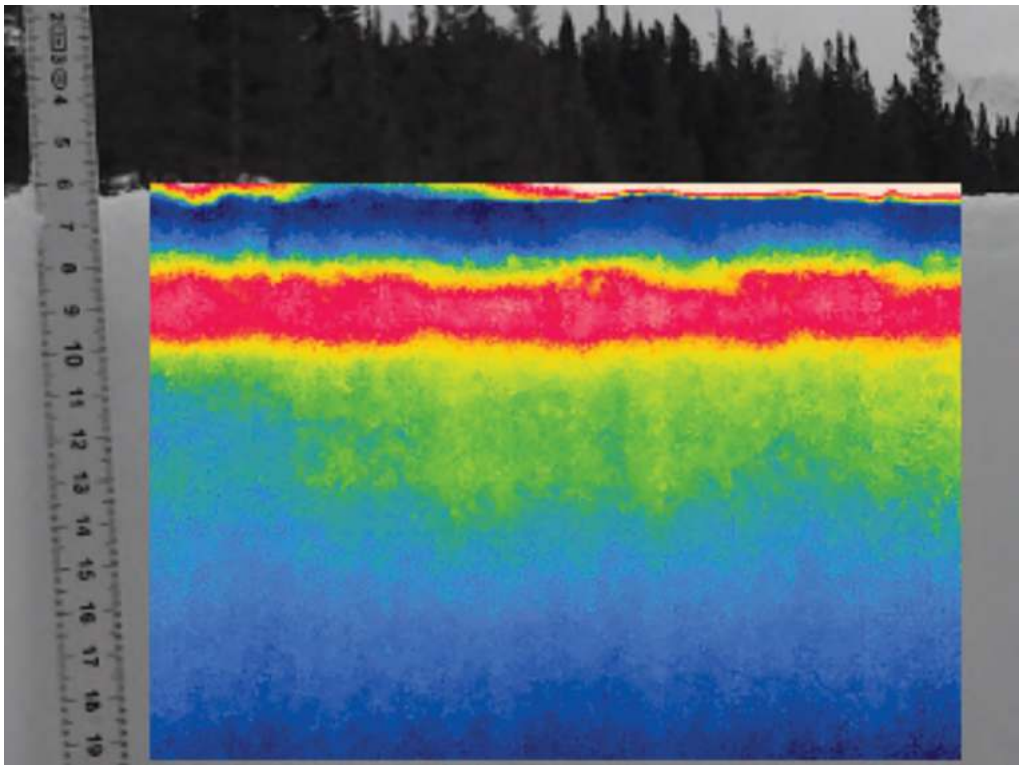
Examples of the New Thermal View



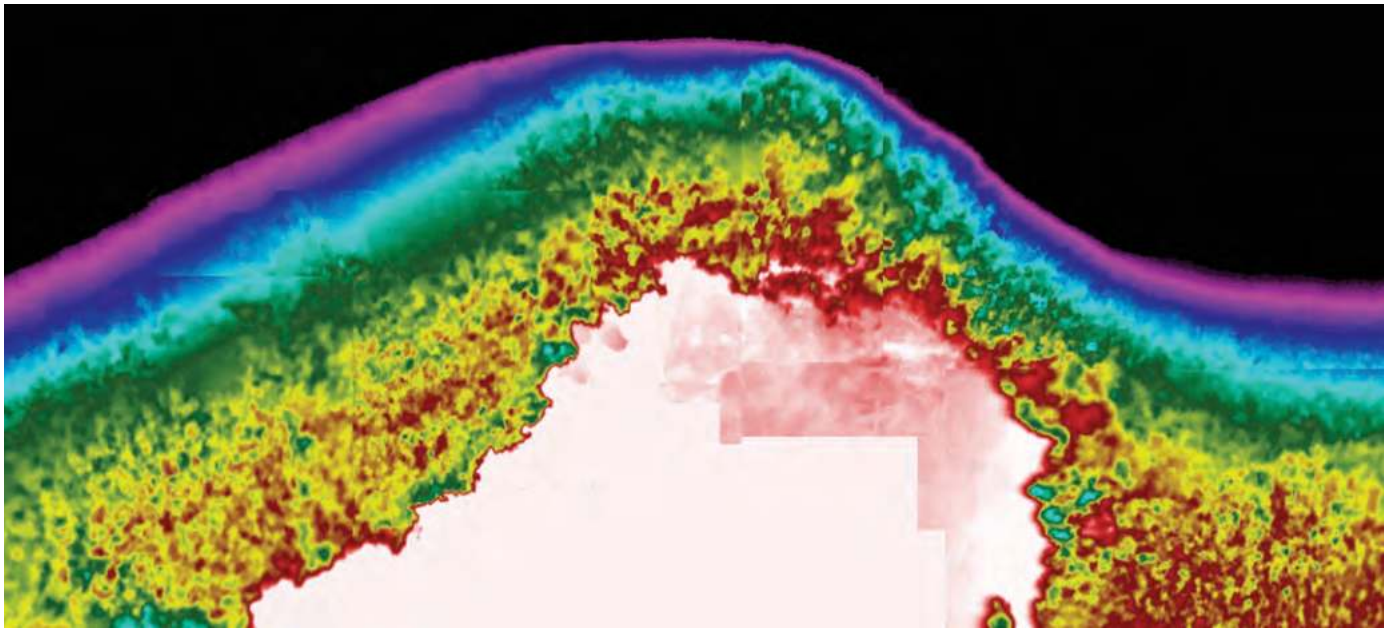
This thermal image captures isothermal "chains" in buried facets. These chains are fingers of the same temperature reaching up and down vertically. These structures of temperature grow because they decrease the steepness of the temperature gradient from ground to sky. These thermal facet chains can be found even before striations are present on the snow crystals.



This thermal image captured temperature gradients appearing on the pit wall during the clearing of the sky in the morning. The relatively warmer layers 1 and 2 are facets, 3 is a crust, and the yellow-red transition at 4 is the edge of the depth hoar. These temperature differences only appeared for a few hours, until the sky clouded over again, and then they almost entirely disappeared.



This thermal image (embedded in a visual image) captured heating of the snow below but not at the surface. This sub-surface heating grew near-surface facets via radiation recrystallization. The ruler provides centimetres for scale. The red snow layer is at 0.0 °C. The temperature of the dark blue snow above and below is -2.0 °C.



This composite of multiple thermal images shows the complex temperatures in a thin snowcover over a rock. The rock and snow surface was exposed by digging away the snow to a flat observation wall that ran over the top of the rock. The rock is the white area at the centre bottom, and all other colours (purple, blue, yellow, red) show the thermal structure of the overlying snow. The temperature scale ranges from -10 °C (white) to -25 °C (purple).

Companion Rescue Skills Course Rolling Out This Winter

Interested in teaching? Attend a mandatory November training session

By Mark Bender

It is important when travelling the backcountry that you can trust your companions in an emergency, and your companions can trust you. The BC Coroners Service Death Review Panel of 2009 recommended the development of "an additional course to specifically address companion rescue skills for recreationists," and in response, a one-day, field-based Companion Skills Rescue course was developed. The course will train students to consider preventative measures, analyze transceiver functions, apply search and rescue techniques and identify post-incident considerations.

The Companion Rescue Skills course builds upon an AST 1 foundation. Along with practicing hard skills with their equipment, students will learn the important link between practicing preventative measures and maximizing the effectiveness of a companion rescue. Students enrolling in this course will be looking to update and improve upon their search and rescue abilities learned in an AST 1 course. It is suitable for any snowmobilers, skiers, snowboarders, mountaineers, and/or snowshoers who recreate in avalanche terrain. This course can be taken on a yearly basis to ensure that rescue skills are continually kept up-to-date.

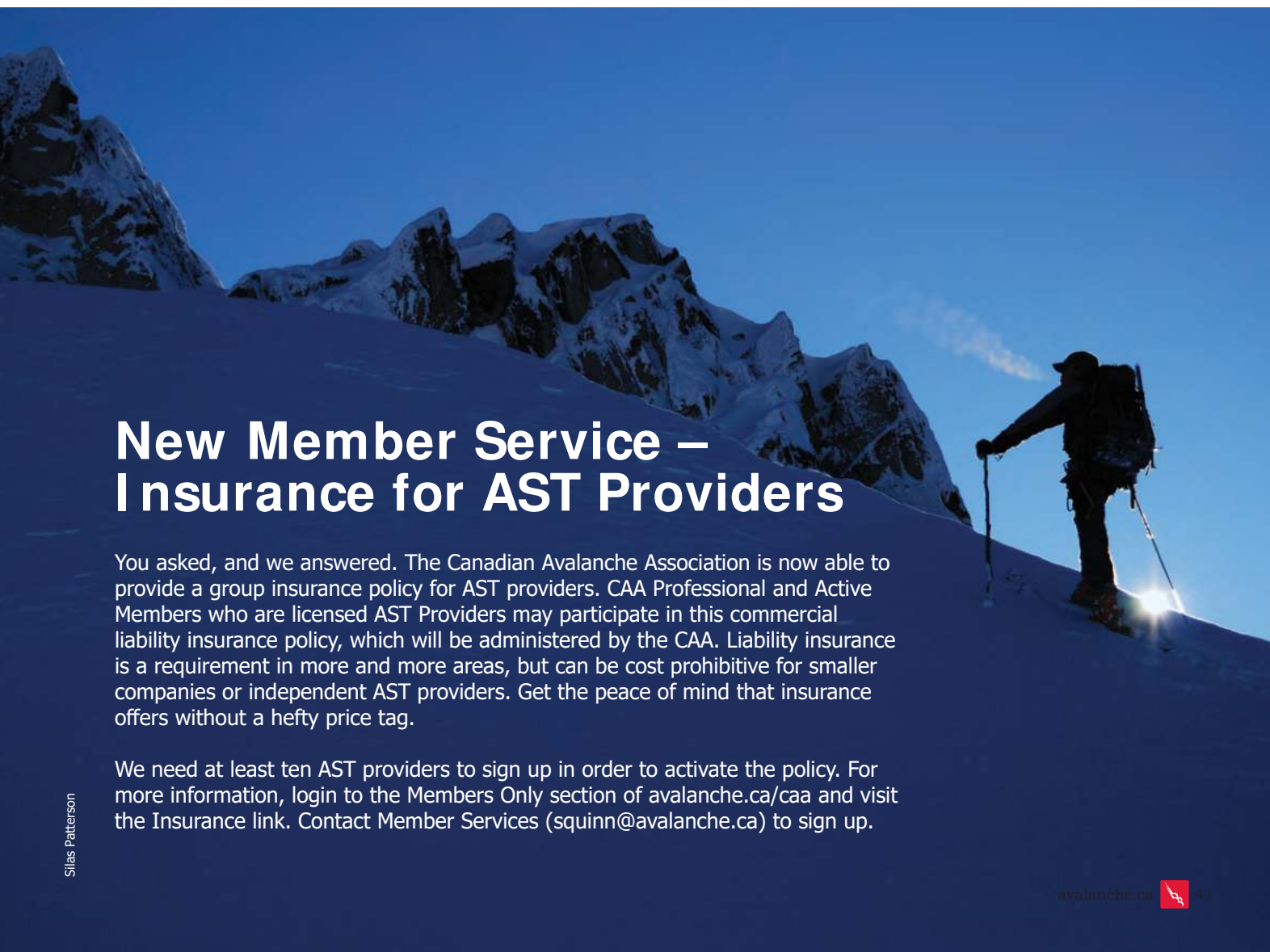
We are now looking for instructors interesting in teaching this new Companion Rescue Skills course. Licensed AST instructors must attend an AST Instructor Training: Companion Rescue Skills Course session in November. This beta workshop will provide you with the chance to run through the teaching material, and will feature presentations from transceiver manufacturers on the ins and outs of their particular models so that you will be well versed about a variety of beacons. If you would like to teach the Companion Rescue Skills course, attendance in one of these training sessions is mandatory.

Brent Strand

AST Instructor Training Companion Rescue Skills Course

Banff, AB: November 5 • Banff Centre
Nelson, BC: November 17 • Selkirk College, Tenth Street Campus
Squamish, BC: November 19 • Capilano University
Terrace, BC: November 26 • Northwest Community College

Workshops will run from 9:00 am to 4:00 pm. The cost is $100.
For more information or to register, please contact Nancy Geismar
p: 250-837-2141 ext. 233 • f: 866-366-2094 • email: ngeismar@avalanche.ca



Silas Patterson

New Member Service – Insurance for AST Providers

You asked, and we answered. The Canadian Avalanche Association is now able to provide a group insurance policy for AST providers. CAA Professional and Active Members who are licensed AST Providers may participate in this commercial liability insurance policy, which will be administered by the CAA. Liability insurance is a requirement in more and more areas, but can be cost prohibitive for smaller companies or independent AST providers. Get the peace of mind that insurance offers without a hefty price tag.

We need at least ten AST providers to sign up in order to activate the policy. For more information, login to the Members Only section of avalanche.ca/caa and visit the Insurance link. Contact Member Services (squinn@avalanche.ca) to sign up.

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- Source: SnoWest Volume 38, No. 3

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Ian Tomm

Kokanee Glacier Provincial Park in British Columbia hosted a day of celebration on August 13 to commemorate the 100th Anniversary of BC Parks. The event featured helicopter rides, guided hikes, live music ad historical re-enactments. The first BC Park was Strathcona Provincial Park on Vancouver Island. This is also a special year for Parks Canada, who are celebrating 125 years of national parks.

Schedule of Coming Events

Sept 30 – Oct 2, 2011

HeliCat Canada Fall General Meeting

Where: TLH Heliskiing, Gold Bridge, BC
Info: Call (250) 542-9021 or
e-mail info@helicatcanada.com

Oct 4 – 6, Oct 18 – 20, 2011

Canada West Ski Areas Association Zone Meetings

AB, SK & MB Zone, Oct 4 – 6
Where: Canyon Ski Resort & Recreation Area, Red Deer AB
BC & YT Zone, Oct 18 – 20
Where: Delta Sun Peaks Resort, Sun Peaks, BC
Info: Call (250) 542-9020 or
e-mail office@cwsaa.org

October 5 – 7, 2011

Wilderness Risk Manager's Conference

This annual conference focuses on risk management and practical skills for the wilderness adventure and education industry
Where: Boston, Massachusetts
Info: www.nols.edu/srmc

October 18 – 23, 2011

ICAR 2011

The International Commission of Alpine Rescue is once again hosting an open forum to discuss ideas and share information on mountain rescue. ICAR represents 30 mountain-rescue organizations from Europe and North America.
Where: Åre, Sweden
Info: www.ikar-cisa2011.org

October 29 – 30, 2011

Decision Making in Avalanche Terrain

The Snow and Avalanche Foundation of Scotland (SAFOS) presents a lecture seminar addressing challenges presented by avalanche hazard in Scotland.
Where: Edinburgh, Scotland
Info: www.sais.gov.uk

October 29 – Nov 6, 2011

Banff Mountain Festival

The Banff Mountain Festival brings you the world's best mountain films, books and speakers.
Where: Banff Centre, Banff
Info: www.banffcentre.ca/mountainculture/

November 2011

Backcountry Avalanche Workshop Series

Presented by Columbia Brewery, this year's BAW series will feature evening sessions in many communities throughout northern and southern BC, as well as full-day presentation in Calgary and Vancouver. Volunteers are always welcome.
Where: Across BC and AB
Info: Call Nancy Geismar at (250) 837-2141 (233)

November 2011

AST Instructor Training

Where: Banff, AB – Banff Centre: November 5
Nelson, BC – Selkirk College, Tenth St. Campus: November 17
Squamish BC – Capilano University: November 19
Terrace, BC – Northwest Community College: November 26
Info: Call Nancy Geismar at (250) 837-2141 (233)

January 21 – 22, 2012

Avalanche Awareness Days

The CAC's annual event continues the tradition, so mark your calendars and get involved. Check our website in early December for a complete schedule of events.
Info: www.avalanche.ca

Al Safrata

A Guide to the Chic-Chocs Backcountry

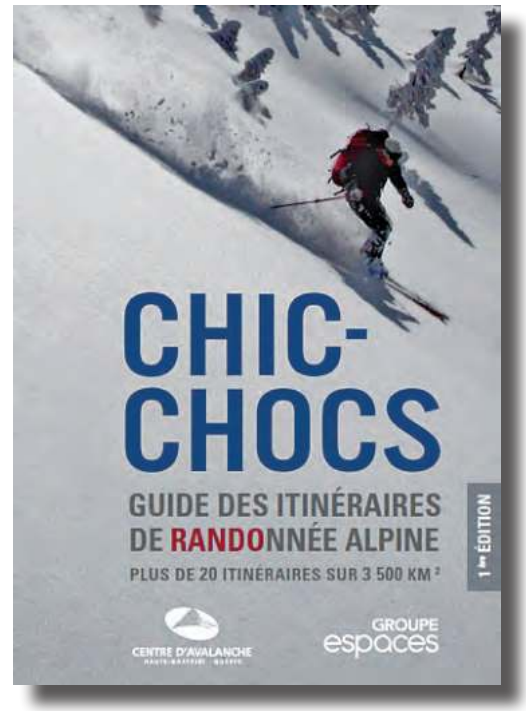
By Stéphanie Lemieux

To put this article into perspective, I will start with some background information on the Chic-Chocs. The name comes from a Micmac expression meaning impassable wall. These mountains are located in the Gaspesie region, just before the Appalachian Mountains fall into the Atlantic Ocean. The highest mountain is 1270 metres, and 25 summits reach over 1000m. No, they are not high, but we have a good vertical drop and interesting alpine terrain because of our proximity to the ocean. The snow climate is a mix of maritime and continental, depending on the flow direction of the systems.

In this remote part of Québec, backcountry skiing as we practice it in western Canada has started to grow in popularity over the past decade. In order to make it more accessible, Le Centre d'avalanche de la Haute-Gaspésie decided that a guidebook to the region should be written. Work began in spring 2008 and in spring 2011 the book was printed. We initially hoped it would be printed by 2009 – yes, we were rookies. However, we are very pleased by the result because of the great advice from our editor Groupe Espaces and the excellent work from the extended Avalanche Centre team.

The guidebook's significant introduction includes a preface from former local Hugo Harrison and topics such as risk management. The meat of the book presents 20 routes located over 3,500 square kilometres of terrain and mixes typical guidebook text with visuals. Runs and trails are overlaid on pictures and maps along with avalanche terrain exposure ratings. The book is spiral bound to make it easy to hold a page while searching for a run in the windy Chic-Chocs.

Overall, the project was a great learning experience for the Haute-Gaspésie Avalanche Centre. We hope that it will be useful and help develop safe backcountry skiing in the Chic-Chocs. There have already been many emails and calls about the availability of the book. À suivre…



Front cover

Sample inside page

Le livre-guide des itinéraires de randonnée alpine des Chic-Chocs

Stéphanie Lemieux

Pour les gens qui étaient au « AGM » ce printemps, cet article est similaire à la présentation en anglais que nous avons faite, mis à part l'accent francophone!

Afin de mettre ce texte en perspective, je vous décrirai brièvement les Chic-Chocs. Premièrement, quel nom! Chic-Chocs est une expression Micmac qui signifie barrière impénétrable. Ces monts sont localisés dans la région de la Gaspésie, juste avant que la chaine de montagnes des Appalaches se jette dans l'océan Atlantique. La plus haute montagne s'élève à 1270 m et nous y trouvons 25 sommets dont la cime surpasse les 1000 m. Non, ce n'est pas très haut, mais le dénivelé y est quand même intéressant puisqu'elles sont en proximité de l'océan et de plus, une bonne partie de celles-ci se retrouvent en milieu alpin. Le climat nival varie entre le type maritime et continental selon la circulation des systèmes météorologiques.

Back cover

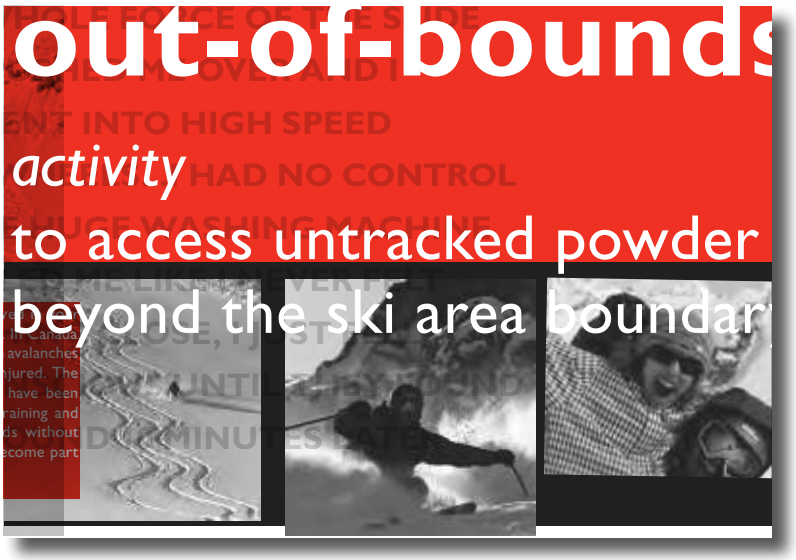
Dans cette région isolée du Québec, le ski de randonnée alpine, comme nous le pratiquons dans l'Ouest canadien, a commencé à se populariser depuis seulement plus ou moins une décennie. C'est avec l'objectif de rendre cette activité encore plus accessible au public en général que le Centre d'avalanche de la Haute-Gaspésie a pris l'initiative d'écrire un livre-guide. C'est au printemps 2008 que nous avons reçu le financement nécessaire pour entamer projet. Le livre a finalement été mis sous presse au printemps 2011. Si je me souviens bien, l'évaluation initiale du délai de finalisation et d'impression du livre était pour 2009… cela démontre bien notre statut d'apprenti en la matière! Malgré tout, nous sommes très satisfaits du résultat. Ceci est grâce aux conseils judicieux de notre éditeur Groupe Espaces et de l'excellent travail de l'équipe étendue du Centre d'avalanche de la Haute-Gaspésie.

Le livre contient une section d'introduction notable qui touche des sujets variés allant de la gestion des risques jusqu'à la préface de notre ancien skieur local Hugo Harrison. Le cœur du livre est la présentation des 20 itinéraires répartie sur 3500 km carrés de terrain. Le format choisi pour présenter cette information est un alliage de plusieurs livres-guide typiques avec, par exemple, les indications pour se rendre aux entrées des sentiers. De plus, l'approche très visuelle du terrain des livres-guide de Whistler et Blackcomb a été favorisée en superposant les descentes et les sentiers sur des photos obliques pour chacun des itinéraires. Par ailleurs, c'est avec la permission de Quickdraw publications que nous avons utilisé plusieurs icônes du livre-guide mentionnées préalablement pour décrire les descentes afin d'alléger la lecture du livre.

Après coup, le projet s'est avéré une expérience très enrichissante pour l'équipe du Centre d'avalanche. Nous espérons que le livre sera utile et qu'il contribuera au développement sécuritaire de la randonnée alpine dans les Chic-Chocs. D'après le nombre de courriel et d'appel que nous avons reçu au sujet de la disponibilité du livre-guide, nous osons croire qu'il ne prendra pas racine sur les étagères des librairies… en espérant que ce n'est pas un pronostic d'apprentie encore une fois. À suivre…


Chic-Chocs production team: Stéphanie Lemieux, Jean-Pierre Gagnon, Philippe Gautier

The CAC thanks the following organizations for sponsoring the out-of-bounds brochure. Their support made the continued printing and distribution of this brochure possible.



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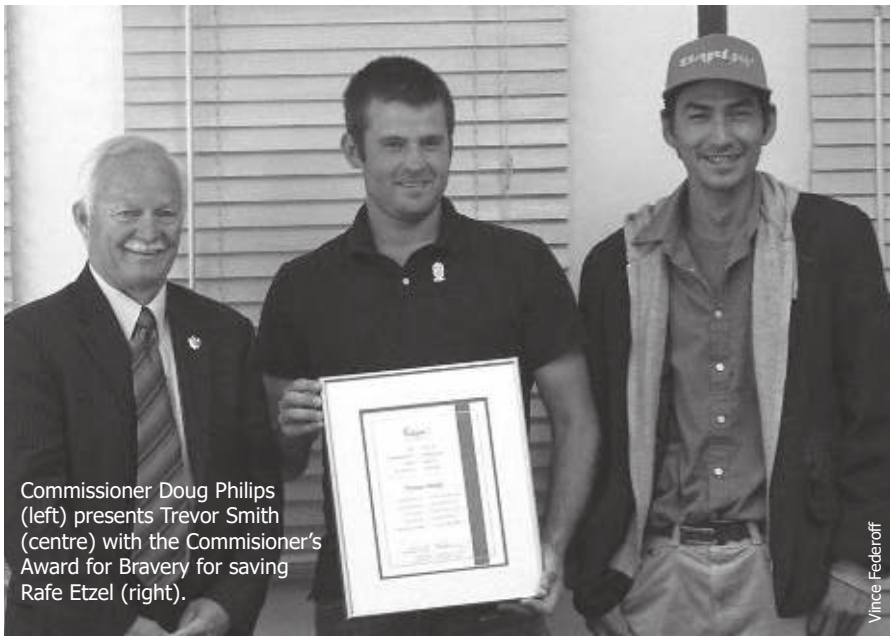
We would like to thank

the InfoEx subscribers and their front line workers for the contributions that have made 20 years of public avalanche bulletins possible.

Fracture line profiles at Lake Louise on January 14, 1983 after a heavy snowfall that produced major avalanche cycle in the days before.

Peter Schaerer

Yukon Claim Staker Recognized for Rescuing Buried Co-worker


Commissioner Doug Philips (left) presents Trevor Smith (centre) with the Commisioner's Award for Bravery for saving Rafe Etzel (right).

Vince Federoff

Kirstie Simpson's article "Gold Rush!" in Volume 96 of *avalanche.ca* detailed the gold rush that recently hit the Yukon, and the consequent avalanche risk faced by staking crews. Approximately 200 exploration companies having staking crews spread throughout the Yukon using countless helicopters for support and speed.

Simpson, President of the Yukon Avalanche Association, called it "a perfect storm--young men eager to get out into the winter backcountry, a free entry system and the price of gold." With gold's value still rising, exploration is not slowing down in the north and companies have realized that their employees may often run a significant risk of triggering avalanches. "Although it's not uncommon for staking crews to initiate avalanches," says Simpson, "it took a very close call last year with the full burial of a staker to wake folks up to the hazards of modern winter staking." Fortunately, the staker was found by a co-worker and survived the November 2009 avalanche approximately 160km north of Mayo, YT.

In August 2011, Yukon Commissioner Doug Philips honoured claim staker Trevor Smith with the Commissioner's Award for Bravery for his role in the incident. After dropping Rafe Etzel off on a snowy mountainside, Smith flew over the area shortly after and noticed that an avalanche had occurred. Smith was set down by the pilot and began searching for Etzel. Etzel was buried for approximately fifteen minutes before Smith spotted his radio antenna, and it took another five to ten minutes for Etzel to start breathing again once his chest was unburied.

"Trevor distinguished himself by acting with bravery and great strength of character in a very dangerous situation," said Yukon Commissioner Phillips in a press release. The Commissioner's Award for Bravery "recognizes individuals who have responded with great effort, at considerable personal risk in hazardous circumstances, to save or safeguard, or attempt to save or safeguard, the life of one or more persons," notes the release.

Since the fall of 2010, exploration companies have requested avalanche courses designed for the mining and exploration industry, and crews across the Yukon and the NWT have taken the courses. Since crew members travel alone and over large distances, the key messages have to do with terrain knowledge, risk management, recognizing signs of instability and the use of the Avaluator decision tool.

"We are now working with the Northern Safety Network Yukon and the Yukon Workers' Compensation Health and Safety Board to create a standard training module for the industry," says Simpson.


Matthias Bindig

Simplifying Explosives Management

Resort using Field ID technology to monitor avalanche safety explosives inventory

Sunshine Village Ski and Snowboard Resort has become the first Canadian ski resort to manage their explosives inventory online. Sunshine, located in Banff National Park, has selected Field ID to provide safety inspection software, metal bar codes, and mobile scanners to the resort in order to track and manage the magazines they use for avalanche control. Field ID provides a web-based Inspection and Safety Compliance Management (ISCM) system.

The Ministry of Natural Resources' Explosives Act has tightened over the past several years, so Sunshine was "looking for an efficient system that would allow us to keep track of our magazines and report easily and efficiently on a daily basis," says Doug Firby, Associate Director of Communications for Sunshine Village, "and to report efficiently in the case of an audit."

"We kept track of our magazines on a daily basis using paper, but that gets very cumbersome and there's a lot of filing," notes Firby; "By removing paper from the process, the solution also supports our goal of being as green as possible," adds Tim Ricci, Assistant Snow Safety Supervisor at Sunshine Village.

Sunshine Village has four magazines located around the resort, with anywhere up to 400kg of explosives in their inventory. "We really need to be aware of it and make sure there's no signs that anything is missing of has been tampered with," says Firby. Sunshine staff have have placed bar codes on magazines used to store their explosives for both avalanche control in the winter and rock blasting in the summer, and a hand-held scanner transmits data to a Field ID server, where it is permanently available. Sunshine will also be using the software to track inspections of other critical safety equipment.

Firby points to increased efficiency as the biggest selling feature for Field ID within the ski resort industry: "[ski patrollers] have a big job to do, so filling out unnecessary paperwork is a great time waster when you can move to a new technology that takes less of their day." While it might be out of the price range for smaller resorts, do you see mid-size or larger resorts moving in this direction?

For more information on Field ID, please visit www.fieldid.com.

Tim Ricci using a mobile phone from Field ID to scan magazines.

Jeremy Cox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Transitions

A Farewell Letter from John Kelly

Hi Fellow CAC and CAA companions,

Looking back on what we've achieved and the team we've assembled, I find myself reflecting on a very successful year. Completing the annual report was incredibly satisfying, reinforcing the fact that there were major advances in every category of our mission and mandate. Many projects seeded long ago have taken root and flourished; threats and challenges that seemed daunting just a year ago have now receded to manageable proportions.

Here are just a few of our recent accomplishments:

- Incorporation of information about terrain into everyday decision-making
- Daily avalanche forecasts
- Solidification of the public-private partnership model of the Avalanche Centre
- Focus of the public eye on snowmobile avalanche issues through the Death Review Panel
- Incorporation of snowmobilers and their perspective into the Avalanche Centre
- Assembly of a world-class team of subject matter experts
- Initiation of a model for the expansion of public warnings
- New curriculum
- Landmarks in youth avalanche education
- Relevance with the major public safety stakeholders such as Recreation Sites and Trails BC, the RCMP and the British Columbia Coroner's Service.
- Introduction of field programs for data collection
- Participation in direct research activities
- Deep and strong sponsor relationships

These things are great but the real prize is the stabilization and incipient decline in the number of avalanche fatalities over the last seven years! We whisper these thoughts quietly and modestly, but occasionally it is all right to speak them aloud. Congratulations are due to all of you who have been pulling towards these goals with energy, enthusiasm and more than a little bit of humour.

From my personal perspective, this provides an opportune time for me to consider what comes next. I feel satisfied with my accomplishments and participation in the growth of the Avalanche Centre, and am looking for my next challenge. I am also looking forward to new prospects and the opportunity for personal growth.

To this end, I have been admitted to an advanced degree program at Simon Fraser University. I will be pursuing studies in Resource Management with an emphasis on the role of Non-Governmental Organizations in the delivery of public safety services. Sounds familiar, doesn't it?

My program begins in September and will last through 18 months. I have been granted a leave of absence by the Board of Directors for this time, so chances are you are not rid of me for good!

In every program area I see strength, vigour and capacity that augurs well for continued excellence under your own guidance. My absence will be more than compensated by your collective experience and potential for growth. Here's to the CAC, CAA and the people who paddle the canoe.

Love and Best Regards,

JK

JK enjoying the ISSW 2006 in Davos.

John Kelly collection

Carole Savage
Snowmobile Program Coordinator

Carole Savage has joined the CAC team as Snowmobile Program Coordinator. As president of the Golden Snowmobile Club in the late 1990s, Carole "saw a need for my club membership to become more avalanche aware" after some avalanche incidents hit close to home. "I took my Level 1 Operations to help serve my club membership better," says Carole, and "it ignited a passion for learning more about snow science and avalanche safety."

Born in Calgary, Carole has lived in BC for seventeen years and recently moved to Port Coquitlam from Vernon. Carole earned a B.Sc in Forestry from the University of Alberta and a Diploma in Wildland Recreation from Selkirk College. Prior to this new role, she worked as an independent forest consultant since 1996.

Carole is an active CAA member working to obtain her Operations Level 2. She has a solid history of promoting safety for snowmobilers: she is a sled-based AST 1 provider, and volunteers for SledCom, an active CAC working committee. She conducted the Bombardier Recreational Products (BRP) outreach tour last year and contributed to the ATES project, and is on the Steering Committee for ITP Curriculum Development.

She is excited about her new position: "the organization culture is very positive, ethical, accountable and transparent," says Carole, and she is eager to continue increasing her avalanche knowledge and mountain travel skill set. Carole's passions include snowmobiling, skiing, fishing, camping, trail running, hiking, cooking, diving, backcountry horse trips, and spending time with her partner Rob and dog Ben.

Carole riding in the Cascade Mountains near Merritt, BC during work on the ATES project.

Carole Savage collection

Karilyn Kempton on Lake Revelstoke.

Simon Wex

Karilyn Kempton
Managing Editor

Karilyn joins the CAA and CAC as Managing Editor, and will be editing *avalanche.ca*, managing social media efforts for the CAC, and coordinating outreach events. She brings a lot of enthusiasm to the CAA and CAC: "I love collaborating with so many people who so clearly believe in what they're doing," Karilyn says, and she "can't wait to use new media tools to keep expanding the reach of the CAC to help backcountry recreationists make smart decisions."

Karilyn moved to Revelstoke three years ago "just for a ski season" and quickly realized she would never leave. Born in Thunder Bay, Ontario, Karilyn graduated from Simon Fraser University in Vancouver with a Master of Arts in English Literature. She spent several years working in corporate communications in the city before moving to the mountains. Previous work experience includes social media and print marketing, freelance writing, and employment facilitation for individuals with disabilities.

Her interests include alpine skiing (lift-accessed and self-propelled), cross country mountain biking, running, canoeing, camping, gardening, cooking and playing sax in several Revelstoke bands. She looks forward to continuing her professional development by taking her Operations Level 1 this winter.

Heather Abbott

Reception


Dallas Morris

Heather with her son Nolan

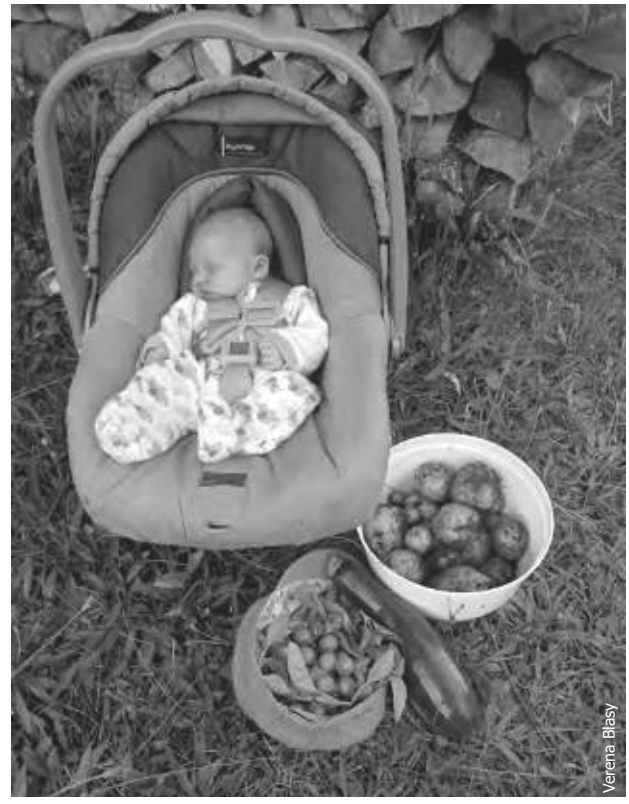
Heather Abbott will be joining the CAA/CAC team as the new receptionist, so you will hear her friendly voice if you give us a ring. Heather grew up in 100 Mile House in British Columbia, and recently moved to Revelstoke from Kamloops, BC.

Heather most recently worked in hotel guest services, and has lots of experience as a receptionist. She brings a great work ethic and strong organizational skills to the table. "I have a lot of passion that I put into my work," Heather says; "I want to go home at the end of the day and feel like I have accomplished something." She looks forward to the challenges and excitement that come along with working for the CAA.

Heather's passions include travelling and photography. "My husband and I like to take [our son] all over the Revelstoke area to see the beauty of the area," she says.

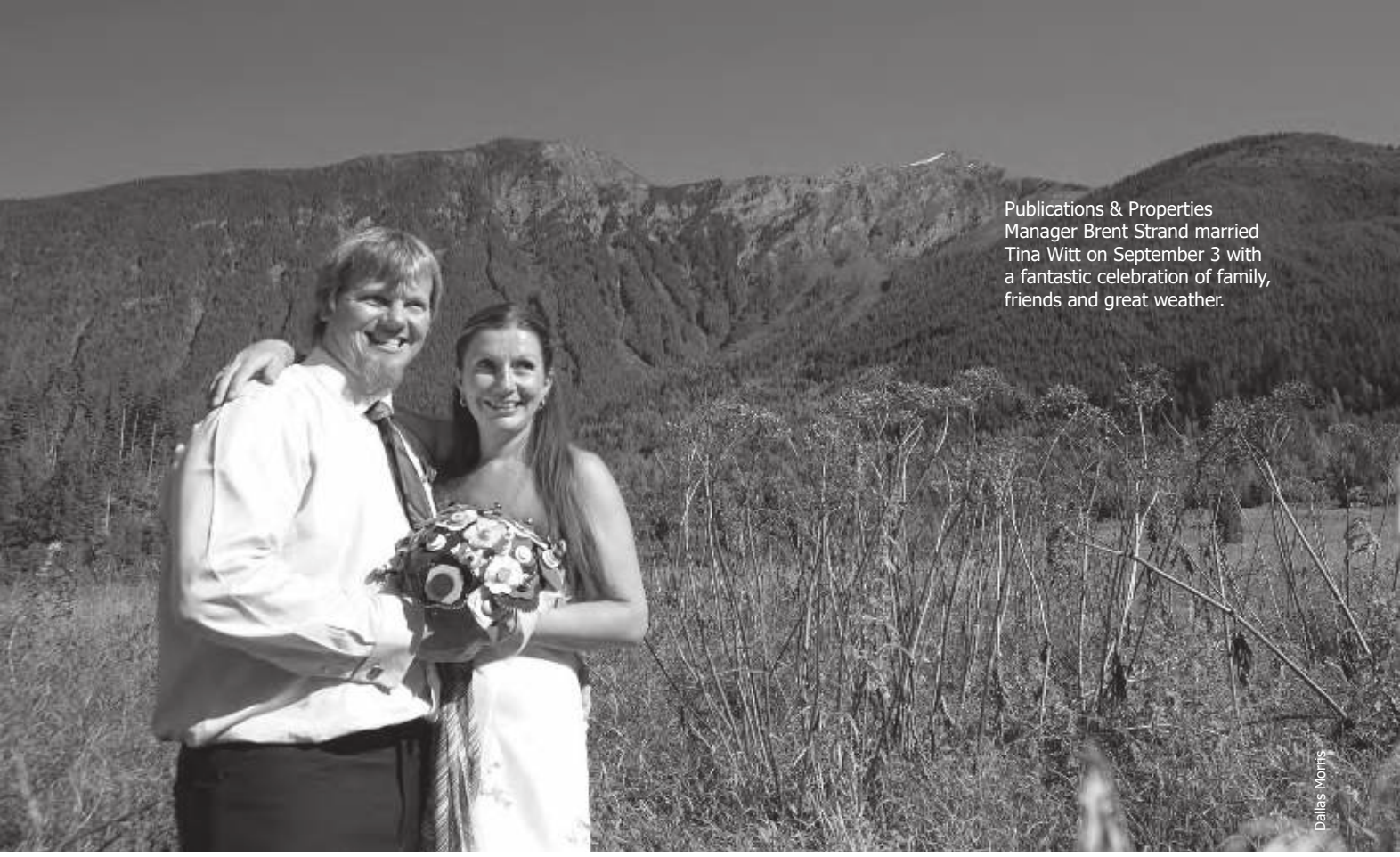
New Additions to the CAA/ CAC Family

CAC Public Forecaster Cam Campbell and partner Ashley welcomed their second baby boy Henry Patrick Terrell Campbell on August 23. Campbell jokes that they have "taken it to the next level!" Big brother Pearce will be three in October.



CAC Public Forecaster and ITP Subject Matter Expert James Floyer and partner Verena recently welcomed in a new member of their family with the birth of their first child Cassia Lily Floyer on August 11. Cassia "already has her parents wrapped around her little finger," says Floyer, who admits that he is completely besotted with her despite some sleepless nights.

CAA ITP Manager Emily Grade and her partner Scott welcomed their fist child Micah Tanner Grady on September 11. Emily finished in the office on September 9 and headed out for a night of canoe camping north of Revelstoke Dam, but their little guy thought that it was perfect timing to make his appearance. She and Scott are "settling into family-life and trying to figure out how to put our Chariot together with the various bike, hike, run, and cross-country attachments."



Publications & Properties Manager Brent Strand married Tina Witt on September 3 with a fantastic celebration of family, friends and great weather.

Dallas Morris

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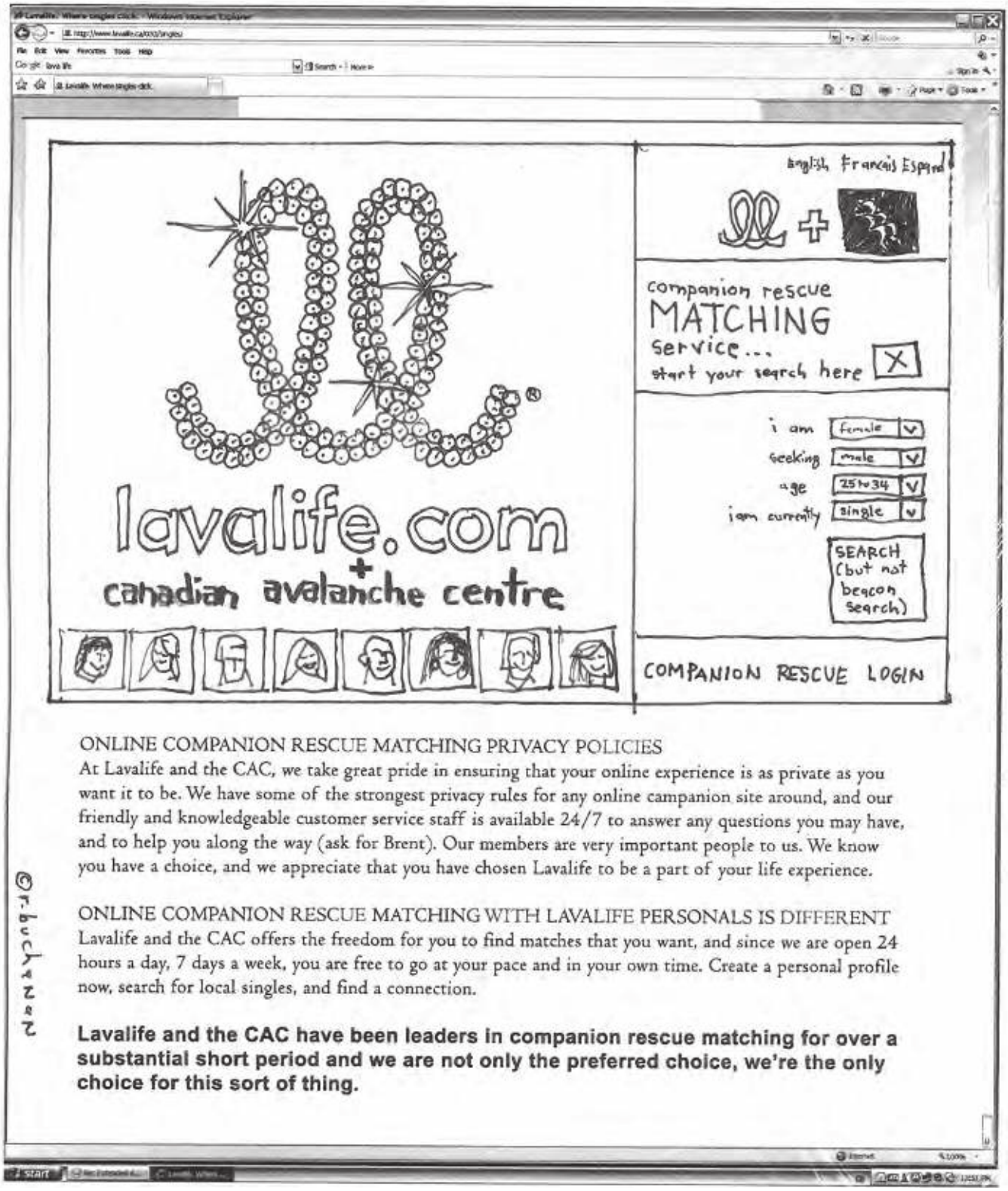

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