Western Canadian Gemstone Newsletter

Spring 2000 Edition
Volume 1, Number 2

Hot opals in cold British Columbia.

A new find south of Houston, BC
By Randy Lord

Back to Western Canadian Gemstone Newsletter

Early finds

Short weather window

Challenges cutting opal

The lay of the land

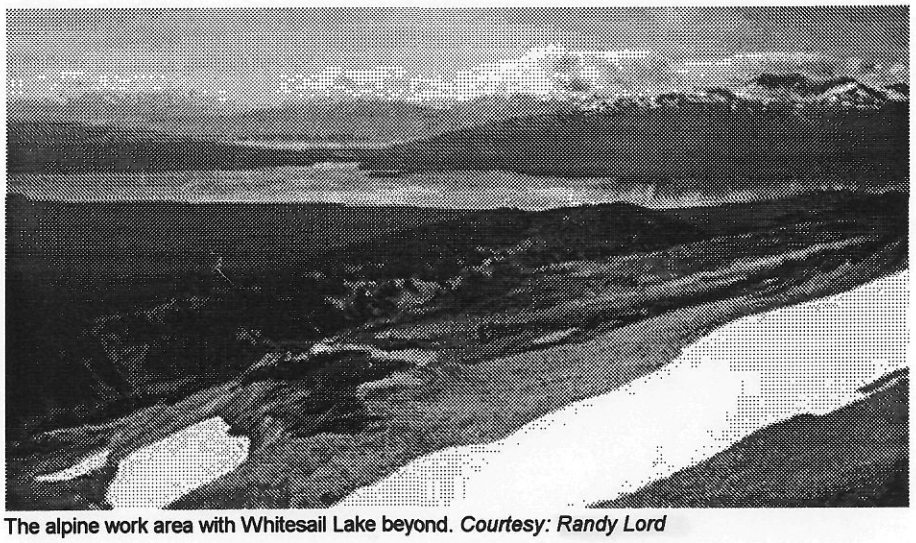
Alpine exploration

Early finds
When you first stumble across an outcrop of volcanic hosted precious opal in the alpine of northern BC, it is seldom recognizable unless you have the eyes of an eagle or the peregrine falcons that fly overhead. Sometimes it is the flashes of red, green or blue fire against the black background that catch your eye. Sometimes it is the white blotches showing all over the rock that do the trick.

Standing proud on the weathered surface these opal grains tell you to get on your hands and knees and look closer. The fact that the precious opal flashes with colour after 10,000 years of glaciation and 10 months of snow cover each year tells you that this is no ordinary opal adventure. A look around at the snow capped peaks and alpine meadows confirms why.

Short weather window
We are exploring and trenching 1,800m (6,000') up on a flank of the Whitesail Mountains in northwest British Columbia. The Northern Lights claim is located approx 90 air kilometres south of Houston, BC and access is by helicopter. This is one of the few alpine locations in the world where precious opal can be found, and paying attention to the task at hand can often prove difficult when blizzards and howling winds are trying to knock you down.

Our extremely short weather window lasts from late July to early September, and snow can fall anytime. Frozen fingers and toes are the price paid for BFDs (bug free days) as sunshine and calm winds signal the hordes of bloodsuckers from their hiding places to have their lunch. We have only been scratching this property with hand tools but finding visible precious opal in surface outcrops over a 5 sq km area has captured our attention.

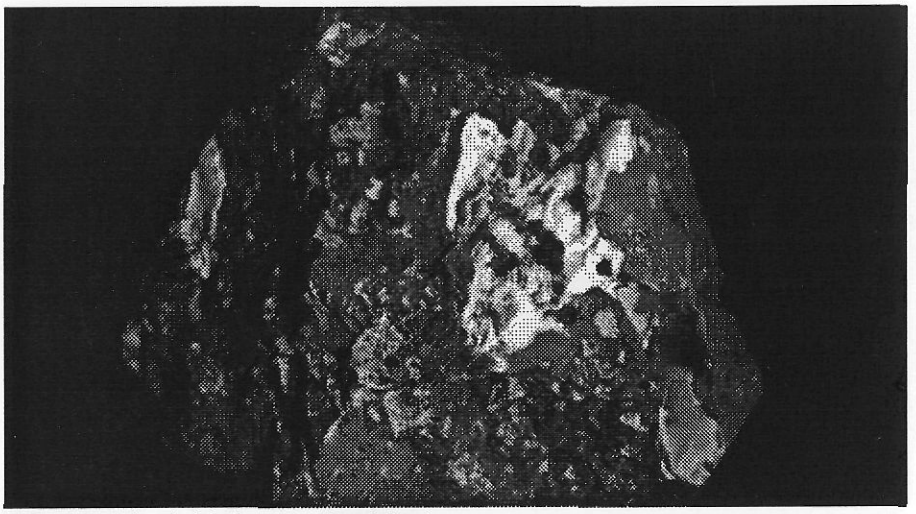


The alpine work area with Whitesail Lake beyond. *Courtesy: Randy Lord*

Volcanic hosted opal deposits are believed to be associated with hydrothermal activity. At the Northern Lights claim, precious opal occurs most commonly as open space fillings in the matrix and vesicles of clasts in the volcanic lahar (debris flows) and lapilli-tuff units of the Tertiary-aged Ootsa Lake Group. It also occurs as amygdules in massive flows. The dominant opal bearing lithologies are the debris flows with minor amounts in the lava flows and ashfall tuffs.

Common opal of all colours, many types of agates and even one agate with a line of precious opal inside are all found in close proximity. Geological theory does not explain how one vesicle can be filled with bright precious opal, the adjacent one be empty, and the occasional empty vesicle show an inside surface that flashes with precious fire. Celadonite and zeolites are present, which somehow indicate a favorable geological environment.

The types of opal we find range from nodules similar to Mexican material; thin seams in matrix that resemble Queensland boulder opal and matrix opal that has the appearance of Honduran opal crossed with dinosaur bone. The nodules are generally small with white, clear, yellow, brown and even black base colour. Their clarity ranges from transparent to opaque; colour intensity varies from good to very brilliant; colour spectrum of this opal covers the entire rainbow. A transparent black opal was cut recently that shows good red and green flash. The boulder type opal generally ends up as specimen material as freezing/thawing and physical extraction all take their toll and the opal presents the weakest plane on which to fracture.



Fire in the opal material. *Courtesy: Randy Lord*

Challenges cutting the opal

The precious opal material represents our biggest volume of production at present. In appearance it shows small flecks of all colours distributed throughout various matrix hosts. The strongly vesicular hosts or matrix types can range from a dense hard black basalt to softer brown porphyritic andesite and to grey, even reddish colour material. Vesicles filled with precious opal may account for over 25% of the volume of the rock. The description of the matrix material as "dinosaur bone" was noted by Kevin L. Smith, a renowned carver. Although sometimes the host volcanic material will take a good polish, sadly the majority of the matrix material produced so far has been too soft for daily wear, and will require stabilizing. After stabilizing the matrix material, it exhibits good colour and is suitable for spheres, carvings and jewelry grade cabachons.

Cutting these various types and grades of opal presents unique challenges

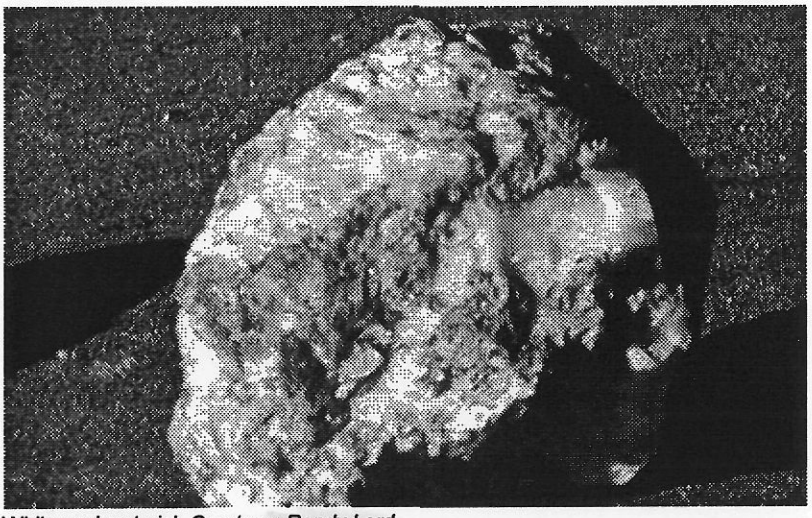
and several cutters and carvers are using their skills and knowledge to achieve good results. Techniques such as doublets work well but natural stones are tricky due in part to the extreme environment and the deep surface weathering. As mining to date has been surface or near surface material, we believe that as trenching proceeds deeper less fractured opal will be recovered.

The lay of the land

An amazing dacite dike was the site of the original discovery of precious opal in the Whitesail range. This prominent vertical feature stands over 6m tall and a metre wide in places where it cuts through the opalized country rocks. It has been named the Great Wall by the prospectors as it resembles closely its namesake; snaking across the property in a distinctive spine.

Ditching and trenching by hand is slow work. *Courtesy: Randy Lord*

Permanent snowpack covers much of the terrain. Tenacious alpine plants cover any marginally, habitable ground so outcrops and exposure of bedrock are minimal on the top. The top is relatively flat with the sides very steep and horizons of red, grey and black units can be followed around the flank and appear to be continuous. With a flat glaciated top and various coloured layers, our best description is that it resembles a chocolate layer cake. Precious opal in nodules, seams and as matrix hosted material has been found in over 20 places but safely trenching or extracting material is a different matter.



White opal material. *Courtesy: Randy Lord*

Our first trench was named Zona Rosa for the red colour of the basalt. It proved an exercise in the excavate and tumble method of mining. Luckily a flat bench 100m below stopped the boulders on their downward journey. The experience of tumbling stove-sized boulders weighing hundreds of pounds down a snow field onto a flat is not soon forgotten. A member of the team would be hunkered down in a safe place noting where the boulders landed. Pieces that survived the tumble were given the sledge and chisel treatment and reduced to gravel piles. Many bright precious opal specimens were found here but the action of freezing and thawing has fractured most of the near surface material. As this trench progressed into the steep slope the uphill wall became hazardous and digging was abandoned.

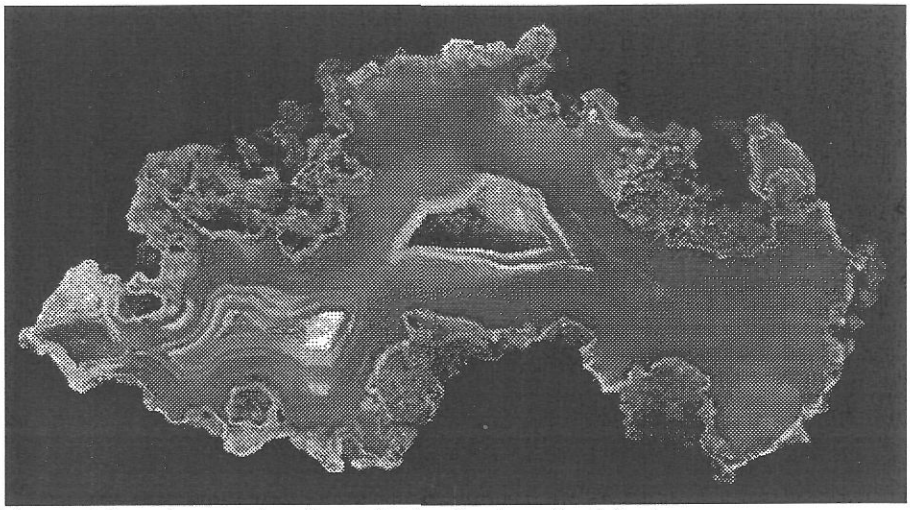
From another very steep site located directly above our fly-in camp we would send boulders the size of automobiles skidding down 200m (600') of snowfield often to have them land within an easy walk from camp. This type of opal mining is not for the faint of heart.

Alpine exploration

As access is by helicopter, we have had to rely on hand tools and portable gas powered saws and drills. We use a wheelbarrow and an alpine rickshaw outfitted with mountain bike wheels for moving loads. These have proven very efficient and this season we flew a small excavator in to assist with trenching. This digger weighs 400kg without its stabilizers and counterweights and flew straight and true like a dragonfly after pick-up by the chopper. Moving this lightweight machine across snow, mud and gravel is accomplished by extending the boom and bucket then lifting the front stablizers and rolling forward on the back wheels as the boom is retracted. The speed and agility of this digger is amazing and future plans include mounting a hydraulic jackhammer, in place of the bucket. Alpine trenching has taken a quantum leap forward, as a relatively inexpensive Bell 206 can be used, instead of the pricier heavy-lift machines.

The motorized digger has greatly increased the work rate. *Courtesy: Randy Lord*

On arrival at the top this season, we found a huge snowfield covering last season's main trench. After hydraulicking the snow to determine its depth, we found we had 4m (12') of snow to contend with. Digging and hauling snow was futile, so we set up an irrigation system. Gravity fed water and sprinklers fashioned from 1" pvc pipe plugged at the end, with numerous holes drilled along its length, meant that two weeks later our trench was open. The digger/rickshaw combination proved very effective at clearing overburden and weathered lahar material. The latter proved very tough, however, and a ripper tooth attached to the bucket made some progress, but chisels, sledges and a Cobra drill were necessary.



The area is home to some interesting agates too. *Courtesy: Randy Lord*

As we dug, we encountered precious opal matrix material at the bottom of the trench, on both sides and the face, so we were encouraged to trench some distance away. Our hopes were realized as precious opal-bearing material kept coming out of every hole we dug. Being limited to payload and time, we high- graded and trimmed the best boulders, then sacked approximately 400kg (800#) of mine-run for a net load. Our 30 day season (1999) ended with another snowstorm.

The author is a technologist who has rockhounded and prospected throughout BC for over 30 years. Gemstone exploration and assessment using innovative techniques are a specialty.
E-mail:Randy Lord

This article was first published in The Eclectic Lapidary e-zine.
