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Opening minds to the Fraser-Musgrave connection

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"NOTHING has so retarded the reception of the higher conclusions of geology ... as the instinctive parsimony of the human mind in matters where time is concerned."

That elegant quote is by one of the founders of geological science, Englishman Charles Lapworth, who died in 1920.

If he were around today and addressing a group of investors hungry for a tip, he would probably say: "Fellahs, the geological past is much bigger than you understand and worth more than a thousand brokers' reports."



Musgrave Minerals MD Rob Waugh

Which leads in a rather roundabout way to one of our best greenfield explorers Musgrave Minerals and its efforts to point out the fascinating connection between the Fraser Ranges and the Musgrave Ranges.

The Fraser Ranges are home to Sirius Resources' Nova nickel-copper-cobalt deposit.

The 2012 discovery triggered a stampede of mineral explorers into the region for tenements along strike.

The Musgrave Ranges could hardly seem to be more removed from this action, situated at least 800km to the northeast across the flat-lying country of wide sedimentary basins.

But in the context of geological time and continent building events, the Fraser Ranges and Musgrave Ranges are truly neighbours.

Musgrave managing director, Robert Waugh, told *MiningNewsPremium* that over the past decade, a number of highly regarded academics on continent building had presented evidence about the connection.

"There looks to be a significant link between the Fraser Range and the Musgrave region, at the time deposits were formed, somewhere between 1 billion and 1.3 billion years ago," he said.

"There is potential through both regions for high-grade nickel sulphide deposits."

The theories about the linkage of the Fraser Range and Musgrave Range require an appreciation of the immense time span and scale of geological events.

A paper published in 2000 by Karl Karlstrom of the University of New Mexico and his co-authors put forward the idea that, at the time of the Rodinia supercontinent, the Fraser Range and Musgrave Ranges were part of a 10,000km-long orogenic (or mountain forming) belt.

The belt stretched all the way from Antarctica through Australia, across North America, into Canada's famous nickel country and beyond into the Baltic region.

A more recent paper by David Giles and others at Monash University's Australian Crustal Research Centre digs more deeply.

It presented new evidence to show the Fraser Ranges and Musgrave Ranges were formed at the same time by the collision of the southern Australian or Gawler Craton with the Yilgarn and other cratons in present day Western Australia.

It suggests the Gawler Craton subsequently rotated to somewhere closer to its present position.

The idea of nickel in the Musgrave Ranges is not new, with the Nebo-Babel discovery in 2000 of a very large, low grade deposit of nickel, copper and cobalt – the same metal assemblage at Nova.

Waugh was a key member of the Western Mining team that made the discovery, and has carried that experience into Musgrave Minerals, which listed in 2011.

BHP Billiton inherited Nebo-Babel when it took over WMC Resources in 2005 and sunk tens of millions of dollars into further exploration to establish a deposit that would match its investment criteria.

The sale of the deposit to Cassini Resources earlier this month means the investment community will finally see the results of BHP Billiton's substantial investment in exploration in the region.

Waugh said there would also be news flow from Musgrave Mineral's exploration drilling that was scheduled to get underway in the next quarter.

He said the Musgrave Ranges and the Fraser Ranges were similar in that both regions had experienced very little exploration.

And while the West Australian side of the Musgrave Ranges was remote (the Stuart Highway and Ghan Railway run right past on the South Australian side), it was not a difficult place to explore.

"You must have a strong relationship with local communities, who have freehold title over much of the area," he said.

"They determine access but this [is] no more difficult than native title that exists for mineral explorers everywhere else."

"And much of the region does not have significant cover, with sand dunes between bits of outcrop.

"The real potential is the fact that no one has been through there.

"You can go to areas where a geologist has never walked and see mineralisation sticking out of the ground.

"It is an exciting place for a geologist and you can see potential for deposits that will be open cuttable."

Waugh said airborne electromagnetic surveys were continually improving and improving the odds of discovery.

"The sensors are becoming more refined and you can see deeper," he said.

"On the older data we have, we can look at depths of only the top 40 or 50m, whereas the new data extends to a depth of about 150m.

"Those advantages are significant and probably the most important trend in exploration technology for us."

Back in the city, Waugh hopes investors will take a closer look at the geological history and understand all the reasons to get excited about the potential of Musgrave Ranges.



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