

Geological Society of Australia

Media release



Wednesday 23 September 2009

Is Mt Kosciuszko a geological teenager having a multi-million year growth spurt...or is it half the mountain it used to be? Getting the answer right could save some species from extinction.

**Geological Society of Australia national Selwyn Symposium 2009 and free public lecture
Thursday 24 September 2009, University of Melbourne**

Are the mountains that Australian skiers schuss down every winter simply geological teenagers that are having a multi-million year growth spurt and are set to double in height—or were they once much taller than they are now and will continue eroding away until they are a flat piece of land located barely above sea level?

While this question may seem academic, finding the right answer could have a direct impact on our ability to save from extinction many threatened plants and animals right along the eastern seaboard.

Leading scientists from both sides of the debate will consider the hotly-contested issue of Australian mountain building at the Geological Society of Australia's national Selwyn Symposium 2009, *Origin of the Australian Highlands*, being held in Melbourne tomorrow (Thursday 24 September 2009).

The Symposium will be followed tomorrow (Thursday) evening by a free public lecture, *Theories of the Earth and Mountain Building*, to be delivered by Professor Cliff Ollier from the University of Western Australia.

"While the traditional thinking has been that Australia's mountains first formed around 90 million years ago, were much higher than they are today and have since been weathering away, a new theory has emerged in recent years that these mountains actually formed less than 40 million years ago, with some researchers suggesting at least half their uplift has occurred very rapidly within the past 10 million years—making them very young in geological terms and, in essence, the teenagers of the world's mountains" said the Chair of the Geological Society of Australia's Victoria Division, Professor David Cantrill (who is also Chief Botanist and Director, Plant Sciences and Biodiversity Division, at the Royal Botanic Gardens Melbourne).

"While in human terms the rate of growth or weathering of Australia's highland mountains is extremely slow—we're talking millimetres to centimetres each year—this is actually quite fast in geological timescales and it can have an important impact on whether particular species of plants and animals survive, especially those that depend on the mountains as being 'islands in the sky' that shield them from warmer climates that would prove fatal to them.

"Climate change and other environmental factors are, in effect, starting to push some already threatened species off the top of the mountains, as the special environmental conditions they depend on for their survival move higher and higher up the mountains and eventually disappear.

"Better understanding whether the mountains of the Australian Alps (and the wider Australian Highlands) were actually once taller than they are now and have since eroded away—or were once much smaller and are now growing rapidly—will have a big impact on what we can learn about the development of various plant and animal species and how they have survived over many millions of years. This would be 'information gold' in helping us better ensure some threatened species' survival into the future.

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“The other significant contribution that a better understanding of mountain building in Australia could provide is in relation to biodiversity. Intriguingly, some species exist for hundreds of kilometres up through the Australian Highlands, but then reach a ‘dip’ in the mountain ranges and can’t seem to make it across that barrier.

“Individual species then occur only south or north of these dips and cannot cross these barriers despite suitable habitat existing on the other side. Examples of such regions include the Hunter River Valley in NSW, the Black Mountain Corridor in north Queensland (between Cairns and Cape Tribulation), and the McPherson Range-McLeay River area (close to the northern NSW and south-east Queensland border).

“At a finer level, species that occur either side of these dips or barriers (but not in between) have a different genetic makeup on either side of the barrier. This is despite the fact that many of these species—at least theoretically—should be able to cross the barrier or, at a minimum, have gene-flow across the barrier.

“Incredibly, some species that apparently could easily cross these dips (such as plants that are dispersed by birds) do not have any gene-flow across the barriers. This results in these species having different genetic compositions on either side of the barriers—leaving a very perplexing series of questions for biologists!

“We still do not know why some species cannot break through these barriers, but understanding whether these dips in the Great Dividing Range are ancient or relatively recent may provide answers to these biological questions—this would also help us understand what species can survive in what locations and why, assisting us significantly in our race against the clock to save more species from extinction.

“Quite apart from the issue of species survival, just how the Australian Highlands came to be formed is intriguing in itself. Mountain building on most continents occurs when the edges of two tectonic plates collide, forcing the Earth’s crust upwards. Yet Australia lies smack near the middle of a plate, which usually would mean that mountains wouldn’t have formed here.

“There is also a close and intriguing association between frequent earthquakes and mountain building, which is shown by the abundance of present day shakes in the Australian Eastern Highlands, in particular their highest culminations along the Great Dividing Range. Good examples are the recent earthquakes centred near Korumburra in the highest areas of Victoria’s South Gippsland Hills.

“Fortunately, new technology and developments in science are enabling Earth Scientists to start to unravel the mystery of how Australia’s mountains came to be formed—and whether they have since been growing taller or weathering away to nothing.

“Tomorrow’s national symposium will bring together leading scientists in this field to further explore the possible answers to this mystery...and the wide range of possibilities those answers could bring.

“One thing is certain: a theory from much earlier times—that the Earth was shrinking and fold mountains were created in the way that crinkles appear on the skin of a shrivelled apple—is at least one theory on mountain building that we can safely put aside nowadays!”

Available for interview:

Chair of the Geological Society of Australia’s Victoria Division, Professor David Cantrill.

Media contact:

Patrick Daley (Patrick Daley Public Relations) on 0408 004 890.

Request to media:

Promotion of the Selwyn Symposium—and the free public lecture (the Selwyn Lecture) which follows it this Thursday evening—would be appreciated, particularly by Melbourne media. Please mention in any story / interview that the Selwyn Symposium and Selwyn Lecture 2009 is being organised by the Geological Society of Australia (Victoria Division) and will be held at the University of Melbourne tomorrow (Thursday). Please find further details below.

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Geological Society of Australia (Victoria Division) Selwyn Symposium 2009

Origin of the Australian Highlands

Thursday 24 September 2009, 9am (registration from 8am)

Fritz-Loewe Theatre, McCoy Building, Earth Sciences, University of Melbourne,
cnr Elgin & Swanston Streets, Melbourne.

Further information at www.vic.gsa.org.au/Selwyn/symposium.htm.

Free public lecture – Geological Society of Australia (Victoria Division) Selwyn Lecture 2009

Theories of the Earth and Mountain Building

Professor Cliff Ollier, University of Western Australia

Thursday 24 September 2009, 6:30pm

JH Mitchell Theatre – Richard Berry Building, University of Melbourne

* Includes presentation of the Geological Society of Australia (Victoria Division) Selwyn Medal 2009 to
Associate Professor Bernie Joyce *

Further information at www.vic.gsa.org.au/Selwyn/symposium.htm.