



Island sanctuaries



I recently had the opportunity to visit Fiordland on the South Island of New Zealand, one of the most stunningly beautiful places in the world. The rugged mountainous landscape with waterfalls tumbling hundreds of metres into sheer-sided fiords, spectacular lakes scoured out by past glaciers in the valleys, and harsh snow-clad granite peaks separated by deep forest-clad valleys that give the area its Maori name Ata Whenua, or shadow-land. Fiordland is a must-see and is just on our doorstep. For those who cannot travel, its great beauty can be seen in the movie trilogy, *Lord of the Rings*.

The rugged landscape of New Zealand is so different from our ancient weathered landscape in Australia, where every self-respecting rock that could fall has long ago done so. The difference has its origin in plate tectonics. The earth's crust is broken into plates that jostle among themselves causing tremors and earthquakes. They move, causing the continents to drift, albeit at an exceptionally slow rate, about as fast as our fingernails grow. But over millions of years the movement is sufficient to drive up mountain ranges, such as the Himalayas, the Andes and the rugged landscape of New Zealand's fiordland.

Continental drift has another consequence. About 160 million years ago a vast continent called Gondwanaland broke up into the southern continents of South America, Africa, India and Australia. Their plants and animals, each isolated by sea,

headed off on independent evolutionary trajectories contributing in a very substantial way to the diversity of life we see on our planet today.

New Zealand split off as an independent landmass about 85 million years ago, and remarkably, it is a place where the mammals just did not make it. The dinosaurs did, in their contemporary guise as birds, and they diversified into all manner of niches we normally regard as the domain of mammals. In pre-human times, New Zealand boasted of three orders of terrestrial vertebrates found nowhere else, comprising over 200 uniquely New Zealand species. Only two are mammals, both bats.

Well-known species are: moa, flightless birds over 3m tall, now extinct; kakapo, a once abundant nocturnal, cryptic flightless parrot; the familiar kiwi with its single monstrous egg; the lizard-liketuataru, with a lineage dating back to the age of the dinosaurs; and a ground-foraging bat. My favourite is the alpine kea. These curious, bold and destructive parrots have no trouble eking out an existence, and have much time left for mischief – snapping off car aerials, prising off the chrome trim, making off with the windscreen wipers and even pulling the rubber seals out from windcreens with their exceptionally strong and dexterous beaks.

New Zealand is no longer mammal-free. The Polynesians brought a rat and a dog (now extinct) to the islands around 1280 AD but, following European settlement, all manner of exotic mammals now roam the islands.

Australian brushtail possums, hedgehogs, rabbits, deer, rats, mice, cats, stoats, weasels and ferrets have gone feral – 32 species in all. This, coupled with other introductions and land-clearing, have had a devastating impact on New Zealand's native fauna. Even mice become effective predators when it comes to ground-nesting birds not adapted to the presence of mammals. Many native species have persisted only on offshore islands where the complement of exotic predators and competitors is low, and these islands have become immensely important for the conservation effort in New Zealand.

Offshore islands also have the potential to play a big part in securing Australia's environmental future. Nine of Australia's mammals extinct on the mainland only survive on islands and, on the flip side, exotic rats on islands account for over half of Australia's 23 bird extinctions and two mammal extinctions. They are a continuing threat. Ecological systems are complex interacting networks of species, and many of these ecosystems on offshore islands are already highly modified by humans.

Close to home, land managers eradicated rabbits from Bowen Island at Jervis Bay, only to find previously innocuous kikuyu grass ran rampant and smothered the lomandra tussocks upon which the local penguin colony depended. Control the rabbits before the cats, and when you do, watch out for the exotic weeds.

We have much to learn from New Zealand's experiences and expertise in invasive animal



Canberra Times
25/05/2009
 Page: 7
 Times
 By: Arthur Georges
 Region: Canberra
 Circulation: 34629
 Type: Capital City Daily
 Size: 653.08 sq.cms
 Frequency: MTWTFS-



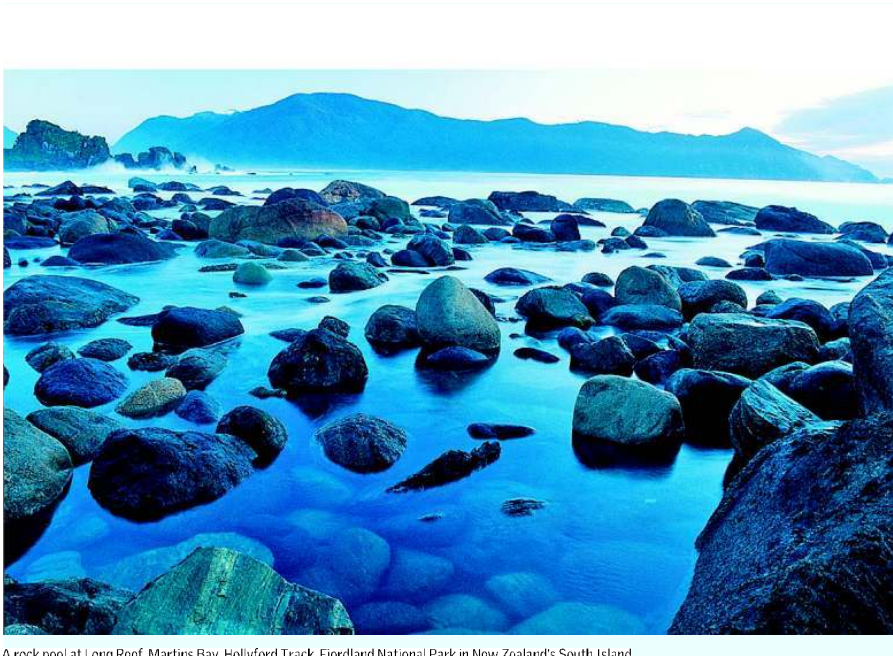
eradication from islands, but we have a unique context in our own flora and fauna which limits transfer of knowledge.

To be effective we require solid research, effective monitoring and effective evaluation to accompany action on the ground.

Now is critical for Australia to lift its game in capitalising on the potential of offshore islands to deliver enduring conservation outcomes. And of course close to home, the Invasive Animals Cooperative Research Centre is an integral partner in establishing our own little "main-

land island" in the form of the fenced reserve at Mulligans Flat.

■ Arthur Georges is professor in applied ecology with the Institute of Applied Ecology at the University of Canberra, and a member of the ARC Environmental Futures Network.



A rock pool at Long Reef, Martins Bay, Hollyford Track, Fiordland National Park in New Zealand's South Island

CSIRO SCIENCE CLUB

CSIRO's Double Helix Science Club is great for kids aged 7-18. Visit www.csiro.au/helix or c all 6276 6643.



- 1.** Where in the world would you find the aqueduct of sylvius, the tract of goll and the islet of langerhans?
- 2.** Who is credited with first exclaiming eureka upon a scientific discovery? a) Ptolemy, b) Archimedes or c) Euclid?
- 3.** What is the common name of the illicit drug methylenedioxy-methamphetamine?
- 4.** How many web pages are there on the internet?
- 5.** How many camels currently live in central Australia?

Answers: **1.** Your body. The aqueduct of sylvius is in your brain, the tract of goll in your spine and the islet of langerhans in the pancreas. **2.** b) Archimedes. **3.** Ecstasy or MDMA. **4.** Google recently found more than one trillion unique URLs. **5.** More than a million camels, the largest wild herd on Earth, are ravaging a vast area of 3.3 million square kilometres in central Australia.