

Treasures of the Three Kings

Scientists are discovering more new species at the Three Kings Islands, this time just offshore, according to GINA WILLIAMS.

The waters about the Three Kings Islands are a place of upwellings and strong currents, where storms lash against exposed coastal cliffs. Located just 30 sea miles off Cape Reinga, in the Far North, the islands of Manawa Tawhi are difficult and frequently hazardous to explore — especially their marine environment.

On a rare calm day, a team of phycologists (or seaweed scientists) is diving from a charter boat into 40 metres of underwater forest formed by the seaweed which surrounds the islands. The water is remarkably clear. When a seaweed-filled dive bag arrives at the surface, there is excitement as yet another new species is recognised. The divers are encountering underwater forest plants yet to be named, or understood. This new find is a large brown seaweed from the *Landsburgia* family, unique to New Zealand, and peculiar to these islands.

The seaweeds collected at the Three Kings are shipped back to Wellington where they are studied at the Museum of New Zealand/Te Papa Tongarewa. In the herbarium at Te Papa, specimens of the new species are laid out on a bench. Inspired by the rarity of this experience, I press long fronds with their delicate blades onto sheet after sheet of white card, ready to be dried, studied, and then stored in the herbarium.

As I work, I wonder what other remarkable underwater secrets are waiting to be discovered at these islands. What does this special seaweed tell us about evolutionary processes? What of the intrinsic values of these marine ecosystems so close to the shore of these unusual islands?

There are four main islands in the Three Kings chain, as well as a prominent group of rocks, the Princes Islands. The North East Island, South West, and West Island, range from 20-80 hectares in size. The largest of the four main islands, at 400 hectares, is Great Island. In all, there are 64 islands, islets and rock stacks in the group. These islands have long been famous as the home of a range of rare and endangered plants and animals unknown elsewhere (see boxes). The discovery of equally unusual and unique communities in the surrounding waters adds further value to the group as a sanctuary of the rare and endangered. Seaweed forests appear to extend to a depth of near 60 metres. For safety reasons, divers are limited to the upper reaches and are unlikely to go beyond the 30-40-metre mark, thus leaving much of the flora completely unstudied, and its diversity unknown.

Like all of New Zealand, the Three Kings group has strong geological and biological ties with the ancestral landmass of Gondwana. As land and sea shifted, rose and fell, over the last 65-80 million years, they exposed the submarine ridges to the north of the Three Kings as temporary island peaks. These probably acted as a dispersal route for the migration of terrestrial and marine flora and fauna through the Pacific. Tantalising clues emerge in the discoveries of botanists, such as the Victorian scientist Thomas Cheeseman (see box).

The fact that 60 percent of our seaweed species are also found elsewhere is another example. These fit into an ever-widening picture of dispersal patterns, stirring ideas

