New Zealand's Fiordland (yes that is the correct spelling) is one of the gems of the planet. The deeply incised, mountainous coastline is covered with temperate rainforest. It is an area of stunning beauty, so much so that it is part of Te Wahipounamau – the South West New Zealand World Heritage site.

I dived at the base of this New Zealand icon: Mitre Peak

I was lucky enough to be part of three expeditions to study the fiords themselves. I was the underwater photographer for two Museum of New Zealand fish collecting expeditions. On the first we dived all of the southern fiords and on the second we dived all of the accessible northern fiords. I also accompanied museum staff on a search for wavyline perch. I ended up doing over one hundred dives here – always a minimum of three sites per fiord (inner, middle and outer) and often several dives at the same site.

The fiords are globally unique. The heavy rain percolates through leaves on the rain forest floor and picks up humic substances (tannins give the water its tea color) before flowing into the fiord where it overlays the more dense salt water underneath. By chance the humic substances act as a filter – they filter out the wavelengths of light used by algae for photosynthesis. This does two things: First of all it reduces the light at 30 feet to the open ocean equivalent of 200 feet, and secondly there is almost no seaweed growth in the inner fiords. The reduced light levels bring about a phenomenon called deep water emergence, creatures normally way beyond divable depths are often found within a few feet of the surface. The lack of seaweeds allows encrusting organisms to proliferate – and they do. In some places lamp shells (brachiopods – survivors from the Permian era) occur at densities in excess of 10,000 per square meter. Black corals grow to within a few feet of the surface in ghostly white colonies.

Spiny seadragon – a deep water emergent

Despite being relatively inaccessible, the fiords are vulnerable. They are so deep that most organisms only live in a narrow 200 foot deep band. When you total up the area it is smaller than Wellington harbor. Along with many other people, but particularly my friend Chris Paulin, Fiordland touched us profoundly, in ways that I am sure you will understand. Threats include lobster fishing (using cray pots), over-fishing, export of water from Doubtful Sound, exotic organisms and sewage from cruise boats. When we were working there, there were two tiny marine reserves and we thought the place deserved better than that. It needed more publicity. We figured if we wrote a book about it, it would draw attention to the fragility and uniqueness of the area. And so *Fiordland Underwater: New Zealand's Hidden Wilderness* was born (I will have copies for sale at $20 each – normal retail is $49.95).

While we were initially opposed at every turn by the Guardians of the Fiordland Fisheries (a fishing industry group) they eventually came round to our (and many other people's) point of view. To our delight there are now ten marine reserves in Fiordland compared with the two when we started the book. The total area protected has risen from 783 hectares to over 10,000 hectares. Neither Chris nor I are egotistical enough to claim that *Fiordland Underwater* made the difference- but it was certainly a contributing factor. It led to me being called as an expert witness in an Environment Court case over exporting fresh water from Doubtful Sound and certainly provided ammunition for the people who worked so hard to make these protected areas happen.

Wavyline perch – a deep water emergent

This talk is about how this incredible ecosystems works and how the terrestrial environment is inextricably linked with the ocean.