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***Nelladanae*: a new species of Macquarie Island 'Waterbear'**

The Australian Museum sponsored an expedition of scientists to Macquarie Island in the summer 1977-1978. One of the researchers, Dr D.S. Horning, collected small invertebrates called tardigrades or 'water bears'. Some of these 'waterbears' have now been identified as distinct species. One of the new species, *Vermectias Nelladanae*, has been named after Macquarie Island's most recent shipwreck.

In search of new species

Dr 'Woody' Horning wanted to make an extensive collection of Macquarie Island mosses and lichens when he visited Macquarie Island in the summer of 1977-78. He was part of an expedition of scientists sponsored by the Australian Museum. Dr Horning was particularly interested in tiny invertebrate animals called tardigrades. He calls these little creatures, 'waterbears'.



The Australian Museum expedition to Macquarie Island, 1977-78. Dr 'Woody' Horning, centre right. Photo courtesy Woody Horning.

'Waterbears' have some distinctive characteristics:

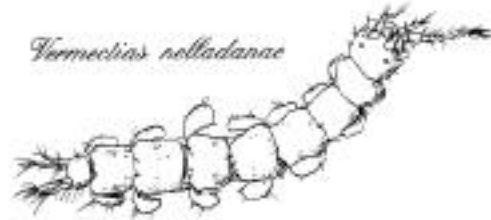
'... *tardigrades* are found on land in mosses, lichens and liverworts, while some are found in fresh water and others in the sea. Their short, cylindrical bodies have four pairs of stubby legs tipped by claws or paddles.. They resemble bears in their slow, lumbering movements. They feed by piercing plant cells or body tissues of other organisms Terrestrial, or land *tardigrades* can survive extreme environmental stresses of drought, cold and heat by going into a state of 'suspended animation'. They do this by forming barrel-shaped tuns (cyst-like structures) when they dry out. In this way they can survive for long periods of time - some *tardigrades* have even been revived from mosses stored in a museum for 120 years!' (Dr D.S. Horning, April 2000)

Dr Horning did not spend as much time collecting mosses and lichens as he expected. One of the three other divers in the expedition felt it was too dangerous to dive the treacherous coastline of Macquarie Island. He volunteered to take the place his place and spent most of his time on the island working in marine biology.

He soon found out just how dangerous the Macquarie Island coast really is.

Woody Horning found his largest and most important collection of *tardigrades* after an accident that could have cost him his life. He was diving 500 metres south of the Green Gorge hut. It was a very rough day and he had been diving in a high swell. A rogue wave tossed him out of the sea over the rocks and into a deep intertidal pool.

After recovering from the shock of surviving this terrifying event, Dr Horning set to work collecting specimens of algae, mosses and lichens and other plant specimens.



Drawing by Hannelore Lauritzen

After collecting these specimens, Dr Horning put them into paper bags and let them dry for a couple of weeks. He then washed and soaked them and preserved them in boiling ethanol. When he examined the samples under an electron microscope he realised that he had found many specimens belonging to all sorts of species.

It was a huge task sorting the specimens out, identifying known species and describing unknown species. It was to be many years before the new species of Macquarie Island *tardigrades* were to be fully identified and described in scientific journals.

Long before this process had taken place, however, Dr Horning knew he had discovered a new species. This specimen was red and had lots of spines and armoured dorsal - it was the first red *tardigrade* ever discovered! The new species *Echiniscus darienae* has been named after Dr Horning's wife, Darien, recently retired director of the Macleay Museum.



Woody and Darien Horning.
Photo courtesy Woody Horning.

A new species *Echiniscoides horningi* has been named after Dr Horning.

Another new species of tardigrade has been named Vermectias nelladanae after the Nella Dan which was shipwrecked in 1987.

It is a very uncommon these days for zoologists to describe a new family, but Dr Horning and his scientific colleagues did this because the species did not fit into any known family. Dr Horning believes that there are probably many more species of invertebrates on Macquarie Island that have yet to be identified.



References

'*Nella Dan still Swimming Happily Around*', Lauritzen News, July 1992.

Interviews with Dr Woody Horning, March and April, 2000

Further Reading

The story of the *Nella Dan* shipwreck can be found in:

'A True Viking funeral' - Nella Dan