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Lineage – Scientific methodology

Annual distribution of the primitive acorn barnacle *Chionelasmus crosnieri* lineage

Chionelasmus crosnieri (Buckeridge, 1998) (Chionelasmatidae) is a rarely encountered Southwest Pacific barnacle. Originally, this species was collected as a single specimen from near Curtis Island on the Kermadec Ridge (30°34' S, 174°30' W) at 465–501 m depth and described as *C. darwini* (Pilsbry, 1907) in Foster (1981). Buckeridge (1998) described *C. crosnieri* from 505–650 m depth south of New Caledonia and proposed that Foster's material was a juvenile of the new species. This view is endorsed here. *Chionelasmus* is a sparsely distributed genus, although it is found in deep waters throughout the Pacific and Indian Oceans. *Chionelasmus darwini*, the type species, is known from both the Indian Ocean and off Hawaii, although the two populations are now separated subspecifically (Yamaguchi 1998). Apart from its local rarity, and hence vulnerability, interest in *C. crosnieri* rests on its being a "living fossil" and one of the most primitive living acorn barnacles (Sessilia). There are, in fact, several long-lived (geologically speaking) species of thoracican barnacles that may be termed "living fossils", of which New Zealand has a remarkably high percentage. *Chionelasmus* has its earliest-known global record in New Zealand, extending back to the Eocene (Buckeridge 1983).

1. Literature.

All information pertaining to the species in New Zealand is given in the papers by Foster (1981) and Buckeridge (1983, 1998). Searches were therefore not initiated on any reference database.

2. Museum holdings.

The sole New Zealand material is held in the NIWA Invertebrate Collection, Wellington. It is from the Kermadec Ridge locality mentioned by Foster (1981) [NZOI (NIWA) Stn K858] on the Kermadec Ridge as recorded in the NIWA **AllSeaBio** database (search made 15 November 2005).

Examination of the NIWA Invertebrate Collection database Specify, and consultation with relevant experts in May 2009 revealed no new records of *Chionelasmus crosnieri*.

3. Summary

Chionelasmus crosnieri is a range-restricted species of balanomorph barnacle in New Zealand with what may be a long fossil record. In New Zealand it is known only from the Kermadec Ridge at 465–501 m depth. It is, however, also known from two localities south of New Caledonia (505–650 m). All information pertaining to the distribution of this species is referenced below.

The above information on the distribution of this barnacle was written by Dr Dennis P. Gordon, NIWA, Wellington, and reviewed (with updating and amplification) by Professor John S. Buckeridge (EOS, Royal Melbourne Institute of Technology University). Too little is known of the distribution of this species to allow hotspots or the 90% distribution to be shown, but because of its habitat, the Unknown and Known not to exist distributions can be distinguished with some confidence. The 100%, Unknown, and Known not to exist distributions were integrated by hand onto a large-scale map of New Zealand. The rounded lines were digitised and imported into a GIS software package as layers. The area of each distribution class was calculated and the layers linked to attribute and metadata files.

No additional records of the species outside of the known range were identified in reviews carried out in November 2007 and May 2009.

4. References

- Buckeridge, J.S. (1983). The fossil barnacles (Cirripedia: Thoracica) of New Zealand and Australia. *New Zealand Geological Survey Paleontological Bulletin* 50: 1–151, 14 pls.
- Buckeridge, J.S. (1998). A new coral inhabiting barnacle, *Chionelasmus crosnieri* sp. nov. (Cirripedia: Balanomorpha) from New Caledonia, Southwest Pacific. *Zoosystema* 20: 167–176.
- Foster, B.A. (1981). Cirripedes from ocean ridges north of New Zealand. *New Zealand Journal of Zoology* 8: 349–367.
- Yamaguchi, T. (1998). Review of *Chionelasmus darwini* (Pilsbry, 1907) (Cirripedia: Balanomorpha): a comparison between the Pacific and Indian Ocean populations. *Species Diversity* 3: 117–131.