

## RECORDS OF NEKTONIC EXISTENCE OF THE SESSILE BARNACLE (*MEGABALANUS DECORUS*)

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**SUMMARY:** The balanomorph barnacle *Megabalanus decorus* (Darwin, 1854) (Balanidae) is recorded attached to a plastic fish tag taken from a trevally (*Caranx georgianus*) collected in the Bay of Plenty (37° 53.2' S, 176° 50' E), and attached to the spine of the posterior dorsal fin of a male dogfish (*Squalus acanthias* L.) trawled from off the Kaikoura Peninsula (42° 25' S, 173° 42' E), New Zealand. Despite its extensive geographical distribution from the Kermadec Islands (30° S, 178° 30' E) to Macquarie Island (54° 29' S, 158° 58' E), and its usage of ships, sharks and other nektonic objects, *M. decorus* has not spread beyond the New Zealand region.

### INTRODUCTION

*Megabalanus decorus* (Darwin, 1854) is a balanomorph barnacle (Cirripedia, Thoracica) commonly found cast up on beaches throughout New Zealand. Its large size, compared with other New Zealand balanomorphs, and the rose pink colour of its shell make it a particularly notable barnacle, and when attached to shells of large molluscs it can be regarded as decorative. The morphology of this species has been described by Darwin (1854), Linzey (1942) and Foster (in press), all of whom name it *Balanus decorus*. Newman and Ross (1976) have revised the Balanomorphs and established the generic ranking of the subgenus *Megabalanus* of Hoek (1913). Megabalanids are characteristically large balanomorphs that have pores running parallel to the direction of growth in the calcareous base, parietes and radii of the shell. *M. decorus* can attain maximum basal diameters and heights of between 6 and 7 cm. In the intertidal zone, specimens are typically attached to rocks or mussels and are usually small and deep pink in colour. Larger, paler, specimens are found sublittorally; it has been dredged from depths down to 729 metres (Foster, in press).

Previously, this species has been recorded from mollusc shells (Darwin, 1854), stalks of tunicates (Hutton, 1879), and the carapaces of crabs (Jennings, 1918) and crayfish (Linzey, 1942). It is also known as a fouling organism of test panels in Lyttelton Harbour (Skerman, 1958), hulls of ships (Skerman, 1960) and has been collected off buoys in the Manakau Harbour, and from the Maui A oil rig

off the Taranaki coast (B. A. Foster, pers. obs.). The present paper adds two new unusual habitat sites to the list.

### GEOGRAPHICAL DISTRIBUTION

*M. decorus* is endemic to New Zealand waters. The record of Hutton (1879) of specimens in the Otago Museum from South Australia has not been substantiated: the barnacle collection of the Otago Museum has been very neglected, and it is not possible to identify Hutton's so-named specimens. There is frequent confusion in museum labelling of specimens of *Megabalanus*, and it is quite likely that Hutton's specimens were of the Australian *M. nigrescens*.

Recent studies on Tertiary Australasian fossil barnacles indicate that fossils from Australia previously designated as *Balanus decorus* (Withers, 1953) are not of this species (J. S. Buckerridge, pers. comm.). It seems likely that *M. decorus* is an indigenous product of the New Zealand region, arising after the divergence of New Zealand from Australia after the break-up of Gondwanaland. The species now occurs from the Kermadec Islands in the north, to Macquarie Island in the south and the Chatham Islands in the east (Foster, in press). Despite this extended range, *M. decorus* has not yet achieved dispersal across the Tasman Sea.

### NEW RECORDS

The two new records for *M. decorus* are:

1. Three adjoining specimens settled on a plastic fish tag which was attached just anterior to the dorsal fin of a trevally (*Caranx georgianus*) (41 cm body length) captured in the Bay of Plenty (37° 53.2' S, 176° 50' E). The barnacles have basal diameters of between 1.0 cm and 1.46 cm, and heights of between 0.92 cm and 1.4 cm (Figs. 1a, 1b). The fish was

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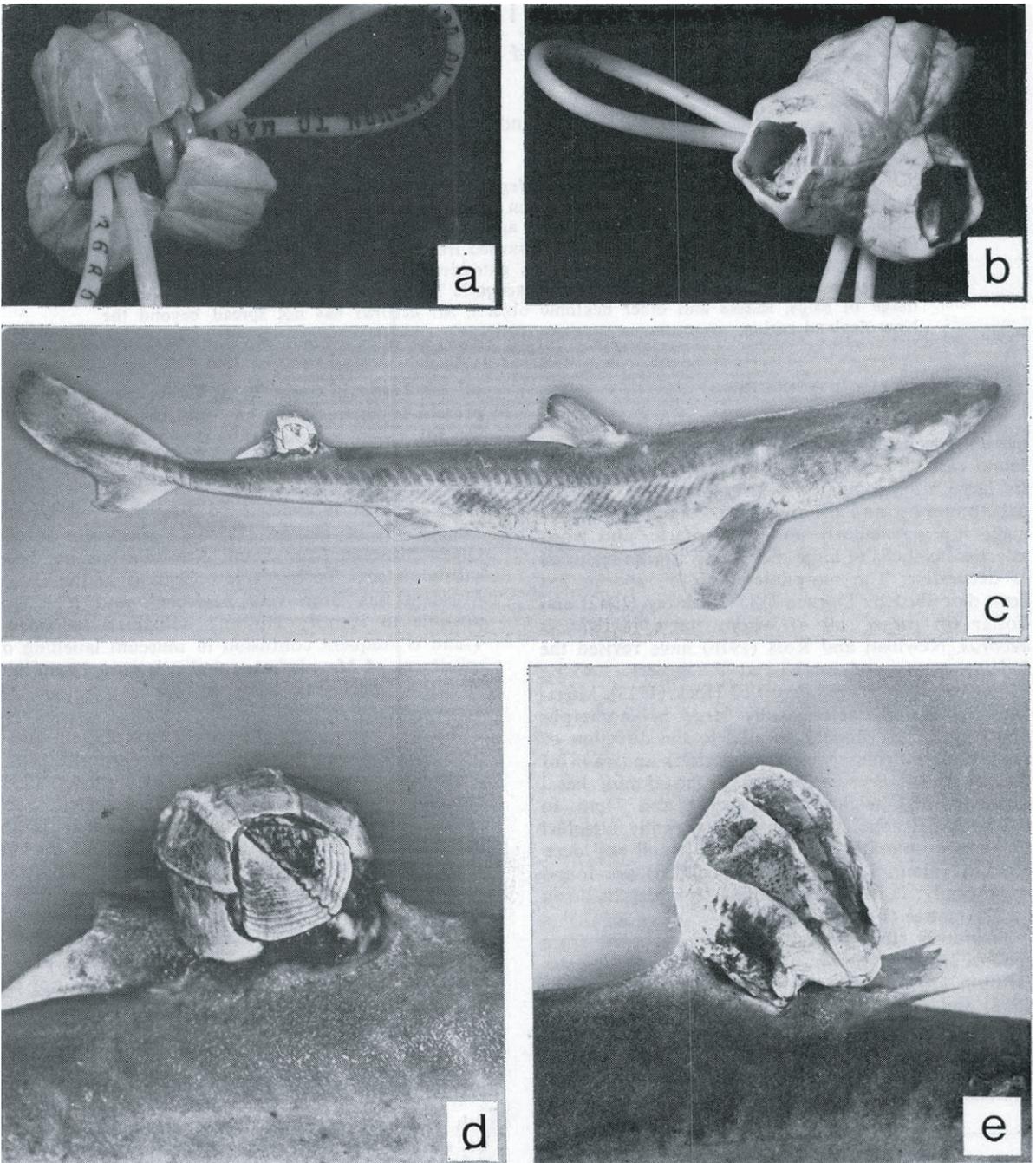


FIGURE 1. Three specimens of *Megabalanus decorus* attached to plastic fish tag (a, b); single specimen of *M. decorus* attached to spine of posterior dorsal fin of dogfish (c, d, e). (Sizes are given in the text).

tagged on 30 October 1973 and recaptured on 13 January 1974, giving the barnacles a maximum time of 75 days to achieve these sizes. The specimens are deposited in the National Museum, Wellington, reg. no. NMNZ Cr. 2173.

2. One specimen attached to the spine of the posterior dorsal fin of a male dogfish (*Squalus acanthias* L.) (46.4 cm body length) (Fig. 1c). The fish was captured in a trawl off the Kaikoura peninsula (42° 25' S, 173° 42' E) on 11 July 1977. The barnacle has a rather unusual appearance due, probably, to its confined basal attachment and subsequent asymmetrical growth (Figs. 1d, 1e). Comparable measurements to those given for the previous specimens are therefore impossible; however, the maximum diameter was 24 mm and the maximum height 27 mm. The specimen is deposited in the Edward Percival Marine Laboratory, Kaikoura, reg. no. KA 487B.

#### DISCUSSION

Balanomorph barnacles appear to settle and grow on a wide range of substrata in the sea, and as a result form a distinct problem as fouling organisms of ships and industrial installations (Crisp, 1976). Not all barnacle species settle indiscriminately, however, and some are highly selective in their habitat selection. Some balanomorph species form obligate, epizotic associations with vertebrates such that the distribution of the barnacle is dependent upon that of its host. Examples include *Coronula* and *Tubicinella* on whales (Pilsbry, 1916) and *Platylepas* and *Stomatolepas* on turtles (Smaldon and Lyster, 1976). Advantages of such site specificity are found in avoidance of smothering on the sea floor by detritus or competitive colonial animals and seaweeds, avoidance of predators, conveyance to alternative water masses and the possibility of better feeding, and increased aggregation to enhance cross-fertilisation. The cyprid larvae of other balanomorph barnacles, for example *Epopella* and *Chamaesipho* in New Zealand, settle only in the intertidal region, and again illustrate the principle of non-random site selection. In the case of intertidal barnacles, a settlement-inducing factor has been isolated for certain species which ensures that the cyprid larvae settle in areas of proven hospitality for the adults (Crisp, 1976). On the other hand, there are barnacles which make use of any solid object for settlement and appear not to be restricted in their site selection. These are opportunistic species, and are the ones that foul boats. In New Zealand, *Elminius modestus* and *Megabalanus decorus* throughout, and *Balanus amphitrite* and *B. variegatus*

in the north, are species that illustrate opportunistic site selection.

Circumstantial evidence indicates that *M. decorus* is fast growing. Firstly, basal diameters of 1.4 cm within 75 days were attained by one of the specimens from the Bay of Plenty reported in this paper. Secondly, specimens collected from regularly cleaned buoys in the Manakau Harbour suggest that basal diameters of 3 cm are attained in about 6 months (B. A. Foster, pers. obs.).

The usage of sharks, ships and other nektonic objects may have lead to the dispersal of fast-growing *M. decorus* to areas such as the Kermadec and Macquarie Islands, which are isolated by very deep seas from the New Zealand shelf.

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