A REVISION OF THE *PANULIRUS HOMARUS*-GROUP OF SPINY LOBSTERS (DECAPODA, PALINURIDAE)

BY

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INTRODUCTION

Holthuis (1946) established priority of the name *Panulirus homarus* (Linnaeus, 1758) for the species of spiny lobster which had previously been known as *Panulirus buergeri* (De Haan, 1851) and somewhat dubiously continued to recognise *Panulirus dasypus* (H. Milne Edwards, 1837) as a species separate from it.

Barnard (1950) distinguished between "*P. bürgeri*" and *P. dasypus* which he recorded from the east coast of South Africa but expressed the opinion that *P. dasypus* should probably be regarded merely as a variety of *P. buergeri*.

In 1953, Gordon examined the material of these two supposed species in the British Museum and as a result of her observations she stated "I am forced to conclude that these twelve specimens belong to a single variable species, *P. buergeri* (De Haan), which according to Holthuis must now be called *P. homarus* (L.)." This proposal has met with general acceptance, but George (1963) noted that the population of *P. homarus* from East Aden consisted entirely of specimens in which the transverse abdominal grooves had well developed sculpturing along their margins and were without interruptions in the dorsal midline, whereas in a large sample from Ceylon described by De Bruin (1962) the transverse grooves were without well developed sculpturing and had interruptions medially. George therefore expressed the opinion that variation in *P. homarus* might not be purely random and suggested that populations from other localities should be examined to clarify the question of variation within this species.

In this paper variation in *P. homarus* in the south-west Indian Ocean is described in detail, based on examination of large samples from Natal, southern Mozambique and south-east Madagascar. In addition, museum material of *P. homarus* from elsewhere in the Indo-Pacific was examined and the affinities and status of geographical populations is discussed.

The following abbreviations have been used in the following text: cl. = carapace length; AM = Australian Museum, Sydney; BM = British Museum (Natural History), London; RMNH = Rijksmuseum van Natuurlijke Historie, Leiden; WAM = Western Australian Museum, Perth.
MATERIAL EXAMINED

Material examined alive or fresh:

Natal. — Twenty-four consecutive monthly samples taken in the course of a life history study comprising a total of over 5,800 specimens. Sampling was by diving and methods used have been described previously (Berry, 1971a). The following specimens are representative: 2 ♂ ♂ cl. 52 mm and 83 mm, 2 ♀ ♀ cl. 71 mm and 77 mm (Rijksmuseum van Natuurlijke Historie no. Crust. D. 29843 (♂ and ♀ syntypes P. b. rubellus) and D. 29844), 2 ♂ ♂ cl. 67 mm and 79 mm, 2 ♀ ♀ cl. 62 mm and 76 mm (S.African Museum no. A 13563).

Mozambique and Zululand. — 199 specimens obtained by diving.

S.E. Madagascar. — 198 specimens in detail, plus several thousand from the holding tanks of a commercial fishing concern.

Museum material:

South Africa: Natal, 1 ♂ cl. 71 mm, 1 ♀ cl. 51 mm (BM no. 1925.8.18.86-87), 1 ♀ cl. 49 mm (BM no. 1928.12.1.5.26).

East Africa: Tanganyika, 9 ♂ ♂ cl. 74, 77, 77, 80, 91, 92, 94, 101, 118 mm, 3 ♀ ♀ cl. 42, 73, 80 mm (RMNH no. 21127). Kenya, 2 ♂ ♂ cl. 82 and ♀ mm (BM no. 1948.3.12.1-2), 1 ♀ cl. 70 mm, 1 ♂ cl. 78 mm (BM no. 1952.6.25.1-2). Socotra, 1 ♂ cl. 95 mm (BM no. 1906.5.29.28).

E. Aden, 3 ♂ ♂ cl. 74, 95, 99 mm, 1 ♀ cl. 87 mm (WAM no. 30-72).

India: Bombay, 1 large ♀ (RMNH no. 15415).

Ceylon, 1 ♂ cl. 31 mm (BM no. 820A).

Japan, 1 ♂ (holotype of Palinurus busergi De Haan) cl. ± 60 mm (RMNH no. 21129).

Hong Kong, fish market, 1 ♂ cl. 58 mm (RMNH no. 19611).

Borneo: Agal Bay, N.W. coast of Sabah, 1 incomplete dry exoskeleton (WAM no. 29-72).

Indonesia: Pulu Weh, N. Sumatra, 1 ♀ cl. 65 mm (RMNH no. 5210). Atjeh (= Atchin), N. Sumatra, 1 ♀ cl. 20 mm (RMNH no. 3553). Java, 2 ♀ ♀ cl. 39 and 76 mm (RMNH no. 5208 and 5209). Muara Tjidjalu, Java, 1 ♀ cl. 49 mm (AM no. P. 13024). Moluccas, 1 ♀ cl. 63 mm (RMNH, no. 1431). 1 ♂ cl. 32 mm (RMNH no. 3527), 1 ♂ cl. 32 mm (RMNH no. 3529), 3 ♀ ♀ cl. 36, 40 and 41 mm (RMNH no. 3525), 1 ♂ cl. 100 mm (RMNH no. 5625). Gorong Is., S. Moluccas, 1 ♀ cl. 50 mm (BM no. 1910.3.29.36). New Guinea, 1 ♀ cl. 46 mm (RMNH no. 16163), 2 ♀ ♀ cl. 36 and 37 mm (RMNH no. 16164), 1 ♂ cl. 48 mm (AM no. 15273).

Papua, 1965, 1 ♂ cl. 58 mm (AM no. P 15273).

Australia: E. Australia, 1 ♀ cl. 60 mm (AM no. P 12916), 1 ♀ cl. 68 mm (AM no. 12965), 1 ♂ cl. 93 mm (AM no. P 10643), 1 ♂ cl. 130 mm (AM no. 10098). Onslow, N.W. Australia, 2 ♀ ♀ cl. 60 and 80 mm (WAM no. 23-72), 1 ♂ cl. 75 mm (WAM no. 26-72), 1 ♂ cl. 88 mm (WAM no. 21-72), abdominal exoskeletons of 7 ♀ ♀ and 4 ♀ ♀ (WAM no. 22-72, 27-72).

RESULTS

Material from the south-west Indian Ocean.

On the east coast of southern Africa two forms of P. homarthus were found to occur which are separable on the basis of differences in colour and morphology.

The predominant form (pls. 1a, 2b) has no median interruptions in the transverse abdominal grooves which bear well developed, rather rounded squamae all along their margins. In some specimens there may be a number of smaller, poorly defined squamae or scales immediately behind these large ones and there may also be a few poorly developed squamae on the anterior margin of the transverse groove, but these are variable features. In life, the overall colour is brick red which becomes slightly browner and darker at the approach of a moult. The dorsal surface of the first three abdominal segments tends to be darker in overall colour than in the remaining segments and all segments are covered in minute, pale yellow spots. These spots are often concentrated along the posterior margins of the segments.