

The Distribution and Biology of *Patiriella vivipara* (Echinodermata: Asteroidea: Asterinidae) a Sea Star Endemic to Southeast Tasmania

GEOFFREY K. PRESTEDGE

16 Geeves Crescent, Midway Point Tasmania 7171, Australia

ABSTRACT. The asterinid sea star *Patiriella vivipara* is endemic to southeast Tasmania and has a highly restricted distribution, being only known from four locations. It has an unusual pattern of viviparous reproduction, giving birth to juveniles. In this study the birth rate, growth rate, size and age at commencement of reproduction of *P. vivipara* was examined in aquaria for a period of six years. The population of *P. vivipara* at Pittwater was also monitored through monthly examination of a permanent 1m² quadrat in which the number of adults and juveniles were counted and recorded. These counts were made over an eight-year period. *Patiriella vivipara* gives birth to juveniles through the year with a period of enhanced reproduction from November to January. Records of water salinity and temperature were taken at Pittwater, as were air temperatures and exposure times during low tide.

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Patiriella vivipara (Dartnall 1969) (Asterinidae) is a small 5 armed asterinid sea star that incubates its young in the gonads (Dartnall 1969; Byrne 1991, 1996). When first described (Dartnall, 1969) it was the only known species of sea star to exhibit viviparity. Three other viviparous asteroids were subsequently found and these are also asterinids. They are *Asterina pseudoexigua pacifica*, (Hayashi, 1977) from Japan, *Patiriella parvivipara*, (Keough & Dartnall, 1978) from South Australia and *P. pseudoexigua* from Queensland, (Byrne, pers. comm.). *Patiriella vivipara* is a simultaneous hermaphrodite and most of the gonads are ovotestes, thereby creating the potential for self fertilisation (Byrne, 1996). The juveniles emerge through the gonopores which are located on the

aboral surface. It is not known whether self, cross fertilisation or both takes place. An unusual feature of *P. vivipara* and *P. parvivipara* is that intragonadal cannibalism supports post-metamorphic growth to an advanced size (Byrne, 1996).

Patiriella vivipara is endemic to southeast Tasmania, and has a highly restricted distribution. In the original survey (Dartnall, 1968) this species was recorded from only three localities, Pittwater, Roches Beach and Eagle Hawk Neck. In 1990 another colony was found on the southern shore of Fortescue Bay (Fig. 1). *Patiriella vivipara* is a uniform orange/yellow orally and aborally, has a maximum radius (R) of 15 mm and the average adult size is approximately 10.00 mm R.