

REPRODUCTIVE CYCLE OF THE WESTERN AUSTRALIAN SILVERLIP PEARL OYSTER, *PINCTADA MAXIMA* (JAMESON) (MOLLUSCA:PTERIIDAE)

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Abstract

The seasonal gonad development of the commercially important Indo-Pacific, silverlip pearl oyster, *Pinctada maxima*, was investigated as part of a mariculture program. Histological preparations from 1,328 adults from populations off the northwest coast of Western Australia were collected approximately twice monthly over a six year period (1982-1988) to examine the pattern of gametogenesis. Histological findings were further supported by visually scoring the gonads of 2,588 broodstock and by observing hatchery and field spawnings of approximately 10,000 oysters. Possible exogenous reproductive stimuli were also investigated.

P. maxima was confirmed to be a protandrous hermaphrodite which matured as a male during year one at a shell height greater than 110 mm. Bisexuality was uncommon. The pattern of gametogenesis was shown to be similar in both sexes with the mean percentage of mature gametes being highest during the warmer austral months. Maturity indices also showed that both sexes followed a similar annual cyclical pattern in which maturity index was highest during months of warmer seawater temperatures and least during the cooler months. The breeding season extended from September/October to March/April with a primary spawning peak at the beginning of the season and a secondary one at the end. Both sexes were multiple spawners and females during hatchery spawnings released between 0.5×10^6 and 12×10^6 ova per spawning. Except for water temperature and possibly chlorophyll-*a*, the exogenous factors measured during this study did not provide any practical indication for predicting the onset or duration of the reproductive cycle in *P. maxima*.

Keywords: reproductive cycle, gametogenesis, maturity index, spawning, mariculture, pearl oyster, *Pinctada maxima*