

BYSSUS PRODUCTION IN SIX AGE CLASSES OF THE SILVER-LIP PEARL OYSTER, *PINCTADA MAXIMA* (JAMESON)

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Abstract

Two experiments were conducted to study byssus production of silver-lip (or gold-lip) pearl oysters, *Pinctada maxima*, from six different age classes. In the first experiment, 75- or 120-day-old *P. maxima* were removed from their point of attachment by severing of the byssus and were placed in clear plastic Petri dishes. The production of byssal threads and the behavior of the pearl oysters were monitored over a 120-h period. Emerging byssal threads were pinkish before changing to green. Juveniles at 75 days of age began reattaching faster than 120-day-old juveniles. However, after the first 12 h, older individuals had produced significantly more ($p < 0.001$) byssal threads than the younger individuals and produced significantly more ($p < 0.001$) byssal threads over the 120-h period. Additionally, byssal thread production for the younger juveniles did not increase significantly ($p > 0.05$) after 48 h, whereas byssal thread production from older animals continued to increase significantly ($p < 0.001$) after this period. The maximum number of threads produced by a single individual in the older age class was 30, compared with 16 in the younger age class. Juvenile *P. maxima* were observed to voluntarily eject the byssal apparatus, move, and reattach within 24 h. Reattachment after voluntary ejection of the byssus was faster than that after mechanical severing. In the second experiment, older *P. maxima* aged 7, 9, 11, or 13 mo were removed from their nets after severing of the byssus with a scalpel. These oysters were placed in nets in an area of either strong (2.5-3.5 knots h^{-1}) or mild (<1 knot h^{-1}) current. Pearl oysters placed in a mild current reattached faster than those in a strong current. However, after 4 days, pearl oysters aged 13 mo in strong current had produced significantly more threads ($p < 0.05$) than those in the mild current, and the same was true for 11-mo-old pearl oysters by Day 5. From Day 5 onward, there were generally more threads produced by pearl oysters in strong current compared with mild current; however, these differences were not significant ($p > 0.05$) for pearl oysters aged 9 and 7 mo. By the end of the 11-day experiment, 9-mo-old oysters had produced significantly more byssal threads than any other age class, and there were significant differences between all age classes in the number of threads produced. The results of these simple experiments provide useful information on the time for reattachment of different age classes of *P. maxima* in a variety of culture conditions after mechanical severing of the byssus.

Keywords: Aquaculture, pearl oysters, *Pinctada*, byssus, attachment

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