

พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

C 726080 MAJOR : MARINE BIOLOGY
KEY WORD: BORING BIVALVE / PHYSIOECOLOGY

PIYAWAN MAILA-IAD : PHYSIOLOGICAL RESPONSES OF CORAL BORING BIVALVES TO
CHANGES IN SUSPENDED SEDIMENT, SALINITY AND COPPER CONCENTRATION
THESIS ADVISOR : ASSOC. PROF. PADERMSAK JARAYABHAND, Ph.D. THESIS CO-ADVISOR
ASSOC. PROF. NITTHARATANA PAPHAVASIT ,101 pp. ISBN 974-636-493-6

Physiological responses of coral boring bivalves to changes in suspended sediment, salinity and copper concentration were carried out in three coral boring bivalves found around coral reef of Khang Khao Island i.e. *Lithophaga malaccana*, *Spengleria mytiloides* and *Gastrochaena cuneiformis*. In this study the three major aspects of ecology, biology and physiology were investigated. The density, distribution pattern and natural habitats were studied. Average density of coral boring bivalves in stations A, C and D were 5, 2 and 1 bivalves/m² respectively. *Lithophaga* spp. were found in many species of living corals and dead corals. *S. mytiloides* and *G. cuneiformis* were found only in dead coral or dead part of coral.

The biological results showed that at the same shell length, the highest weight was *L. malaccana*. In declining order were *G. cuneiformis* and *S. mytiloides* respectively. The sex ratio recorded in the three bivalves were closed to 1:1. The values of BCI (Body Condition Index) altered during 6 months. The BCI of *L. malaccana* tended to increase whereas in *G. cuneiformis* tended to decrease. *S. mytiloides* did not showed significant variations in BCI during the study period.

The physiological responses of boring bivalves to suspended sediment demonstrated two different patterns. The first pattern was the increases in respiration while the clearance rate decreased as found in *G. cuneiformis* and *S. mytiloides*. The second pattern was increases in respiration but the clearance rate unchanged as in *L. malaccana*. The responses to salinity changes at three levels i.e. 16 ppt., 24 ppt. and 32 ppt. showed the same trends in the three boring bivalves with low scope for growth at low salinity. In the responses to copper concentrations i.e. 0 µg/l, 10 µg/l and 20 µg/l, the highest scope for growth occurred in the three bivalves was recorded at 10 µg/l. The responses to the combinations of salinity and copper concentrations showed synergistic effect. At salinity 16 ppt. and copper concentration 20 µg/l, the scope for growth for *L. malaccana* and *S. mytiloides* were lowest. The scope for growth increased with increasing salinity. The scope for growth of *G. cuneiformis* in all physiological experiments were minus. This may be concluded that this species was the most sensitive boring bivalve to environmental changes.

It can be concluded from the physiological responses of coral boring bivalves to environmental changes that *L. malaccana* was most tolerant species while *G. cuneiformis* was the most the most sensitive species. This correlated to the ecological study that *L. malaccana* was the most dominant species found in many species of living and dead corals. *G. cuneiformis* was rare and limited its distribution only in dead corals or dead part of corals. Moreover these results can be applicable to the monitoring on the changes in coral reefs. *G. cuneiformis* can be used as the indicator species on the changes occurred at one location but of different time periods. It is on condition that the percent coverage of dead corals should not change over the time course. *L. malaccana* can be used to monitor the changes in coral reefs at different localities during the same period. However the physiological responses must also be considered.

ภาควิชา วิทยาศาสตร์ทางทะเล

สาขาวิชา วิทยาศาสตร์ทางทะเล

ปีการศึกษา 2539

ลายมือชื่อนิสิต ชัยวรรณ พิศาลบุตร

ลายมือชื่ออาจารย์ที่ปรึกษา พิศาลบุตร

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม ศ.ดร.วิทย์ นันทนกุล