

Section 18 Abstracts

RECRUITMENT OF *EPITONIUM ULU* ONTO THE SOLITARY CORAL *FUNGIA SCUTARIA*

J. L. BELL, AND C. J. HURLBUT.
Kewalo Marine Laboratory, University of Hawaii,
Honolulu, HI 96813 & Harbor Branch,
Fort Pierce, FL, USA.

In Hawaii, *Epitonium ulu* has been found only on the solitary coral, *Fungia scutaria*. Although *E. ulu* attains a mean adult size of 13mm, it is extremely fecund. During the summer each animal produced a mean of 32 egg capsules per day, each capsule containing 500–600 eggs. Despite high fecundity, *E. ulu* were found in small numbers and their distribution was patchy. To measure recruitment density and post-recruitment growth rates, two patch reefs in Kaneohe Bay, Hawaii were sampled for 21 months. First, all *E. ulu* were removed from the *Fungia* on each reef. Subsequently, every two months the *Fungia* were checked for newly recruited *E. ulu*. They were removed from the *Fungia*, counted, and measured. *Fungia* were returned to the reef. Egg masses were found throughout the year, appearing more frequently between August and March. *E. ulu* demonstrated a sparse recruitment onto *Fungia*, peaking in August and September. Extremely small *E. ulu* were found on *Fungia*, indicating that they are on *Fungia* shortly after settlement. They grow rapidly making it possible to reach reproductive size in less than 2 months after recruiting to *Fungia*.

BIOLOGY, ECOLOGY AND POPULATION DYNAMICS OF *MODIOLUS AURICULATUS* KRAUSS ON TAHITI ISLAND

F. BOURDELIN AND C. PAYRI
URA 1453 CNRS, Laboratoire d'Ecologie Marine,
Université Française du Pacifique, BP 51150 Pirae,
Tahiti, French Polynesia.

The use of the mussel *Modiolus auriculatus* K. (Mytilidae) as a biological indicator of pollution—

within the monitoring network of the lagoon ecosystem—induced us to study the biology, ecology and dynamics of natural populations around Tahiti island. An intertidal population and a subtidal population were monthly sampled at random within a basic 0,25 square metre quadrat. Individual biometric data, length and weight provide length/weight relationships, growth curves and size-frequency distributions for both of the populations. The study of the gonads gives the sex-ratio as well as indication of the reproductive cycles. Comparative analysis of the two populations shows differences between the length/weight relationships and between the growth curves— $W=7.10^{-5}L^{2.9}$ and $L_t=42.21(1-e^{(-0.0032t)})$ for the intertidal population, $W=5.10^{-5}L^{3.1}$ and $L_t=39.67(1-e^{(-0.0073t)})$ for the subtidal population. However—for both of the populations—the sex-ratio is 1:1 and the maturity stage is noticeably the same. Growth curves are logistic curves and will be compared. It seems that the conditions of immersion and emersion influence this species and more particularly the length growth. Then, the length can provide a good biometric parameter to assess the alterations of *Modiolus auriculatus* during a "Mussel Watch" test.

TEMPORAL FLUCTUATIONS OF BENTHIC PARAMETERS IN THE SOUTH WEST LAGOON OF NEW CALEDONIA

J. CLAVIER*, G. BOUCHER** AND
C. GARRIGUE*

* ORSTOM B.P. A5, Noumea, New Caledonia,
** CNRS URA 699, 55 rue Buffon, Paris.

Temporal fluctuations of tropical benthic biomasses and fluxes at the water sediment interface are so far poorly documented. We present the results of 1988, 1990 and 1991 benthic surveys in the South West lagoon of New Caledonia. Flux chambers were used to study aerobic metabolism and nutrient fluxes at the water-sediment interface. Tri-



Fonds Documentaire IRD
Cote: Bx25842 Ex: unique

plicate incubations were carried out during 2 hours at twelve stations allocated to three bottom types. 0.2 m² PVC tubes were pushed into the sediment by SCUBA diving and closed with clear acrylic hemispheres to trap ca 60 l of water. An oxygen probe connected to a waterproof oxymeter was placed in each enclosure for oxygen recording. Water samples were regularly withdrawn with syringes for nutrients analysis. Dissolved ammonium, nitrate+nitrites and organic nitrogen were immediately analyzed on board. At the end of the incubations, sediment cores were collected in the enclosure substrate for sediment granulometry, ATP and plant pigments analysis. An air-lift sampler was used to collect enclosed fauna and flora. Only oxygen, ammonium, ATP and macrophytes show a significant global fluctuation. This general pattern varies according to bottom types and greatest variations are observed in the grey sand bottoms located in the middle part of the lagoon.

MULTISPECIES-ASSOCIATIONS OF SYMBIONTS ON SHALLOW WATER CRINOIDS OF THE CENTRAL GREAT BARRIER REEF

K. E. FABRICIUS AND M. B. DALE.

Australian Institute of Marine Science, PMB No. 3, Townsville Q4810, Australia; and CSIRO, Cunninghamham Laboratory, 306 Carmody Rd., St Lucia Q4067, Australia.

46 taxa, belonging to the classes Gastropoda, Polychaeta, Myzostomata, Ophiuroidea, and Crustacea, were identified as symbiotic associates of shallow water crinoids. No strict specialisation on a single host species by any of the identified symbiont taxa existed, but monospecific specialisation can not be excluded for myzostomid, gastropod or a few rare decapod species. Provision of shelter for the symbionts, either in the form of stout body morphology or of nocturnal behaviour of the host, was a major factor determining the inhabitation rates. Crinoids of the family Comasteridae had more symbionts than other crinoids, probably because of the easier accessibility of food on this. Interactions between and among different symbiont classes determined the structures of the symbiont associations. Among the symbiotic shrimps, some species commonly co-occurred on the same host individual, whereas others were never found together. Niche separation or active host defence are discussed as reasons for mutual acceptance or exclusion.

INTERSPECIFIC COMPETITION FOR CAVITIES AMONG INTERTIDAL CRUSTACEANS

M. F. GASSEL.

Dept. of Integrative Biology, Univ. of CA, Berkeley, CA 94720, USA.

This study examines the causes and consequences of competitive behavior among three intertidal crustacean taxa. The endemic Hawaiian snapping shrimp *Alpheus heeia* is commonly found in shallow waters of Kaneohe Bay, HI. The species occurs sympatrically with another alpheid shrimp, *A. lobidens*. A stomatopod, *Gonodactylus aloha*, which is thought to be an introduced species, also occurs in the same habitat. All three taxa use rubble cavities for shelter and possess potentially lethal appendages. Habitat characteristics and patterns of distribution of these three taxa are documented using quadrat sampling. The relative ability of each species to acquire and defend cavities is determined in laboratory experiments. The results of cavity defense experiments, combined with knowledge of the observed distribution patterns in the field, are used to understand the interaction of ecological and behavioral forces, and the role these forces play in shaping the biotic structure of tropical reef communities.

QUANTITATIVE STUDY OF THE MACROZOOBENTHIC TROPHIC STRUCTURE OF PINNACLES IN ATOLLS: PRE-SAMPLING AND STRATIFICATION IN TIKEHAU ATOLL (TUAMOTU, FRENCH POLYNESIA)

C. HILY.

Centre ORSTOM BP 529 Papeete, Tahiti, Polynésie Française.

A pre-sampling relative with a further quantitative ecological study of the energetic pathways into the macrozoobenthic trophic network of pinnacles was realized in a Tuamotu atoll. Continuous series of samples, using a 1m² quadrat, were obtained by scuba diving on various types of pinnacles. An original method of coding was elaborated to describe, in each sample, 12 environmental factors which defined homogenous strata. These strata are biotopes in which assemblages of species can be differentiated. Then they can be sampled according with a statistical method of sampling optimization

Proceedings
of the
**Seventh International
Coral Reef
Symposium**

Volume 2

Proceedings of the 7th International Coral Reef Symposium conducted by the University of Guam Marine Laboratory under the auspices of the Committee on Coral Reefs of the International Association of Biological Oceanographers and the International Society for Reef Studies

Guam, Micronesia, 22-27 June 1992



University of Guam Marine Laboratory
Mangilao, Guam



