EC 3

INTRA- AND INTER-SPECIFIC INTERACTIONS IN A SCLERACTINIAN GENUS MONTIPORA

T.Yeemin and K.Yamazato. Dept. of Biol., Univ. of the Ryukyus, Okinawa.

Types of interactions within and between species and ranking of competitive ability among four species of Montipora were examined by experimental grafting methods and by observations of populations on the reefs of Sesoko Island, Okinawa. At the initial stage of interactions among xenogeneic pairs, extrusion of mesenterial filaments and extracoelenteric digestion were observed. A linear ranking hierarchy was observed at the early stage of the experiments and this relation changed during the experimental period. The following ranking of competitive ability was suggested: M. ehrenbergii→M. foliosa →M. foveolata→M. digitata. Intra-reef allografts of the three species studied exhibited low rate of fusion and in case of inter-reef allografts no fusing pairs were observed at all. On the reefs in front of Sesoko Marine Science Center, M. foliosa is the most abundant species in terms of both number of colonies and coverage, while M. foveolata is a rare species. Ranking of competitive ability of Montipora on natural reefs is similar to that in long-term experiments. The interactions among the species of Montipora seem to correspond with ecological relations such as distribution patterns and population structure of this genus.

EC 4

REPRODUCTIVE ECOLOGY OF A SCLERACTINIAN CORAL *GALAXEA FASCICULARIS* LINNAEUS.

K. Yamazato and M. Minei. Dept. of Biology, Univ. of the Ryukyus, Okinawa.

On two types of *G. fascicularis* growing on the reefs in front of Sesoko Marine Science Center, maturity size, sexuality, gametogenesis, spawning period and schedule, and embryogenesis were studied. The colonies of Normal type reached maturity at the size of 5x4 cm across. Both Normal and Hard types were hermaphroditic. Gametogenesis was completed within a year and was synchronous among the polyps of individual colonies and among the colonies of a population in both types. Both types released gametes and fertilization was external. The mean number of oocytes in a polyp was 1,000 and 700 and the size of oocytes was 360 μm and 280 μm across in Normal and Hard types, respectively. The spawning of Normal type was observed on June 29-30, 1986 in the field as well as in the freshly collected colonies (Heyward, pers. comm.) and that of Hard type on July 27-28, 1986 in the freshly collected colonies. Although, these dates happened to coincide with the last quarter moon with which the spawning of many Great Barrier Reef corals were reported to coincide, spawning on the other dates were also noted in the different series of observations. Both male and female gametes were released at the same time at 2000 - 2200 in both types. The early stages of embryogenesis were observed in Hard type. The free swimming planula larvae were observed on the morning of a day after spawning. They settled on the limestone substrates within a week after spawning.

EC 5

THE ENVIRONMENTAL CUE TO BEGIN GAMETOGENESIS IN THE CHITON ACANTHOPLEURA JAPONICA.

E. Yoshioka. Seto Mar. Biol. Lab., Kyoto Univ., Wakayama.

In the chiton A. japonica, gametogenesis in the testis is recognised as spermatogenesis and accumulation of sperms, and in the ovary as the vitellogenesis of the oocytes.

On 10 April and on 10 May, 1985, gonads in 30 individuals from the field were examined. Gametogenesis did not occur on 10 April, and occurred in 11 individuals on 10 May. Therefore gametogenesis begun between 10 April and 10 May, when sea water temperature increased and photoperiod elongated.

In the laboratory, from 10 April to 10 May, chitons were kept in four tanks respectively regulated as following conditions in temperature and photoperiod: (1) 15°C, L9:D15 ; (2) 15°C, L16:D8 ; (3) 22°C, L9:D15 ; (4) 22°C, L16:D8. On 10 May, gonads in 30 individuals in each condition were examined. Gametogenesis did not occur in individuals from condition (1) and (2), and occurred in 12 individuals from condition (3) and in 11 individuals from condition (4).

The results indicate that the cue to begin gametogenesis is increase in sea water temperature.

EC 6

ASEXUAL REPRODUCTION OF LONG SLENDER LAND PLANARIANS; GENUS, BIPALIUM IN TOKYO AND ENVIRONS

N. Makino and Y. Shirasawa. Dep. of Biol., Tokyo Med. Coll., Tokyo.

Three races in land planarians(genus,Bipalium)of Japan reproduce asexually,namely, these are B.nobile, B.multilineatum and B. kewense. The water planarian is fissionable in the asexual condition but B. nobile reproduce asexually in the sexual condition, for after the oviposition,a worm fissioned small piece,within one day. Other two races B.multi. and B.kew. fissioned in asexual condition as they have no genital pore. Thus,land and water planarians differ from in the fissionable condition. To B.kew.,we collected one hardly at Shinjuku,Tokyo.For the fission way,worms have something incommon with one another. In general,worms cut with posterior end piece of all three races and especially B.multi. cut 5 to 9 pieces like a multiple division in some cases. Generally,anterior large part including the mouth is not fissionable, except two worms of B.multi..Large fissioned piece divide 2 -3 pieces anew but the worm fissioned one small piece again and again in the case of B.kew..In the nutriture,the way of fission is somewhat arranged, a hungry worm is so fissionable than a well fed one. About the relation of body weight in worm and fission piece, the piece is almost 1/10 from the entity.The small worm is not fissionable as a general rule. The fission seems to occur after dark and irregurally on the lineage.