

## EC 6

INTRA- AND INTER-SPECIFIC INTERACTIONS IN PORITES (SCLERACTINIA, CNIDARIA).

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In order to elucidate ecological and taxonomical relationships within and between species of a coral genus Porites, intra- and inter-specific interactions were studied both in the laboratory and on the coral reefs of Sesoko Island, Okinawa. While all isografts and some allografts resulted in fusion, various types of interactions took place in most allografts and all xenografts. These included uni- and bi-directional damaging on tissues, overgrowth with or without damage, filling, indifference and fusion. The competitive ability differed among the colonies of a given species, with the relations being not linear but network-like. Types of inter-colonial interactions tended to reflect the distance between the grafted colonies. Estracoelenteric digestion by extruded mesenteric filaments were found to be used in interspecific competitions. However, hierarchical ranking among the species studied changed with time. The ranking obtained at the end of 6 month's contact experiments differed from the naturally occurring ranking of P. lichen > P. (S.) iwayamaensis > P. sinensis nona > P. lutea > P. eridani.

## EC 7

THE DIURNAL ACTIVITY OF THE SEA-ANEMONE, PARASICYONIS ACTINOSTROIDES AND ITS RELATIONSHIP WITH ZOOXANTHELLAE.

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The sea-anemone lives together with much Zooxanthellae (the symbiotic algae). We found the diurnal change of the form of sea-anemone's tentacles, such as swelled in the daytime and became thin at night. In order to investigate the relationship between the change of the tentacle's form and the amount of algae, the individuals of sea-anemone with much algae and those with a little of them were kept in water under the following conditions; i.e., in the day light, in the constant illumination, and in the constant dark. Meanwhile, the fluctuation of the quantity of pH (index of CO<sub>2</sub>), DO (Dissolved oxygen), and NH<sub>4</sub><sup>+</sup> in the environmental water was examined as indices. We observed the diurnal activity in the change of the form of the tentacles as an index, by checking the diameters of the thickness of them. The results indicate the exchange of the form was occurred by the stimulation of light, regardless of the amount of algae. Especially, in the case of the sea-anemone with much algae in the light, such a symbiotic relationship was found that the photosynthesis was performed by algae, which absorbed CO<sub>2</sub> and NH<sub>4</sub><sup>+</sup>, probably metabolic products of the sea-anemone, and emitted O<sub>2</sub>.

## EC 8

CORAL ESTABLISHMENT ON A SUBMERGED CONCRETE PILLAR IN SINGAPORE. L.M.Chou<sup>1</sup> & T.M.Lim. Zoology Dept., National Univ. of Singapore. 1. Sesoko Marine Science Center, Univ. of the Ryukyus, Okinawa (until 19 Dec. 1984)

A study of the coral community on a 10-year old submerged vertical concrete pillar at Pulau Hantu (lat.1°13.6'N, long.103°45'E), Singapore was made and compared with that on the adjacent reef slope. Grids containing squares of 10 cm were used to estimate areal cover of individual colonies. The community on the concrete pillar was richer in terms of species diversity, coral cover, colony number, size range and depth range. Twenty-seven species occurred on the pillar compared with 12 on the reef slope. Coral cover on the pillar was 30.91% (19.05% on the slope) while the number of colonies was 128 (33 on the slope). The size range of 2 to 1599 sq.cm on the pillar (20 to 1295 sq.cm on the slope) showed that while young colonies were being formed, the more established ones were reaching larger sizes than those on the slope. The depth range of 0.5 to 6.5 m on the pillar (1.0 to 5.6 m on the slope) indicated that it is a better substrate for coral settlement. Six species, Acropora aculeus (Dana), A. cytherea (Dana), A. valida (Dana), Agaricia incrustans Bernard, Psammocora digitata Milne-Edwards & Haime and Montastrea curta (Dana) which are recorded for the first time in Singapore waters, were all present on the man-made concrete pillar.

## EC 9

LIFE SPAN, GROWTH AND FOOD HABITS OF THE FRESHWATER FISH, ORYZIAS LATIPES UNDER NATURAL CONDITIONS.

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In laboratory, the Medaka lives about 3 years and lays eggs during the whole year. The present study shows that under natural conditions its ecology is quite different.

Regular samplings were made in a rice-field near Lake Imba (Chiba) since October 1983. The analysis of the otolith proves that the Medaka lives only one year. They hatch in spring, grow until the late summer, do not increase in size during the winter and grow rapidly in the early spring to reach the sexual maturity. The breeding season begins in mid-April and runs until the extinction of the adults in late June. The cause of the sudden disappearance of the adults is unclear. But this might be due to their large size which makes them more vulnerable against the predators. On the other hand, the rapid drop in the planktonic biomass, which occurs naturally at this moment, added to the inability of the Medaka to exploit the benthonic resources can also partially explain their extinction. The most important foods in autumn are the Collembola and others terrestrial insects fallen on the surface of the water, while in winter and the early spring they are the Collembola and unicellular organisms like Navicula or Fragilaria