

POPULATION DYNAMICS AND GENETIC POPULATION STRUCTURE OF A GORGONIAN CORAL: DO MULTI-YEAR STUDIES CHARACTERIZE LONGER TIME SCALE DYNAMICS? H.R. Lasker* and M.A. Coffroth, State Univ. of New York at Buffalo.

Population dynamics measured over periods of years may inadvertently characterize growth during exceptional periods. Studies of long lived organisms like corals, which are subject to episodic recruitment and/or mortality are particularly prone to such errors. Among clonal organisms processes such as growth and recruitment of larvae create characteristic population genetic structures and analyses of such populations can be used to infer dynamics over longer time scales. In the San Blas Is., Panama, the population dynamics of the gorgonian coral *Plexaura* A is dominated by vegetative propagation. During 8 years of monitoring there has been no successful recruitment of planulae, and hundreds of successful vegetative recruits. Size-specific population models indicate that the high survivorship of large colonies and vegetative propagation dominate the population's dynamics. Measures of population structure based on DNA fingerprinting reveal that the population of over 2000 colonies is dominated by two large clones. These data indicate that high rates of vegetative propagation and exceptionally low larval recruitment have been in operation for the last 50-100 years.

INFLUENCE OF COLONY MORPHOLOGY AND ORIENTATION TO FLOW ON PARTICLE CAPTURE BY THE CORAL *AGARICIA AGARICITES* B.S. Helmuth, Marine Science Center, Northeastern Univ., Nahant, MA.

The scleractinian coral *Agaricia agaricites* is a common member of coral reef communities throughout the Caribbean and is found over a wide range of depths. Transects conducted in Discovery Bay, Jamaica, indicated that colony morphology is very plastic, and is correlated with depth. Encrusting and horizontal plating forms were most commonly encountered in shallow (≤ 10 m) water, while colonies in deeper areas (20m) tended to form upright, bifacial plates facing directly into flow. To determine the influence of colony morphology and orientation on particle capture, feeding trials were conducted in a unidirectional flow tank. Bifacial forms fed more efficiently oriented facing into flow compared to colonies oriented parallel to flow. Horizontal plating colonies fed over a wide range of flow speeds (3-50 cm/s), and were always at least as bifacial forms feeding in identical flow speeds. These results suggest that horizontal plating *A. agaricites* may represent a plastic morphology that can feed efficiently in the wide range of flows encountered on most reefs. Bifacial plates, in contrast, may have arisen as a result of pressures other than feeding, such as light capture or spatial competition.

SWEEPER TENTACLES: A QUESTION OF ENERGETICS, ENVIRONMENT, AND SIZE. J. Miles, Northeastern Univ., Boston, MA.

The development of sweeper tentacles in *Erythropodium caribaeorum* involves extensive modifications of the polyp morphology and cytology. The production of sweeper tentacles is induced by the presence of a variety of neighbors, but induction events vary between habitats. A significantly greater number of transplants in the back-reef produced sweepers than those on the fore reef. Primary productivity measurements were recorded for normal and sweeper tentacles to detect energetic costs of maintaining sweepers. No significant differences were found in Pmax, respiration rates, or P:R values for normal and sweeper tissue from the back-reef. Both Pmax and the P:R ratio for normal tissue from the fore reef were significantly lower than normal tissue from the back-reef area. Two alternate hypotheses are important in explaining the variability in sweeper tentacle distribution. Organisms adjacent to *Erythropodium* colonies are significantly different between the two habitats. Colonies in the back-reef are significantly larger than those on the fore reef. Colonies on the fore reef may not surpass a threshold level of stimuli or colony size necessary for induction of sweeper tentacles.

NATURALLY OCCURRING AND LABORATORY INDUCED BLEACHING IN TWO CARIBBEAN CORAL SPECIES.

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The effects of bleaching on corals bleached both naturally and those induced to bleach were examined. Twenty *Agaricia lamarcki* and *Montastrea annularis* colonies from 30m (+/- 3m) depth were monitored from October 1989 through June, 1991. During this period, all *Agaricia lamarcki* colonies monitored bleached twice as determined by appearance and reduced algal cell densities while the *Montastrea annularis* colonies showed little effects of bleaching. Twelve *Montastrea annularis* colonies were induced to bleach with high temperature and light in fall 1989. The colonies were placed back in the field and their recovery was monitored: 2-4 days after, 7 weeks after, 16 weeks after, and 1 year after bleaching. One year following bleaching, zooxanthellae densities returned to levels approximately 70% of normal, tissue protein increased to levels observed in normal corals, and maximum production was higher than in normal, prebleached corals. Colonies affected by bleaching appear more susceptible to subsequent bleaching, which can lead to mortality of the colony. Evidence of increasing algal cell densities precedes increasing tissue protein concentrations in recovering corals, and zooxanthellae in recovered corals appear more efficient than algae in prebleached corals.

LOW CLONAL DIVERSITY HYBRIDS OF THE KILLIFISH *HETEROCLITUS* AND *F.* and A. Yeakel*. Ursinus

All-female, gynogenetic killifishes *F. heteroclitus*, currently known from two localities in Nova Scotia, species are found at both hybridization potentially (genetically distinct clone). Analysis of variation in its histocompatibility system that nearly all hybrids ex clone. Allelic variation a and *S-Idh-A*, present in rarely observed in hybrid suggesting that they are hybridization events. This makes allozyme analysis measure of clonal diversity. Control grafts to the hybrids are always rejection time: 16.8 days between hybrids remain grafts have been in place although we expected it be high, allozyme and so far detected only one m:

RELATIONSHIPS OF SE UPON ISOENZYME ANAL CHARACTERS. B.F. H Mount Vernon Colle

Nine species of nized on the basis acters: cell and pe of ciliary rows, and nodal number. isolated from Eur Japan were grown flora and assigned *S. teres*, *S. ambig Morphological cha enzyme analysis we the relationship b species. Isoenzyme protocols were ob Chemistry (Marshf enzymes, Malate de glucose isomerase, the focus of the zymograms obtained into two major α characters of liviu were also used to strains into gro found between the on zymograms and c ter. However, the strains differ fro assignment.*