

**SOCIAL BEHAVIOR AND FORAGING
ECOLOGY OF CARIBBEAN
CHAETODONTIDS**

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[Converted to electronic format by Damon J. Gomez (NOAA/RSMAS) in 2003. Copy available at the NOAA Miami Regional Library. Minor editorial changes were made.]

Date: February 9-16, 1980

Purpose: To obtain quantitative, behavioral, distribution, reproductive, and foraging data for certain Caribbean Chaetodontids and other fishes (Report No. 80-1)

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Accomplishments: The four 100-meter transects on the east slope and west wall of Salt River Canyon, established during NULS Mission 1 (1978), were sampled for a comparison of chaetodontid distribution, abundance, and foraging patterns. Abundance of chaetodontids and pomacanthids was measured by divers swimming along the transect lines and counting all relevant species seen within 1 meter to either side and within 2 meters above the transect. As in 1978, *Chaetodon capistratus* and *C. aculeatus* were the most abundant chaetodontid fishes. *Chaetodontid striatus* was counted on the east slope transect during this mission and not previously. *Chaetodon sedentarius* was observed only twice and did not occur in any transect survey. For a dietary comparison to the data taken in 1978, six individuals of *Chaetodon capistratus* and *C. aculeatus* were observed at each transect. Foraging behavior and prey selection were quantified by following individuals for 5-minute periods and consecutively tallying the

number of bites on each prey item. Individual fish were not followed over successive 5-minute periods.

During evening crepuscular observations on the east slope, several pairs of *Hopplectrus guttavarius* (shy Hamlet) were found spawning regularly in the vicinity of the east slope tank drop site. Observations of fishes at dusk have revealed that a majority of reef fishes spawn at this time. Hamlets spawn in pairs, above a towering structure. Such orientation may be advantageous to fish because it enables the adults to remain close to refuge (if a predator attacks), and puts the eggs relatively high into the water, out of the grasp of benthic dwelling planktivores. The crepuscular period is the general time of peak predation by reef piscivores and fishes exposed at this time risk higher mortality than at other times. However, at this time, eggs released in the water column have a low risk of mortality, since by dusk most reef planktivores have descended to the reef for the night and any remaining active may be quickly satiated. The relative influence of predators upon spawning reef fishes was also investigated. Several pairs of *H. guttavarius* were selected for study, and a baseline on their natural spawning activity was obtained for each pair. The following data were recorded: the time of each spawning clasp; the location and structure (coral, gorgonian, etc.) over which spawning occurred; height over the structure and height over the bottom where spawning occurred; and the movements of the spawning pair. The aquanauts then acted like potential predators by not allowing the pairs to spawn (each time fish attempted to spawn, a diver rushed in). The fish have two alternative reactions: they may cease

spawning (which is the reaction of certain pomacanthids), or they may continue to attempt spawning regardless of the risk.

The result of this experiment will enable contrasting between the reproductive behavior of Hamlets and that of other reef fishes. It will also provide an experimental evaluation of the response of Hamlets to predators.