

**THE ROLE OF LIGHT IN NOCTURNAL/DIURNAL CHANGEOVER
PATTERNS OF CERTAIN CORAL REEF FISHES**

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Purpose: Test the hypothesis that fish respond directly to light intensity each time they enter or leave their shelters.

Participants: Raymond D. Clarke—Sarah Lawrence College; George Dale—Fordham University

Accomplishments: Technical—Two recording hydrophotometers were designed and constructed specifically for this project. These instruments were capable of recording light levels three orders of magnitude lower than the minimum level observable by the unaided human eye.

Scientific—The experimenters used artificial lighting to illuminate the study reef just prior to the normal evening changeover in fish assemblage from diurnal to nocturnal. The lighting seemed to delay the changeover but not prevent it. When the reef was darkened prematurely by the experimenters, many of the changes associated with evening changeover were initiated.

One of the striking features observed was the rapidity with which the diurnal assemblage of fish was replaced by the nocturnal assemblage (18 minutes) and vice versa (15 minutes). The replacement did not include a quiescent period, as some experimenters have reported; on the contrary, there was a period when the nocturnal and diurnal fishes were intermixed over the reef. For the first time, light intensity and a predictable sequence of changeover events, supporting the theory that nocturnal fishes use light intensity as a cue for

the onset of changeover behavior. The diurnal fish seem to be less dependent on light intensity, though it may still be important in controlling activity patterns.