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## UNDERWATER COLOR PHOTOGRAPHY

In the past year, we have continued to use the underwater photography system designed by Jack Mardesich and described in last year's annual report. The photographs obtained have been clear and detailed and have provided information that supplements trawl and grab surveys of southern California nearshore marine communities.

Recently, in a survey coordinated by Harold Stubbs, the camera system was deployed at six locations along the Los Angeles and Orange County coasts—at stations in San Pedro Bay and at Dago Bank and at two stations in Redondo Canyon and two in Santa Monica Canyon. The camera was baited with either liver catfood or squid and white croaker. On-bottom time at each site averaged 60 minutes and produced an average of sixteen clear photographs of the activity around the bait.

We noted a total of at least nineteen species of fish, at least two types of algae, and five species of large invertebrates in the set of pictures. The greatest variety of fish (up to eight species) occurred at 200 meters in Santa Monica Canyon; six species of fish were filmed at the station in San Pedro Bay. The lowest fish diversity occurred at 200 meters in Redondo Canyon and at 330 meters in Santa Monica Canyon (two fish species seen at each site).

Dominant and common fish varied from site to site. At Dago Bank, ocean whitefish (*caulolatilus princeps*) dominated; Pacific sanddabs (*Citharichthys sordidus*) were dominant in San Pedro Bay, hagfish (*Eptatetratus* sp.) were predominant in Redondo and Santa Monica Canyons at 330 meters, and an interesting variety of rockfishes, dominated by greenblotched rockfish (*Sebastes rosenblatti*), were predominant in Santa Monica Canyon at 200 meters. Sablefish (*Anoplopoma fimbria*) were common at both 200 and 330 meters in Redondo Canyon and at 330 meters in Santa Monica Canyon.

The camera system worked well in the survey. The only malfunction occurred at the San Pedro Bay station, where the camera landed on its side rather than upright. This situation produced some interesting photographs of numerous small animals protruding from the mud and Pacific sanddabs actively swimming 1 meter off the bottom to the bait.

We are now comparing the camera observations from the 330-meter depth in Santa Monica Canyon with trawl data collected during the same week in this area. This type of photography will continue, and we expect to explore depths to 1,000 meters. Before long, an underwater super-8, time-lapse camera system will be in operation—this will allow us to track the movements of on-bottom invertebrates in detail.



**Jack Mardesich, Chief Engineer for the Project,  
prepares to lower the baited camera from the  
ENCHANTER IV.**

Four of the photographs taken over a 24-hour period at 100 meters in Redondo Canyon revealed a community of sharks, hagfishes, bony fishes, and large invertebrates. The photographs also show the coiling behavior of the snake-like hagfishes—one can be seen in the lower portion of the photo at the far right.

