

## Evaluation of video and image resources from EX1102- ROV and Camera Sled Integration and Shakedown on NOAA Ship Okeanos Explorer

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The focus of the cruise was to conduct both shallow and deep dives for a complete check of system functionality, in addition to train ROV pilots and video engineers on capturing the highest quality video and images during dives. Dive sites were selected from features identified during EX1101 multibeam mapping operations. The original areas proposed for dives were Santa Cruz Canyon, “10-Story Mystery” and “Crazy Caldera” (Fig. 1). “10-story Mystery” is off the southwest coast of Santa Rosa Island, the Santa Cruz Canyon area was immediately south of Santa Cruz Island, and Crazy Caldera was outside of the Channel Islands National Marine Sanctuaries boundaries near San Juan Seamount.

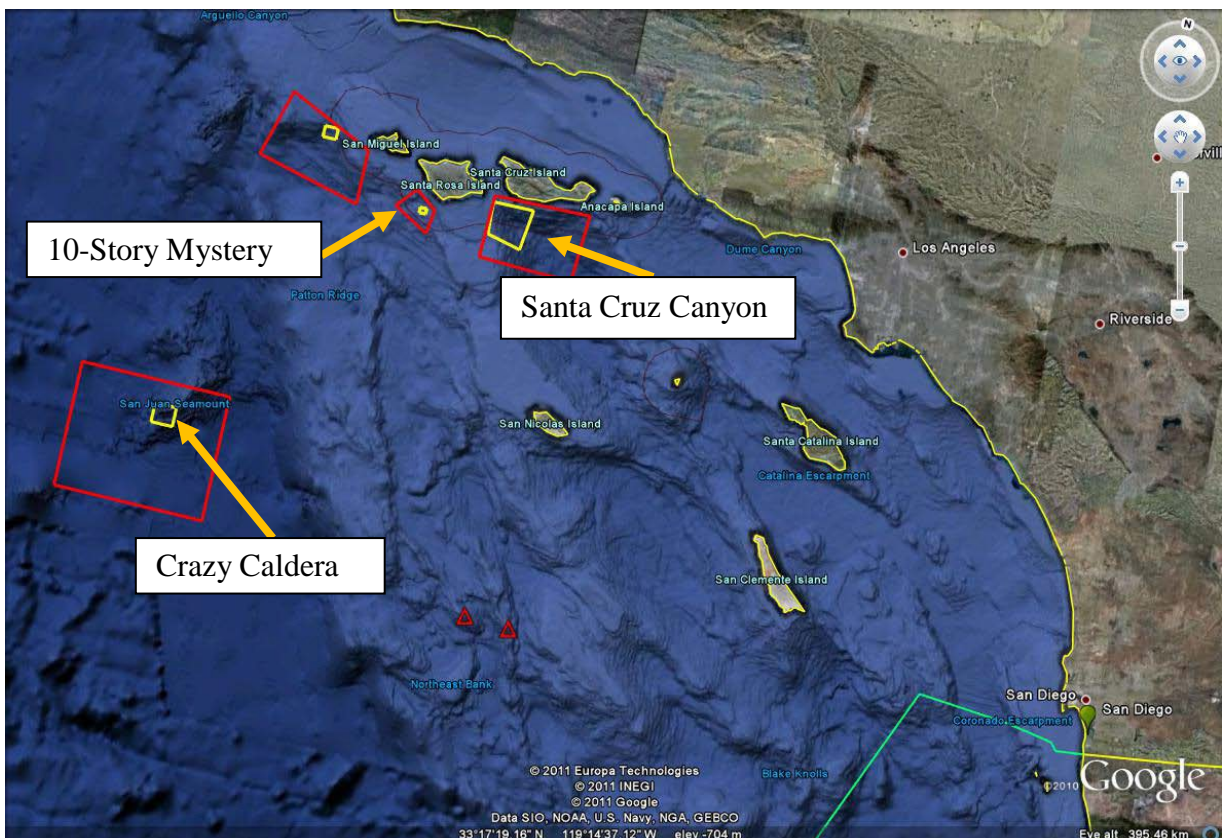


Figure 1. Operating areas in the vicinity of San Diego and the Channel Islands for potential dive site locations for the ROV test dives. Image created and provided in published EX1102 cruise plan.

During EX1102 only seven dives were attempted. Two of those dives were aborted due to technical issues. All success full dives occurred in the Santa Cruz Canyon study area. No dives were attempted in the proposed area off of Santa Rosa Island, and only one unsuccessful dive was attempted near San Juan Seamount. Of the dives that occurred south of Santa Cruz Island, one is currently in an MPA while the other four are from locations not currently closed to a bottom contact (Fig. 2).

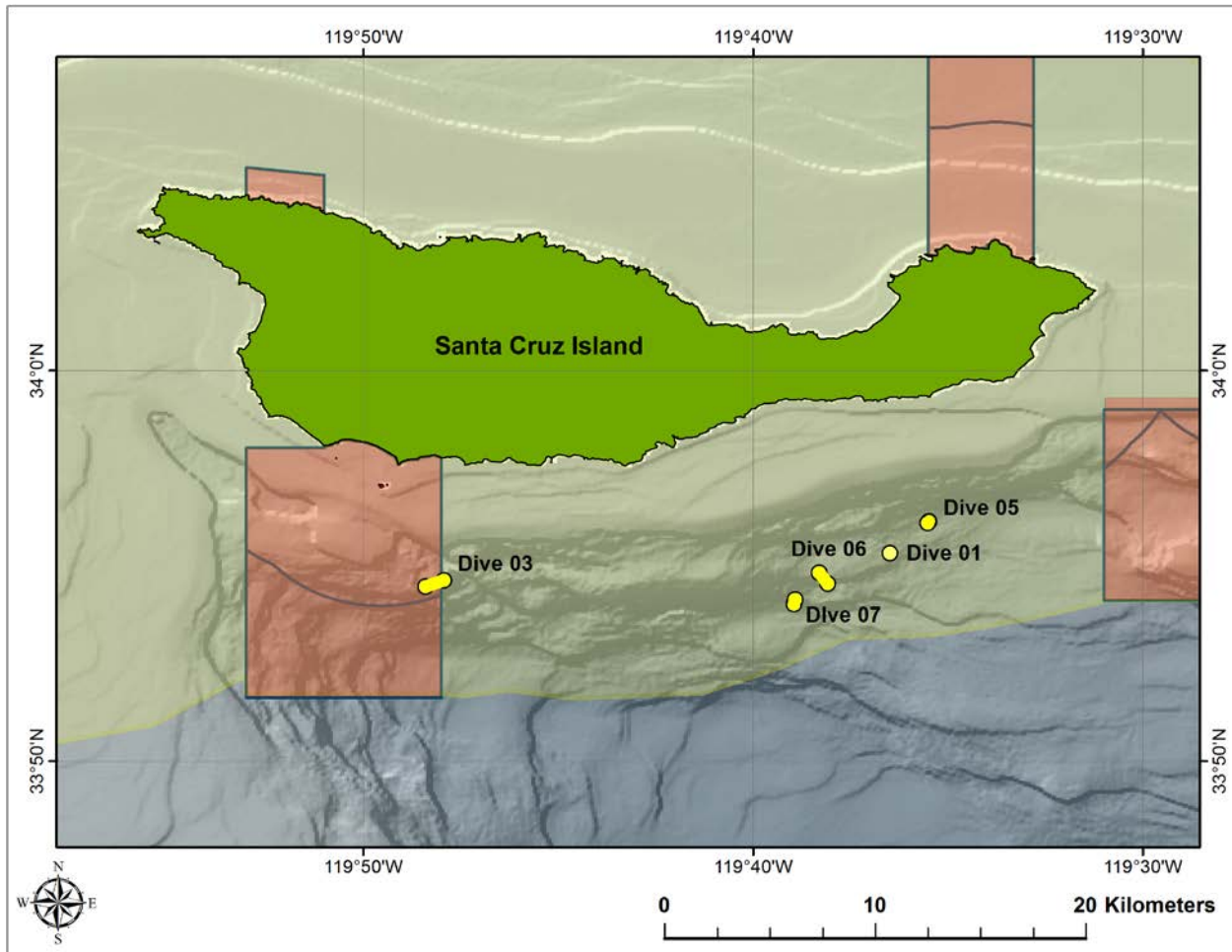


Figure 2. Dive locations South of Santa Cruz Island. Area shaded in red represents areas protected by an MPA. Area shaded in yellow represents the boundary of the Channel Islands National Marine Sanctuary.

Full video files do not exist for any dives however there is a fair volume of archived video highlight clips which could be annotated. There is an hour of footage or more for most successful dives. Table 1 outlines the available footage for each dive. Dives two and four were each cut short due to technical difficulties. Highlight clips include many instances of equipment checks and technical tests the time represents footage that focuses on observed biology in this region.

Dive summaries provided by OER provide a general summary of the habitat observed in each dive. Dive 01 was characterized as being over low relief soft sediment habitat with the occasional small rock outcrops. Dive 03 began at the base of the Gull Island submarine Canyon and progressed up the west wall, and reported trawl marks within the MPA, and unexpectedly high diversity and density along the steep rock walls of the canyon. Dive 05, was described as primarily soft sediment with occasional small to medium rock outcrops, with those rock outcrops being heavily colonized with invertebrates. Dive 06 traversed a steep wall mostly covered in sediment but with occasional hard outcrops and ended exploring the plateau above the wall. Dive 07 was over moderate slope, and reports an “impressive rock reef with many sponges, tunicates, anemones, soft corals, bryozoans, hydroids, and dorid nudibranchs.”

Table 1. Summary of dive depth and time on bottom as well as available video and still images with a biological focus from EX1102.

Dive	Depth (M)	Bottom Time (HH:MM)	Video footage (HH:MM)	Hi-Res Digital Stills
ROV01	803	4:32	0:35	17
ROV02	50	NA	0:04	3
ROV03	786	5:21	1:51	66
ROV04	3988	0:45	0:03	3
ROV05	745	3:19	2:07	131
ROV06	886	5:09	1:00	78
ROV07	1014	3:46	1:27	45

While there are only five dives with substantive video from this cruise they represent a variety of features from low to high relief, and at least two of the dives illustrate potentially high diversity and density. While the overall amount of available footage is large, using our typical procedures may not be possible. Since, the video is segmented into highlight clips 5 minute transects would not be possible, the average clip length for most dives is under two minutes. However, 30 second or even 1 minute transects may be viable. It also seems this video would need to be re-analyzed. The event logs available for download seem incomplete given the large volume of highlight clips that are never mentioned in the event log. It would be interesting to assess the density and soft coral composition of the rock reef documented in the dive summary from dive 07 as it exists outside of an MPA and may constitute an area in need of protection.