

R/V *Media*
Cruise Report
Survey of a Potential Habitat Area of Particular Concern
May 22-May 28, 2000

Prepared by

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On May 28 personnel from Auke Bay Laboratory completed a survey of a potential habitat area of particular concern (HAPC) in the eastern Gulf of Alaska. The survey was designed to determine if the site met the criteria for designation as HAPC. The North Pacific Fishery Management Council has determined that such designation is warranted if the site in question is especially sensitive to natural or human-induced impacts, is of ecological importance to the managed species in question at some stage of its life history, is sensitive to degradation due to a lack of ecological resilience, has a high probability of being exposed to fishing or other impacts, or is rare or unique. Areas of sea floor with high microhabitat diversity due to coarse substrate composition or rich epifaunal assemblages provide complex habitat structure for a variety of bottom-dwelling species and are considered to be readily impacted by commercial fishing activity.

OBJECTIVES

1. Chart the areal extent and bathymetry of the potential HAPC near Cape Ommaney, Baranof Island, Alaska.
2. Identify vertebrate and invertebrate faunal population densities and distributions within the potential HAPC.
3. Compare faunal populations between complex high-relief habitat within the HAPC and surrounding low-relief habitat.
4. Classify habitat at the survey site according to the scheme proposed by Greene et al. (1999).
5. Document the presence of derelict fishing gear and natural or human-caused damage to sessile invertebrates at the site.

SURVEY OPERATIONS

Survey operations were conducted using the R/V *Media*, a 42 m fishery research vessel chartered from the Alaska Department of Fish and Game. The vessel was equipped with SSB and VHF communications systems, radars, depth recorders, DGPS receivers, LORAN receivers, SATNAV, video track plotters with SEAPLOT navigational software, an ultrashort baseline acoustic tracking system, and an underwater submersible communication system. The underwater surveys were conducted with the 2 person battery-powered research submersible DSV *Delta* (Fig. 1).

The submersible is 4.7 m long, travels up to 6 km per hour for up to 4 hours, and dives to a depth of 365 m. It is equipped with 10 external halogen lights, internal and external still and video cameras, video recorders, a gyrocompass, a laser scaling device, sub to tender communications, an acoustic transponder and a hydraulically powered remote manipulator arm.

The charter began on May 22 in Sitka, Alaska, but weather conditions delayed arrival at the survey site until 1500 hrs on May 23. The vessel departed Cape Ommaney at 1600 hrs on May 26. The survey site is located at approximate geographic coordinates 56° 09' N, 135° 07' W, about 20 km west of Cape Ommaney, Baranof Island, Alaska (Fig. 2).

Upon arrival at the site the extent of the habitat feature was roughly charted from the *Media* using the ship's echolocator and DGPS, and this information was used to choose locations for deployment of the submersible *Delta*. The survey plan called for conducting a series of straight line parallel transects along a predetermined heading, with length, orientation, and distance apart depending on the size of the potential HAPC site. The submersible was to be positioned approximately 0.5 m from the sea floor while conducting the transects. While submerged, the geographic coordinates of the *Delta* were monitored at one minute intervals from the support vessel using DGPS and the ultrashort baseline acoustic tracking system. Continuous images of the submersible were obtained from the internal and external video cameras. The external video camera was mounted on the starboard side of the submersible with the image plane parallel to the sea floor. It was equipped with a laser scaling device to obtain estimated sizes of biological and physical components of habitat within the camera's field of view. The internal video camera was also positioned on the starboard side of the submersible oriented with image plane at an approximate 45° angle from the sea floor. It provided a wide angle view of habitat, epifaunal organisms, and fauna in the water column. The audio track of the cameras was used to note the time when the transects began and ended, as well as water depth and the submersible pilot's estimate of current velocity along transects. The audio track was also used to record other observations regarding physical and biological components of the habitat, including substrate, megahabitat and microhabitat characteristics, lateral water visibility, faunal assemblages, behavior and associations of individual species within those assemblages, presence of derelict fishing gear along transects, and any damage to epifaunal invertebrates.

PRELIMINARY RESULTS

The extent of the potential HAPC site was successfully charted from the *Media*. The site measures approximately 400 x 600 m. Maximum vertical relief is approximately 55 m, and water depths range between 201 and 256 m (Fig. 3). The study plan called for running a series of straight line parallel transects over the habitat feature on a predetermined heading but this method proved impractical because of highly variable bathymetric characteristics and current vectors at the site. However, we were able to adequately cover the entire site during the survey, owing to its relatively small size. The area studied is likely an extension or ridge projecting southeastward from the 200 m isobath on the continental shelf, and may be part of a series of such features. The substrate is primarily bedrock and large boulders, most likely composed of mudstone, and provides abundant cover in the form of caves and interstices of various sizes. The epifaunal community is rich and diverse, much more so than the surrounding low-relief sand-gravel habitat. Of particular interest was the presence of a pod of several hundred juvenile Golden King Crab (Fig. 4).

Largest epifauna were gorgonian red tree coral colonies (Fig. 5) and several species of sponges (Fig. 6). These organisms are not randomly distributed at the study site. Review of the video and audio data may provide insights into habitat features or oceanographic processes affecting distributions. For example, examination of direction of flow of the arms of ubiquitous crinoids (Fig. 7) may provide information on localized current patterns within the HAPC. Numerous species of fish, particularly adult and sub-adult rockfish, are present in relatively large numbers and were often associated with gorgonian coral colonies and several species of sponge (Fig. 8).

Derelict longline gear was commonly observed (Fig. 9), as were dead and damaged red tree coral colonies (Fig. 10). The submersible depth and location data will be used to produce a more precise bathymetric chart of the site than we were able to obtain from the *Media*. Data recorded in real time on the submersible system's event log, as well as data recorded on the video and audio tapes, will be used in conjunction with computer software to produce chart overlays depicting locations of particular habitat features and associated biota.

We conducted a total of 7 dives at the site, lasting about 2 hours each, to document habitat and associated biota. An additional 5 dives were performed to collect specimens of red tree coral, sponges, and a starfish believed to prey on red tree coral (Fig. 11). Approximately 25 hours of digital and Hi-8 video were collected, as well as several hundred still images. On the trip back to Juneau, a final dive was performed at Short Finger Bay in Seymour Canal to determine the depth and areal extent of a small assemblage of sponges that will be the location of a future study.

LITERATURE CITED

Greene, H. R., M. M. Yoklavich, R. M. Starr, V. M. O'Connell, W. W. Wakefield, D. E. Sullivan, J. E. McRea Jr., and G. M. Caillet. 1999. A classification scheme for deep seafloor habitats. *Oceanologica Acta*. 22(6):663-678.