Mesophotic coral ecosystems in the Hawaiian Archipelago

J. Rooney · E. Donham · A. Montgomery

of a number of scleractinian zoothanthellate coral reefs at
depths of 30–130? m. Th1D[(-7.9studys)-357.9(haeracerizte)14.1(sa)-3491(nths)-354distri-0

identification of sites for more localized and detailed studies requiring other methods.

Results

A total of 334 seafloor videos and 3,733 still photographs collected by underwater camera sled and ROV dives, covering 407 linear km of seafloor, were analyzed and mapped (Table 1). Still and video imagery and direct observations from 18 submersible dives in the Auʻau Channel and several dozen technical SCUBA dives at several of the MHI were used to collect samples and to help develop a better understanding of MCEs.

Imagery was collected around 6 of the 8 islands in the

of this depth range and were often interspersed with branching corals. It has been demonstrated that Montipora capitata is able to meet all of its metabolic energy requirements through heterotrotropic feeding (Grottoli et al. 2006), and optimal conditions for these reefs are hypothesized to include direct exposure to strong currents with high concentrations of zooplankton.

Leptoseris coral MCEs

Leptoseris
at depths from ca. 80 m to at least 130 m (Fig. 4c). In the Hawaiian Archipelago, Leptoseris

optimal light interception and reduced skeletal carbonate deposition (Fricke et al. 1987), they create a myriad of

43% in the 40–50 m depth range and then declined more rapidly than in the MHI. Coralline algae peaked at 8% in the 30–40 m depths and declined gradually.

Peaks in cover of both scleractinian corals and macro-algae occurred within depth bins 20 m shallower in the NWHI than in the MHI. Overall, the MHI had markedly deeper and greater percentages of scleractinian coral. Within the archipelago as a whole, the total mean percentage of all types of living cover hovered between 40 and 50% between depths of 30–70 m and then abruptly

Effective ecosystem-based management requires that all of the significant components of the ecosystem be explicitly considered and included in management efforts. Programs that ignore the mesophotic realm are systematically