

DISTRIBUTION, ABUNDANCE, AND UTILIZATION OF DRIFT MACROPHYTES IN A NEARSHORE SUBMARINE CANYON SYSTEM

Christopher Harrold
Karen Light
Susan Lisin
Monterey Bay Aquarium
886 Cannery Row
Monterey, CA 93940, USA

The potential importance of exported drift macrophyte material from kelp forests to adjacent deep-sea benthic communities near Monterey Bay, California, was investigated using a deep-diving remotely operated vehicle (ROV). Temporal and spatial variation in drift macrophyte and megafauna abundance and distribution were determined at continental shelf (Pt. Joe) and submarine canyon (Carmel Submarine Canyon) study sites. Twenty-two different types of macrophytes were encountered during the surveys, most of which were brown algae, including the giant kelp Macrocystis pyrifera. The carbon biomass of M. pyrifera alone ranged from less than 1 mg C m⁻² at Pt. Joe to over 10000 mg C m⁻² in the canyon. These data, combined with estimates of drift kelp decomposition rates, suggest that drift M. pyrifera may account for up to 60% of the carbon flux to 500 m depth in canyon habitats. M. pyrifera was the primary component in the guts of Allocentrotus fragilis from the Carmel Submarine Canyon while detritus and other non-plant material dominated the guts of animals from Pt. Joe. Both gut fullness indices and gonad indices were higher from canyon animals compared to their Pt. Joe counterparts. Our data therefore suggest that macrophytes transported from kelp forests play a potentially important ecological role in adjacent deep-sea benthic communities.