



Ocean Ecology

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I. INTRODUCTION

Ocean ecology is the subdiscipline of oceanography dealing with the environmental adaptations and mutual interactions of the organisms populating the world's oceans, from the recently discovered, heat-loving bacteria of deep sea vents to the majestic blue whales.

Ecology, the systematic study of the interrelationships of organisms, is only one century old, as is oceanography, which began with the circum-global *Challenger* Expedition (1872–1876); ocean ecology is therefore a new field, with many scattered observations still awaiting synthesis, perhaps similar to geology before the advent of plate tectonics.

This brief account presents some of the elements that will have to be incorporated in such synthesis, with emphasis on the processes that generate biomass that can be exploited to meet human needs. It concludes with the requirements—and a plea—for a mode of exploitation that can ensure the sustainability of the living resources of the ocean.

II. MAJOR ECOLOGICAL ZONES OF THE OCEANS

The ecological zones of the oceans can be defined according to different sets of criteria, depending on the specific discipline of the scientists performing the classification. One type of classification, by depth zone and distance from the coast, is illustrated in Fig. 1, which also defines a number of terms used in this article.

An alternative classification is presented in Fig. 2, based on surface features of the ocean and work performed by fisheries oceanographers mindful of biogeography. The marine ecosystems thus identified are large, but perhaps still homogeneous enough for management by appropriate international management bodies. (Unfortunately, these areas do not overlap with the 15 "FAO Areas" used by the Food and Agriculture Organization of the United Nations to present global fisheries catches.)

Another, more basic classification scheme would consist of differentiating the entire world ocean into an enormous body of cold water (-2° to