

LME's: A Regional Approach to Marine Resources Management

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Within the past decade, a new regional approach to fisheries science has emerged, that of Large Marine Ecosystems — extensive aggregates of fish populations which are linked together in predator-prey relationships. These ecosystems, which tend to exist in the marginal sectors of the oceans, are characterized by unique bathymetry, hydrography and productivity. To date, 49 Large Marine Ecosystems (LME's) have been identified, several of them occupying semi-enclosed seas, such as the Baltic and the Mediterranean. The LME's are particularly important because of the structure of their biomasses, with particular attention paid to their commercially valuable species. Over time the LME's are subjected to certain stresses, both natural and human-induced, which may alter the biomass structure, often to the detriment of the valuable stocks. Among the stresses are shifts in the direction and flow velocities of currents, large-scale environmental changes in water temperature, overexploitation of preferred stocks, pollution of breeding and nursery grounds, and habitat degradation through the destruction of wetlands. The existence of such stresses would seem to indicate the need for some sort of management of the ecosystems.

The objective of an LME management program would be primarily to maintain the stability of the biomass structure, and if possible, to improve the structure through the use of adaptive management techniques. Two corollary objectives would be preventing environmental degradation of the coastal areas and increasing the body of scientific knowledge concerning the general marine ecology. To accomplish this, considerable scientific data and data assessment are required.

Beyond the need for data and research, several functional issues need to be faced before an international — or even national — LME management program can be successfully initiated and maintained. For example, how will remedial measures to restore impacted biomass structures be selected and introduced within an LME? What are the real and/or perceived costs to concerned interests if management action is undertaken? At the international level, will some countries stand to benefit through management practices while others are disadvantaged? How high a priority level do fisheries matters have within the participating countries' national governments? The quest for international LME management programs has barely begun, and there is little evidence yet to suggest what the real costs and benefits of successful management efforts may really be.