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The Ivory Barnacle, Balanus eburneus, as a Biological Indicator in Brackish Waters of South Florida

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Abstract

During the past decade unprecedented changes have been wrought in coastal lagoons, bays, and estuaries as a result of solid-fill causeway construction, dredging, bulkheading, and diversion of large quantities of fresh-water from the interior. Often the greatest change occurs in areas that have been noted for heavy fishery production. In some cases these changes are known to have reduced landings from such fisheries.

When conflicts of interest arise, the biologist is often called upon to decide for or against the proposed development. Normally these biological investigations are of an emergency character with little time allowed with which to conduct the investigation. In fairness to all parties, some technique is needed that will enable the biologist to extend his observations beyond the scope of the emergency investigation. Such might be provided by an animal or plant "indicator" species. The indicator ideally would have wide distribution throughout the coastal waters of the southeast, be common enough that it could be used in any area, and would give an indication of the traditional pattern of the hydrography as well as the probable pattern of local productivity.

Studies on the ivory barnacle (Balanus eburneus) of south Florida have shown the species is common and widespread. It shows variation in shape, growth rate, and population density with changes in the environment. Studies on animal and plant associates in the different environmental categories under which the barnacle exists have been shown to be useful in determining the probable productivity of the area under different hydrographic regimes.

Results are encouraging enough to make it seem likely that the barnacle can be used as a field tool for the biologist who is called upon to investigate emergency studies in coastal waters.

Effects of Civilization on Striped Bass and other Estuarine Biota in Chesapeake Bay and Tributaries [1]

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Abstract

Chesapeake Bay, a highly productive estuary along the mid-Atlantic Coast, annually produces commercially about 80 pounds of seafood per surface acre. Its major features and productivity have been subjected to great influences of civilization, some catastrophic, others moderate but sustained. The estuary has been remarkably resilient and is still considered a relatively unspoiled region. The man-made changes, many wasteful, and others beneficial, have not overall greatly reduced its potential productivity, although the carrying capacity (especially the bottom) has been reduced. Man has compensated partly for such changes by adding to the fertility of the waters.

The biota has been subjected to density-independent and density-dependent factors. The former has produced permanent and devastating effects through sedimentation, pollution, wet-land reclamation, and dams. The increased construction of dams, while continuing to affect fish movements, through water-flow regulation, will greatly endanger the existing biota by the alteration of circulatory, flushing, and tidal patterns of the lower estuary. Highway construction, detergents, pesticides, and radioactivity loom large in the future of estuaries. Density-dependent effects produced by man's systematic seafood harvests and his meager attempts at manipulating or cultivating estuarine crops have had little effect on the long-range productivity of the Bay. Marked

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