ECONOMIC, POLITICAL, AND CULTURAL REALITIES IN THE SCIENTIFIC MANAGEMENT OF REEF RESOURCES IN THE PACIFIC ISLANDS

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Use of scientific methods directed at maintaining reef sustainability must be conducted within a broad context that considers economic, political and cultural realities in relation to management goals and techniques. Scientific techniques of monitoring, restoration, and mitigation are simply tools that can only be used to advantage in certain situations if the economic and social factors are favorable. Application of conservation, mitigation and restoration methods will vary under different political and cultural situations. Two management systems exist in the Pacific islands, which we have termed the "Traditional" and the "Western" systems. Sustainability of the resource is the primary objective in both, but the methods of achieving this goal can be quite different. We have summarized the major differences that exist between these systems in the areas of management practices, management focus, knowledge base, dissemination of information, resource monitoring, legal authority, access rights, stewardship and enforcement. These differences must be taken into account in developing management plans. We note that each of the two systems has strengths and weaknesses, so managers are encouraged to incorporate the best qualities of each to fit local management needs. In the area of economics, we present a management model for decision making concerning the application of conservation, mitigation or restoration techniques. We propose that cost of maintaining reef sustainability shows an exponential increase as we move along a management continuum from prevention through mitigation and into restoration while effectiveness shows an exponential decrease. We argue that optimum cost-effectiveness of management action is highest when the focus is on prevention, preservation and protection of reef resources. Further, this model demonstrates that investment in scientific research directed at the advancement of theory and application of improved practices can translates into economic gain as well as protecting our resources. (Key words: *sustainability, economics, politics, social considerations*>)