

OCEAN REGENERATION

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Contents

1. Introduction
 2. Developing Ocean Regeneration Plans
 3. Restoring Degraded Habitats
 4. Stocking Fingerlings
 5. Establishing Artificial Habitats
 6. Promoting Sustainable Fishing
 7. Enhancing Marine Environment Quality
 8. Facilitating the Co-management of the Marine Environment in the 21st Century
- Glossary
Bibliography
Biographical Sketch

Summary

Many parts of the world have been experiencing a decline in ocean productivity for the past 20 years or so. The causes of the depletion of fish and marine resources include, particularly, land-based pollution and habitat loss. Every day hundreds of thousands of tons of various wastewater and solid wastes are being dumped into the seas, and this seriously degrades the quality of the marine environment and harms the health of marine organisms. Additionally, some destructive fishing is conducted in coastal areas. For instance, the inappropriate use of strolling nets in shallow coastal waters may deplete the number of fingerlings. Dynamite fishing which uses explosives damages fish habitats and, consequently, decreases fishery production. These activities should be well controlled by law enforcement.

However, ocean regeneration requires a well-considered and integrated plan. This may mean follow-up action must be taken. The restoration of degraded habitats, stocking fingerlings and the establishment of artificial reefs are often used to increase marine productivity. There is also a necessity to monitor the overall quality of the marine environment and properly control land-based pollution discharged into the oceans. Fundamentally, education programs for fishermen and the general public should be provided, because they are of importance to the long-term benefits of coastal communities as well as the marine ecosystem. It has also been recommended to seek the involvement of the private sector to establish and facilitate cost-effective co-management of marine environment in the 21st century.

1. Introduction

Overexploitation of fishery resources due to modern fish-finding techniques and harmful practices, like fish poisoning and blasting, have become serious concerns in many countries. The industrial and agricultural pollution of bays, estuaries and oceans has continuously been degrading the coastal environment. In many countries, the reclamation of coastal wetlands (e.g., mangroves, salt marshes and tidal flats) which provide food, shelter and breeding areas for a large spectrum of marine and estuarine organisms is particularly harmful to the marine ecosystem. Constructing artificial structures (e.g., seawaters, jetties) and damming rivers, both of which may interfere with established wildlife migration patterns and natural processes, also aggravate the threatening situation for migratory fish in coastal areas. All of these human activities in turn contribute to the depletion of fishery resources and other marine lives.

For certain types of anthropogenic effects, the ecological consequences of change in marine biodiversity are at least partially known. These include unsound friendly fishery activities, physical habitat destruction, eutrophication, the release of toxic chemicals and the transport of exotic species. There are also more subtle human causes of change in biodiversity, the potential ecological consequences of which are largely unknown. Some examples of global climate and associated effects, such as sea-level rise and changes in global ocean circulation, loss of coastal sensitive areas and an alteration of marine biodiversity, need to be further studied. In response to these concerns, the sustainable development of the marine environment and well-planned ocean regeneration programs are believed to be key issues for coastal nations.

2. Developing Ocean Regeneration Plans

The degradation of the marine environment has been a common problem and, therefore, has been a pressing issue to be tackled by coastal nations. Since all coastal nations share responsibility for protecting the marine environment, many of them have devised ocean policies as guidance for them to further develop substantial activities in their ocean regeneration plans. More active initiatives have been proposed and are planned to enhance the productivity of marine ecosystems. In 1998, for example, Australia announced its Oceans Policy that calls for "understanding, protecting and wisely using" the oceans. A "Living Oceans Agenda" of the United States serves as another example. At the conclusion of the 1998 National Ocean Conference in Monterey, California, President Bill Clinton was urged to endorse three national initiatives in the "Living Oceans Agenda" to rebuild marine resources. These initiatives might well serve as a reference for all nations that share the same concerns over the declining fisheries and the degradation of the marine environment. They are to:

- create a US \$200 million-a-year federal ocean conservation investment fund to restore the nation's fisheries and protect ocean biodiversity;
- complete an inventory of America's ocean fisheries, wildlife and habitats in its Exclusive Economic Zone within six to eight years; and
- launch a five-year pilot program using the Monterey Bay area as a model to develop regional partnerships for the protection of coastal resources in communities nationwide.

It was proposed that the ocean conservation fund of US \$200 million a year use revenues from offshore mineral leases so that it "would allow the current use of non-renewable resources in the ocean to support the sustainability of renewable living ocean resources". For the success of all initiatives and further actions, the Clinton administration also called on the National Ocean Conference during the 1998 International Year of the Ocean to help shape a comprehensive national ocean policy. In accordance with the ocean policies, coastal countries are urged to create and implement ocean regeneration plans. If this is to bring about ocean regeneration, it is recommended that this national plan include the following elements:

- a leading agency or an integrated administrative mechanism with the mandate, will and skill to involve all responsible stakeholders in the planning and acting on ocean regeneration;
- adequate resources and clear jurisdiction for agencies responsible for developing and implementing the plan;
- scientific research and well-established information systems to support the needs of planning and management of the ocean environment;
- positive goals and objectives, which are based on the sustainability of the marine environment, to protect and regenerate the ocean;
- active and effective actions to maintain, restore and enhance the productivity of the marine ecosystem as well as the natural processes of the natural environment;
- efficient management of development activities in order to ensure healthy, resilient, productive oceans with increased aesthetic, social and economic value to the community; and
- an evaluation operating system applied on a regular basis to continuously improve the performance of implementing the ocean regeneration plan.

Policies and measures to deal with ocean regeneration should be cost-effective, so as to ensure the maximum benefits at the lowest costs. To improve their performance, there is a necessity to underscore the fact that all related programs need to be periodically re-evaluated.

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Biographical Sketch

Wen-Yan Chiau is an Associate Professor in the Department of Marine Environment and Engineering at National Sun Yat-sen University in Kaohsiung, Taiwan. After earning his B.Sc. in Urban Planning (1976) and L.L.M. (1980) in Taiwan, he was granted his M.A. in Urban Planning (1989) and Ph.D. in City and Regional Planning (1991) from the University of Pennsylvania. Dr. Chiau's expertise is in the field of environmental planning and management, especially in the areas of coastal zone management, wetland conservation, coastal tourism, ocean policy and environmental law. He is author of the first book on coastal zone management in Chinese entitled, *Coastal Management: Theory and Practices*, published in November 2000. During his some 20 years as a planner and conservationist, he has served as both project manager and principal advisor on a wide range of projects related to the marine environment. In addition to giving lectures, conducting research projects and advising graduate students, he actively participates in related governmental affairs and serves as a member of various *ad hoc* governmental committees. Currently, he is a member of the National Council on Sustainable Development of the Executive Yuan (Cabinet), the highest-level agency formulating conservation and sustainable development policies in Taiwan. He is also concurrently an advisor for the Subcommittee on Sustainable Development of the Legislative Yuan (Congress), a reviewer of the "National Biodiversity Report" and vice coordinator of the committee on "National Oceans Policy". On a voluntary basis, Dr. Chiau contributes a great deal of his time to several NGOs in Taiwan. He is the president of Wetlands Taiwan and the CEO of the Foundation of Ocean Taiwan. As part of his active involvement in international matters vis-à-vis the marine environment, Dr. Chiau has been one of the representatives of the Chinese Taipei Delegation in the APEC Meetings of the Marine Resource Conservation Working Group since the sixth meeting in Sidney, B.C., Canada in 1994. He is an executive board member of the Asia-Pacific Environmental Council (AEC) and was responsible for organizing the sixth Asia-Pacific NGOs Environmental Conference (APNEC-6) held in Taiwan in 2002. APNEC meetings, held every two years, have been among the most important events for NGOs in the region.