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Ocean & Coastal Management 47 (2004) 257–272

www.elsevier.com/locate/ocecoaman

Ocean &
Coastal
Management

Strategic planning for a wetlands conservation greenway along the west coast of Taiwan

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Abstract

Most of the wetlands in Taiwan have been filled, over-exploited, or polluted, and this has injured coastal ecosystems and damaged local public welfare. As a result of global trading and Taiwan's recent membership in the World Trade Organization (WTO), capital investments in local traditional agriculture and aquaculture will further decline and cause greater recession in rural areas. To help address this growing problem, a strategic plan designed to conserve, restore, and properly utilize the wetlands of Taiwan is proposed. The primary goal is to establish a "wetlands conservation greenway", which combines wetland areas that currently merit designation as protected areas with adjacent areas that are subject to wise utilization (sustainable use) or that need to be rehabilitated. This plan will create a large corridor along the north–south axis of the west coast of Taiwan, which will connect the various types of wetlands to form a conservation greenway. The conservation greenway will help maintain or reestablish the continuity and integrity of diverse wetland areas and promote the development of general guidelines for the national management and regulation of wetlands. Within the greenway, three different types of wetland management areas are recognized: protected areas, ecological parks (for sustainable use), and restoration areas. Each type of wetland management area will have a distinct management approach based on its contribution to wetlands conservation goals. Other important elements of this strategy include: (1) a philosophy for managing coastal wetlands, (2) a delineation of the proposed greenway, its

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doi:10.1016/j.ocecoaman.2004.01.005

distinct areas, and approaches proposed for their respective management, (3) an implementation framework and action plans, and (4) an example of conservation proposal for a section of the coastal wetlands conservation greenway in Changhua County in west-central Taiwan.

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Keywords: Coastal wetlands; Conservation greenway; Taiwan

1. Introduction

1.1. *Why establish a wetlands conservation greenway?*

Wetlands along the coasts of Taiwan are severely threatened by habitat destruction resulting from economic development. Extensive areas, primarily lagoons and intertidal flats, have already been lost due to land reclamation. Pollution, salt-water intrusion, flooding, and land subsidence are causing further habitat degradation. Industrial and commercial developments have caused the most serious loss of wetlands [1–3]. These developments result in loss of nursery grounds for various fishery stocks and abandonment of fish and shellfish culture ponds and rice paddies. Fishermen and farmers now face declining production resulting in lower incomes. In addition, Taiwan's entry into the World Trade Organization (WTO) in 2002 will cause further decreases in aquacultural and agricultural production, leading to increased pond and farm abandonment and additional unemployment. In order to protect, improve, and restore wetland functions, while simultaneously reducing income losses to fishermen and farmers who may be abandoning their land, it is necessary to plan and implement a program to transform these less-competitive lands into wetlands that will be preserved for sustainable use. This goal has become one of the most urgent issues for the current government.

The spatial and temporal integrity of ecosystems contributes to their resistance, persistence, and resilience when they are disturbed [4]. Thus, a large, complete, continuous area is far more useful for maintaining ecosystem integrity than several smaller, fragmented ones [5]. The west coast of Taiwan consists of diverse types of wetlands. The designation of a contiguous "wetlands conservation greenway" (as defined below in Section 3.1) will include all these wetland types thereby helping to protect Taiwan's natural heritage and sustain its economic development.

Although ecosystems are independent of political boundaries, the management of such a large wetlands conservation greenway will, of necessity, be under the control of governments at various levels. Therefore, it is essential to establish sound guidelines and general standards at the national level, which are feasible and effective for managing the conservation of Taiwan's wetlands.

1.2. *Objectives of this strategic plan*

This strategic plan describes (1) a philosophy for managing wetlands conservation, (2) a proposed definition for the wetlands conservation greenway and the wetlands

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