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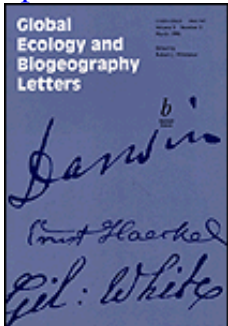
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Different Kinds of Mangrove Forests Provide Different Goods and Services

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MANGROVE SPECIAL ISSUE**Different kinds of mangrove forests provide different goods and services**

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Abstract. The goods and services that mangrove forests provide to society are widely understood but may be too generally stated to serve as useful guidelines in decision-making. Understanding the differences between fringe, riverine, and basin forests may help to focus these guidelines and to determine the best use of a particular forest. Fringe mangroves are important primarily for shoreline protection. Riverine forests, which are likely to be the most productive of the three types of forests, are particularly important to animal and plant productivity, perhaps because of high

nutrient concentrations associated with sediment trapping. Basin forests serve as nutrient sinks for both natural and anthropogenically enhanced ecosystem processes and are often important sources of wood products. Exploitation of a forest for one particular reason may make it incapable of providing other goods and services.

Key words. Mangrove forests, flood protection, nutrients, wastewater recycling, timber harvesting, shrimp ponds.

INTRODUCTION

Mangrove forests are widely recognized as providing a wide variety of goods and services to people, including protection from floods, provision of a variety of plant and animal products, sediment trapping, and nutrient uptake and transformation (FAO, 1994). Destruction of these forests continues, however, in spite of this understanding of their importance. Although these wetlands are abundant along many protected shorelines around the world, the life-sustaining but still poorly documented benefits they can provide, such as support to offshore fisheries, are likely to be diminishing.

The lack of a direct, easily observed relationship between a mangrove forest and the benefits it provides (and sometimes the lack of sufficient research to document it) may be one reason for continued exploitation, and often loss, of these wetlands. Another reason may be the generality that cloaks many discussions of the importance of these wetlands. In fact, not all mangrove forests provide all the goods

and services attributed to them. There are significant differences in the characteristics of mangrove habitats, not only between continents and regions but within individual stands of mangroves as well. Using a simple rationale for classifying a given mangrove stand may assist land-use managers in determining its likely value to society and subsequently in using it more wisely. The purpose of this paper is to develop a simple functional classification of mangrove forests and to identify which goods and services are likely to derive from which kinds of forests.

DIFFERENCES WITHIN AND AMONG MANGROVE FORESTS

Efforts to understand mangrove forests focused for many years on the significance to tree species distributions of spatial differences in soil water characteristics (Macnae, 1968), short-term differences in propagule dispersal and survival (Rabinowitz, 1978; Smith, 1987), competition among species (Clarke & Hannon, 1971), and geomorphological history or characterization of estuaries (Thom, Wright &

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