

# Peatswamp ecology and sustainable development in Borneo

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While tropical lowland peatswamp ecosystems are well-represented among the major forest formations of Borneo, they are rare outside South-East Asia. They are richly endowed with biological diversity, including the crocodile (*Crocodylus porosus*), which is a threatened species, and are characterized by their organic (histosol) soils that have developed recently, approximately within the past 5000 years. Their unique ecological features, as well as logistical difficulties in accessing and utilizing peatswamps, have not, however, deterred exploitation. Some of the tallest, most commercially desirable timber species, such as ramin (*Gonystylus bancanus*) have been harvested routinely in the peatswamp forests of Sarawak. Also, due to its primary location in coastal lowlands in close proximity to human activity, drained and reclaimed peatswamp land is desirable for development of highways, housing, and industrial and plantation estates. Ecological information is needed urgently by decision-makers and land-owners, who may be contemplating conversion of natural peatswamp ecosystems to other land uses, to undergird conservation policy and best management practices for the wise stewardship and sustainable development of this ecosystem.

The paper provides an overview of peatswamp ecology with recommendations for avoiding or reducing potential ecological impacts associated with peatswamp development in Borneo, which include a moratorium on further development until a Borneo peatswamp survey and inventory as well as a holistic, multi-sectoral, integrated environmental assessment and planning procedure are completed; gazettement of pristine peatswamp forest parcels as totally protected areas; implementing highly restricted multiple-use policy that allows development only in degraded areas, and insuring protection of the critical hydrological role of peatswamps in providing fresh water supply for human use as an overriding criterion in assessing any development scheme.

*Keywords:* tropical peatswamps; peatlands; conservation; biodiversity; Borneo.

## Introduction

Peatswamp forest, one of the major forest formations occurring in Borneo (the world's third largest island) and vicinity (Fig. 1), is perhaps the most heavily exploited and least known scientifically in South-East Asia (Whitmore, 1995). In Borneo, it occurs along the coasts of Sarawak, Brunei Darussalam, Sabah and Kalimantan on low-lying, poorly-drained sites (Fig. 2), and exists further inland than its neighbouring beach forest and mangrove forest formations. Pristine lowland peatswamp ecosystems are perhaps best exemplified by those found in the Rajang Delta and Baram River areas of Sarawak, and cover over 1.6 million ha statewide, representing 13% of the total land area of the state (Wong, 1991). Over the past 4500 years, peat has accumulated as much as 20 m in some areas (Anderson, 1961).