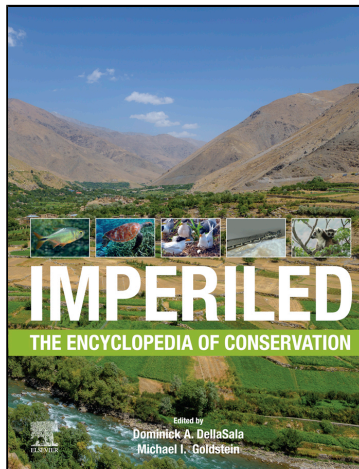


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Riparian Forest of Western Ghats, an Endangered Ecosystem

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Abstract

The tropical riparian evergreen forests in the Southern Western Ghats were mapped and described based on biodiversity and spatial distribution. The ecosystem was assessed against multiple criteria, IUCN Red List of ecosystem (Ver. 1.1.) for the first time in India. The periodic reduction of riparian vegetation revealed a loss of 83% in the past 100 years due to factors such as dams, forest plantations, reservoir operation coupled with climate change induced flood. At minimum degradation rate, the collapse of the ecosystem is projected within 20–40 years, indicating it as Critically Endangered (CR). Prediction of potential areas based on Niche modelling and terrain suitability provided three priority areas and policy suggestions for conservation and restoration.

Introduction

The tropical evergreen forest formation in the Western Ghats, an important biodiversity hotspot in the Indian Subcontinent, is unique with its diverse flora and fauna. The Western Ghats has more than 30% of plant, fish, herpetofauna, bird, and mammal species found in India (Bawa et al., 2007). It harbors more than 5000 species of flowering plants including more than 1800 endemics. The Western slopes of Western Ghats, especially in the part of Southern Western Ghats of Kerala, has a wide range of wet forest formations including tropical moist deciduous to tropical wet evergreen and montane shola forests due to the high monsoonal rainfall in the region. Apart from the low elevation to medium elevation evergreen and wet evergreen types, different kinds of moist forest types; such as the endangered Myristica swamp forest, Dry evergreen forest, Shola grassland ecosystem and vegetation of the lateritic plateaus, are considered to be unique. The riparian forest in the rainfed region of the Western Ghats remained unnoticed until 2000, even though Champion and Seth (1968), in the revised forest classification of India, mentioned the riparian forest in the dry part of the country as an independent forest type. A study on the riparian vegetation in the Chalakudy River (Amitha Bachan, 2003) pioneered detailed documentation of the floral faunal wealth and its importance as a unique vegetation.

The Athirappilly Vazhachal (waterfall), popularly known as 'Indian Niagara' in the Chalakudy River (Fig. 1A) is always a fascination to everyone who visits the section of Ghats in Kerala. Regular visits to the falls in the lower elevations (100 m from mean sea level MSL), and meanders alongside the Anamalai road or the trail along the banks of the river up to a 6 km upstream from the beautiful Vazhachal rapid is a unique evergreen forest formation. The narrow belt of low elevation evergreen riparian forest is verdant even in extreme summer months and easily distinguishable from the surrounding deciduous teak plantations (Fig. 1B). The presence of tall evergreen forest trees such as *Dipterocarpus indicus*, *Vateria indica*, *Prioria pinnata* along with obligate riparian elements, *Barringtonia acutangula*, *Humboldtia vahliana*, *Homonoia riparia*, accommodate many endemic and threatened plants and fauna including the Great hornbill (*Buceros bicornis*), Malabar pied hornbill (*Anthracosceros coronatus*), Malabar grey hornbill (*Ocy-ceros griseus*) and Lion tailed macaque (*Macaca silenus*).

The available literature hardly supported the presence of the riparian evergreen vegetation since the revised classification of vegetation in India by Champion and Seth (1968), that mentions only the riparian fringing forest type in the dry areas of Central India. However, the richness of the rainfed sections of the Ghats in Kerala as catchments of 41 west and three east-flowing rivers, support the hypothesis of riparian forest types in the moist Western Ghats. The Chalakudy River is the fifth longest river amongst these catchments. A comprehensive assessment of the 1704 km² area of the river basin, spread over four different bioclimatic regimes revealed the existence of several riparian forest types (Amitha Bachan, 2010).