Land Cover Change Impacts on the Abundance and Composition of Flora in the Densu Basin

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Abstract

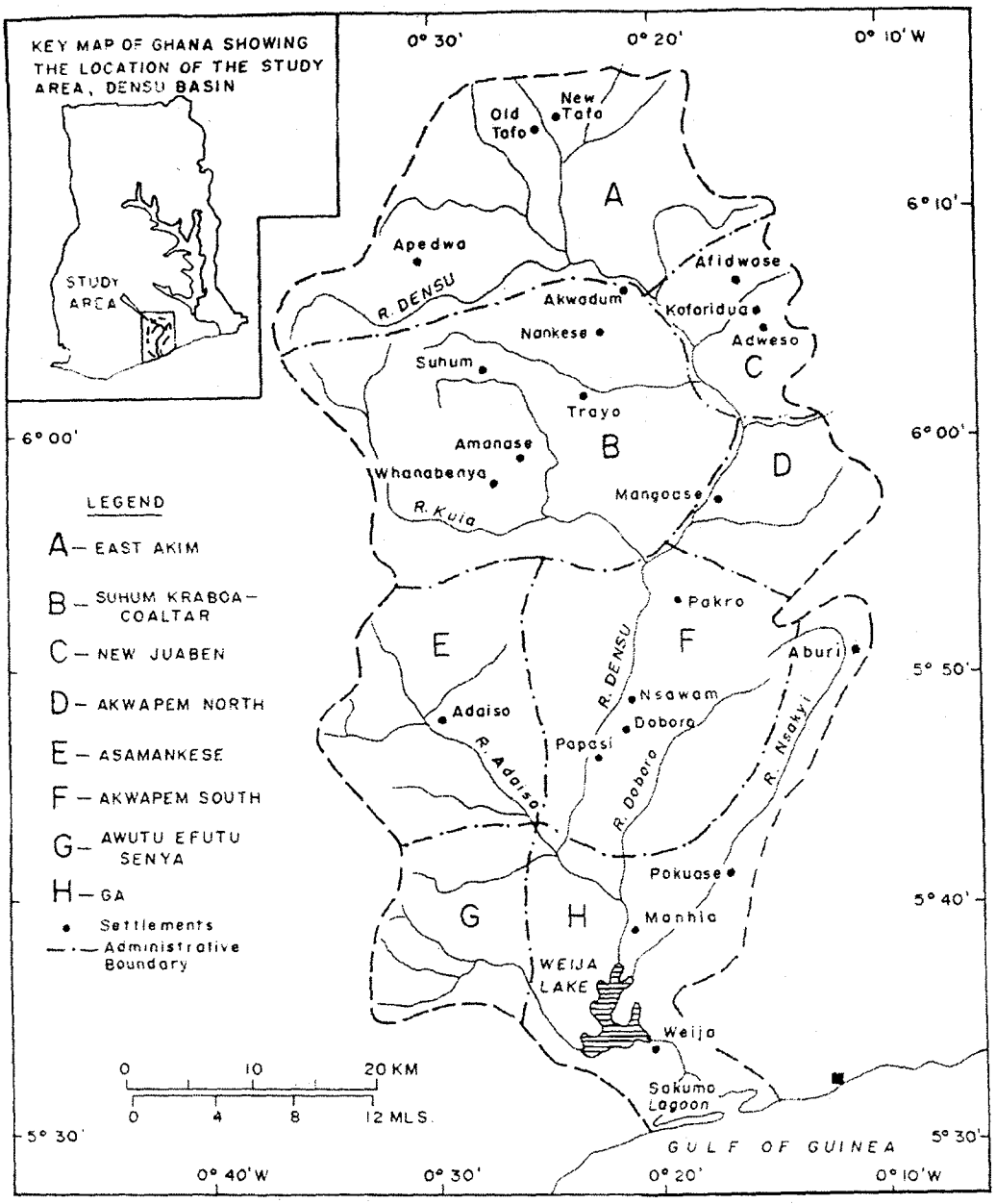
The Densu Basin is one of the most intensively cultivated river basins in Ghana, giving rise to a complex mosaic of land cover categories with concomitant alterations in the floristic composition of the area. Both cocoa cultivation and farming of staples have contributed significantly to both qualitative and quantitative degradation of the hitherto rich floristic composition. In comparison, the plant community of existing pockets of forest, though patchy and much disturbed, possess a much higher population density of larger/bigger trees and are more species diverse than the vegetation associated with the cocoa or food crop farms. The observed vegetation degradation is worst on fields put to food crop cultivation. To improve the ecological integrity of the basin for sustainable agriculture, tree-based agrosystems that are locally adaptable to the soils of the area may have to replace the current system of arable farming.

Introduction

The Densu Basin forms part of the Southern Forest-Savanna Transition frontier and transcends eight administrative districts, namely East Akim, Suhum-Kraboa-Coaltar, New Juaben, Akwapim North, Akwapim South, Asamankese, Awutu- Efutu-Senya and Ga districts (Fig. 1). The area constitutes one of Ghana's most productive agro-ecological ecotones (Gyasi *et al.*, 1994). Lying between latitudes 5° 55' and 6° 10' N and longitudes 0° 25' and 0° 15' W, the area was once the cradle of Ghana's cocoa industry and still remains an active zone for the cultivation of the crop, though production is progressively on the decline. In addition to the cultivation of cocoa (*Theobroma cacao*) and oil palm (*Elaeis guineensis*), the inhabitants are sustained economically by the cultivation of such food crops as maize (*Zea mays*), cassava (*Manihot utilissima*) and plantain (*Musa paradisiaca*).

In the recent past, agricultural activities in the area have not only been intensified but also become pervasive to the extent that most of the landscape has been dramatically transformed in the process into a complex mosaic of land cover classes (Attua, 1996), Also, a study by Agyepong & Kufogbe (1996) indicated that the trajectory of land use and cover changes in the basin have progressively shifted from cocoa cultivation to food crop farming. Unknown, however, are the ecological implications of this progressive change in land cover characteristics, particularly on the abundance and composition of flora in the basin. As succinctly encapsulated in a joint report by the International Geosphere-Biosphere Programme (IGBP) and the Human Dimensions Programme (HDP) on the relationship between land use and cover change, such alterations in land use and cover characteristics have significant implications on the abundance and composition of vegetation (IGBP/HDP, 1993).

The objective of this study, therefore, was to comparatively examine and quantify the aggregate effects of this agricultural



Source: Soil Research Institute, Kumasi, 1965.

Fig. 1. Administrative districts of the Densu Basin