

# A Janus-faced biodiversity change and the partiality of ecological knowledge in a world biodiversity hotspot in Ghana: Implications for biodiversity rehabilitation

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## Abstract

The Gyamfiase–Adenya–Obom cluster of villages in the forest-savanna region of Ghana is located within one of Conservation International's 34 “World Biodiversity Hotspots” of the most biodiversity-threatened regions of the world. In collaboration with local farmers in this area since 1993, the People, Land Management and Ecological Change Project in Ghana (PLEC-Ghana) has been working on promoting biodiversity rehabilitation to address problems of biodiversity change. This goal is expected to be achieved through agrobiodiversity or biodiversity-friendly agricultural practices. However, farmers' employment of these practices has been lackluster, even while they acknowledge biodiversity changes, dominated by *Chromolaena odorata* and other herbaceous species, that are driving the decline in forests and their biodiversity. In interpreting the difficulties of biodiversity rehabilitation in Gyamfiase–Adenya–Obom, this study outlines the diverging ecological knowledge of non-residents/outside and local farmers about biodiversity change, which it describes as Janus-like with two diverging faces. One face of biodiversity change shows the detrimental impacts on biodiversity and its observers—non-residents/outside—insist on biodiversity rehabilitation that nurtures forests, and the growth and domination of tree species. The other face of biodiversity change shows its agronomic advantages and its observers—the local farmers—are skeptical of current biodiversity rehabilitation practices. Farmers see agronomic benefits in biodiversity change, in particular the benefit of faster soil regeneration within the predominant bush fallow system of farming. And as a result of this observation, farmers continue with practices that sustain a decline in forests and biodiversity. Based on social and ecological research that explores three biodiversity-friendly practices promoted by PLEC-Ghana (fallow management, mulching, and intensive weeding to protect tree seedlings), this article discusses the partiality of ecological perspectives that emphasize either face of biodiversity change but not both, and the implications for biodiversity rehabilitation.

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**Keywords:** Agrobiodiversity; Biodiversity rehabilitation; Bush fallow agriculture; *Chromolaena odorata*; Local ecological knowledge; Ghana

## 1. Introduction

A third of the area of Ghana is located within one of Conservation International's 34 “World Biodiversity Hotspots” of the most biodiversity-endangered and vulnerable regions of the world (Conservation International, 2005a).<sup>1</sup> This most biodiversity-threatened area of Ghana is a subset

of the larger Guinean Forest Region of West Africa (World Wildlife Fund, 2001; Conservation International, 2005a). The predominant view is that this region's astounding biodiversity is being degraded by society.<sup>2</sup> For instance, 85% of the original 620,314 km<sup>2</sup> of forest habitat has been cleared (Conservation International, 2005c) and what remains is “highly fragmented, largely due to human activities... primarily slash-and-burn agriculture” (World

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<sup>1</sup> This same area is also one of the World Wildlife Fund's “Global 200 Ecoregions” whose biodiversity is threatened (World Wildlife Fund, 2005).

<sup>2</sup> In this larger region, 9000 vascular plant species (1800 of which are endemic) have been enumerated (Conservation International, 2005b).

Wildlife Fund, 2001).<sup>3</sup> The loss of forest habitats is also extensive in Ghana's biodiversity hotspot. Covering 8.2 million hectares (34% of Ghana's total area) in the late 19th century, the Guinean canopy forest habitats of Ghana presently cover only 1.6 million hectares, or 7% of Ghana's total area (The World Bank, 1998, p. 2; The Republic of Ghana, Ministry of Food and Agriculture, 1999, p. 1). It is threats to biodiversity, such as these, which led to the United Nations Convention on Biological Diversity (CBD) of June 1992. This global treaty calls for a global commitment to meeting the goal of "rehabilitating and restoring degraded ecosystems and promoting the recovery of threatened species in collaboration with local residents" (Secretariat of the Convention on Biological Diversity, 2000, p. 9).

In response to this call, the People, Land Management and Ecological Change Project in Ghana (PLEC-Ghana) is collaborating with local farmers to promote biodiversity rehabilitation through agrobiodiversity or biodiversity-friendly agricultural practices within Ghana.<sup>4</sup> The Gyamfiase–Adenya–Obom cluster of villages in the forest-savanna ecological zone (a part of the Guinean Forest Region) in the Eastern Region of Ghana (Fig. 1) is one of PLEC-Ghana's project sites and is this study's research site. A primary focus of PLEC-Ghana in this area since 1993 is to collaborate with local farmers to revive the biodiversity-friendly traditional agroforestry practices that would rehabilitate the degraded forest ecosystem and conserve its natural life forms (Gyasi, 2002). In PLEC-Ghana's view, biodiversity-unfriendly practices have "exerted a disturbing effect on the fragile forest ecosystem through the widespread removal of the ground storey of the natural forest, through the erosion of soils and the leaching of their nutrients and through the loss of natural plant and animal species" (Gyasi, 1997, p. 85). This perspective is described in this study as the endangerment discourse, and it suggests that these problems of endangerment can be addressed with biodiversity-friendly practices.

Local anecdotes indicated to this author that the general response of farmers to biodiversity rehabilitation has been lackluster. These local stories pointed to a continuing general decline in forests and their biodiversity. Given the unanimous view of widespread biodiversity decline in the study area, and given the endangerment discourse about the benefits of biodiversity rehabilitation, why are many farmers not employing the biodiversity rehabilitation practices being promoted, and are there benefits to biodiversity

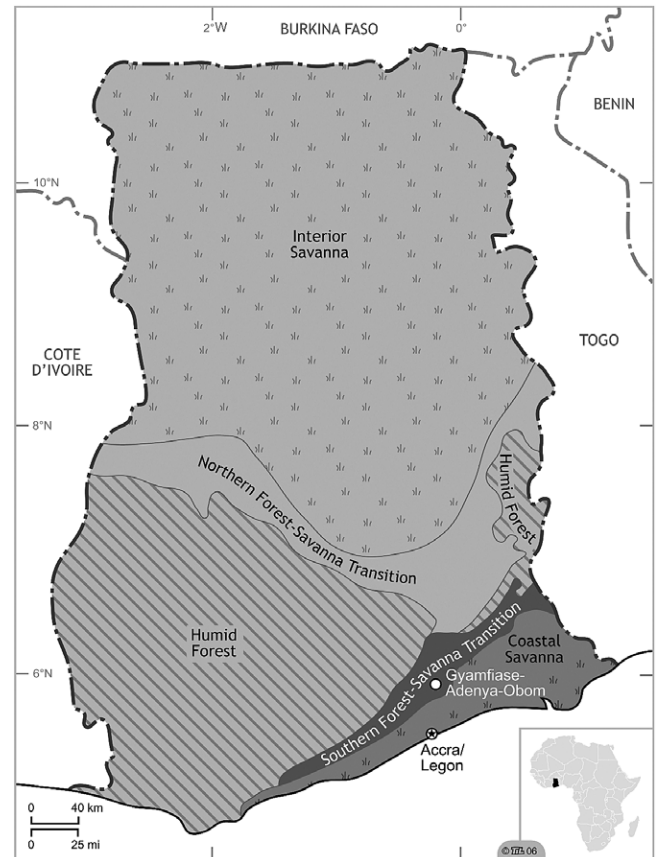


Fig. 1. The Gyamfiase–Adenya–Obom study site.

rehabilitation than are being realized by many farmers? This was the study's research problem, and local anecdotes prior to the study provided an initial answer to this problem. These anecdotes presented a different viewpoint from those of outsiders about the benefits of biodiversity rehabilitation. Apparently, biodiversity change in the study area is Janus-faced, that is it has two diverging faces. One face of biodiversity change shows the detrimental impacts of such change. This face is emphasized by non-locals (more so than locals), and observers of this face—the outsiders—insist on biodiversity rehabilitation. The other face of biodiversity change shows the agronomic advantages of such change, and this perspective is emphasized by locals (more so than non-locals). Observers of this face—the local farmers—are skeptical of biodiversity rehabilitation, and as a result farmers continue with practices that sustain the decline in forests and biodiversity.

Within this context that suggests contradictory faces of biodiversity change, the answers to the following research questions were pursued in order to address the larger research problem:

1. What is farmers' local ecological knowledge of biodiversity change and of the benefits of biodiversity rehabilitation, and how does this knowledge diverge from the endangerment discourse?

<sup>3</sup> The irony is that "much of the livelihood [of people in this area] is closely dependent on, or not far removed from, the natural resource base and the variety of goods and services that healthy, productive ecosystems can provide" (Conservation International, 2000, p. 11).

<sup>4</sup> PLEC operates in 12 countries in the Asia Pacific region, the Americas, and Africa to assist in the dissemination of agrobiodiversity practices that sustain the diversity of useful plants in managed ecosystems and that rehabilitate degraded ecosystems. The project is funded by the Global Environment Facility (GEF) and the United Nations University (Brookfield et al., 2002, pp. 5–6).

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