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Forest cover change in Sri Lanka: The role of small scale farmers

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A B S T R A C T

Forest cover in Sri Lanka has decreased rapidly during the last century and only fragments of the once widespread natural forest cover remain. This paper analyzes forest cover change and small scale farmers' relation to natural forests around two protected forest areas in Sri Lanka; Kanneliya Forest Reserve and Knuckles Conservation Forest. Methods used are spatial analysis to observe changes in forest cover from the 1980s until 2010, interviews with small scale farmers and key informants as well as field observations. In Kanneliya Forest Reserve, a decrease in forest cover is observed, particularly due to population increase and expanding tea plantations. In Knuckles Conservation Forest on the other hand, we find an overall increase in forest cover due to expansion of tree plantations, a ban on shifting cultivation and emigration from the area followed by natural forest regeneration. Agriculture is the most common source of income in both study areas and there is a clear link between conversions of forests to agricultural expansion. The profits from agricultural activities are in general insufficient to sustain small scale farmers' needs and the most common alternative source of income is achieved through resources extracted from the forest. Since 2001, demarcation of forest boundaries around the two forest reserves has reduced encroachment and illegal felling of timber. However, this policy has simultaneously threatened the livelihoods of peripheral communities in the forest buffer zones, especially in the investigated villages around Knuckles Conservation Forest. Despite successful attempts to reduce deforestation rates through governmental interventions, further incorporation of local people into the management of forests as stipulated in the current forest policy should be continued.

Introduction

Deforestation and forest degradation accounts for 6–17% of all anthropogenic greenhouse gas emissions and tropical forest cover continues to decline globally although at a slower rate than in the past (FAO, 2010a; Hett, Castella, Heinimann, Messerli, & Pfund, 2012; Le Quere, Raupach, Canadell, & Marland, 2009; Van der Werf et al., 2009). Discussions within the United Nations Framework Convention on Climate Change (UNFCCC) to reduce emissions from deforestation and forest degradation (REDD+) by compensating countries and forest owners economically, provide an opportunity to stem forest cover loss and associated emissions further (Angelsen, 2009). Reducing deforestation is however complex since the principal and underlying drivers vary from country to country (Geist and Lambin, 2002) and several approaches are needed that incorporate state, private and community-based actors to stem deforestation rates (Bray et al., 2008; Naughton-Treves, Holland, & Brandon, 2005; Nepstad et al., 2006; Porter-Bolland, 2012).

Sri Lanka falls within one of the world's 34 biological hotspots with extraordinary high concentration of biodiversity and endemism (Gunatilake, 1998; Myers, 1990). Sri Lanka had a population of 20.7 million in 2010 and in recent years the population growth rate has fallen and was down to about 0.9% in 2010, lower than in most neighboring countries (CIA, 2011). Between 1990 and 2002 the proportion of the population living below the poverty line fluctuated at around 25%. By 2010 this figure was down to 9% (Centre for Poverty Analysis, 2011; Department of Census and Statistics, 2011). About 72% of Sri Lanka's population live in rural areas where a majority are small scale farmers for subsistence with small land extents averaging 0.47 hectares (ha) in 2002 (Census of Agriculture, 2002; Chokkalingam and Vanniarachchy, 2011). In 2001 about 30% of Sri Lanka's rural population lived close to forests and depended partly on forest resources for fuelwood and non-timber forest products (NTFPs) (Bandaratillake, 2001; Chokkalingam and Vanniarachchy, 2011). The forestry sector accounted for 1.7% of Gross Domestic Product (GDP) in 2005, but the real contribution of the forestry sector to the national

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economy is greater than this due to subsistence uses stemming from forest supplies and services. Forests also provide a range of ecosystem services that are seldom valued and not accounted for in the conventional economy (Nanayakkara, 1996, p. 116; Stern, 2007).

Until the turn of the 19th century about 80% of Sri Lanka was covered by primary forests. The forest cover was reduced to 44% in 1956, 30% in 1996 and is presently close to 25% (FAO, 2010a; GOSL, 2000). Detailed accounts of deforestation processes in Sri Lanka are limited, especially for recent years, but drivers of deforestation are often located outside the forestry sector (Chokkalingam and Vanniarachchy, 2011; Herath, 2007; Mattsson, Persson, Ostwald, & Nissanka, 2012). Principal drivers of forest loss have been conversion of forests to agriculture and development schemes, logging activities due to high demand for roundwood from industries and households, encroachment from, e.g., shifting cultivation, shrimp farming, unsustainable tourism industry and lack of demarcated forest areas. Identified underlying drivers of deforestation are, e.g., lack of a national land use policy and planning among ministries, poverty as a consequence of shortage of lands, lack of decentralized forest management and private sector involvement to use alternative wood resources (Bandaratillake, 2003; Chokkalingam and Vanniarachchy, 2011; White, 2006). The civil war 1983–2009 added further strains to the already fragmented forest cover when forest was strategically cleared to provide less cover for the enemy and rural communities were relocated into forested areas (Chokkalingam and Vanniarachchy, 2011; Suthakar and Bui, 2008).

Deforestation has been most widespread in wet and intermediate climate zones where only fragments of the once widespread natural forest cover remain (FAO, 1997). Eighty-five percent of the natural forests consist of dry-zone forests. Lowland rainforests and montane forests with higher biological diversity and higher levels of endemism are confined to small patches (Gunatilleke and Gunatilleke, 1990). The government has recognized the importance of forests for biodiversity protection and about 50% of all natural forests in the country, or 14% of the total land area, have been declared as protected (Bandaratillake, 2003) (Fig. 1).

Ninety-three percent of the natural forest area belongs to the state which leaves little or no forest under private or local community ownership (Chokkalingam and Vanniarachchy, 2011; FAO, 2009). The management and protection of the natural forests of Sri Lanka falls under two governmental ministries; The Forest Department (FD) and the Department of Wildlife Conservation (DWLC). Most important in the work of the two departments is the Forest Ordinance from 1907, with the overall goal to protect the national forest resources (FAO, 2009). Over the years, amendments, new legislation and policies have been enacted in a series of attempts to overcome policy weaknesses in forest management. The Forestry Sector Master Plan (FSMP) (MFE, 1995) initiated in 1995 was an ambitious attempt to provide a comprehensive

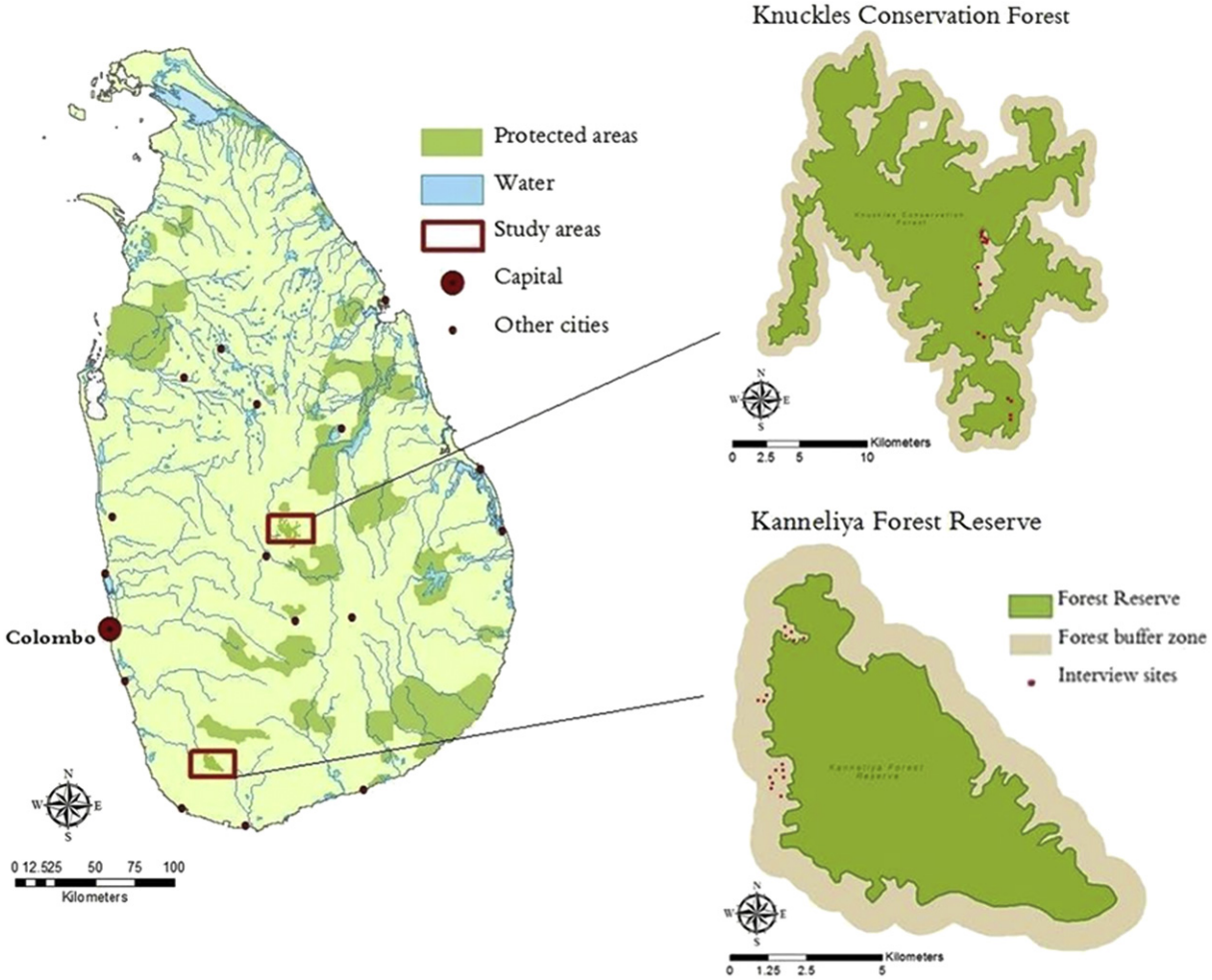

Fig. 1. Geographical location of Knuckles Conservation Forest and Kanneliya Forest Reserve. Modified from Gunawardane (2002) and Forest Department (2009a, p. 39).