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Interactions and Socio-Economic Linkages between Local Communities and Protected Areas: A Case Study of the Sinharaja MAB Reserve in Sri Lanka

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Abbreviations

CBO	Community Based Organisation
FFPO	Fauna and Flora Protection Ordinance
GN	Grama Niladari
MAB	Man and Biosphere
NHWA	National Heritage Wilderness Area
PA	Protected Area
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHS	World Heritage Site

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Executive summary

Introduction

Sinharaja is Sri Lanka's best known forest, and is the largest relatively undisturbed lowland rainforest in the country. In Sri Lanka it is recognised as a National Heritage Wilderness Area, while it is globally known as an International Man and Biosphere Reserve and a Natural World Heritage Site.

Aims and objectives

The study aimed to identify the interactions and socio-economic linkages between local communities and protected areas, using the Sinharaja Man and Biosphere (MAB) reserve as a case study. The objectives of the study were (1) to investigate both the positive and the negative impacts of local communities on the conservation status of Sinharaja; (2) to analyse the local benefits and costs of conserving Sinharaja as a protected area; (3) to understand what motivates local people to conserve or destroy Sinharaja; and (4) to point to ways in which the Forest Department can focus their conservation actions in a manner which will to encourage conservation by local people and discourage disruptive activities.

Results and discussion

The study surveyed nine villages, in the three administrative Districts in which the forest is situated and collected information from a total of 187 households.

The survey did not identify any obvious positive impacts of local communities on the conservation of Sinharaja. Negative impacts included illegal forest use, encroachment, poaching and the spread of tea cultivations in to the forest. These negative impacts also affect biodiversity due to habitat loss and edge effects. It must be noted that with the right conservation strategies there is potential for identified negative impacts to be turned in to positive impacts.

There are local costs and benefits of conserving Sinharaja as a protected area. Benefits to local communities from Sinharaja include services such as water and electricity from mini hydro's. A vast majority of the local communities adjacent to the forest recognise and appreciate the non extractive benefits of Sinharaja, while a small proportion value it

for aesthetic purposes. About a quarter of respondents also benefited from community conservation projects.

The prohibition of forest use is an opportunity cost for local communities. Though extractive activities are illegal, local communities still believe that they should be allowed to take resources from Sinharaja. Almost half the surveyed households had conflicts with wildlife. Many respondents stated that they were negatively affected by wildlife such as the wildboar, porcupine and sambhur that destroyed or damaged their crops.

Though local communities greatly appreciated the services provided by Sinharaja, and have very positive attitudes towards conservation, in many cases it did not translate to the end of illegal forest use. Claims were made however that there is a reduction of forest use over time, mainly attributed to the income from tea. Tea cultivation however can also be a double edged sword. On one hand it can reduce the need to extract resources from the forest, while on the other it can cause temptation to acquire lands beyond their legal entitlement, spreading in to the forest. Results show that belief in the sacredness of the forest did not translate to conservation of the forest either. Involvement in conservation projects also did not stop local communities from illegally extracting resources from the forest.

The wide appreciation for services provided by the forest to local communities cannot be stressed too strongly. It is evident that local communities have a very positive attitude towards the conservation of Sinharaja. However this does not necessarily translate to protection, or refraining from illegal forest use.

Conclusions

This study has shown that despite legal protection and recognition both locally and internationally – the forest is still subjected to many threats. The edge within the legally protected area is subjected to most threats including illegal resource extraction and encroachment.

As direct beneficiaries of the services of Sinharaja, a vast majority of the local communities who live adjacent to it, appreciate its importance and have positive attitudes towards conserving it. However the results of this study clearly show that local communities extract resources from the forest (almost entirely illegally – apart from kitul) irrespective of their knowledge of the forest, attitudes, belief of sacredness and involvement in community conservation.

These results show that a “carrot and stick” approach is required to conserve Sinharaja. Such an approach would include rewards (“carrot”) to lure the local communities away from the forest, while punishments (“stick”) will deter them from the forest. Law enforcement is vital to ensure that illegal activities which destroy the forest do not occur. Local communities also need to be rewarded for conserving the forest and for the opportunity cost of non extraction.

Though there is no legal buffer zone for Sinharaja, the outer area of the legally protected core is managed as a buffer (although private lands and tea estates would be excluded from this). A core, without a buffer would result in a “hard edge”. A buffer would provide a “soft edge” to the core, and could prevent creeping encroachments. A multiple use buffer zone, outside the core would allow certain resources to be extracted in a manner that it would not affect the core. Zoning would therefore allow conservation to be carried out in a manner that ensures the services and health of the forest are not compromised, while local communities are rewarded and provided with alternatives.

Recommendations

In order to conserve Sinharaja, with the support of the local communities it is vital to have mutually reinforcing measures. This would be a package of different measures which all act together (and support each other) towards a common goal. A “carrot and stick” approach should be taken, where there is a policy offering both rewards and punishments. Therefore all of the recommendations below are necessary to secure the conservation of Sinharaja, and will not be sufficient in isolation.

1. Create awareness about the importance of Sinharaja and on activities that are not allowed in the forest
2. Implement and enforce laws and regulations
3. Clear demarcations of the legal boundary
4. Sustainable community conservation programmes
5. Scientific research and regeneration in the edge areas
6. Studies on the value of Sinharaja and the services provided by the forest

CONTENTS

1. Introduction

Sinharaja is Sri Lanka's best known forest, and is the largest, relatively undisturbed lowland rainforest in the country. In Sri Lanka it is recognised as a National Heritage Wilderness Area, while it is globally known as an International Man and Biosphere Reserve and a Natural World Heritage Site.

The study focused on the interactions and socio-economic linkages between protected areas and local communities in the Sinharaja Man and Biosphere (MAB) reserve in Sri Lanka. This interaction included the impacts of the protected area on local communities, the impacts of local communities on the protected area and also the attitudes of local communities towards conservation. Such studies are rare in Sri Lanka, especially at a large scale and are necessary to assess the threats to forests, need for community-based conservation programmes, resolve human-wildlife conflicts and identify the cost and benefits of conservation.

2. Aims and Objectives

2.1 The Aim

This study aimed to identify the interactions and socio-economic linkages between local communities and protected areas, using the Sinharaja MAB reserve as a case study.

The Sinharaja rainforest in Sri Lanka is recognised as a biodiversity hotspot, and also protected as an important watershed, feeding two major rivers in Sri Lanka (de Soysa & Raheem, 1999). As a protected area, Sinharaja is managed by the Forest Department. Although the conservation status of the reserve places significant restrictions on local land and resource use within the forest, illegal and unsustainable resource use and encroachment by local communities has adverse impacts on the reserve.

By understanding the nature of these socio-economic linkages and threats, and investigating local attitudes and motivations for conservation, the study aimed to generate decision-making information to improve conservation and livelihoods of local communities. The analysis is based on questionnaire surveys carried out in the villages situated in the periphery of Sinharaja.

2.2 The Objectives

The objectives of the study were:

1. To investigate both the positive and the negative impacts of local communities on the conservation status of Sinharaja.
2. To analyse the local benefits and costs of conserving Sinharaja as a protected area.
3. To understand what motivates local people to conserve or destroy Sinharaja's land and resources.
4. To point to ways in which the Forest Department can focus their conservation actions in a manner which will encourage conservation by local people and discourage disruptive activities.

3. Literature review

3.1 Introduction to the protected area network in Sri Lanka

In Sri Lanka the protected area network includes 12.4% of the land surface, which are conserved as Strict Natural Reserves, National Parks, Nature Reserves, Jungle Corridors and Sanctuaries by the Department of Wildlife Conservation. In addition to this, another 2.2% of forested area is conserved by the Forest Department as Forest Reserves, Proposed Forest Reserves and National Heritage and Wilderness Areas (Ministry of Environment and Natural Resources, 2002).

There are a number of categories of Protected Areas (PAs) in Sri Lanka, managed for various purposes by different authorities. Varying levels of protection and restrictions on end and land/resource use apply to each category of PA. There are a total of eight categories of PAs managed by four authorities.

3.2 Policies and legislation relevant to biodiversity and protected areas

Sri Lanka has a comprehensive legal framework that has been set in place for environmental conservation and protection. More than 90 separate environment related statutes have been enacted over the last 100 years directly or indirectly for environmental protection and natural resource management (Ministry of Environment and Natural Resources, 2002). Environmental protection is enshrined in the Sri Lankan

constitution and was formally institutionalised with the enactment of the National Environmental Act No. 47 of 1980.

Public forests are managed by the Forest Department, and governed by the Forest Ordinance. This Ordinance consolidates laws relating to forests, and to the felling and transportation of timber. It declares forest protected areas, including plantations and natural forests, and establishes other state land as forests where even commercial use is permitted (EFL, 2006). The Fauna and Flora Protection Ordinance (FFPO) protects various listed plant and animal species. The protected species are listed in different schedules under the FFPO, which treat different categories of species in different ways. For some taxonomic groups such as fish or plants, protected species are listed, while for others such as mammals, birds and reptiles, the FFPO schedules list species that are not protected – meaning that, by extension, all other species in this category are protected (FFPO, 1937).

The Forest Department manages a total of three categories of PAs, namely Reserved Forests, Conservation Forests and National Heritage Wilderness Areas (EFL, 2006).

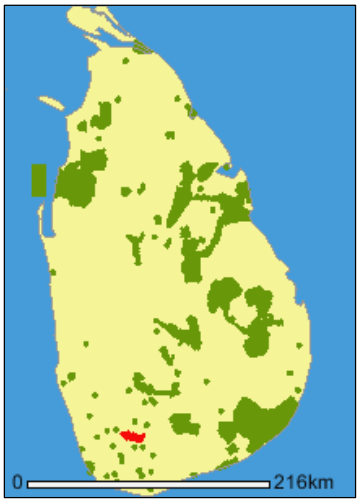
3.3 Man and Biosphere Reserves

The Man and Biosphere Programme (MAB) was launched by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in the early 1970's. The Programme proposes an interdisciplinary research agenda and capacity building to improve the relationship of people with their environment, globally. It targets the ecological, social and economic dimensions of biodiversity loss and the reduction of this loss. A World Network of Biosphere Reserves is used for knowledge-sharing, research and monitoring, education and training, and participatory decision-making. The MAB Programme is governed by the International Co-ordinating Council of the Man and the Biosphere (MAB) Programme, usually referred to as the MAB Council.

The biosphere reserve concept was developed initially in 1974 now has more than 480 sites in over 100 countries, the World Network of Biosphere Reserves provides context-specific opportunities to combine scientific knowledge and governance modalities to reduce biodiversity loss, improve livelihoods, enhance social, economic and cultural conditions for environmental sustainability. It contributes to the pursuit of the Millennium Development Goals, in particular goal 7 on environmental sustainability (UNESCO, 2007).

3. 4 Sinharaja Forest

3.4.1 Location



The Sinharaja forest lies in the Southwest Lowland Wet Zone of the island, between 6°21' - 6°26N, and longitudes 80°21' - 80°34'E. It is also bordered by the tributaries of Kalu Ganga (Black River) in the North, and in the South by the Gin Ganga (Gin River). The forest lays over three administrative districts of Galle and Matara in the Southern Province, and Ratnapura District in the Sabaragamuwa Province (de Zoysa and Raheem; Bambaradeniya *et al*, 2006). The forest covers the steep hills and valleys of Rakwana and is famously known as Sri Lanka's largest, relatively undisturbed rainforest (de Zoysa and Raheem, 1990). There are nine peaks ranging from 575m to 1,170m are located within the forest, of which the Northeastern peak of Hinipitigala is the highest (Bambaradeniya *et al*, 2006).

3.4.2 Climate

The mean annual rainfall in Sinharaja varies between 3,600 - 5,000mm and area where dry spells are rare (Bambaradeniya *et al*, 2006). The main sources of rain however are the two monsoons that blow over the country from May to July (south-west monsoon) and November to January (north-east monsoon) (de Zoysa and Raheem, 1990). The mean annual temperature ranges between 19°C and 27°C. The forest is an important watershed for the Kalu and Gin Rivers (Bambaradeniya *et al*, 2006).

3.4.3 History

Myths and legends surround the history of Sinharaja. The forest derives its name from "Sinha", which means lion. According to legend the Sinhala people of the country were a result of the union between a King's daughter and a mighty lion who lived in the forest (de Zoysa and Raheem, 1990).

Prior to 1968 Sinharaja was protected largely due to its inaccessibility (IUCN, 1993). In the recent past, during the period 1971 to 1977 the Western part of Sinharaja was subjected to selective logging for the production of plywood. An outcry from conservationists against the logging operation resulted in a complete ban on logging in this forest since 1978. Planting of *Pinus caribaea* outside the MAB reserve started in

1978. In 1985 the Forest Department began planting four rows of pines in the barren and denunded lands along the boundary to establish a live boundary for the MAB reserve.

3.4.4 The value of Sinharaja

The prominent role of forests in biodiversity (plants and animals) conservation, watershed protection, soil conservation, moderating the global climate, recreation, food security and sustainable development has been widely recognised (UN,1993).

The Sinharaja forest is valued for its biodiversity, watershed protection and other services provided by forests such as regulation of climate and carbon sequestration. Sinharaja provides watershed protection to two major rivers in Sri Lanka, the Gin Ganga and Kalu Ganga. Studies carried out in forests that are similar and close proximity to Sinharaja have shown that unlogged tropical humid forests play an important role in regulating the quantity and the time distribution of run-off, minimising sediment loads and facilitating infiltration to soils (Ponnudurai, 1980). The National Conservation Review identified Sinharaja as being one of 85 forests important for controlling soil erosion, while being ranked fourth for the importance of protecting headwaters. Overall it has been considered one of the top priority forests (ranked 14th) for watershed protection and species conservation. In addition to this, Sinharaja has been identified as being one of the contiguous forests of highest importance for soil and water conservation (IUCN/WCMC/FAO, 1997).

Hoffman in his 1972 account captures the services of Sinharaja, and states “Thus the rain forest demonstrates its water-holding capacity, its balancing influence on the climate and the temperature. Though the country around is in the grip of an unusual drought, all is moist inside the forest, and the water courses run freely, drawing on the natural reserves in the shaded and protected ground. Like a sponge the soil absorbs the heavy rain, gives off water sparingly, and thus prevents both flood and drought within its area”.

Biodiversity

The vegetation of the forest consists mainly of primary and secondary Tropical Lowland Wet Evergreen Rainforests, with a few patches of Lower-Montane forests and grassland habitats in areas of higher altitude. About 340 woody plant species, representing 71 families have been recorded from Sinharaja, which accounts for approximately 35% of woody plant species recorded in Sri Lanka. Nearly 60% of the woody plants recorded from Sinharaja, are endemic to the island. The herbaceous plant community is equally rich. In some plant families such as Dipterocarpacea (trees dominating the forest

canopy), endemism is greater than 90%. A diverse community of lower plants (ferns, fungi, bryophytes etc.) are also found in Sinharaja (Bambaradeniya *et al*, 2006).

A total of 320 vertebrate species belonging to mammal (43), bird (154), reptile (71), amphibian (33) and fish (19) species are found in the rainforest. It is estimated that 35% of the native vertebrate species of the forest is endemic to Sri Lanka (Bambaradeniya *et al*, 2006). Notable species found in Sinharaja include species such as the Elephant (*Elephas maximus*), Leopard *(Panthera pardus)*, Purple-faced Leaf Monkey (*Trachypithecus vetulus*), Fishing Cat (*Prionailurus viverrinus*) and Rusty Spotted Cat (*Prionailurus rubiginosa*).

Floral species beneficial to man include kitul palm (*Caryota urens)* for jaggery which is used as a sugar substitute, wewal (*Calamus sp*). for cane, cardamom (*Elattaria ensal*), as spice, *Shorea sp.* for flour, dun (*Shorea sp.*) for varnish and incense and weniwal (*Coscinium fenestratum*) for medicinal purposes. These plant species are used intensively by villagers (Forest Department, 1986).

3.4.5 Legal protection of Sinharaja

A cabinet decision was taken to ban logging in 1978, and an area of 8,500ha was protected by the Forest Department and was also declared an International Man and Biosphere (MAB) Reserve. An additional 2,687 ha of Sub-Montane Forest located on the Eastern side was included in the Sinharaja Reserve, expanding the total area to 11,187ha. The entire area was declared a National Heritage Wilderness Area (NHWA) in 1988, and subsequently, UNESCO recognised it as the first Natural World Heritage Site (WHS) in Sri Lanka. Currently the total 11,187ha is covered by the NHWA, MAB and WHS. The administration and management of the Sinharaja World Heritage Site is vested with the Forest Department of Sri Lanka.

The Sinharaja NHWA has been declared under the National Heritage Wilderness Areas Act, and Gazetted on the 21st of October 1988.

According to the National Heritage Wilderness Areas Act No. 3 of 1988, no person shall in a National Heritage Wilderness Area: (a) cut, mark, lop, girdle, saw, covert, collect or remove any plant tree or any part thereof or any other forest produce; (b) wilfully strip off any bark or leaves from, or otherwise damage or interfere with, any tree; (c) cut grass or pasture cattle; (d) pollute water; (e) remove, uproot or destroy, or cause any damage or injury to, any plant; (f) sell, expose or offer sale, any plant; (g) shoot, trap or snare,

molest or disturb, any bird or animal; (h) sell, expose or offer for sale, any bird, beast or reptile or any part of any such bird, beast or reptile; (i) take or destroy any egg of any bird or reptile or nest of any bird; (j) fire any gun or do any other act which disturbs or is likely to disturb, any wild animal or do any act which interfere, or is likely to interfere with, the breeding place of any such animal; (k) posses or use any trap or any explosive or poisonous substance capable of being used for the purpose of injuring or destroying any animal or plant; (l) erect any building, whether permanent or temporary, or occupy any building so erected; (m) make any fresh clearing; (n) kindle or keep, or carry any fire; (o) remove any forest produce in any form; (p) clear, or break up any land for cultivation or any other purpose; (q) construct any road; (r) or damage, alter or remove any wall, ditch, embarkment, fence, hedge, railing or other boundary mark.

The Gazette for Sinharaja refers to National Heritage Wilderness Areas Sinharaja Map 1 of 20th October 1988, prepared by the Surveyor-General. The Schedules of the Gazette state the lands that are included in the NHWA, it includes sections belonging to various villages that are situated adjacent to the forest. Some of the villages that have parts of their land situated in the forest include Delgoda, Kudawa (part), Kongahakanda, Hapugoda (part), Pahala Potuitiya (part), Kekkillepitiya (part) of the Kalawana A.G.A.'s Division, Kukul Korale in the Ratnapura District of the Sabaragamuwa Province (as specified in Schedule I of the Gazette); and Giguruwa, Kosmulla, Tambalagama, Radagoda, Lankdagama, Watugala and Madugeta of the Hinidum Pattu of the Galle District, Lankagama, Mederipitiya, Kiriwala-Dola and Viriwalagama of Morawak Korale of the Matara District in the Southern Province (as specified in Schedule II of the Gazette).

3.4.6 Threats to Sinharaja

Sinharaja is highly protected on paper but is being degraded despite this. Some of the main threats identified include encroachment, timber and fuel wood extraction, gemming and poaching, agro-chemical use and Invasive Alien Species (de Zoysa & Raheem, 1987; IUCN 1993). Illegal encroachments include extension of tea cultivations and settlements. The forest has been encroached upon, and the original extent of the forest has been significantly reduced (Perera, 2006; IUCN, 1993). Research has already identified that encroachment and other disturbances are causing edge effects, threatening certain types of species, in the case of one study, the herpetofauna (Surasinghe, 2007).

Hoffman who visited Sinharaja in 1972, states in his account that even though he believed that selective logging (which was planned at that time for the forest) would be a sensible and acceptable economical measure, that after 3 days of careful observation in the field, and subsequent study he came to the firm conclusion that Sinharaja should be left alone. He says “that they serve the nation best in their present, totally unexploited state” (Hoffman, 1972). Sadly Sinharaja has degraded significantly since then, initially due to mechanised, selective logging, while issues of encroachment, poaching and logging continue to this day (Perera, 2006; IUCN, 1993).

Roads were cut in the early 1970’s to allow logging (Hoffman, 1972), and these have developed since over time, fragmenting the Sinharaja forest (Perera, 2006). Chena cultivation was also a significant threat to the forest in the several decades ago (Hoffman, 1972), although this has now been replaced with small holder tea (Perera, 2006). It has been identified that a challenge for conserving wet zone forests in Sri Lanka is not so much the exploitation of renewable forest resources but loss of forest land due to illegal encroachments for agriculture and settlement (IUCN, 1993).

Poaching of wild animals from Sinharaja has also been recorded, with species such as the sambhur, mouse deer, wild boar, giant squirrel and purple faced leaf monkey being targets. In addition to these, traps set for these animals also killed (de Zoysa and Raheem, 1990). A recent socio-economic survey done by Harsha Perera has revealed that poaching continues, especially targeting species such as the sambhur, wildboar, the hare, and jungle fowl. According to research in the village of Kudawa, which is situated adjacent to the forest, at least 1-2 wildboars, and 1-2 sambhurs are killed a month. Poaching is carried out using both traps and guns, which include both licensed and unlicensed guns. In the village of Lankagama, Perera estimates that there are 10 unlicensed guns, and 2 licensed guns (Perera, 2006).

Extraction of forest resources such as timber and non-timber forest products is another threat affecting the degradation of Sinharaja. It includes the extraction of timber species such as hedawaka (*Chaetocarpus castanocarpus*), davata (*Carallia brachiata*), hora (*Dipterocarpus zeylanicus*), welipiyanna (*Anisophyllea cinnamomoides*) and hal (*Vateria copallifera*) by villagers and outsiders. Villagers around Sinharaja are dependent on the forest for their timber needs (Perera, 2006). Other resources extracted include firewood, rattan (*Calamus* sp), tapping of kitul (*Caryota urens*), wildfoods such as beraliya (*Shorea megistophylla, Shorea disticha, Shorea affinis*), hal (*Vateria copallifera*) and medicinal

plants such as wenival (*Coscinium fenestratum*), wild cinnamon (*Cinnamomum dubium*) etc (Perera, 2006; Vithana 2002 and de Zoysa and Raheem, 1990)

Gem mining is another threat to Sinharaja, carried out by well organised gangs, who dig up marshy areas, leaving the vegetation destroyed and pits are a major hazard to both humans and animals (de Soyza and Raheem, 1990).

3.4.7 Conservation and management of Sinharaja

The Sinharaja forest, comprising of 11,187ha has been legally protected. The first management plan for Sinharaja was produced in 1986 by IUCN, in collaboration with the Ministry of Lands and Land Development, and the Forest Department. This management plan focused on Phase 1 of the conservation and managements of Sinharaja and was implemented from 1988 to 1991. Under Phase 1, the boundary was identified and a part of it was demarcated, it initiated a buffer zone management programme, provided visitor facilities, improved infrastructure, carried out research and surveys on the socio-economics and encroachments and also carried out awareness programmes.

A revised management plan was produced in 1993, and Phase 2 was implemented thereafter and continues to this day. The management plan for the Sinharaja forest recommends strategies to ensure maximum protection of the legally protected core area, while livelihood and traditional practices are enabled in the buffer zone as long as it does not damage the protected forest. The management plan has 17 recommendations including boundary demarcations, removal of encroachments; strengthen research, deploying staff using Community Based Organisations (CBOs) and vigilance groups to strengthen protection, research on ecological, hydrological and socioeconomic aspects.

There is no legal buffer zone for Sinharaja. However given that it is a MAB reserve, the legally protected forest is considered the “core area” of the biosphere reserve, while the area outside of this is referred to as an external buffer zone (IUCN, 1993). This zone found outside the legally protected area includes natural forests, *Pinus caribaea* plantations, non-forested land, private lands and village home gardens, with the bulk of the forested lands being administered by the Forest Department. The National Heritage Wilderness Area Act provides the highest possible legal protection, and forbids community activities within it. The buffer zone is protected under the legislation of the Forest Ordinance as Other State Forests. This permits activities such as the collection of non-timber forest products in the buffer zone, but also seeks to regulate them (Bandaratillake, 1992). According to Bandaratillake a 3km buffer zone was set up to

support economic activities and to prevent encroachment. Private lands situated adjacent to Sinharaja would not be governed as a part of the buffer zone, as it is not a legally demarcated zone. However other legislation such as the Fauna and Flora Protection Ordinance would apply.

3.4.8 Villages and local communities adjacent to Sinharaja

Sinharaja is surrounded by villages, large tea estates, small holder tea, forests and private lands. During the period in which the initial Conservation Plan for Sinharaja was developed, an accurate estimate of villages and settlements were not available (Forest Department, 1986). According to available research at the time, within the Ratnapura District, 52 families were identified along the perimeter (Hathurusinghe, 1985). At the time two ancient villages were identified within the south western part of the MAB reserve, namely Warukandeniya and Kolontotuwa. The Plan contains a map of 20 peripheral villages, and states that an unknown number of the people living in these villages and settlements are probably encroachers.

According to Hoffman's account the population around Sinharaja in the early 1970's was thinly spread. When he visited Sinharaja in the early 1970's the economy of the people were based on two main activities – chena cultivations (shifting cultivations) and tapping of wild kitul palms (Hoffman, 1972).

More recent research on villages and local communities adjacent to Sinharaja has shown that there are over 40 villages situated in and around the forest (Perera, 2006; Wijesooriya and Gunatileke, 2003). These are situated along the southern, north eastern, northern and north-western sections of the forest. The majority of the villages are situated along the periphery of the forest, except a few villages, such as Warukandeniya and Kolonthotuwa which are situated within the forest. According to the study it is believed that, there are over 26,000 individuals living in the villages adjacent to the forest. The two oldest villages are Kosmulla and Pitakelle. The sizes of villages vary, but are generally fairly small. The number of households in each village varies from about 20 to 140 families living in a fairly close-knit community. About 30 villages date back about 100 years, of which 28 are Gazetted. The other two villages have not been gazetted. Villages adjacent to the forest have also been classified as ancient (Kosmulla, Kolontotuwa etc), "satellite villages" that are of more recent origin (Ilumbekande, Denuwakkande etc) and newly formed villages (Sinhagama) (Wijesooriya and Gunatilleke, 2003).

The Conservation Plan of 1986 states that population growth, need to construct roads and houses, and elimination of income from traditionally used forest products act together to increase the demand for land. It states that encroachment is the biggest problem faced by the Forest Department in protecting the Sinharaja reserve (McDermot, 1985).

Local communities are engaged in traditional activities involving extraction from the forest including firewood, timber for domestic purposes, rattan and wild foods and medicinal plants. Among collected foods and plants include wild cardamom, medicinal plants such as wenivel geta, wild pepper species for use in indigenous medicine. The kitul palm tree is tapped for sap in order to make jaggery, a basic ingredient in many traditional sweets in the country. Attempts have been made by the Forest Department to restore the vegetation of the buffer zone to prevent extraction by local communities. The Department in the 1980/1990's even set up nurseries in the buffer zone to produce kitul and rattan seedlings, with pine stands being under planted with rattan (Bandaratilleke, 1992). Tea is the main source of livelihood and occupation for the villagers around the Sinharaja reserve. However local people continue to collect food items, medicines and wood for domestic use as and when required (Dela, 2003).

4. Methodology

Systematic sampling was the chosen methodology for surveying the households. A total of 9 villages belonging to the 3 administrative Districts in which Sinharaja is situated were surveyed. Three villages from each District were chosen for the study, in order to equally represent the geographical areas. The size of the villages however varied. A third of the households in each village were selected by visiting every third household, with the first house chosen at random. The data was collected between June 2007 and October 2008 by structural interviews. It must be noted that it is usually not possible to sample exactly a third of the population using systematic sampling of every third household. In some villages a portion slightly higher than a third was recorded, as systematic surveying was difficult due to the way in which the village was spread. In some areas a portion less than a third was surveyed as some residents were unavailable during the survey.

4.1 The questionnaire

The structured questionnaire (Annex 1) contained a mixture of 'precise and closed questions' with a list of possible answers to each, and a few open ended questions.

Generally question content can be categorised into five distinct types: behaviour, beliefs, knowledge, attitudes and attributes (Dillman, 1978). The questionnaire used in the survey contained questions regarding behaviour, knowledge, attitudes, beliefs and attributes. The questionnaire has eleven main sections as follows:

(i) Summary data
(ii) Basic household data
(iii) Assets
(iv) Main occupation and livelihood
(v) Land tenure/ownership
(vi) Land use
(vii) Use of forest resources
(viii) Knowledge of forest and interactions with the Forest Department
(ix) Changes over time
(x) Costs and benefits
(xi) Attitudes

Each section has several closed and open ended questions, while a Likert Scale was used for some of the attitude questions. Each questionnaire lasted approximately 20-30 minutes.

The Microsoft excel package was used to analyse the data. Open ended questions were categorised so that they could be analysed.

4.2 Pilot testing

Pilot testing is carried out to evaluate each question, and the questionnaire as a whole, before final administration. Pilot testing is important to test variation, meaning, redundancy, scalability and non-response (de Vaus, 1998).

In pilot testing, it is also important to check the flow, timing, respondent interest and attention and question skips. It is also important to conduct the pilot test with people who resemble those to whom the questionnaire will finally be given (de Vaus, 1998). The pilot testing was carried out in a few households in the Lankagama village during the reconnaissance visit, and required only minor changes, prior to carrying out the main survey.

4.3 Progress of the study

As the study involved surveying villages in all three Districts surrounding the MAB Reserve, two scoping visits were carried out to collect information on villages, demographic information, inform the relevant authorities of the study and to determine the location of the villages so that the methodology could be determined. The first reconnaissance visit was carried out from the 20th to 22nd June 2007 to the Ratnapura District where several villages were visited to collect the above mentioned information. The second reconnaissance visit was carried from the 3rd to the 5th of July to Galle and Matara Districts where similar information was gathered. During this visit a few surveys were also carried out in the Lankagama village to determine whether the questions were appropriate and whether it was understood (see Section 4.2). Permission was granted by the Forest Department to carry out the surveys subsequent to submitting the application for research activities.

The main survey was carried out first in the Neluwa area of the Galle District from the 15th to 19th July. The first village to be surveyed was Kosmulla. The other two villages to be surveyed in this District included Warukandeniya and Kolontotuwa. A total of 67 surveys were carried out in this District.

The second District to be surveyed was the Matara District where once again three villages were selected. The selected villages include Watugala (in Mederipitiya GN Division), Higurahena and Keeriwalagama adjacent to the Sinharaja forest. A total of 84 surveys were carried out in this District. The majority of the study was carried out between 25th to 31st August 2007. Due to bad weather the survey team had to return to the village several months later in January 2008 to carry out surveys in the remaining households.

The third District surveyed was the Ratnapura District and surveys were carried out from the 11th to the 13th of October 2008. The villages in this district were relatively small compared to those in the other Districts. The villages, Pitakelle, Denawakkanda and Pelawatte were surveyed in this district, totalling to 36 households.

The biggest constraint throughout the study was the combination of heavy rains and poor infrastructure, which delayed the fieldwork by several months. In one instance rainy weather resulted in the four wheel drive used for the study getting stuck in deep mud, and took several hours to overcome the issue. The team were advised to stay away from the area until the weather improved as the mud tracks were easily affected by heavy

rains. As these rural tracks are the only route into the rural villages the team waited several months before a clear indication that the rainy season had passed. This meant revisiting the same areas to finish surveying the targeted households. The villages in and around Sinharaja are infested by leeches, especially during rains, but this issue was overcome by the use of leech socks. Despite all delays and challenges the target of surveying a third of nine villages was successfully carried out as planned.

The progress in pictures

Reconnaissance Visits

A Sinharaja sign board at the Pitadeniya Entrance, Deniyaya (Matara District)

Akvan, Venuri, Wardani, Ananda and Sanjeewa – members of the wonderful survey team

Piloting the survey - a household in Lankagama, Galle District

The MAB Young Scientist with Venuri of the survey team, inside Sinharaja

A view of the Denawakkanda village in the Ratnapura District

A view from the Pitakelle Village, Ratnapura District

Main Survey – Galle District
Kosmulla, Kolontotuwa and Warukandeniya

A view of Sinharaja from the Kolontotuwa village

The UNESCO Young Scientist in the Kolontotuwa village

Kosmulla village

A family in the Kosmulla village

Interviewing one of the oldest inhabitants of the Warukandeniya village

A view of the Warukandeniya village

Main Survey – Matara District
Watugala, Hingurahena and Keeriwalagama

A view from Watugala

A household in Watugala

Part of the survey team in a household in Hingurahena

A view of Hingurahena village

A view of Kiriwalagama

A household in Keeriwalagama

Main Survey – Ratnapura District
Pitakelle, Denawakkanda and Pelawatte

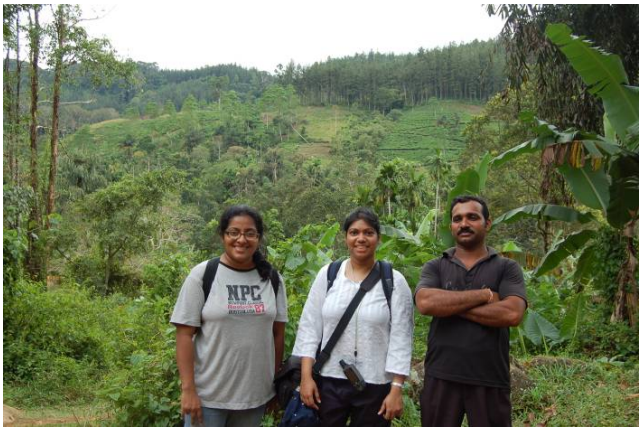
A view of Pitakelle village, towards Sinharaja

A household in Pitakelle

A household in Denawakkanda

A family in Denawakkanda

A household in Pelawatte



The survey team in Pelawatte

6. Results

6.1 Households surveyed

A total of 187 households were surveyed from nine villages bordering the Sinharaja forest. The Sinharaja forest belongs to three districts, and therefore three villages from each district were chosen so that each area is equally represented. In each village approximately a third of the households were surveyed. The total number of households in each village was determined by discussions with Grama Niladari (GN) officers and villagers.

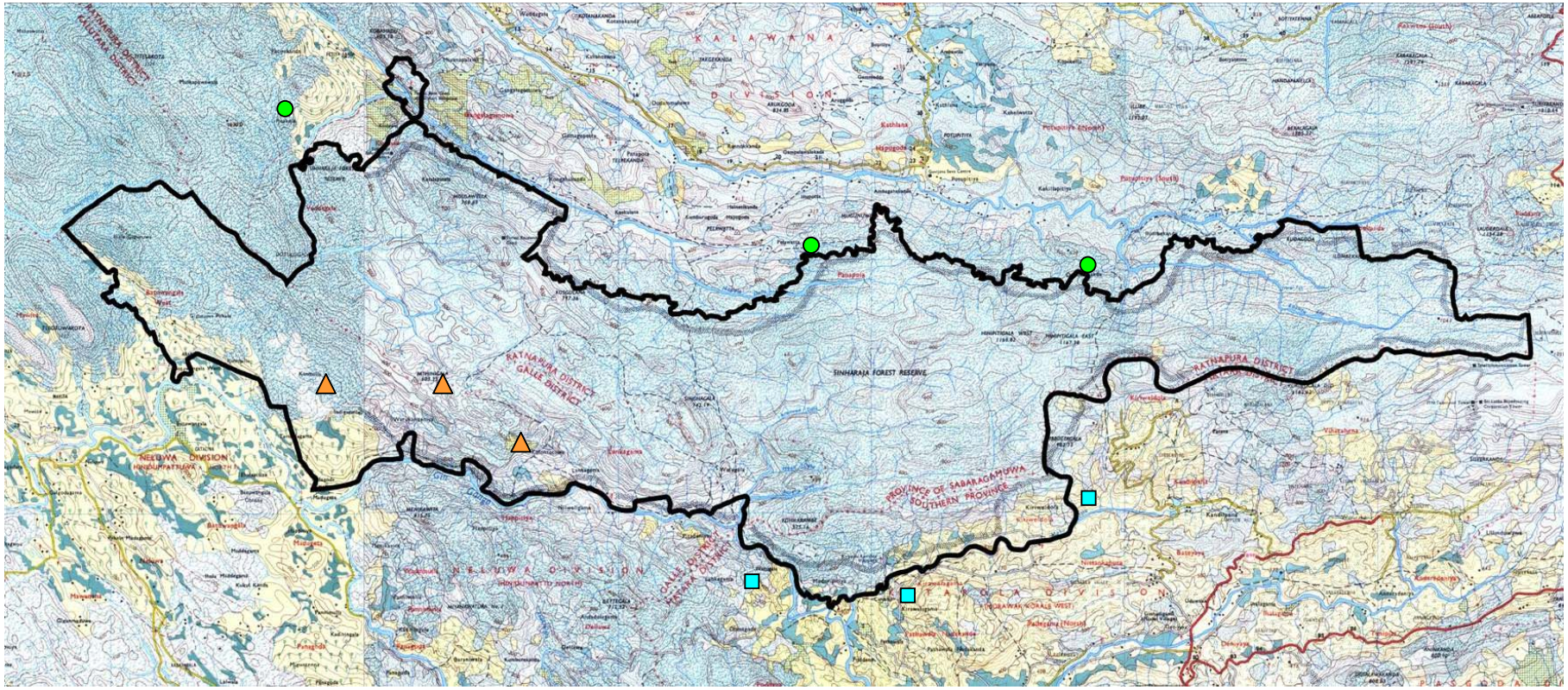
The number of households in each village varied, the smallest being Pitakelle in the Ratnapura District, while Keeriwalagama in the Matara District was the largest.

Table 1: Surveyed households

District	Total surveys done in District	Village	GN Division of Village	Total number of households in village	Total households surveyed
Galle (G)	67	Kolontotuwa (G)	Warukandeniya	74	22
		Kosmulla (G)	Kosmulla	71	22
		Warukandeniya (G)	Warukandeniya	67	23
Matara (M)	84	Hingurahena (M)	Kiriweldola	99	30
		Keeriwalagama (M)	Keeriwalagama	112	42
		Watugala (M)*	Mederipitiya	35	12
Ratnapura (R)	36	Pitakelle (R)	Kudawa	37	11
		Denawakkanda (R)	Illumbakanda	39	13
		Pelawatte (R)	Hapugoda	32	12
Total					**187**

* It must be noted that the Watugala village surveyed was not Watugala which belongs to the Galle District. Watugala village surveyed in this study is a small village belonging to the Mededipitiya GN division in the Matara District.

Location map of the surveyed villages*



The villages of Pitakelle, Pelawatte and Denawakkanda in the Ratnapura District (from left to right)
The villages of Kosmulla, Warukandeniya and Kolontotuwa in the Galle District (from left to right)
The villages of Watugala, Keeriwalagama and Hingurahena in the Matara District (from left to right)

*It must be noted that this boundary is not the boundary of the survey plan. It is the boundary of a forest cover map of Sinharaja and may or may not reflect the lots removed by the 1988 Gazette declaring Sinharaja as a NHWA. The Sinharaja boundary provided by the Forest Department has been overlayed on the scanned and georeferenced 1:50,000 Sheets provided by the UDA. It has been put together using the ArcGis software. The villages surveyed in this study have been marked on the 1:50,000 sheets and purely mapped here to indicate the locations only, and does not reflect any legal boundaries.

6.2 Basic household characteristics

The majority of the respondents were the heads of the household, which was on average 58%. In addition to the head, the spouse, children and other relatives were interviewed. The figure however varied from 38% in Denwakkanda to 65% in Warukandeniya. Majority of the respondents were male (60%), however not by a large proportion.

Only a very small portion of the respondents had no education (5%) on average, while in the villages of Watugala, Kolontotuwa, Kosmulla, Pelawatte and Warukandeniya all respondents were educated. In all the surveyed villages majority of the respondents had studied only in primary school (on average 51%), although on average 23% had completed their Ordinary level exam, and 10% had completed Advanced level. Only 1% of the total respondents had further education. Majority of the respondents were aged 36 to 69 (62%), while 39% were aged between 18 and 35. A smaller proportion was aged above 70, and an even smaller number were below the age of 18 (2%).

The majority of the respondents, 34% had been living on their land since birth, while 6% stated that they have been living in their land for over 50 years. Recent migrations to the villages (and within) were very small, with 19% moving in to the land during the past 3 to 10 years, and an even smaller portion of 5% moving in, over the past 3 years. The vast majority (80%) of those who moved, moved within the village or were from the same district, while 10% were from districts adjacent to the Sinharaja forest. Only 3% of the respondents were from other areas. In the case of Warukandeniya, all of the immigrants were from the same District or moved within the village. Majority of the respondents who moved, did so for marital reasons. A significant portion of those who immigrated/moved, did so because of land availability – which included capturing land and also land which was purchased. Equal proportions (5%) immigrated/moved for farming or work, and due to natural disasters such as floods and landslides.

The total population in the surveyed households were 872, with an average family size being 4.7. The family sizes were slightly larger in the villages Denawakkanda (5.5) and Kolontotuwa (5.3). The smallest family size was recorded from Pitakelle. The total adults in the surveyed households were 583, of which 38% had studied in primary level, and 21% and 11% completing Ordinary and Advanced level exams respectively. The proportion of those who had no education was very low, just 1%, while only 2% had further education. The education level of 26% was not known.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 2 to 11).

6.3 Household wealth status

The survey collected information on a range of wealth indicators. The average land area per household was 254 perches (over 1.5 acres). The villages with the smallest average land areas was Hingurahena (190 perches) and Pelawatte (191 perches). However this is still more than one acre of land per household on average. Households in Watugala and Warukandeniya villages had a much larger area of land 403 perches, and 360 perches respectively. All except one household had crop land. The average crop area for households in all villages was 214 perches (over 1.3 acres). The average crop area was highest in Watugala (350 perches), and was second highest in Warukandeniya (285 perches). On average crops occupied 84% of the total land. Tea was markedly dominant with an average of 91% of crop land being utilised by it.

On average, each household produced 294 kilos of tea from their crop land a month. This translates to an average monthly income of Rs. 14,772 per household. The income from tea was lowest in Kosmulla (Rs. 8,499) and highest in Watugala (Rs. 20,750). Of the three districts, the income from tea was highest in the Matara District, with an average of Rs. 17,443.

Only 9% of the surveyed households had livestock, which included cattle, poultry and goats.

On average 74% of the households received water from the forest, many using pipes to obtain water from free flowing streams, originating from the forest. Only 13% on average obtained water from a well (either own or shared).

Farming was the main occupation of household heads, which was on average 78%. This was as high as 91% in Pitakelle, and was lowest in Kosmulla with 59% of the heads occupied in farming. Unskilled labour was the next biggest occupation with just 8%, while the others were business owners (3%) or occupied in semi-professional or in skilled labour (3%). On average only 20% of the households received Samurdhi, although the percentage of Samurhi recipient households varied from 0% in Watugala to 67% in Pelawatte. Only 12% of the surveyed households stated that they received off farm income, although in Watugala and Kolontotuwa not a single household stated that

they received off farm income. Of those who stated they received off farm income, this worked out to an average of just over Rs. 6,000 a month.

Household wealth status is also reflected in the different types of housing. Though there were differences in types of house construction, the majority of households had plastered walls (73%), with tiled roofs (66%) and glass windows (37%). This trend was also consistent for the average households represented by each District. On average each house had a living room, three bed rooms and a kitchen. Of those surveyed, 98% of the households had toilet facilities. With regard to the ownership of material assets, on average 81% of the surveyed households had a radio, 68% had TV's, 16% had motorbikes, 6% had bicycles and 5% vehicles.

The vast majority of households relied on firewood for cooking, accounting for approximately 89% of the total, while 12% relied on gas for cooking. Energy availability (excluding cooking) was from sources such as mains, mini hydros, solar, small motors, kerosene and other sources such as batteries and generators. The energy availability was on average 67%. Of the total households surveyed 40% had energy from renewable sources of energy such as mini hydros and solar panels. In Pelawatte all houses received their energy from a mini hydro.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 12 to 22).

6.4 Land ownership

The vast majority of respondents stated that the occupied land was owned (92%), 3% stated that they had rented, while 2% were workers. Of those who claimed to own their land, 60% stated that they inherited the land, while 16% purchased their land, 15% cleared to obtain land while some were allocated (5%) or given land (1%). Clearing as a method of acquiring land was highest in the villages of Hingurahena (27%), Warukandeniya (26%) and Denawakkanda (25%).

Of the total households surveyed, only 70% of the households claimed to have entitlement to land. Entitlement to land (according to claims) was highest in Pitakelle (82%), and was lowest in Watugala and Pelawatte with 58% each. This translates to at least 30% of the surveyed households being illegal. Less than half those who claimed to have land entitlement had a title deed, while the rest of stated that there lands were Swarna/Jaya boomi entitlements, permits or other types of entitlement. Clearing of new

lands was witnessed in 7% of the surveyed households. It is likely that those who did not have entitlement to land, stated otherwise given the illegality of possessing land without entitlement. No documentation on entitlement was requested, shown or verified as this was beyond the scope of this study.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 23 to 27).

6.5 Use of forest and resources

The majority of surveyed households stated that they collect products from the forest. On average this was 57%, while the proportion was as high as 81% in the Ratnapura District. Villages with the highest forest use were Pelwatte (92%) and Denawakkanda (85%), and was lowest in Watugala (25%), which was expected, as it was the village which was furtherest away from the forest boundary. Of those collecting forest products, the vast majority (60% on average) rated these products as being either very important (28%) or important (32%) to them. It must be noted that some respondents may have not wanted to give away details about use of forests products, as majority of the collected products are in fact illegal. On average 20% claimed they collected firewood from the forest. The collection of firewood from the forest was highest in Pelawatte (75%), and lowest in Hingurahena where none of the respondents stated they collect firewood from the forest. A large portion of the surveyed households stated that they collect wildfoods from the forest (25% on average), varying from 0% in Watugala to 48% in Warukandeniya. A significant portion of the surveyed households claimed that they obtain medicines (11%), timber (5%), kitul (5%), rattan (4%), housing materials (2%) and handicrafts (2%), while no one claimed to hunt in the forest. Timber use from the forest was highest in the villages of Denawaakanda (23%) and Pelawatte (17%). The use of wildfoods was highest in Warukandeniya (48%) and Kolontotutwa (41%). Use of medicinal plants was highest in Pelawatte (33%) and Denawakkanda (31%). Only the tapping of kitul is allowed, with a permit.

When inquired about whether other people from the village obtain products from the forest, 89% stated that the others collect forest products. Of those who claimed other people collected forest products, 27% stated that everybody collects products from the forest. When questioned the types of forest products collected by the others, 70% of the respondents stated that wildfoods were collected by the others. According to 30% of the respondents, kitul was collected by other people. Other forest products collected included dummala (claimed by 24%), medicines (20%), firewood (19%), timber (9%), rattan (6%), hunting (4%), while 1% stated that gem mining was carried out.

Of the households surveyed, 84% replied about their trend of forest use over time. Of those who responded, 90% stated that forest use had declined over time. When giving reason for the decline, a majority (51%) of those who stated that forest use reduced stated that this was because either they had no time to go to the forest, because of tea and other income, or because they had no need to go into the forest. Over a quarter (26%) stated that their use declined because of laws, rangers and because the forest was protected. Smaller percentages stated that their use decline because they will lose services (including water) from the forest or because they were educated (4%), 3% were scared to go in because of wildlife, and 1% because they were involved in conservation projects.

Of the total households, 90% responded to the trend of the availability of forest resources over time. Of those who responded, 41% stated that the availability of forest resources have increased over time. The major reason stated for the increase of forest resource availability is reduction of forest use was less and people don't go (64%). Another reason (by 17%) given was because there are more animals and that forest had grown. Legal protection and not being allowed to go accounted for 11% of responses. Of those who stated that resource availability had declined (16%), reasons stated included landslides and natural disasters, past and present destruction of the forest.

According to 54% of the respondents, a significant decline in forest use had occurred within the past 10 years. A significant proportion (28%) stated that the decline was during the past 11 to 20 years, which coincides with the period after the forest was declared a National Heritage Wilderness Area, and a UNESCO World Heritage Site. A total of 17% stated that there was a significant reduction in their forest use during the past 21-30 years. This coincided with the period where commercial logging of Sinharaja was banned, and was declared a Man and Biosphere Reserve.

A claim that the Loris' tears were used by the communities of Sinharaja for medicinal purposes was heard, and this question was included in the questionnaire. On average 8% of the households in the Matara and Rathnapura Districts stated that the Loris' tears were used for medicinal purposes by others, while no households stated that they use the tears themselves (the question was added after the survey had commenced, and therefore could not be incorporated to the questionnaire carried out in Galle).

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 28 to 38).

6.6 Knowledge on Sinharaja and Forest Department

A vast majority of the households surveyed, 89% stated that the forest was indeed a Protected Area. Although this was a large proportion it still meant that over 10% of the surveyed households didn't even know that the forest was protected. Only 70% of the households stated they knew the boundaries of the Sinharaja forest, while a higher proportion (77%) stated that the forest was a World Heritage Site. Only 31% were aware that Sinharaja was a Man and Biosphere Reserve.

When queried about the activities allowed to be carried out inside the forest 49% stated that nothing was allowed, 5% stated that non extractive activities such as entering, walking and looking was allowed and another 5% stated that only kitul tapping could be carried out legally. A large proportion (30%) stated that non timber forest products such as collecting wildfoods, medicines, rattan etc were permitted, while 1% also stated that extractive activities were allowed. All extractive activities are prohibited in Sinharaja forest, apart from tapping kitul – which requires a permit.

It was stated by a majority (42%) that forest officers frequently visited the forest, while some stated that the visits were infrequent (34%), or seldom (14%). Some stated that the forest officers never visited the forest (at least to their knowledge). In Hingurahena 40% of the households stated that forest officers never come to the area. With regard to the relationship between forest officers and the villagers – similar proportions (21% each) stated that their relationship was either good or poor, while 32% stated that their relationship was average. Only 17% stated that they received assistance from forest officers. Assistance varied from legal activities such as community conservation projects such as the Sumithuro organisation which gives plants, loans etc to villagers, to illegal activities such as leaving out land while putting up boundaries, and allowing villagers to take extractive resources such as timber from the forest.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 39 to 42).

6.7 Livelihoods and changes over time

The surveyed respondents stated that their livelihoods had changed over the years due to tea and other income sources, better facilities, while some stated that life had got more difficult. Of the total respondents, 85% stated that the way in which they earn their livelihood had changed. The main reason stated (42%) was due to tea and other income.

A total of 80% stated that they would like their children continuing to live in the village. With regard to aspirations for their children's future, the majority (51%) stated that they would like to educate their children/ do a good job, while only 5% stated that they would want their children to work on the land. Another 5% stated that they would want their children to leave the village.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 43 to 44).

6.8 Costs and benefits of living adjacent to the Sinharaja forest

A large proportion of the surveyed households (72%) recognised that services provided by the forest (including provision of water) were a major benefit to the local people. A large proportion of 48% stated that wildfoods, medicines etc, classified as non timber forest products were beneficial to local people, while a smaller proportion (5%) stated that benefits included extractive resources such as timber. Only 4% saw the benefits of the forest for aesthetic/existence or intrinsic values. There was a considerable proportion (12%) stated that there was no benefit from the forest to the local people.

The Sinharaja forest does not cause problems to the vast majority of the surveyed households, with only 19% stating that they have problems with the forest. Of those who claimed to have issues, 88% stated that conflicts with wildlife was the biggest reason, while a smaller proportion of 11% stated natural disasters such as landslides and flooding being problems. When specifically asked about whether they were affected by wildlife, 48% of all households stated that they are affected by wildlife conflicts. Of those affected by wildlife conflicts, a vast majority of 97% stated that they were negatively impacted by wildboar, while other wild animals causing problems included sambhur (20%), and porcupine (13%). Apart from Pelawatte and Kolontotuwa, households who have conflicts with wildlife stated that they were affected by wildboar.

Community conservation projects were low in the villages, with only 27% stating some involvement in conservation. The main implementing organisation is the Sinharaja Sumithuro – facilitated by the Forest Department. This programme is most active in Kosmulla village with 77% of the surveyed households being a part of the Sumithuro organisation. Many stated during discussions, that although Sumithuro was initiated in many villages, it had not continued to function in a sustainable manner. The smaller proportions of households in villages such Denawakkanda, Hingurahena, Kolontotuwa and Pelawatte who stated involvement in conservation projects – were probably

members of presently non-operating committees. In the Galle District, 42% were involved in conservation projects, while 24% were involved in Marata, and a mere 6% in Ratnapura.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 45 to 48).

6.9 Attitudes towards Sinharaja and its conservation

The most liked species was the jungle fowl, with 32% of the households stating that it was the animal they wanted to see conserved. A quarter of all respondents stated that they liked all animal species to be conserved. Other species among those who were liked were sambhur (19%), parrots (13%), giant squirrel (11%), deer (11%), leopard (10%), barking deer (9%), peacock (7%), elephants (6%) and all birds (5%). In the village of Kolontotuwa 52% of the respondents stated that they would like to see all animal species conserved, when asked for names of specific species.

It must be noted that only 51% of the households surveyed stated that they disliked any species. Among those species that they thought should be least conserved were the wildboar (67%), porcupine (15%), sambhur (14%), snakes (12%), leopard (7%), monkeys (4%) and elephants (2%).

The respondents were asked what attributes of Sinharaja they liked and disliked. These were posed as open ended questions, which gave the respondents the ability to freely express themselves, however these were later categorised so that they could be analysed. The majority of respondents, 58%, liked Sinharaja for the services the forest provides, with a special emphasis on the provision of water and rain. There were a large proportion of respondents (47%), who stated that they liked Sinharaja for aesthetic, intrinsic and existence values. A smaller proportion stated that they liked it because of non timber forest products such as wildfoods and medicines, while only 1% stated they liked it for extractive resources such as timber. Only 4% stated that there were attributes of Sinharaja they disliked. The biggest reason was wild animals, either due to crop raiding or because the respondents stated they were scared of them (37% of those who disliked some attributes of Sinharaja). Other reasons included tourism (7%), weather and rain (7%), and natural disasters (4%).

When asked the question “how would you feel if Sinharaja was completely cut down”, people felt very strongly about the conservation of the forest. A large proportion stated that is would become a desert, that they would have no water and that it may cause

drought, stating it was invaluable for their survival. Over a third stated it would be a great loss, while a tenth gave very strong statements such as “we are finished”, “we will die” or “no future”. One respondent went to the extent of saying (probably in the heat of the moment) that “it is better if my daughter dies”.

Approximately 35% of the surveyed respondents stated that there were threats to Sinharaja. Of those, over half (53%) stated that cutting trees was a major threat to the forest. In addition to this, a large proportion stated that poaching animals was a major threat (27%). Encroachments and the spread of tea was another serious threat stated by 17% of the respondents. Among the other threats stated were – tourism, tourists hotels and visitors (14%), hydro power projects (10%), burning forest (8%), natural disasters (7%), gem mining (5%), sand mining (3%), “selling” Sinharaja (3%), planting of Pinus trees (3%), corruption and political influences (3%) and taking plants (2%).

Attitudes of the respondents towards various statements were verified by asking them the level of agreement or disagreement with the given statement. A five point Liket scale ranging from strongly agree, to strongly disagree was used for this purpose. Apart from two or three respondents, the rest of those surveyed, responded well to this type of question. The majority of the respondents (72%), stated that they either strongly agreed (27%), or agreed (45%) with the statement on “whether local communities should be allowed to exploit the resources of protected areas”. However there were 23% with the view that this should not be the case (with 21% disagreeing and 2% strongly disagreeing). In contrast, when the respondents were asked to give their level of agreement on the statement “whether the future of protected areas will be bleak if people were allowed to exploit its resources”, 97% were in agreement with the statement (with 48% strongly agreeing, and 49% agreeing to it). This shows that even though the majority believed that they should be allowed to exploit resources of protected areas, they also believed that if people were allowed to do so, the future of protected areas would be bleak.

When asked whether “it is necessary to conserve certain areas for the benefit of future generations” an overwhelming 98% either strongly agreed (51%) or agreed (47%) with the statement. In the villages of Denawakkanda, Pelawatte, Pitakelle, Hingurahena, Keeriwalagama, Watugala and Kosmulla no respondent disagreed with this statement.

There was agreement among respondents regarding “whether it is necessary to conserve areas for its natural beauty”, with 95% either strongly agreeing (36%), or

agreeing (59%) with the statement. In Pelawatte and Pitakelle, no respondents disagreed with this statement. There was also similar agreement with regard to the existence value of animal species with 85% of respondents either strongly agreeing, or agreeing, with the statement “animals should be conserved, even if they are of no use to humans”.

The vast majority of respondents, 94% were in agreement with the statement that “laws and regulations are important to conserve forests like Sinharaja” with 94% either strongly agreeing, or agreeing to the statement. In Pitakelle, Hingurahena and Kosmulla no respondent disagreed with this statement.

A major proportion of the surveyed respondents (84%) believed that the Sinharaja forest was sacred. This question was added later, and therefore not reflected in the interviews in Galle. A large proportion stated they believed the forest to be sacred because Sinharaja was “Saman God’s range” (30%), because “you have to watch your mouth” (23%), due to the value and services of the forest (19%), because of “powers” (12%), because “other people say” (9%), because people “know or feel it” (7%) and because it helps them live (5%).

When asked whether Sinharaja forest should be protected, all who answered stated that it should. The reason stated by a vast majority (62%) was that it should be conserved for the services it provides, with an emphasis on the provision of water. It must be noted that this was an open question with no prompting or possible answers. The open ended questions were categorised for analytical purposes. Conserving it for future generations was another reason (18%), while others stated that it should be protected for aesthetic/existence/intrinsic values (15%), for their survival (13%), for non-timber forest products (3%), for extractive resources (1%)

When asked what the respondents could do to protect Sinharaja a large proportion stated that they could inform authorities if people were destroying it (32%), not harming/ protecting forest (30%), replanting (2%), with 17% stating that there is nothing they can do to protect the forest.

The respondents were asked what action the government should take to protect Sinharaja. Of those who responded, 28% stated that rangers need to be increased, or be more effective, while a quarter stated that there should be strict laws and enforcement of those existing. A fifth of the respondents stated that the government

should protect it, and continue to do so, while 13% stated that awareness should be created about Sinharaja. Over a tenth (11%) stated that that the government should demarcate boundaries. Smaller proportions thought what the government was doing was sufficient or that there was nothing specific to state, 6% wanted the destruction stopped, while 2% stated that villagers should be involved in conservation and 1% recommended that degraded areas should be replanted.

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 49 to 64).

6.10 Correlations

Correlations were carried out to see the relationship between variables.

A correlation was carried out to see whether there is a difference in forest use amongst those with and without land entitlements (ie. encroachers and non encroachers). Forest use among those who claimed to have entitlement was 60%, while 47% of those who didn't have entitlement used the forest. The results in fact show that forest use was higher amongst those who claimed to have entitlement, rather than those who had no entitlement.

Correlations carried out on the relationship between the involvement of respondents in community conservation and forest use (extraction), showed that 54% of those involved used the forest, while 58% of those who were not involved extracted resources from the forest. The difference of 4% shown between the different groups in terms of forest use is insignificant.

When comparing forest use by age group, it was revealed that 64% of those between the ages of 18 to 35 extracted resources from the forest. A smaller proportion (54%) between the ages of 35 and 69 extracted from the forest while only about a third of those over 70 used the forest. This shows that youth are the biggest resource users of Sinharaja.

There is no clear relationship between the knowledge on the forest and its use. However there was a general trend that those who had a better knowledge of the forest in fact used the forest more. This is highlighted when comparing the forest use of those with the lowest level of knowledge (50%), and those with the highest knowledge (77% forest use). There is no clear relationship between the level of education and forest use.

The forest was used by 68% of those who didn't believe Sinharaja was sacred, while 61% of those who did believe in its sacredness still utilised it.

The average income (from tea) of those who used the forest was Rs. 13,533, while the average income of those who didn't extract was Rs. 16,500. This shows that the forest was used by those who had a marginally lower income, than those who did not extract resources from the forest.

The wildboar was disliked by over 50% of those who had conflicts with wildlife. Only 20% of those who didn't have conflicts disliked the wildboar. There is only a marginal difference in attitudes towards the conservation of animals, irrespective of whether respondents have conflicts with wildlife.

There is barely a difference in when the encroachers and non encroachers moved to their land.

There is no obvious difference in what the respondents stated that they can do to protect Sinharaja, irrespective of whether they were involved in community conservation projects. There is however a difference in the proportions who stated that "they cannot do anything" to protect it. Of those who were involved in conservation projects, only 3% stated they cannot do anything to protect Sinharaja, while 21% of those who were not involved in conservation projects stated they cannot do anything to protect Sinharaja.

Of those who obtained their drinking water from the forest, 63% recognised that Sinharaja should be protected for its services. Comparatively a slightly smaller proportion of 52% of those who didn't obtain water from Sinharaja also felt that it should be protected for its services. A similar proportion that used and didn't use the forest had the same level of agreement (strongly agreed or agreed) regarding whether "it is necessary to conserve certain areas for the benefit of future generations". A similar result was also obtained for forest use and level of agreement on whether "it is necessary to conserve areas for its natural beauty".

Correlation between forest use and how respondents would feel if Sinharaja was completely cut down showed that the majority of both forest users and non users stated that - either the forest will become a desert, there'll be no water, drought and that they need he forest for their survival (69% of forest users, and 53% of non users). A large

proportion of both groups also stated that it will be a great loss (34% of forest users, and 41% of non users).

Detailed results for all villages and districts are tabulated in Annex 2 (Tables 65 to 79).

7. Discussion

This study surveyed nine villages, in the three administrative Districts in which Sinharaja is situated and collected information from 187 households. Given that there are 40 villages adjacent to the forest, and that the study covered almost a quarter of the villages, it can be assumed that the surveyed proportion is representative of the local communities adjacent to Sinharaja. By surveying a third of each village, in a systematic way, it can be assumed that the households and the population of each village are well represented. Surveying three villages from each District gave the opportunity to compare and contrast between the Districts. The discussion will focus on meeting the objectives of the study, outlined in Section 2.2.

7.1 Impacts of local communities on the conservation status of Sinharaja

7.1.1 Use of forest resources

The collection of forest products is illegal, as Sinharaja is a NHWA where resource extraction is prohibited (apart from tapping kitul with a permit). The results showed that over half the surveyed population collected products from the forest. This figure is probably not a reflection of actual extraction, as many may not have wanted to disclose illegal activities. Therefore results pertaining to illegal activities can be assumed as being conservative. Wildfoods, firewood and medicine accounted for the most collected products, with 5% of those who used the forest claiming that they even took timber. In some of the smaller villages such as Pelawatte and Denawakkanda (which are both situated adjacent to the forest) almost all the surveyed households collected products from the forest.

Asking respondents about resource extraction of others was a better indicator of actual extraction by local communities, as it would not have the issue of respondents not wanting to disclose their own illegal activities. Almost a three quarter stated that others use the forest, with kitul, dummala, medicines and firewood accounting for most of the answers. Timber and rattan extraction, hunting of species such as the wildboar and sambhur for meat was also revealed through this question. In addition to this, just over a

quarter of those who were able to identify threats to Sinharaja felt that poaching was a major threat. This indicates that threats endanger not only trees, but also the fauna of Sinharaja – which could threaten the balance of the ecosystem.

The use of extractive resources is a concern – especially considering that there are over 40 villages around the periphery of the forest. Among the threats identified by the respondents, felling of trees accounted for over half the responses – indicating that extractive timber along the edge is a real threat to the forest.

Many claim that forest use has declined, as indicated by responses to several questions and is highlighted in Section 6: Results. The majority who claim that forest use has declined, state that this is mainly because they have no time to go, because of their dependence on tea or because have no need to go anymore. A quarter also stated that laws, rangers and the forest being accorded protection, deterred them from going in to the forest. This indicates the importance of law enforcement ("pushing people away"), while a sustainable income from other sources is also vital ("pulls people away"). However in some areas in the edge, and possibly the interior (based on observations and claims of people), extractive use of forest products, seems to have been replaced by the more destructive practice of growing tea.

7.1.2 Encroachment

Encroachment is a major issue in many of Sri Lanka's forests and other protected areas (MENR, 2002). It is a major concern as it clear cuts forests, resulting in the loss of habitat.

Currently only 70% of the surveyed households claimed to have entitlement to land. There is a possibility that those who did not have entitlement to land also claimed entitlement, as they did not want to reveal their illegality. In addition to this, it does not take in to account any newly cleared land, for which the entitlement may not be valid. However verifying validity or entitlement, or entitlement of newly cleared lands was not within the scope of this study, and therefore it can be stated conservatively that the 30% are encroachers, and that this probably is a minimum figure.

The method in which land was obtained also indicated the impact local communities had on the forest and the adjacent area, as 15% stated that they obtained land by clearing it (this too is probably a conservative figure, as clearing is likely to be illegal). The fact that

clearing accounted for acquisition of land in Hingurahena, Warukandeniya and Denawakkanda is a cause for concern. The enumerators also recorded that evidence of newly cleared land was witnessed in 7% of the surveyed households. Given that sections of some villages are included within the legally protected area (as specified in the Gazette), these areas should be closely monitored to prevent clearing and encroachment, while addressing existing issues.

7.1.3 Immigration to village and movements within village

Though the majority of the respondents claim that they have been living in the villages since birth, or for several decades, a considerable proportion of respondents have either moved within the village, District or come from outside. This indicates that there is continuous pressure on land resources, as availability is limited. This issue will only worsen when the population increases over time. The lack of land triggered several respondents to claim that the government should either give them land elsewhere, or find solutions for their children. Increase of population within each village will no doubt increase the demand for land, and among families, crop land would have to be split between several children. This would cause temptation to illegally expand existing farms in to the forest. As new houses come up there will be a higher demand for construction materials such as timber, and other resources from Sinharaja. Special attention should be given to encroachments and new clearings, as sections of several villages are found within the legally protected area.

7.1.4 Dependency on tea and expansion of tea lands

According to the results of this study, the income from tea (and other minor sources) has reduced dependency on extractive forest resources for livelihoods. Many would breathe a sigh of relief when looking at the results which clearly indicate that income from tea has reduced and in some cases deterred the extraction of forest products and their dependence on the forest. However these results should be interpreted with caution, given that tea is a commodity with fluctuating prices. The fall of tea prices could mean that local communities could revert back to dependency on the forest during bad times, similar to the current economic crisis affecting tea prices.

Therefore it is vital to encourage other sources of income, in the event that tea does not bring the desired income. Other sources of income would buffer income, and help steer communities away from the forest during bad times. Fluctuation of the price varies by grade and market value. This was evident during the survey period (July 2007 to Oct

2008), where the recorded minimum price for tea was Rs. 30 a kilo, and the maximum Rs. 57.

The desire to increase income, and the temptation to expand and possibly encroach is not only a prevailing threat, but could worsen in the future. Visits to villages showed tea plantations at the edge of well forested areas, indicating encroachments. Responses and observations show that extractive resource use (wildfoods, rattan etc) by some, have been replaced by tea; a far more destructive practise. It is not only agro chemical use (for tea) that threatens biodiversity, but clearing and spread of tea in to the forest would also result in habitat loss. In addition to this, many identified encroachment and spread of tea as major threat to Sinharaja, and ranked as the third greatest threat based on the number of responses.

7.1.5 Negative impacts and effects on biodiversity

Resource extraction, encroachments, pressure on land pose serious threats to the legally protected forest, especially the area adjacent to the periphery (which will be referred to as “the edge” in this discussion). When comparing protected areas (of similar size), vulnerability to disturbances is usually higher for areas with more edges and longer perimeters (del Carmen Sabatini et al, 2006). Sinharaja has an elongated shape, which means that it has a longer perimeter exposed to the outer areas, and therefore higher vulnerability.

Some studies have already shown that encroachment and degradation of the periphery poses a major threat to certain species, in the case of one study – the herpetofauna (Surasinghe, 2007). In addition to this, some sections of villages adjacent to the forest have been excluded from the legally protected area; there are access roads close to the periphery while encroachments have fragmented the forest even more. Research carried out by Gascon et al (2000) has shown that logging and the access roads through forests results in their fragmentation. Around the perimeter of each forest fragment, is an edge where ecological changes start to take place. Eventually, the edge effect leads to recession of the forest edges and shrinking of the fragment until it disappears. This according to the researchers is a worrying trend, and is a particular problem in tropical forests.

Other studies (Laurance et al, 2006) done in tropical regions such as the Amazon have shown that edge effects (i.e., the diverse environmental changes associated with the

abrupt, artificial boundaries of forest fragments) appear to be the most important drivers of ecological change. These studies suggest that modified lands adjoining nature reserves can exert powerful, possibly even dominant, influences on the reserve itself (Laurance, 2000). Permanent conversion of forest to agriculture (tea, cinnamon, rubber, oil palm) can have more detrimental consequences to the soil because of higher rates of erosion and nutrient loss. This kind of forest clearance also results in the complete eradication of almost all forms of forest regeneration present in the groundstory (Ashton et al, 2001). The impact of threats to the health of the forest, especially in edge areas is less researched in the case of Sinharaja, and serious efforts should be made to research and restore these areas.

7.1.6 Negative impacts and legal implications

Encroachments, movements within and between villages and the spread of tea lands being threats, it is important to look deeper in to the issue involving the legality of land tenure. As highlighted in the subsection “Legal protection of Sinharaja”, under subsection 3.4.5, sections of villages adjacent to the forest have been included, while some have been excluded from the legally protected area. All these have been marked in the Survey Plan referred to in the Gazette. In order to determine the legality, the lands on the ground will have to be compared with the Gazette and the Survey Plan, as there are no clear boundary markings in many of the visited villages. The important and laborious task of verifying land entitlement was not within the scope if this study.

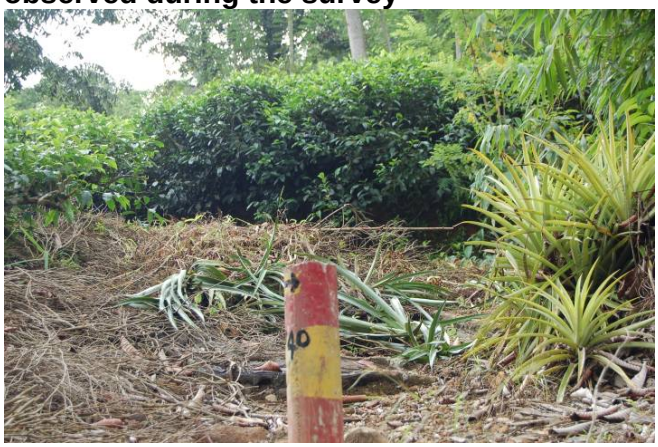
7.1.7 Positive impacts

The survey did not identify any obvious positive impacts of local communities on the conservation of Sinharaja. However there is potential for the identified negative impacts to be turned in to positive impacts.

Community conservation, if carried out in a proper manner (within the legal framework, and without destruction to the forest) could contribute to the conservation of Sinharaja. Dialogues with the communities have shown that community conservation has not been sustainable in the surveyed villages, but has the potential to have a positive impact on conservation. In addition to this, when questioned on what they can do to protect Sinharaja many stated that they could inform relevant authorities if illegal activities were taking place. This shows the potential for forming vigilant groups in the villages for the protection of the forest.

Possible threats to Sinharaja observed during the survey

A chain saw in the possession of a villager in Pelawatte



A boundary marker surrounded by tea and bare land in Kolontotuwa

The spread of tea lands in to the forest in Denawakkanda

Trees being cut in Kolontotuwa

A household directly adjacent to the forest in Kolontotuwa

Tea creeping up towards the forest in Keeriwalagama

7.2 Local costs and benefits of conserving Sinharaja as a protected area

7.2.1 Benefits from services

A number of questions in the questionnaire aimed to identify the local costs and benefits of conserving Sinharaja.

The services provided by Sinharaja, especially provision of water and its function as a watershed forest was appreciated by a large proportion of respondents. This was also reflected in their answers regarding the benefits of Sinharaja. It is a clear indication that a vast majority of the local communities recognise and appreciate the non extractive benefits of Sinharaja, while a small proportion valued it for aesthetic purposes.

A large number of villagers depend on the forest for drinking water, a direct benefit of living adjacent to the forest. Of the total surveyed households, it was determined that over a quarter obtained electricity from mini hydro's – another direct benefit from the water courses originating from the forest.

7.2.2 Cost of prohibiting extractive activities

The prohibition of forest use is an opportunity cost for local communities. A vast majority of respondents believed that local communities should be allowed to exploit the resources of protected areas. This highlights that though extraction activities are illegal, local communities still believe that they should be allowed to take resources from Sinharaja.

The prohibition of extraction is a cost to local communities as this prevents them from using the forest for domestic purposes (however this cost would be insignificant when considering the services to the local communities, and the country as a whole).

In addition it must be noted respondents stated that they mainly use extractive forest resources for domestic purposes, and depend on farming (tea), for their income. Therefore, prohibiting extraction will not have a major impact on livelihoods, but would restrict certain traditional practices and use of rare wildfoods.

7.2.3 Benefits from traditional practices (kitul)

Tapping of kitul, with a permit is allowed inside Sinharaja. The study revealed that a small proportion of those surveyed benefited from the tapping of kitul. However a large quantity of firewood is required for making jaggery and treacle which can have a negative impact on the forest.

7.2.4 Benefits from community conservation

Over a quarter of those surveyed benefit from community conservation projects, initiated by the Forest Department ("Sinharaja Sumithuro" - Friends of Sinharaja). Giving loans for livelihood development, providing plants for agro forestry, provision of materials to deter people from resorting to extractive resources were among the direct benefits cited. These benefits have the potential to develop further, as only a small proportion is currently involved in community conservation projects. Sustainability must be ensured for long term benefits and to deter those who extract resources from the forest.

Community conservation should have a positive impact on both the forest and the local communities and be within the legal framework. These could include activities such as guides to visitors, educators to the villagers, assisting in research activities, restoration projects, and even acting as informants when illegal activities take place.

7.2.5 Wildlife conflicts

Almost half the surveyed households had conflicts with wildlife. Many respondents stated that they were negatively affected by wildlife such as the wildboar, porcupine and sambhur that destroyed or damaged their crops. This was also the main issue highlighted by a minority that stated that they had "problems" due to living in close proximity to Sinharaja.

7.2.6 Likes and dislikes

Responses to the "likes and dislikes" about Sinharaja gave a good indication about the costs and benefits to the local communities. A large proportion stated that they liked the services provided, while a significant proportion appreciated aesthetic values. This highlights that these attributes of Sinharaja are liked by the local communities and can be therefore considered to be a benefit to those who live around it.

Only a fraction of the surveyed households (4%) stated there were attributes about Sinharaja that they disliked, with some of the main reasons being conflicts with wildlife, tourism, weather and natural disasters.

7.3 What motivates local people to conserve or destroy Sinharaja?

7.3.1 Other sources of income

Claims have been made that there is a reduction of forest use over time by local communities. Many have indicated that their livelihood has changed over time, in most cases for the better. This has been widely attributed to income from tea, while working in farmland has resulted in people having less time and need to go in to the forest. Those who extracted resources from the forest had less income from tea, than those who didn't extract. Therefore a higher level of income can deter people from using the forest, and needs can be met from other livelihood sources.

Tea can also be a double edged sword. On one hand it can reduce the need to extract resources from the forest, while on the other hand it can cause temptation to acquire lands beyond their legal entitlement, in to the forest. This was witnessed during the survey, as illustrated through the photographs. It is therefore vital to create employment opportunities which will enhance the level of income, and those which do not have a detrimental impact on the forest.

7.3.2 Declaration as a NHWA, WHS and MAB reserve

Many claimed a significant reduction in forest use during the past ten years, the time where most awareness was created on Sinharaja. Some stated that their forest use declined during the past 11 to 20 years, which coincides with the period it was declared a NHWA and WHS, while others reduced after logging was banned and it was designated as a protected area and a MAB reserve. Therefore giving Sinharaja its due legal protection and recognition, probably prompted people to reduce the use of forest resources to a certain extent.

7.3.3 The sacredness of Sinharaja

There is a strong belief amongst the people around Sinharaja that the forest is indeed sacred and is the range of Saman God, as shown by the study. There is a belief amongst many that you have to watch your mouth when you enter, or else you will get

stranded in the forest. It is not just hearsay according to people, many state they feel the power, while others state that it is because Sinharaja is a valuable forest. Correlations show that even though people believe Sinharaja is sacred, they still carry out extractive activities and that there is no significant difference in forest use between those who believe it is sacred and those who do not believe. Therefore belief will not necessarily translate to conservation of the forest.

7.3.4 Involvement in conservation projects

Results have shown that similar proportions of those who are involved and not involved in community conservation use the forest. This shows that the involvement in conservation projects does not necessarily stop local communities from illegally extracting resources from the forest.

There is also no obvious difference in what the respondents stated that they can do to protect Sinharaja, irrespective of whether they were involved in community conservation projects. However the proportion of those who stated that “they cannot do anything” to protect it, was higher for those not involved in community conservation.

7.3.5 Appreciation of services

The wide appreciation for services provided by the forest to local communities cannot be stressed too strongly, as highlighted previously. This positive attitude is encouraging as it is likely that local communities would protect the forest from imminent threats. Many stated that they would inform authorities if people were destroying the forest, while an almost equal proportion recognised the fact that by them not harming the forest, and by protecting it – they could contribute to the conservation of Sinharaja. However this is not an indication that people would completely stop the use of forest products, as highlighted previously. Of those who obtained water from the forest, 63% recognised that Sinharaja should be protected for its services. Comparatively a slightly smaller proportion of 52% of those who didn’t obtain water from Sinharaja also felt that it should be protected for its services.

7.3.6 Attitudes

More positive attitudes towards the conservation of the forest were seen as all those who responded stated that Sinharaja should be protected. The motivation for this, as indicated from the reasons given - were the provision of services by the forest, the need to conserve it for future generations, and for aesthetic, existence and intrinsic values. A

significant proportion also stated that they needed it for their own survival. Therefore this shows clear motivation for the conservation of the forest, although this does not necessarily translate to non extraction of forest products as shown. It is also worth reiterating here that the vast majority "liked Sinharaja" for the services provided, while almost a half stating they liked the aesthetic attributes of the forest.

It is likely that if people "wanted to see certain species conserved" they would themselves be motivated not to destroy such species, and the forest that supports them (and vice versa). The most popular animal species for conservation was Sri Lanka's national bird – the jungle fowl, followed by sambhur, parrots, giant squirrel, deer, leopard and barking deer. Species that people thought should not be conserved were animals that usually raid and destroy crops – such as wildboar, porcupine and sambhur. Some stated they disliked snakes – probably due to the fear of being bitten and poisoned. Wildlife conflicts did have a significant impact on attitudes towards the species involved in the conflict. The wildboar was disliked by over 50% of those who had conflicts with wildlife while only 20% of those who didn't have conflicts disliked the wildboar. However there was only a marginal difference in the level of agreement on whether animals should be conserved even if they are of no use to humans (irrespective of whether respondents have conflicts with wildlife).

Results and reactions to questions indicated that people have an innate fear that if the forest was completely destroyed it would adversely affect their lives and livelihoods. Many stated that it would be a crime, become a desert and that they will have no water, while one respondent went to the extent of saying, probably in the heat of the moment that "it is better if my daughter dies". In addition to this, a vast majority had a positive attitude towards the conservation of Sinharaja – with large proportions being in agreement with the necessity of "conserving certain areas for the benefit of the future generations", "necessity to conserve areas for natural beauty", and "that animals should be conserved, even if they are of no use to humans".

It is evident that local communities have a very positive attitude towards the conservation of Sinharaja. However this does not necessarily translate to protection, or refraining from illegal forest use. This was highlighted when correlations showed that both forest users and non users had similar sentiments regarding the conservation of Sinharaja. Both groups felt strongly and negatively regarding the loss of Sinharaja. Attitudes towards conservation by both groups were also similar as shown by the levels

of agreement regarding whether “it is necessary to conserve certain areas for the benefit of future generations” and to whether “it is necessary to conserve areas for its natural beauty”. This shows that positive attitudes don’t necessarily stop local communities from using the forest.

3.3.7 Other factors that contributed to conservation and destruction

Forest use was highest amongst youth, aged between 18 and 35 years. It is surprising to note that there was no correlation between education and forest use (extraction), while those who had a higher level of knowledge extracted more resources (illegally) from the forest. Local communities extracted from the forest, irrespective of whether they had entitlement to the land in which they live. Forest use was in fact higher amongst those who claimed to have entitlement, rather than those who didn’t. Therefore the forest is not safe even from those who legally have entitlement to live adjacent to it.

8. Conclusions

Sinharaja is a vitally important forest in Sri Lanka, providing services of watershed protection, climate regulation, harbouring biodiversity, carbon sequestration among many other services, common to rainforests. The benefits of Sinharaja are not only limited to those communities living adjacent to the forest, but also to downstream communities and the country as a whole.

The strict legal protection accorded to the forest is well justified given the value and services of Sinharaja. Its importance is globally recognised as an UNESCO World Heritage Site and a Man and Biosphere Reserve.

Selective logging in the 1970’s resulted in the loss of primary forest in some areas, and was fortunately banned after several years, due pressure from the conservation community. Research and restoration efforts have contributed to the conservation and regeneration of some of the degraded areas.

The conservation efforts carried out inside the forest however should not overlook another vital region of the forest – the edge and the boundary. (The edge referred here is the “inner edge”, of the legally protected area). This study has shown that despite legal protection and recognition both locally and internationally – the forest is still subjected to many threats. The edge within the legally protected area is subjected to the most threats we talk of today, as highlighted in this study. Resource extraction,

encroachment and spread of tea lands are major threats; and are already affecting the health of the forest.

The importance of conserving the “largest relatively undisturbed” lowland rainforest is recognised by the forest being designated as a “National Heritage Wilderness Area”, where all extractive use has been prohibited. This entire area forms the “core” of the biosphere reserve, while the outside areas are considered to be the buffer. Though this and other studies indicate (based on local claims) a reduction in extractive activities inside the forest, many still continue with collecting firewood, wildfoods, rattan, medicinal plants, timber etc. In some areas this reduction seems to have been overtaken by a more destructive practice, the spread of tea cultivations into the forest.

The edge of the Sinharaja forest, with over 40 adjacent villages and access roads, is subjected to the many pressures highlighted; while its elongated form means that these edge effects exposes a large proportion of the forest to these threats. A well conserved edge is important for the health of the entire forest.

As direct beneficiaries of the services of Sinharaja, a vast majority of the local communities who live adjacent to it, appreciates its importance and have positive attitudes towards conserving it. Despite this, there is still a majority who extract resources from the forest, and some who engage in more damaging activities such as timber extraction, clearing and encroaching. The results of this study clearly show that local communities extract resources from the forest (almost entirely illegally – apart from kitul) irrespective of their knowledge of the forest, attitudes, belief of its sacredness and involvement in community conservation.

While it is important to enhance the positive attitudes and appreciation shown by local communities towards Sinharaja, this alone would not deter and reduce people’s use of the forest in the future. A “carrot and stick” approach is required to conserve Sinharaja. Such an approach would include rewards (“carrot”) to lure the local communities away from the forest, while punishments (“stick”) will deter them from the forest.

Law enforcement is vital to ensure that illegal activities do not destroy the forest. This would include halting illegal extraction, clearing and encroachment. On the ground monitoring is essential to ensure enforcement. Given that sections of some villages are included within the legally protected area, these areas must be closely monitored to prevent clearing and encroachment, while addressing existing threats.

Local communities also need to be rewarded for conserving the forest and for the opportunity cost of non extraction. Though there is no legally designated buffer zone for Sinharaja, the outer area of the legally protected core is managed as a buffer (private lands and tea estates would be excluded from this). A core, without a buffer would result in a "hard edge". A multiple use buffer zone, outside the core would allow certain resources to be extracted in a manner that it would not affect the core. A buffer would provide a "soft edge" to the core, and could prevent creeping encroachments. Wildfoods, medicines, firewood and timber – can be grown in home gardens and in the buffer.

Creating multiple zones would allow conservation to be carried out in a manner that the services and health of the forest are not compromised, while local communities are rewarded and provided with alternatives. It is important that the purpose and function of the legally protected area, and the area outside it, are not confused and diluted during management and conservation. Many of these activities can be implemented through well designed community conservation programmes. They should be sustainable, done without compromising the long term survival of Sinharaja, and should be within the existing legal framework of the country. If carried out in an effective manner, it could contribute to the conservation of Sinharaja, create positive attitudes, and also to enhance the livelihoods of the local communities.

It is vital that there is enforcement of laws, clear boundary markings, awareness, scientific research, on the ground monitoring in order to minimise edge effects and conserve Sinharaja, so that its services are not compromised for the current population and the future generation of Sri Lankans.

9. Recommendations

In order to conserve Sinharaja, with the support of the local communities, it is vital to have mutually reinforcing measures. This would be a package of different measures which all act together (and support each other) towards a common goal. A "carrot and stick" approach should be taken, where there is a policy offering both rewards and punishments. The rewards ("carrot") would lure local communities away from the forest, while punishments ("stick") would deter them away from it. Therefore all of the recommendations are necessary to secure the conservation of Sinharaja, and will not be sufficient in isolation.

1. Create awareness about the importance of Sinharaja and on activities that are not allowed in the forest

It is vital to create awareness among the local communities about the importance of Sinharaja and the services provided by the forest. The study has shown that there is some confusion about what activities are allowed and disallowed inside the forest, and about its legal boundaries. Therefore it is vital that these facts are well communicated to the local communities, especially as the Gazette declaring Sinharaja includes some areas of existing villages. Although the majority were aware of the services provided by Sinharaja, it was mainly limited to the provision of water. Despite the appreciation and valuing of the services, a majority continue to extract forest products. It is of utmost importance to communicate that it is by protecting the forest that they can benefit its services.

2. Implement and enforce laws and regulations

The scale of illegal activities inside Sinharaja vary from minor offences such as picking wildfoods, to much more severe and lasting impacts such as encroachment. All of these activities have an impact on the health and sustainability of the forest. It must be kept in mind that these activities are illegal, and enforcement is vital for the conservation of Sinharaja to benefit both local communities and the entire country. It is also important to note that extracting resources even on a small scale, over time, could add up to considerable destruction. It is vital therefore that all illegal activities are halted, and that there is regular monitoring by the Forest Department. Action should also be taken to address and remove encroachments. Regularising them would only encourage further encroachments, which would multiply the threats to Sinharaja.

3. Clear demarcations of the legal boundary

It is a legal requirement to survey and prepare a survey plan before declaring an area as protected; this is especially important in the case for Sinharaja which has earned a very high level of protection through the National Heritage Wilderness Area Act. Though a survey plan has been done for Sinharaja, the study has shown that on the ground marking of the boundary is incomplete, even though the forest was declared a NHWA two decades ago. In areas where boundary markers are present, it is questionable whether the demarcation has been carried out based on the survey plan by the Survey Department, as this is a common issue facing protected areas in

Sri Lanka. In the case of Sinharaja, sections of many villages are included in the legally protected area, and therefore on the ground verification would be necessary, using the survey plan, the gazette and authentic documentation for entitlement. It is therefore vital to have clearly demarcated boundaries, which are in accordance with the legal boundaries specified in the gazette. It is also important that these maps are readily available for researchers, especially those who work along the edge and periphery.

4. Sustainable community conservation programmes

Although community conservation programmes in the villages adjacent to the forest were launched, these have not proved to be sustainable. In several villages many community conservation groups have ceased to function. In order to provide alternatives for extractive forest products, and to deter people from entering the forest for these purposes, it is vital to focus community conservation projects on enriching the area outside the protected forest (especially home gardens) with firewood, wildfoods, medicinal plants, rattan and timber – or provide alternatives. It is also vital to enhance more sustainable income sources, from non destructive practices, and steer away from potentially harmful activities that can have direct and indirect impacts on the conservation of Sinharaja. Local communities can also participate in the conservation of the forest by becoming guides, awareness creators to the villages, assisting in research activities, restoration projects, and even acting as informants when illegal activities take place. Ongoing projects should be further developed, while new programmes should be designed for sustainability.

5. Scientific research and regeneration in the edge areas

Sinharaja is probably more researched than any other forest in Sri Lanka. This has been important for the regeneration of the previously logged areas in the core of the protected forest. There has been less research carried out in the edge, where the current wave of threats are degrading the forest. It is important to allocate funds and encourage scientists to carry out research on the impacts of edge effects, and carry out restoration and regeneration where necessary. Research should be strategic in order for it to be useful for conservation management (strategic conservation management research).

6. Studies on the value of Sinharaja and the services provided by the forest

Sinharaja is valued by different people for various reasons; even among local communities this appreciation varies. It is valued for extractive resources, aesthetic, existence and intrinsic values and for the services it provides. So far it hasn't been too difficult to convince the Government and the general population of Sri Lanka that Sinharaja is worthy of special protection. Many services provided by natural ecosystems are often irreplaceable. Restoration costs are far greater once degradation has occurred. Given that threats to Sinharaja will only increase with population pressure and demand for land – valuing this forest in monetary terms for its ecosystem services will only strengthen the argument that the entire forest should be fully protected for the future of all Sri Lankans. Therefore it is vital to carry out a comprehensive study to value Sinharaja and its services.

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Annex 1 - The Questionnaire

Sinharaja Socio-Economic Survey

1. SUMMARY DATA

Household code | GPS Coordinates | Photo No.

GN Division | Village

Date of interview | Enumerator

Status of respondent — ගෘහමූලිකයාට ඇති නෑදෑකම

ගෘහමූලිකයා	කිරිඳ	දුව	පුතා	වෙනත්
Head	Wife	Daughter	Son	Other

Gender of respondent — ස්ත්‍රී/පුරුෂ: Female ස්ත්‍රී | Male පුරුෂ

Age — වයස

Education status of respondant

primary only — ප්‍රාථමික | # O-level — සාමාන්‍ය පෙළ | # A-level — උසස් පෙළ | # further education — වැඩිදුර අධ්‍යාපනය

2. BASIC HOUSEHOLD DATA

Residence

Length of family's residence on this land
මෙම ප්‍රදේශය කුළ ජීවත් වූ කාල සීමාව

Place of family's origin — පවුලේ මුල් පදිංචිය

If your original home is elsewhere, why did you come to live in this area?
එසේ නම්, මෙම ප්‍රදේශයට පැමිණීමට හේතුව

Household size

Always resident — ස්ථිර පදිංචිකරුවන්	No. adult males — වැඩිහිටි පිරිමි සංඛ්‍යාව	No. adult females — වැඩිහිටි ගැහැණු සංඛ්‍යාව	No. children — දරුවන් සංඛ්‍යාව

Educational status of adults- number of people

primary only — ප්‍රාථමික | # O-level — සාමාන්‍ය පෙළ | # A-level — උසස් පෙළ | # further education — උසස් පෙළ

3. ASSETS

මුළු ඉඩම් ප්‍රමාණය — Total land area

වගාකරන ඉඩම් ප්‍රමාණය — Area farmed

Livestock (no)

පශු සම්පත්	සංඛ්‍යාව
Buffalo	
කිරි හරක්	
Cattle	
කුකුලන්	
Poultry	

Utilities — *Water source:* ජල පහසු කම

	Yes	No
වනාන්තරය — Forest		
නල ජලය — Own tap-mains		
ළිං ජලය — Own well		
පොදු ළිං — Shared well		
පොදු නල — Shared tap/hose		

Other assets

Vehicle — මෝටර් බයිසිකල්	
Motorbike — බයිසිකල	
Bicycle	
TV	
Radio	
වෙනත්	

House

බිත්ති — Walls	කපරාරු Plastered	කටු මැටි Clay	ලී Wood	තහඩු/ටකරන් ගඩොල්/බඹරලෑ Tin	Brick/blocks	වෙනත් Other (specify)

වහලය — Roof	තහඩු/ටකරන් Tin	ඇස්බැස්ටර් Asbestos	උලු Tile	ලී Wood	වෙනත් Other

ජනෙල් — Windows	විදුරු Glass	ලී Wood	වෙනත් Other

කාමර ගණන	සාලය Living	නිදන කාමර Bedrooms	මුළුතැන්ගෙය Kitchen
No rooms (No's)			

වැසිකිලියනිවසට යාබදව — Latrine type	Attached	Separate	වල වැසිකිලිය Pit	ජල මුද්‍රිත Squat	වෙනත් Other
වැසිකිලි පහසුකම්		වැසිකිලිය නිවසට දුරින්			

Utilities — *Energy source:*

Firewood — දර	
Gas — ගෑස්	
Kerosene — භූමි තෙල්	
Electricity — විදුලිය	
Solar — සූර්ය කෙරුම	
Mini hydro කුඩා ජල විදුලිය බලාගාරය	

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Sinharaja Socio-Economic Survey

4. MAIN OCCUPATION AND LIVELIHOOD

Occupation

ගෘහ මූලිකයාගේ රැකියාව
Main occupation of household head

අනෙකුත් රැකියාවන්නම්
Secondary occupation of household head

නිවසේ අනෙක් අයගේ රැකියා
Other occupations of resident household members

Off-farm income

Number of residents with jobs — රැකියා සහිත පදිංචිකරුවන්

	Yes	No
Remittances from non-residents නිවසේනොවන අයගෙන් ලැබෙන ආදායම්		
Samurdhi recipient? — සමෘධි ලැබෙනවාද?		
Estimated off-farm income — අමතර ආදායම්		

Relative importance of livelihood sources

		Rank
Crops	භෝග	
Livestock	පශු සම්පත්	
Off-farm income	අමතර ආදායම්	
Remittances	වෙනඅයගෙන්	
Forest	වනාන්තරයෙන්	
Other	වෙනත්	

5. LAND TENURE/OWNERSHIP

ඔබගේ පවුල මෙම ඉඩමට පැමිණියේ කවදාද?
Is the land:

		If owned, was land:	
මෙම ඉඩම		ඉඩම අයිති නම් එය	
Your own		Inherited උරුම වූවක්ද	
ඔබගේද	→	Bought මිලදී ගත්තක්ද	
Rented කුලියටද		Cleared කැලෑ කපා ගත්තාද	
Worker ඔබ මෙහි කුලී වැඩ කරන්නේද		Allocated වෙන්කර දීමට	
		Given	

Does it have a title deed?
ඉඩමට ඔප්පු ඇතිද

ඔව් Yes	නැ No

ඔප්පු
Type of deed

ස්වර්ණ Swarna bhoomi	ජයභූමි Jaya bhoomi	ඔප්පු Title deed

අලුතින් එළිපෙහෙලි කර ඇත
Note evidence of newly cleared land

Yes	No

Forest clearance
Was forest land already cleared when you acquired the farm?
ඔබ ඉඩම ලබාගත්තා විට/පදිංචියට එන විට ඉඩම එළිකර තිබුණාද?

ඔව් Yes	නැ No

6. LAND USE

ඊඩමේ ප්‍රතිශතයක් ලෙස

% of total plot under

නිවස House	
භෝග Crops	
වත්ත Home garden	
තණබිම Pasture	
පාවිච්චි නොකරන Fallow/unused	

Farm production

Major crops ප්‍රධානභෝග	වසරකට කන්න ගණන *# crops/yr*	ඉඩම්ප්‍රමාණය *Area*	අස්වැන්න/ඒකක* *Output (units) per month*	විකුනනප්‍රමාණය *% sold*	ඒකකයකම්ල *Price/unit*
Tea තේ					

Minor crops & non-timber forest products
සුලුභෝග හා දැව නොවන වන ද්‍රව්‍ය

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Sinharaja Socio-Economic Survey

7. USE OF FOREST RESOURCES

Who uses the forest

Do you collect any products from the forest (Y/N)? Yes ☐ No ☐

වනාන්තරය කුලින් යම් කිසි දෙයක් ලබාගන්නේද?

If yes, how important are these products to you? / එසේ නම් ඒවාගේ වැදගත්කම් ඔබට කොතරම්ද?

ඉතාවැදගත් *Very important*	වැදගත් *Important*	සාමාන්‍ය වැදගත් *Fairly important*	වැදගත් නැත *Not at all important*

Do other local people collect any products from the forest (Y/N)? Yes ☐ No ☐

ගමේ අනෙක් මිනිසුන් ඉන් යම් යම් දේ ලබාගන්නේද?

If yes, how common is forest use for these people? / එසේනම් මිනිසුන් ප්‍රමාණයක් වනාන්තරයෙන් ද්‍රව්‍ය ලබාගන්නේද?

හැමෝම *Everybody*	සමහරක් *Some*	ටික දෙනෙක් *Few*	කිසිවෙක් නැත *Nobody*

What products do they collect? / ලබාගන්නා ද්‍රව්‍ය මොනවාද?

Types of household forest use

	කැලයේ වැදගත්කම *Importance of forest*			භාවිතයේ තරම *Incidence of use*			භාවිතයේ ස්වභාවය *Type of use*		
	Sole ප්‍රධාන විශයෙ	*Primary* සාමාන්‍ය	*Minor* සමහරවිට	*No of times*	*Week* සතියක්	*Month* මාසයක්	*Year* අවුරුද්දක්	*Quantity* ප්‍රමාණය	*For sale* විකිණීමට	*Home use* නිවසේ පාවිච්චි
Fuelwood දර				_____	☐	☐	☐	_____	☐	☐
Housing materials නිවස සඳහා අවශ්‍ය ද්‍රව්‍ය				_____	☐	☐	☐	_____	☐	☐
Timber දැව				_____	☐	☐	☐	_____	☐	☐
Hunting දඩයම්				_____	☐	☐	☐	_____	☐	☐
Medicines ඖෂධ				_____	☐	☐	☐	_____	☐	☐
Wild foods කැලයෙන් ලබාගන්නා ආහාර				_____	☐	☐	☐	_____	☐	☐
Handicrafts අත් කම්				_____	☐	☐	☐	_____	☐	☐
Kitul කිතුල්				_____	☐	☐	☐	_____	☐	☐
Rattan වෙවැල්				_____	☐	☐	☐	_____	☐	☐
_____				_____	☐	☐	☐	_____	☐	☐

Dynamics of forest use

Over time, has your use of the forest:
වනාන්තරය භාවිතා කිරීම

Stayed the same	එකම මට්ටමේ පවතිනිද?	
Increased	වැඩි වී ඇතිද?	
Reduced	අඩු වී ඇතිද?	
Variable	වෙනස් වන සුළු	
Why and how?	ඇයි/කොහොමද?	

Over time, has the availability of forest resources:
ප්‍රයෝජනය සඳහා වනාන්තර වල සම්පත්

Stayed the same	එකම මට්ටමේ පවතිනිද?	
Increased	වැඩි වී ඇතිද?	
Reduced	අඩු වී ඇතිද?	
Variable	වෙනස් වන සුළු	
Why and how?	ඇයි/කොහොමද?	

සැලකිය යුතු ලෙස කැළෑව භාවිතා කිරීම අඩු කර ඇත්තේ කවදා සිටද ?
When did you significantly reduce your use of the forest? _____
Why? ඇයි _____

Information on traditional practices
සම්ප්‍රදායිකව කරගෙන යනු ලබන ක්‍රියාකාරකම් පිළිබඳ විස්තර

Do people in the area use the Loris's tears for medicinal purposes?
වෛද්‍යමය කාර්යයන් සඳහා උණහපුළුවාගේ කඳුළු ලබාගනවාද? ඔව් Yes ☐ ☐ No නැ

Do you do this? ඔබ එසේ කරනවාද? ඔව් Yes ☐ ☐ No නැ

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8. KNOWLEDGE OF THE FOREST & INTERACTIONS WITH THE FOREST DEPARTMENT

Perceptions of ownership

Is the forest a Protected Area? Yes / No
කැලය රක්ෂිතයක් ද

If so, do you know the boundaries of the PA?
රක්ෂිතයේ මායිම් දන්නවාද?

Is it a Man & Biosphere
මෙය මිනිසා සහ ජෛවගෝල රක්ෂිතයක් ද? Yes / No

Is the forest a World Heritage Site? Yes / No
වනාන්තරය ලෝක උරුම ස්ථානයක්ද?

What do you understand of the the term Man & Biosphere Reserve
මිනිසා සහ ජෛවගෝල රක්ෂිතයක් යනුවෙන් හෙළඟෙන්නේ කුමක්ද?

What is allowed and prohibited

What other activities are allowed inside the forest?
කැලය තුලකල හැකි වෙනත් කටයුතු මොනවාද

What other activities are prohibited inside the forest?
කැලය තුලකල නොහැකි කටයුතු මොනවාද

Forest Dept

	සැමවිට *Frequently*	සමහරවිට *Infequently*	යම්කරමක් *Seldom*	නැත *Never*
Do FD ever visit the area? වන ජීවී/වන සංරක්ෂණ නිලධාරීන් පැමිණෙන්ද				

If yes, what are their reasons for coming into the area?
වන ජීවී/වන සංරක්ෂණ නිලධාරීන් පැමිණෙන්ද

	හොඳ Good	සාමාන්‍ය Average	අඩු Poor
වන සංරක්ෂණ නිලදාරී සමග පවක්නා සම්බන්ධතාවය කෙසේද? How would you describe your relationship with Forest Department officials?			

Do you receive any assistance from FD officials? Yes / No
ඔවුන්ගෙන් උපකාර ලැබෙද

Describe assistance උපකාර විස්තර කරකරන්න

9. CHANGES OVER TIME

Changes in livelihoods
ජීවනෝපායේ සිදුවන වෙනස්කම්

Over time, has the way in which you earn your livelihood changed? ඔව් Yes / නෑ No
කාලාන්තරයක් තුල ඔබගේ ජීවනෝපායේ රටාව වෙනස් වී ඇත්ද?

If so, how-reason කෙසේද?

Would you want your children to continue to live here? Yes / No
ඉදිරියේදී ඔබගේ දරුවන් මේ ප්‍රදේශයේ ජීවත් වනවාට කැමතිද?

What do you aspire for your children's future?
ඉදිරියේදී ඔබ දරුවන් වෙනුවෙන් බලාපොරොත්තු වන්නේ මොනවාද?

10. COSTS AND BENEFITS

Forest costs and benefits

What benefits does the forest give to the local population and to others?
වනාන්තරය විසින් මිනිසුන් සඳහා ලබාදෙන ප්‍රතිලාභ මොනවාද?

What problems does the forest cause for the local population and for others?
වනාන්තරය නිසා සිදු වන කරදර මොනවාද?

වනාන්තරයේ ජීවත් වන සතුන් සමඟ ගැටුම් තිබේද? Yes / No

What problems does the forest cause for the local population and for ot

ඔව් නම් කොයි වර්ගයේ සතුන් සමඟද? If yes which species?

පරිසර සංරක්ෂණ ව්‍යාපෘතිවල හා සම්බන්ධද
Are you involved in Forest Conservation Projects? Yes / No

ඔව් නම්, ඒ හා සම්බන්ධ ආයතන හා එම ව්‍යාපෘතිය පිළිබඳ දක්න
If yes, describe, including information on implementing organisation

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11. Attitudes

11.1 What two animal/bird species would you like to see conserved? සංරක්ෂණය කළ යුතු සත්ව හා කුරුළු විශේෂ 2ක්

1 _____ 2 _____

11.2 What two animal/bird species would you least like to see conserved? අවම වශයෙන් සංරක්ෂණය විය යුතු සත්ව/ කුරුළු විශේෂ ?

1 _____ 2 _____

11.3 Two things you like about the Sinharaja forest සිංහරාජ වනාන්තරයේ ඔබ කැමති අංග 2ක්

1 _____

2 _____

11.4 Two things you don't like about the Sinharaja forest සිංහරාජ වනාන්තරයේ ඔබ අකමැති අංග 2ක්

1 _____

2 _____

11.5 If Sinharaja was completely cut down, how would you feel?
සිංහරාජය සම්පූර්ණයෙන් කපා දැමුවහොත් ඔබට කුමක් සිතේද?

_____

11.6 What are the biggest threats to Sinharaja?
සිංහරාජයට ඇති ප්‍රධානතම තර්ජන මොනවාද?

1 _____

2 _____

3 _____

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To what extent do you agree or disagree with the following statements?

ආරක්ෂිත කලාප අසල ජීවත්වන ජනතාව ඒවා කුළින් ප්‍රයෝජන/ ද්‍රව්‍ය ලබාගත යුතුය

11.5 Local communities should be allowed to exploit the resources of protected areas

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
සම්පූර්ණයෙන් එකඟය	එකඟය	මධ්‍යස්ථ	එකඟ නොවේ	සම්පූර්ණයෙන් එකඟ නොවේ

ඉදිරි අනාගතය උදෙසා සමහර ප්‍රදේශ ආරක්ෂා කළ යුතුය

11.6 It is necessary to conserve certain areas for the benefit of future generations

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
සම්පූර්ණයෙන් එකඟය	එකඟය	මධ්‍යස්ථ	එකඟ නොවේ	සම්පූර්ණයෙන් එකඟ නොවේ

ස්වභාවික සෞන්දර්ය උදෙසා සමහර ප්‍රදේශ ආරක්ෂා කළ යුතුය

11.7 It is necessary to conserve areas for its natural beauty

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
සම්පූර්ණයෙන් එකඟය	එකඟය	මධ්‍යස්ථ	එකඟ නොවේ	සම්පූර්ණයෙන් එකඟ නොවේ

මිනිසාට ප්‍රයෝජනවත් නොවන සතුන් වුවද සංරක්ෂණය කළ යුතුය

11.8 Animals should be conserved, even if they are of no use to humans

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
සම්පූර්ණයෙන් එකඟය	එකඟය	මධ්‍යස්ථ	එකඟ නොවේ	සම්පූර්ණයෙන් එකඟ නොවේ

සිංහරාජය වැනි වනාන්තර සංරක්ෂණය කිරීම සඳහා දැඩි නීතිරීති නිබිය යුතුය.

11.9 Laws and regulations are important to conserve forests like Sinharaja

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
සම්පූර්ණයෙන් එකඟය	එකඟය	මධ්‍යස්ථ	එකඟ නොවේ	සම්පූර්ණයෙන් එකඟ නොවේ

ආරක්ෂිත ප්‍රදේශ වලින් ජනතාව අසීමිතව ප්‍රයෝජන ගතහොත් එහි අනාගතය ඉතා අසුභදායි විය හැකිය.

11.10 If people are allowed to exploit the resources of protected areas the future of pa's will be bleak

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
සම්පූර්ණයෙන් එකඟය	එකඟය	මධ්‍යස්ථ	එකඟ නොවේ	සම්පූර්ණයෙන් එකඟ නොවේ

සිංහරාජ වනාන්තරය ආරක්ෂා කිරීමට ගතයුතු ක්‍රියාමාර්ගය කුමක්ද?

11.11 What action do you think the government should take on Sinharaja?

	ඔව් Yes	නැ No
Do you think the forest should be protected? මෙම වනාන්තරය ආරක්ෂා කළ යුතුද? ඇයි		

Give details:

What can you do to protect Sinharaja?
සිංහරාජය ආරක්ෂා කරගැනීම සඳහා ඔබට කුමක් කළ හැකිද?

Do you believe that some forests are sacred?	Yes ☐	☐	No
සමහර වනාන්තර පූජනීයයි කියා ඔබ විශ්වාස කරනවාද?	ඔව්		නැ
Do you believe Sinharaja is sacred?	Yes ☐	☐	No
සිංහරාජය වනාන්තරය පූජනීයයි කියා ඔබ විශ්වාස කරනවාද?	ඔව්		නැ

If yes, why do you say that?
ඔබ එසේ පවසන්නේ ඇයි?

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Annex 2 - Results

Basic household characteristics

Table 2: Status of respondent[§]

	Head	Spouse	Son	Daughter	Other	Not Known/Didn't Specify
All Districts	58%	29%	7%	5%	1%	1%
Ratnapura (R)	50%	25%	14%	11%	0%	0%
Matara (M)	58%	32%	7%	2%	0%	0%
Galle (G)	61%	27%	4%	4%	1%	1%
Denawakkanda (R)	38%	38%	23%	0%	0%	0%
Pelawatte (R)	50%	17%	17%	17%	0%	0%
Pitakelle (R)	64%	18%	0%	18%	0%	0%
Hingurahena (M)	57%	33%	10%	0%	0%	0%
Keeriwalagama (M)	60%	29%	7%	5%	0%	0%
Watugala (M)	58%	42%	0%	0%	0%	0%
Kolontotuwa (G)	64%	27%	5%	0%	5%	0%
Kosmulla (G)	55%	32%	9%	0%	0%	5%
Warukandeniya (G)	65%	22%	0%	13%	0%	0%

Table 3: Gender of respondents

	Male	Female
All Districts	60%	40%
Ratnapura (R)	50%	50%
Matara (M)	61%	39%
Galle (G)	66%	34%
Denawakkanda (R)	54%	46%
Pelawatte (R)	50%	50%
Pitakelle (R)	45%	55%
Hingurahena (M)	63%	37%
Keeriwalagama (M)	57%	43%
Watugala (M)	67%	33%
Kolontotuwa (G)	68%	32%
Kosmulla (G)	59%	41%
Warukandeniya (G)	70%	30%

Table 4: Education level of respondent

	No Education	Primary	O Levels	A levels	Further Education	Don't Know/Not Specified
All Districts	5%	51%	23%	10%	1%	10%
Ratnapura (R)	8%	58%	25%	3%	0%	6%
Matara (M)	8%	49%	26%	15%	1%	0%
Galle (G)	0%	51%	18%	6%	0%	25%
Denawakkanda (R)	15%	54%	31%	0%	0%	0%
Pelawatte (R)	0%	67%	33%	0%	0%	0%
Pitakelle (R)	9%	55%	9%	9%	0%	18%
Hingurahena (M)	10%	67%	17%	7%	0%	0%
Keeriwalagama (M)	10%	38%	33%	19%	0%	0%
Watugala (M)	0%	42%	25%	25%	8%	0%
Kolontotuwa (G)	0%	50%	14%	9%	0%	27%
Kosmulla (G)	0%	45%	32%	5%	0%	18%
Warukandeniya (G)	0%	57%	9%	4%	In 0%	30%

[§] Please note that the totals (in some cases) do not add up to 100%. This is seen in this and other tables, because the percentages have been rounded.

Table 5: Age of respondents

	Below 18	18 to 35	36 to 69	Above 70
All Districts	2%	29%	62%	7%
Ratnapura (R)	3%	40%	49%	9%
Matara (M)	1%	27%	67%	5%
Galle (G)	0%	19%	69%	13%
Denawakkanda (R)	8%	38%	46%	8%
Pelawatte (R)	0%	58%	25%	17%
Pitakelle (R)	0%	20%	80%	0%
Hingurahena (M)	4%	21%	64%	11%
Keeriwalagama (M)	0%	31%	67%	2%
Watugala (M)	0%	25%	75%	0%
Kolontotuwa (G)	0%	20%	80%	0%
Kosmulla (G)	0%	20%	80%	0%
Warukandeniya (G)	0%	17%	50%	33%

Table 6: Length of residence on land

	Since Birth	>50	31-50	11-30	3-10	<3	Don't know/Not specified
All Districts	34%	6%	12%	22%	19%	5%	1%
Ratnapura (R)	53%	3%	11%	6%	19%	3%	0%
Matara (M)	32%	2%	13%	29%	18%	5%	2%
Galle (G)	27%	12%	10%	22%	19%	7%	0%
Denawakkanda (R)	54%	0%	15%	0%	23%	0%	0%
Pelawatte (R)	50%	8%	8%	0%	17%	8%	0%
Pitakelle (R)	55%	0%	9%	18%	18%	0%	0%
Hingurahena (M)	23%	7%	10%	23%	27%	3%	7%
Keeriwalagama (M)	38%	0%	17%	29%	12%	7%	0%
Watugala (M)	33%	0%	8%	42%	17%	0%	0%
Kolontotuwa (G)	18%	9%	18%	23%	23%	9%	0%
Kosmulla (G)	36%	5%	5%	23%	18%	14%	0%
Warukandeniya (G)	26%	22%	9%	22%	17%	0%	0%

Table 7: Place of origin

	Same Village/District	District adjacent to Sinharaja (Galle/Matara/Ratnapura)	Other area	Not known/Not specified
All Districts	80%	10%	3%	8%
Ratnapura (R)	65%	24%	0%	12%
Matara (M)	80%	7%	4%	9%
Galle (G)	85%	7%	2%	5%
Denawakkanda (R)	67%	33%	0%	0%
Pelawatte (R)	67%	33%	0%	0%
Pitakelle (R)	60%	0%	0%	40%
Hingurahena (M)	71%	14%	10%	5%
Keeriwalagama (M)	88%	4%	0%	8%
Watugala (M)	75%	0%	0%	25%
Kolontotuwa (G)	80%	13%	7%	0%
Kosmulla (G)	77%	8%	0%	15%
Warukandeniya (G)	100%	0%	0%	0%

Table 8: Reason for moving to land

	Marriage	Land availability - captured, bought, etc	Farm/Work	Flood/Landslides	Other	Not specified
All Districts	52%	13%	5%	5%	16%	7%
Ratnapura (R)	81%	0%	13%	0%	6%	0%
Matara (M)	57%	17%	2%	4%	15%	4%
Galle (G)	36%	12%	7%	7%	21%	14%
Denawakkanda (R)	100%	0%	0%	0%	0%	0%
Pelawatte (R)	67%	0%	17%	0%	17%	0%
Pitakelle (R)	80%	0%	20%	0%	0%	0%
Hingurahena (M)	50%	25%	0%	5%	15%	5%
Keeriwalagama (M)	64%	16%	4%	4%	8%	0%
Watugala (M)	50%	0%	0%	0%	38%	13%
Kolontotuwa (G)	33%	7%	7%	7%	27%	13%
Kosmulla (G)	31%	8%	15%	8%	31%	8%
Warukandeniya (G)	43%	21%	0%	7%	7%	21%

Table 9: Population of surveyed households

	No. adult males	No. adult females	No. children	Total family size	Average family size	Total adults
All	284	299	289	872	4.7	583
Ratnapura (R)	53	55	63	171	4.8	108
Matara (M)	125	127	111	363	4.3	252
Galle (G)	106	117	115	338	5.0	223
Denawakkanda (R)	22	21	28	71	5.5	43
Pelawatte (R)	20	19	17	56	4.7	39
Pitakelle (R)	11	15	18	44	4.0	26
Hingurahena (M)	43	41	45	129	4.3	84
Keeriwalagama (M)	61	64	48	173	4.1	125
Watugala (M)	21	22	18	61	5.1	43
Kolontotuwa (G)	39	41	36	116	5.3	80
Kosmulla (G)	31	36	44	111	5.0	67
Warukandeniya (G)	36	40	35	111	4.8	76

Table 10: Education level of population in surveyed households

	Not known	Primary only	O-level	A-level	Further education	No education
All	154	222	125	66	10	6
Ratnapura (R)	27	51	17	11	1	1
Matara (M)	74	85	52	34	2	5
Galle (G)	53	86	56	21	7	0
Denawakkanda (R)	12	19	6	6	0	0
Pelawatte (R)	10	18	8	2	1	0
Pitakelle (R)	5	14	3	3	0	1
Hingurahena (M)	26	40	13	3	0	2
Keeriwalagama (M)	37	35	32	16	2	3
Watugala (M)	11	10	7	15	0	0
Kolontotuwa (G)	20	36	19	5	0	0
Kosmulla (G)	10	25	24	5	3	0
Warukandeniya (G)	23	25	13	11	4	0

Table 11: Education level of population in surveyed households (%)

	Not known	Primary only	O-level	A-level	Further education	No education
All	26%	38%	21%	11%	2%	1%
Ratnapura (R)	25%	47%	16%	10%	1%	1%
Matara (M)	29%	34%	21%	13%	1%	2%
Galle (G)	24%	39%	25%	9%	3%	0%
Denawakkanda (R)	28%	44%	14%	14%	0%	0%
Pelawatte (R)	26%	46%	21%	5%	3%	0%
Pitakelle (R)	19%	54%	12%	12%	0%	4%
Hingurahena (M)	31%	48%	15%	4%	0%	2%
Keeriwalagama (M)	30%	28%	26%	13%	2%	2%
Watugala (M)	26%	23%	16%	35%	0%	0%
Kolontotuwa (G)	25%	45%	24%	6%	0%	0%
Kosmulla (G)	15%	37%	36%	7%	4%	0%
Warukandeniya (G)	30%	33%	17%	14%	5%	0%

Household wealth status

Table 12: Access to land

	Average land (perches)	Average crops (perches)	Crops as % of total land area	Tea Area (perches)	Tea as % of crop area
All	254	214	84%	194	91%
Ratnapura (R)	233	170	73%	167	99%
Matara (M)	232	208	90%	192	92%
Galle (G)	293	244	83%	210	86%
Denawakkanda (R)	256	216	84%	210	97%
Pelawatte (R)	191	131	69%	131	100%
Pitakelle (R)	250	157	63%	156	99%
Hingurahena (M)	190	168	88%	164	98%
Keeriwalagama (M)	213	197	92%	189	96%
Watugala (M)	403	350	87%	273	78%
Kolontotuwa (G)	223	184	83%	176	96%
Kosmulla (G)	293	261	89%	234	89%
Warukandeniya (G)	360	285	79%	220	77%

Table 13: Income from tea

	Area (perches)	Tea (kg/per month)	Income from tea (Rs)*
All	194	294	14,772
Ratnapura (R)	167	279	13,949
Matara (M)	192	344	17,443
Galle (G)	210	240	12,006
Denawakkanda (R)	210	402	20,083
Pelawatte (R)	131	222	11,083
Pitakelle (R)	156	208	10,382
Hingurahena (M)	164	248	12,856
Keeriwalagama (M)	189	394	19,711
Watugala (M)	273	415	20,750
Kolontotuwa (G)	176	265	13,244
Kosmulla (G)	234	170	8,499
Warukandeniya (G)	220	284	14,213

*A kilo of tea calculated at Rs. 50.

Table 14: Source of water

	Water from forest	Own well	Shared well
All	74%	11%	2%
Ratnapura (R)	92%	6%	0%
Matara (M)	64%	12%	5%
Galle (G)	78%	12%	0%
Denawakkanda (R)	92%	8%	0%
Pelawatte (R)	92%	0%	0%
Pitakelle (R)	91%	9%	0%
Hingurahena (M)	83%	13%	3%
Keeriwalagama (M)	45%	14%	5%
Watugala (M)	83%	0%	8%
Kolontotuwa (G)	77%	18%	0%
Kosmulla (G)	68%	9%	0%
Warukandeniya (G)	87%	9%	0%

Table 15: Occupation of household head

	Farming	Unskilled labour	Business owner	Semi-professional/Skilled labour	Other/nothing
All	78%	8%	3%	3%	7%
Ratnapura (R)	86%	0%	0%	0%	14%
,Matara (M)	75%	13%	4%	4%	5%
Galle (G)	78%	6%	3%	4%	7%
Denawakkanda (R)	85%	0%	0%	0%	15%
Pelawatte (R)	83%	0%	0%	0%	17%
Pitakelle (R)	91%	0%	0%	0%	9%
Hingurahena (M)	70%	27%	0%	0%	3%
Keeriwalagama (M)	81%	7%	5%	5%	2%
Watugala (M)	67%	0%	8%	8%	17%
Kolontotuwa (G)	86%	5%	0%	5%	5%
Kosmulla (G)	59%	14%	5%	9%	14%
Warukandeniya (G)	87%	0%	4%	0%	4%

Table 16: Other income

	Samurdhi recipients	Estimated off-farm income	Off farm income - Yes
All	20%	6131	12%
Ratnapura (R)	36%	360	3%
Matara (M)	11%	6450	17%
Galle (G)	22%	6294	12%
Denawakkanda (R)	15%	-	0%
Pelawatte (R)	67%	-	0%
Pitakelle (R)	27%	360	9%
Hingurahena (M)	13%	3950	13%
Keeriwalagama (M)	12%	7450	24%
Watugala (M)	0%	-	0%
Kolontotuwa (G)	27%	-	0%
Kosmulla (G)	27%	4558	27%
Warukandeniya (G)	13%	11500	9%

Table 17: Ownership of material assets

	Vehicle	Motorbike	Bicycle	TV	Radio
All	5%	16%	6%	68%	81%
Ratnapura (R)	3%	8%	11%	81%	81%
Matara (M)	4%	12%	6%	65%	81%
Galle (G)	7%	25%	4%	64%	82%
Denawakkanda (R)	0%	0%	8%	85%	85%
Pelawatte (R)	8%	8%	0%	75%	92%
Pitakelle (R)	0%	18%	27%	82%	64%
Hingurahena (M)	0%	3%	3%	63%	70%
Keeriwalagama (M)	5%	17%	10%	60%	83%
Watugala (M)	8%	17%	0%	92%	100%
Kolontotuwa (G)	9%	32%	0%	55%	82%
Kosmulla (G)	5%	9%	14%	59%	73%
Warukandeniya (G)	9%	35%	0%	78%	91%

Table 18: Type of house

	Walls					Roof				Windows	
	Plastered	Clay	Wood	Tin	Brick /blocks	Tin	Asbestos	Tile	Wood	Glass	Wood
All	73%	15%	0%	1%	10%	5%	19%	66%	5%	53%	37%
Ratnapura (R)	61%	25%	0%	0%	14%	3%	25%	69%	0%	50%	31%
Matara (M)	79%	11%	0%	1%	10%	7%	25%	50%	12%	57%	37%
Galle (G)	73%	15%	0%	0%	9%	3%	9%	85%	0%	49%	42%
Denawakkanda (R)	62%	31%	0%	0%	8%	8%	31%	54%	0%	54%	23%
Pelawatte (R)	42%	33%	0%	0%	25%	0%	42%	58%	0%	33%	42%
Pitakelle (R)	82%	9%	0%	0%	9%	0%	0%	100%	0%	64%	27%
Hingurahena (M)	77%	17%	0%	0%	7%	20%	30%	50%	0%	57%	43%
Keeriwalagama (M)	79%	5%	0%	2%	14%	0%	24%	43%	24%	55%	33%
Watugala (M)	83%	17%	0%	0%	0%	0%	17%	75%	0%	67%	33%
Kolontotuwa (G)	64%	23%	0%	0%	14%	9%	18%	73%	0%	32%	55%
Kosmulla (G)	77%	5%	0%	0%	9%	0%	5%	91%	0%	64%	32%
Warukandeniya (G)	78%	17%	0%	0%	4%	0%	4%	91%	0%	52%	39%

Table 19: Size of house

	Living (No.)	Bedrooms (No.)	Kitchen (No.)
All	1	3	1
Ratnapura (R)	1	2	1
Matara (M)	1	3	1
Galle (G)	1	3	1
Denawakkanda (R)	1	3	1
Pelawatte (R)	1	2	1
Pitakelle (R)	1	2	1
Hingurahena (M)	1	2	1
Keeriwalagama (M)	1	3	1
Watugala (M)	1	3	1
Kolontotuwa (G)	1	2	1
Kosmulla (G)	1	3	1
Warukandeniya (G)	1	3	1

Table 20: Sanitation

	Attached/separate toilet
All	98%
Ratnapura (R)	97%
Matara (M)	99%
Galle (G)	99%
Denawakkanda (R)	100%
Pelawatte (R)	92%
Pitakelle (R)	100%
Hingurahena (M)	97%
Keeriwalagama (M)	100%
Watugala (M)	100%
Kolontotuwa (G)	100%
Kosmulla (G)	95%
Warukandeniya (G)	100%

Table 21: Energy source for cooking

	Firewood	Gas
All	89%	12%
Ratnapura (R)	100%	0%
Matara (M)	77%	25%
Galle (G)	97%	3%
Denawakkanda (R)	100%	0%
Pelawatte (R)	100%	0%
Pitakelle (R)	100%	0%
Hingurahena (M)	97%	3%
Keeriwalagama (M)	60%	45%
Watugala (M)	92%	8%
Kolontotuwa (G)	100%	5%
Kosmulla (G)	95%	0%
Warukandeniya (G)	96%	4%

Table 22: Energy availability from mains and other (excl cooking energy)

	Total Energy availability	Energy only from renewable energy
All	67%	40%
Ratnapura (R)	92%	86%
Matara (M)	64%	21%
Galle (G)	57%	39%
Denawakkanda (R)	92%	92%
Pelawatte (R)	100%	100%
Pitakelle (R)	82%	64%
Hingurahena (M)	70%	3%
Keeriwalagama (M)	57%	19%
Watugala (M)	75%	75%
Kolontotuwa (G)	64%	64%
Kosmulla (G)	45%	5%
Warukandeniya (G)	61%	48%

Land ownership

Table 23: Land ownership

	Your own	Rented	Worker	Other
All	92%	3%	2%	3%
Ratnapura (R)	94%	0%	0%	6%
Matara (M)	92%	1%	2%	4%
Galle (G)	91%	6%	3%	0%
Denawakkanda (R)	92%	0%	0%	8%
Pelawatte (R)	92%	0%	0%	8%
Pitakelle (R)	100%	0%	0%	0%
Hingurahena (M)	87%	3%	0%	7%
Keeriwalagama (M)	93%	0%	5%	2%
Watugala (M)	100%	0%	0%	0%
Kolontotuwa (G)	100%	0%	0%	0%
Kosmulla (G)	73%	18%	9%	0%
Warukandeniya (G)	100%	0%	0%	0%

Table 24: Land acquisition

	Inherited	Bought	Cleared	Allocated	Given	Other/Not specified
All	60%	16%	15%	5%	1%	4%
Ratnapura (R)	65%	18%	9%	9%	0%	0%
Matara (M)	59%	14%	16%	5%	1%	4%
Galle (G)	57%	18%	16%	2%	2%	5%
Denawakkanda (R)	42%	25%	25%	8%	0%	0%
Pelawatte (R)	73%	18%	0%	9%	0%	0%
Pitakelle (R)	82%	9%	0%	9%	0%	0%
Hingurahena (M)	46%	12%	27%	8%	4%	4%
Keeriwalagama (M)	61%	21%	13%	3%	0%	3%
Watugala (M)	83%	0%	0%	8%	0%	8%
Kolontotuwa (G)	77%	9%	14%	0%	0%	0%
Kosmulla (G)	69%	19%	6%	0%	7%	0%
Warukandeniya (G)	30%	26%	26%	4%	0%	13%

Table 25: Entitlement to land

	Deed/Permit/Other
All	70%
Ratnapura (R)	69%
Matara (M)	72%
Galle (G)	69%
Denawakkanda (R)	69%
Pelawatte (R)	58%
Pitakelle (R)	82%
Hingurahena (M)	76%
Keeriwalagama (M)	74%
Watugala (M)	58%
Kolontotuwa (G)	77%
Kosmulla (G)	59%
Warukandeniya (G)	70%

Table 26: Type of entitlement (of those who have entitlement)

	Swarna bhoomi	Jaya bhoomi	Title deed	Permit	Other
All	18%	11%	47%	10%	16%
Ratnapura (R)	4%	0%	68%	4%	24%
Matara (M)	37%	25%	33%	2%	5%
Galle (G)	0%	0%	52%	24%	26%
Denawakkanda (R)	0%	0%	78%	0%	11%
Pelawatte (R)	14%	0%	57%	14%	29%
Pitakelle (R)	0%	0%	67%	0%	33%
Hingurahena (M)	32%	27%	41%	0%	0%
Keeriwalagama (M)	45%	26%	26%	3%	3%
Watugala (M)	14%	14%	43%	0%	29%
Kolontotuwa (G)	0%	0%	53%	18%	29%
Kosmulla (G)	0%	0%	62%	15%	23%
Warukandeniya (G)	0%	0%	44%	38%	25%

Table 27: Clearing of forest

	Evidence of newly cleared land	Forest was cleared when land was obtained
All	7%	34%
Ratnapura (R)	8%	29%
Matara (M)	2%	28%
Galle (G)	13%	44%
Denawakkanda (R)	8%	38%
Pelawatte (R)	17%	8%
Pitakelle (R)	0%	44%
Hingurahena (M)	0%	21%
Keeriwalagama (M)	5%	38%
Watugala (M)	0%	9%
Kolontotuwa (G)	14%	38%
Kosmulla (G)	14%	58%
Warukandeniya (G)	13%	36%

Use of forest and resources

Table 28: Collection of forest products

	Households that collect products from forest	Relative importance of forest products collected			
		Very important	Important	Fairly important	Not at all important
All	57%	28%	32%	23%	8%
Ratnapura (R)	81%	45%	34%	7%	0%
Matara (M)	52%	14%	27%	32%	16%
Galle (G)	49%	33%	36%	24%	3%
Denawakkanda (R)	85%	45%	27%	9%	0%
Pelawatte (R)	92%	73%	27%	0%	0%
Pitakelle (R)	64%	0%	57%	14%	0%
Hingurahena (M)	53%	19%	19%	31%	19%
Keeriwalagama (M)	60%	12%	28%	32%	16%
Watugala (M)	25%	0%	67%	33%	0%
Kolontotuwa (G)	50%	27%	36%	36%	0%
Kosmulla (G)	45%	40%	30%	10%	10%
Warukandeniya (G)	52%	33%	42%	25%	0%

Table 29: Type of forest product collected by surveyed households

	Firewood	Housing materials	Timber	Hunting	Medicines	Wild foods	Handicrafts	Kitul	Rattan
All	20%	2%	5%	0%	11%	25%	2%	5%	4%
Ratnapura (R)	61%	6%	14%	0%	28%	17%	8%	11%	6%
Matara (M)	4%	0%	2%	0%	4%	17%	0%	4%	4%
Galle (G)	19%	3%	4%	0%	10%	40%	1%	4%	3%
Denawakkanda (R)	69%	0%	23%	0%	31%	23%	8%	0%	8%
Pelawatte (R)	75%	17%	17%	0%	33%	8%	8%	0%	0%
Pitakelle (R)	36%	0%	0%	0%	18%	18%	9%	36%	9%
Hingurahena (M)	0%	0%	0%	0%	7%	20%	0%	7%	0%
Keeriwalagama (M)	5%	0%	5%	0%	0%	19%	0%	2%	7%
Watugala (M)	8%	0%	0%	0%	8%	0%	0%	0%	0%
Kolontotuwa (G)	23%	0%	9%	0%	18%	41%	0%	14%	5%
Kosmulla (G)	5%	5%	0%	0%	9%	32%	5%	0%	5%
Warukandeniya (G)	30%	4%	4%	0%	4%	48%	0%	0%	0%

Table 30: Collection of forest products by other villagers

	Whether other people collect forest products	Who collects forest products			
		Everybody	Some	Few	Nobody
All	89%	27%	39%	29%	3%
Ratnapura (R)	89%	53%	31%	8%	8%
Matara (M)	89%	18%	49%	29%	1%
Galle (G)	89%	23%	31%	40%	3%
Denawakkanda (R)	92%	54%	31%	15%	0%
Pelawatte (R)	92%	83%	0%	8%	8%
Pitakelle (R)	82%	18%	64%	0%	18%
Hingurahena (M)	97%	30%	47%	23%	0%
Keeriwalagama (M)	87%	5%	49%	41%	3%
Watugala (M)	75%	30%	60%	0%	0%
Kolontotuwa (G)	100%	29%	52%	19%	0%
Kosmulla (G)	71%	14%	29%	38%	10%
Warukandeniya (G)	96%	26%	13%	61%	0%

Table 31: Forest products collected by others[**]

	Firewood	Medicine	Wild foods	Hunting	Timber	Kitul	Rattan	Gem mining	Dummala
All	19%	20%	70%	4%	9%	30%	6%	1%	24%
Ratnapura (R)	20%	17%	71%	3%	9%	17%	6%	3%	17%
Matara (M)	10%	15%	75%	5%	10%	32%	6%	0%	33%
Galle (G)	30%	27%	64%	4%	7%	34%	7%	1%	15%
Denawakkanda (R)	42%	25%	25%	0%	17%	25%	8%	0%	0%
Pelawatte (R)	17%	8%	100%	8%	8%	8%	0%	0%	25%
Pitakelle (R)	0%	18%	91%	0%	0%	18%	9%	9%	27%
Hingurahena (M)	10%	10%	80%	0%	0%	27%	10%	0%	40%
Keeriwalagama (M)	5%	19%	74%	5%	17%	33%	5%	0%	36%
Watugala (M)	25%	17%	67%	17%	8%	42%	0%	0%	8%
Kolontotuwa (G)	41%	45%	55%	0%	5%	9%	14%	0%	14%
Kosmulla (G)	27%	9%	55%	9%	14%	45%	5%	0%	9%
Warukandeniya (G)	22%	26%	83%	4%	4%	48%	4%	4%	22%

[**] Please note that the percentages given are responses to each type of material, with several households using more than one type.

Table 32: Forest use over time

	Stayed the same	Increased	Reduced	Variable
All	3%	5%	90%	2%
Ratnapura (R)	3%	6%	92%	0%
Matara (M)	0%	10%	87%	3%
Galle (G)	7%	0%	92%	2%
Denawakkanda (R)	8%	0%	92%	0%
Pelawatte (R)	0%	8%	92%	0%
Pitakelle (R)	0%	9%	91%	0%
Hingurahena (M)	0%	4%	96%	0%
Keeriwalagama (M)	0%	15%	79%	6%
Watugala (M)	0%	0%	100%	0%
Kolontotuwa (G)	11%	0%	84%	5%
Kosmulla (G)	6%	0%	94%	0%
Warukandeniya (G)	4%	0%	96%	0%

Table 33: Reason for decline in forest use (for those who stated use had declined)

	No time/ because of tea/ other income/no need to go	Limited/no use	Laws/illegal /rangers/ protected	Will lose water/services /people educated	Scared to go- wildlife	Because of conservation project	Other/not specified
All	51%	6%	26%	4%	3%	1%	11%
Ratnapura (R)	58%	3%	18%	3%	3%	0%	12%
Matara (M)	46%	4%	33%	2%	6%	2%	9%
Galle (G)	53%	11%	25%	6%	0%	2%	11%
Denawakkanda (R)	50%	0%	8%	8%	0%	0%	25%
Pelawatte (R)	64%	0%	27%	0%	9%	0%	0%
Pitakelle (R)	60%	10%	20%	0%	0%	0%	10%
Hingurahena (M)	67%	5%	14%	5%	5%	0%	10%
Keeriwalagama (M)	38%	4%	38%	0%	8%	4%	12%
Watugala (M)	14%	0%	71%	0%	0%	0%	0%
Kolontotuwa (G)	69%	6%	25%	6%	0%	0%	0%
Kosmulla (G)	20%	20%	33%	7%	0%	7%	27%
Warukandeniya (G)	64%	9%	18%	5%	0%	0%	9%

Table 34: Change in the availability of forest resources

	Stayed the same	Increased	Reduced	Variable	Don't know
All	18%	41%	16%	9%	15%
Ratnapura (R)	35%	38%	9%	0%	12%
Matara (M)	16%	27%	23%	11%	19%
Galle (G)	11%	58%	11%	11%	13%
Denawakkanda (R)	62%	15%	0%	0%	23%
Pelawatte (R)	8%	58%	17%	0%	0%
Pitakelle (R)	33%	44%	11%	0%	11%
Hingurahena (M)	19%	15%	31%	8%	23%
Keeriwalagama (M)	19%	28%	17%	17%	19%
Watugala (M)	0%	55%	27%	0%	9%
Kolontotuwa (G)	24%	43%	14%	14%	19%
Kosmulla (G)	11%	56%	17%	6%	11%
Warukandeniya (G)	0%	74%	4%	13%	9%

Table 35: Reason stated for increase in availability of forest resources

	Forest use less/people don't go	Not allowed/ protected/laws	More trees/animals/forest grown	Not specified/other/don't know
All	64%	11%	17%	9%
Ratnapura (R)	50%	29%	0%	14%
Matara (M)	70%	0%	15%	15%
Galle (G)	67%	11%	25%	3%
Denawakkanda (R)	50%	50%	0%	0%
Pelawatte (R)	57%	29%	0%	0%
Pitakelle (R)	40%	20%	0%	40%
Hingurahena (M)	50%	0%	25%	25%
Keeriwalagama (M)	70%	0%	10%	20%
Watugala (M)	83%	0%	17%	0%
Kolontotuwa (G)	67%	11%	22%	0%
Kosmulla (G)	70%	10%	30%	0%
Warukandeniya (G)	65%	12%	24%	6%

Table 36: Reason stated for reduction in availability of forest resources

	Past destruction	Present destruction/use	Landslides/natural disasters	Other/not specified
All	12%	20%	20%	48%
Ratnapura (R)	0%	33%	33%	33%
Matara (M)	19%	19%	25%	38%
Galle (G)	0%	17%	0%	83%
Denawakkanda (R)	-	-	-	-
Pelawatte (R)	0%	50%	0%	50%
Pitakelle (R)	0%	0%	100%	0%
Hingurahena (M)	38%	13%	38%	13%
Keeriwalagama (M)	0%	20%	20%	60%
Watugala (M)	0%	33%	0%	67%
Kolontotuwa (G)	0%	50%	0%	50%
Kosmulla (G)	0%	0%	0%	100%
Warukandeniya (G)	0%	0%	0%	100%

Table 37: Significant decline in use of forest resources

	<11	11 to 20	21 to 30	> 30
All	54%	28%	17%	2%
Ratnapura (R)	48%	29%	23%	10%
Matara (M)	71%	22%	6%	0%
Galle (G)	40%	33%	26%	0%
Denawakkanda (R)	58%	25%	25%	8%
Pelawatte (R)	60%	30%	0%	20%
Pitakelle (R)	22%	33%	44%	0%
Hingurahena (M)	80%	15%	5%	0%
Keeriwalagama (M)	63%	29%	8%	0%
Watugala (M)	80%	20%	0%	0%
Kolontotuwa (G)	46%	31%	15%	0%
Kosmulla (G)	62%	15%	23%	0%
Warukandeniya (G)	18%	47%	35%	0%

Table 38: use of Loris's tears for medicinal purposes

	Use by other households	Use by household
	Yes	Yes
All	8%	0%
Ratnapura (R)	6%	0%
Matara (M)	9%	0%
Galle (G)	Not asked	Not asked
Denawakkanda (R)	8%	0%
Pelawatte (R)	0%	0%
Pitakelle (R)	10%	0%
Hingurahena (M)	5%	0%
Keeriwalagama (M)	11%	0%
Watugala (M)	11%	0%
Kolontotuwa (G)	Not asked	Not asked
Kosmulla (G)	Not asked	Not asked
Warukandeniya (G)	Not asked	Not asked

Knowledge on Sinharaja and Forest Department

Table 39: Knowledge on Sinharaja forest is a protected area

	Forest is a PA	Boundaries	MAB Reserve	WH Site
All	89%	70%	31%	77%
Ratnapura (R)	78%	86%	39%	69%
Matara (M)	93%	62%	30%	79%
Galle (G)	91%	73%	29%	79%
Denawakkanda (R)	38%	100%	31%	42%
Pelawatte (R)	100%	92%	33%	67%
Pitakelle (R)	100%	73%	55%	100%
Hingurahena (M)	93%	66%	23%	60%
Keeriwalagama (M)	90%	58%	31%	90%
Watugala (M)	100%	67%	42%	83%
Kolontotuwa (G)	95%	70%	33%	81%
Kosmulla (G)	86%	61%	32%	80%
Warukandeniya (G)	91%	86%	22%	77%

Table 40: Activities allowed inside Sinharaja Forest

	Nothing	Non extractive (enter/look/walk)	Kitul only	Non timber forest products	Extractive activities	Unclear/not answered/not specified
All	49%	5%	5%	30%	1%	13%
Ratnapura (R)	44%	6%	6%	11%	0%	33%
Matara (M)	43%	6%	2%	39%	1%	13%
Galle (G)	58%	4%	7%	28%	0%	3%
Denawakkanda (R)	62%	0%	0%	8%	0%	31%
Pelawatte (R)	17%	0%	0%	25%	0%	58%
Pitakelle (R)	55%	18%	18%	0%	0%	9%
Hingurahena (M)	40%	0%	3%	53%	3%	10%
Keeriwalagama (M)	45%	10%	2%	36%	0%	10%
Watugala (M)	42%	8%	0%	17%	0%	33%
Kolontotuwa (G)	73%	9%	5%	14%	0%	5%
Kosmulla (G)	45%	5%	5%	41%	0%	5%
Warukandeniya (G)	57%	0%	13%	30%	0%	0%

Table 41: Frequency of forest visitation by Forest Officers

	Frequently	Infrequently	Seldom	Never	Don't know/not answered
All	42%	34%	14%	9%	2%
Ratnapura (R)	50%	50%	0%	0%	0%
Matara (M)	21%	33%	26%	17%	2%
Galle (G)	63%	27%	6%	3%	1%
Denawakkanda (R)	62%	38%	0%	0%	0%
Pelawatte (R)	42%	58%	0%	0%	0%
Pitakelle (R)	45%	55%	0%	0%	0%
Hingurahena (M)	3%	17%	33%	40%	7%
Keeriwalagama (M)	26%	48%	21%	5%	0%
Watugala (M)	50%	25%	25%	0%	0%
Kolontotuwa (G)	73%	18%	5%	0%	5%
Kosmulla (G)	55%	27%	9%	9%	0%
Warukandeniya (G)	61%	35%	4%	0%	0%

Table 42: Relationship with Forest Officers

	Relationship with Forest Officer				Assistance from forest officers
	Good	Average	Poor	No relationship/Not specified	
All	21%	32%	21%	20%	17%
Ratnapura (R)	22%	53%	11%	3%	11%
Matara (M)	15%	19%	27%	30%	7%
Galle (G)	28%	37%	18%	16%	31%
Denawakkanda (R)	23%	54%	8%	8%	17%
Pelawatte (R)	33%	25%	17%	0%	8%
Pitakelle (R)	9%	82%	9%	0%	9%
Hingurahena (M)	3%	10%	30%	33%	4%
Keeriwalagama (M)	12%	24%	29%	36%	5%
Watugala (M)	58%	25%	17%	0%	17%
Kolontotuwa (G)	18%	59%	14%	9%	24%
Kosmulla (G)	36%	9%	18%	36%	52%
Warukandeniya (G)	30%	43%	22%	4%	18%

Livelihoods and changes over time

Table 43: Changes in livelihood

	Livelihood changed	Tea/other income	Better facilities	Life has got more difficult	Other/not specified
All	85%	42%	24%	9%	30%
Ratnapura (R)	75%	41%	37%	0%	30%
Matara (M)	86%	25%	30%	16%	31%
Galle (G)	89%	65%	9%	4%	28%
Denawakkanda (R)	54%	86%	29%	0%	14%
Pelawatte (R)	92%	18%	45%	0%	36%
Pitakelle (R)	82%	33%	33%	0%	33%
Hingurahena (M)	90%	33%	11%	15%	41%
Keeriwalagama (M)	86%	14%	41%	22%	27%
Watugala (M)	73%	44%	44%	0%	20%
Kolontotuwa (G)	76%	81%	13%	0%	13%
Kosmulla (G)	95%	67%	0%	10%	24%
Warukandeniya (G)	95%	50%	15%	0%	45%

Table 44: Future of children

	Would like children to continue to live in village	Aspirations for children's future			
		Education/job	To work on land	To leave village	Other
All	80%	51%	5%	5%	38%
Ratnapura (R)	85%	47%	16%	6%	31%
Matara (M)	77%	51%	3%	0%	42%
Galle (G)	81%	53%	2%	10%	36%
Denawakkanda (R)	92%	54%	8%	0%	38%
Pelawatte (R)	80%	60%	20%	0%	20%
Pitakelle (R)	80%	22%	22%	22%	33%
Hingurahena (M)	88%	36%	4%	0%	46%
Keeriwalagama (M)	78%	55%	3%	0%	42%
Watugala (M)	55%	67%	0%	0%	33%
Kolontotuwa (G)	95%	45%	0%	15%	45%
Kosmulla (G)	90%	60%	0%	10%	30%
Warukandeniya (G)	56%	56%	6%	6%	33%

Costs and benefits of living adjacent to the Sinharaja forest

Table 45: Perceived benefits of the forest to local people and others

Household code	Services (incl water)	Non Timber Forest Products	Extractive Resources (incl timber)	Aesthetic/Existence/ intrinsic value	Nothing	Other
All	72%	48%	5%	4%	12%	2%
Ratnapura (R)	66%	72%	6%	3%	6%	6%
Matara (M)	73%	37%	5%	1%	8%	1%
Galle (G)	74%	51%	5%	9%	20%	0%
Denawakkanda (R)	80%	80%	20%	10%	0%	0%
Pelawatte (R)	82%	82%	0%	0%	0%	0%
Pitakelle (R)	36%	55%	0%	0%	18%	18%
Hingurahena (M)	50%	50%	3%	3%	13%	3%
Keeriwalagama (M)	85%	37%	5%	0%	5%	0%
Watugala (M)	92%	8%	8%	0%	8%	0%
Kolontotuwa (G)	68%	55%	5%	5%	27%	0%
Kosmulla (G)	81%	48%	5%	14%	19%	0%
Warukandeniya (G)	73%	50%	5%	9%	14%	0%

Table 46: The problems the forest causes

Other	Households that have problems	Conflicts with wildlife	Natural disaster	Other
All	19%	88%	11%	3%
Ratnapura (R)	64%	100%	0%	4%
Matara (M)	8%	50%	43%	0%
Galle (G)	7%	80%	20%	0%
Denawakkanda (R)	38%	100%	0%	20%
Pelawatte (R)	67%	100%	0%	0%
Pitakelle (R)	91%	100%	0%	0%
Hingurahena (M)	7%	100%	50%	0%
Keeriwalagama (M)	7%	33%	33%	0%
Watugala (M)	17%	50%	50%	0%
Kolontotuwa (G)	5%	0%	100%	0%
Kosmulla (G)	18%	100%	0%	0%
Warukandeniya (G)	0%	-	-	-

Table 47: Conflicts and problems with wildlife

	Households having conflicts with wildlife	Type of species			
		Wildboar	Porcupine	Sambhur	Other
All	48%	97%	13%	20%	10%
Ratnapura (R)	61%	95%	14%	50%	14%
Matara (M)	47%	100%	11%	0%	5%
Galle (G)	42%	93%	15%	22%	15%
Denawakkanda (R)	38%	100%	0%	0%	0%
Pelawatte (R)	50%	83%	17%	17%	17%
Pitakelle (R)	100%	100%	18%	91%	18%
Hingurahena (M)	55%	100%	19%	0%	0%
Keeriwalagama (M)	38%	100%	0%	0%	7%
Watugala (M)	58%	100%	14%	0%	14%
Kolontotuwa (G)	23%	60%	0%	40%	20%
Kosmulla (G)	55%	100%	33%	0%	25%
Warukandeniya (G)	48%	100%	0%	40%	0%

Table 48: Involvement in forest conservation projects

	Households involved	Implementing organisation	
		Sumithuro	Other
All	27%	92%	6%
Ratnapura (R)	6%	100%	0%
Matara (M)	24%	86%	10%
Galle (G)	42%	96%	4%
Denawakkanda (R)	8%	100%	0%
Pelawatte (R)	8%	100%	0%
Pitakelle (R)	0%	-	-
Hingurahena (M)	3%	100%	0%
Keeriwalagama (M)	31%	86%	7%
Watugala (M)	50%	83%	20%
Kolontotuwa (G)	5%	0%	100%
Kosmulla (G)	77%	100%	0%
Warukandeniya (G)	43%	100%	0%

Attitudes towards Sinharaja and conservation

Table 49: The most liked animal and bird species

	All	Jungle Fowl	Peacock	Sambhur	Leopard	Barking deer	Deer	Monkey	All Birds	Parrots	Giant squirrel	Elephant
All	25%	32%	7%	19%	10%	9%	11%	10%	5%	13%	11%	6%
Ratnapura (R)	13%	50%	3%	20%	13%	0%	20%	3%	7%	3%	0%	7%
Matara (M)	16%	28%	0%	19%	9%	20%	15%	11%	5%	20%	14%	7%
Galle (G)	40%	29%	17%	19%	8%	0%	3%	11%	3%	8%	14%	5%
Denawakkanda (R)	22%	33%	0%	0%	0%	0%	44%	11%	11%	0%	0%	0%
Pelawatte (R)	8%	42%	8%	33%	17%	0%	17%	0%	0%	8%	0%	17%
Pitakelle (R)	11%	78%	0%	22%	22%	0%	0%	0%	11%	0%	0%	0%
Hingurahena (M)	18%	11%	0%	18%	11%	14%	11%	11%	0%	25%	4%	11%
Keeriwalagama (M)	12%	38%	0%	18%	9%	32%	12%	12%	6%	21%	26%	6%
Watugala (M)	25%	42%	0%	25%	8%	0%	33%	8%	17%	8%	0%	0%
Kolontotuwa (G)	52%	19%	5%	24%	5%	0%	0%	5%	10%	5%	10%	10%
Kosmulla (G)	38%	24%	29%	19%	10%	0%	10%	14%	0%	14%	19%	0%
Warukandeniya (G)	29%	43%	19%	14%	10%	0%	0%	14%	0%	5%	14%	5%

Table 50: Animals disliked

	Wildboar	Porcupine	Snakes	Sambhur	Leopard	Monkeys	Elephants	Other
All	67%	15%	12%	14%	7%	4%	2%	12%
Ratnapura (R)	70%	13%	4%	26%	4%	0%	4%	0%
Matara (M)	79%	18%	13%	8%	0%	3%	0%	13%
Galle (G)	51%	14%	17%	14%	17%	9%	3%	20%
Denawakkanda (R)	29%	14%	14%	0%	14%	0%	0%	0%
Pelawatte (R)	71%	29%	0%	29%	0%	0%	14%	0%
Pitakelle (R)	100%	0%	0%	44%	0%	0%	0%	0%
Hingurahena (M)	87%	33%	20%	13%	0%	0%	0%	0%
Keeriwalagama (M)	57%	7%	14%	0%	0%	7%	0%	36%
Watugala (M)	100%	10%	0%	10%	0%	0%	0%	0%
Kolontotuwa (G)	33%	22%	11%	33%	22%	22%	0%	11%
Kosmulla (G)	64%	21%	21%	0%	14%	0%	0%	36%
Warukandeniya (G)	50%	0%	17%	17%	17%	8%	8%	8%

Table 51: Things liked about Sinharaja

	Services - incl water	NTFP	Extractive Res incl Timber	EastheticExistence /instrinsic value
All	58%	12%	1%	47%
Ratnapura (R)	67%	17%	0%	40%
Matara (M)	66%	10%	0%	38%
Galle (G)	45%	13%	3%	63%
Denawakkanda (R)	71%	29%	0%	14%
Pelawatte (R)	50%	17%	0%	50%
Pitakelle (R)	82%	9%	0%	45%
Hingurahena (M)	63%	7%	0%	37%
Keeriwalagama (M)	73%	12%	0%	29%
Watugala (M)	45%	9%	0%	73%
Kolontotuwa (G)	48%	14%	0%	62%
Kosmulla (G)	55%	15%	0%	55%
Warukandeniya (G)	33%	10%	10%	71%

Table 52: Things disliked about Sinharaja

	Don't like - yes	Wild animals (crop damage/scared)	Poor infrastructure	Tourism	Natural Disasters	Weather/rain	Other
All	4%	37%	0%	7%	4%	7%	41%
Ratnapura (R)	0%	71%	0%	0%	14%	29%	0%
Matara (M)	0%	40%	0%	20%	0%	0%	40%
Galle (G)	7%	20%	0%	7%	0%	0%	60%
Denawakkanda (R)	0%	50%	0%	0%	0%	50%	0%
Pelawatte (R)	0%	50%	0%	0%	50%	50%	0%
Pitakelle (R)	0%	100%	0%	0%	0%	0%	0%
Hingurahena (M)	0%	33%	0%	33%	0%	0%	33%
Keeriwalagama (M)	0%	100%	0%	0%	0%	0%	0%
Watugala (M)	0%	0%	0%	0%	0%	0%	100%
Kolontotuwa (G)	0%	25%	0%	0%	0%	0%	50%
Kosmulla (G)	11%	22%	0%	11%	0%	0%	56%
Warukandeniya (G)	0%	0%	0%	0%	0%	0%	100%

Table 53: How would you feel if Sinharaja was completely cut down?

	Will become a desert/no water/drought need it for survival	Great loss	We won't/can't let it happen	Will be difficult	Not good/against it/don't like it	Other	We are finished/we will die/no future
All	63%	38%	9%	3%	10%	1%	11%
Ratnapura (R)	49%	46%	14%	3%	14%	0%	17%
Matara (M)	64%	39%	7%	4%	8%	1%	11%
Galle (G)	69%	31%	8%	2%	9%	2%	9%
Denawakkanda (R)	33%	33%	17%	8%	8%	0%	25%
Pelawatte (R)	50%	58%	25%	0%	0%	0%	8%
Pitakelle (R)	64%	45%	0%	0%	36%	0%	18%
Hingurahena (M)	60%	47%	3%	3%	10%	0%	13%
Keeriwalagama (M)	74%	33%	10%	5%	5%	0%	10%
Watugala (M)	42%	42%	8%	0%	17%	8%	8%
Kolontotuwa (G)	68%	23%	5%	0%	14%	5%	14%
Kosmulla (G)	67%	33%	10%	5%	5%	0%	5%
Warukandeniya (G)	73%	36%	9%	0%	9%	0%	9%

Table 54: Perceived threats to Sinharaja

	Cutting trees	Tourism/ visitors/ hotels	Encroachment/ spread of tea	Taking plants	Poaching	Burning forest	Selling the forest	Sand mining	Hydro projects	Natural disasters	Gem mining	Pinus	Corruption/political influence
All	53%	14%	17%	2%	27%	8%	3%	3%	10%	7%	5%	3%	3%
Ratnapura (R)	50%	38%	0%	13%	0%	0%	13%	0%	0%	0%	0%	0%	0%
Matara (M)	35%	9%	26%	0%	9%	13%	0%	4%	22%	9%	9%	0%	0%
Galle (G)	68%	11%	14%	0%	50%	7%	4%	4%	4%	7%	4%	7%	7%
Denawakkanda (R)	33%	67%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pelawatte (R)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pitakelle (R)	60%	20%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Hingurahena (M)	50%	0%	0%	0%	25%	50%	0%	0%	0%	0%	25%	0%	0%
Keeriwalagama (M)	23%	15%	31%	0%	8%	8%	0%	8%	23%	15%	8%	0%	0%
Watugala (M)	50%	0%	33%	0%	0%	0%	0%	0%	33%	0%	0%	0%	0%
Kolontotuwa (G)	57%	14%	29%	0%	57%	0%	0%	0%	0%	0%	0%	0%	0%
Kosmulla (G)	69%	8%	8%	0%	46%	8%	8%	8%	0%	0%	0%	8%	15%
Warukandeniya (G)	75%	13%	13%	0%	50%	13%	0%	0%	13%	25%	13%	13%	0%

Table 55: Level of agreement on whether local communities should be allowed to exploit the resources of protected areas

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
All	27%	45%	5%	21%	2%
Ratnapura (R)	14%	56%	3%	25%	3%
Matara (M)	31%	51%	4%	14%	0%
Galle (G)	30%	33%	7%	28%	3%
Denawakkanda (R)	15%	38%	8%	38%	0%
Pelawatte (R)	8%	67%	0%	17%	8%
Pitakelle (R)	18%	64%	0%	18%	0%
Hingurahena (M)	40%	33%	7%	20%	0%
Keeriwalagama (M)	24%	64%	0%	12%	0%
Watugala (M)	33%	50%	8%	8%	0%
Kolontotuwa (G)	32%	23%	5%	36%	5%
Kosmulla (G)	9%	50%	14%	27%	5%
Warukandeniya (G)	48%	26%	4%	22%	0%

Table 56: Level of agreement on whether it is necessary to conserve certain areas for the benefit of future generations

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
All	51%	47%	1%	1%	1%
Ratnapura (R)	47%	53%	0%	0%	0%
Matara (M)	50%	49%	1%	0%	0%
Galle (G)	54%	40%	1%	1%	3%
Denawakkanda (R)	46%	54%	0%	0%	0%
Pelawatte (R)	42%	58%	0%	0%	0%
Pitakelle (R)	55%	45%	0%	0%	0%
Hingurahena (M)	53%	47%	0%	0%	0%
Keeriwalagama (M)	43%	55%	2%	0%	0%
Watugala (M)	67%	33%	0%	0%	0%
Kolontotuwa (G)	45%	45%	5%	0%	5%
Kosmulla (G)	59%	36%	0%	0%	0%
Warukandeniya (G)	57%	39%	0%	4%	4%

Table 57: Level of agreement on whether it is necessary to conserve areas for its natural beauty

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
All	36%	59%	3%	2%	1%
Ratnapura (R)	25%	72%	3%	0%	0%
Matara (M)	37%	61%	2%	1%	0%
Galle (G)	40%	51%	3%	3%	1%
Denawakkanda (R)	15%	77%	8%	0%	0%
Pelawatte (R)	25%	75%	0%	0%	0%
Pitakelle (R)	36%	64%	0%	0%	0%
Hingurahena (M)	40%	60%	0%	3%	0%
Keeriwalagama (M)	31%	67%	2%	0%	0%
Watugala (M)	50%	42%	8%	0%	0%
Kolontotuwa (G)	41%	50%	5%	0%	5%
Kosmulla (G)	36%	55%	5%	5%	0%
Warukandeniya (G)	43%	48%	0%	4%	0%

Table 58: Level of agreement on whether animals should be conserved, even if they are of no use to humans

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
All	35%	50%	11%	7%	2%
Ratnapura (R)	25%	53%	8%	14%	0%
Matara (M)	19%	60%	12%	6%	4%
Galle (G)	63%	36%	11%	5%	0%
Denawakkanda (R)	23%	38%	23%	15%	0%
Pelawatte (R)	25%	75%	0%	0%	0%
Pitakelle (R)	27%	45%	0%	27%	0%
Hingurahena (M)	23%	53%	0%	17%	7%
Keeriwalagama (M)	14%	64%	19%	0%	2%
Watugala (M)	25%	58%	17%	0%	0%
Kolontotuwa (G)	110%	30%	5%	0%	0%
Kosmulla (G)	32%	41%	14%	14%	0%
Warukandeniya (G)	50%	36%	14%	0%	0%

Table 59: Level of agreement on whether laws and regulations are important to conserve forests like Sinharaja

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
All	48%	46%	2%	4%	0%
Ratnapura (R)	40%	49%	0%	11%	0%
Matara (M)	48%	48%	4%	1%	0%
Galle (G)	54%	42%	2%	3%	0%
Denawakkanda (R)	23%	54%	0%	23%	0%
Pelawatte (R)	42%	50%	0%	8%	0%
Pitakelle (R)	60%	40%	0%	0%	0%
Hingurahena (M)	47%	53%	0%	0%	0%
Keeriwalagama (M)	50%	43%	5%	2%	0%
Watugala (M)	42%	50%	8%	0%	0%
Kolontotuwa (G)	55%	41%	0%	5%	0%
Kosmulla (G)	55%	45%	0%	0%	0%
Warukandeniya (G)	52%	38%	5%	5%	0%

Table 60: Level of agreement on whether if people are allowed to exploit the resources of protected areas, the future of Protected Area's will be bleak

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
All	48%	49%	1%	1%	2%
Ratnapura (R)	53%	47%	0%	0%	0%
Matara (M)	46%	53%	1%	0%	0%
Galle (G)	47%	45%	0%	3%	5%
Denawakkanda (R)	38%	62%	0%	0%	0%
Pelawatte (R)	58%	42%	0%	0%	0%
Pitakelle (R)	64%	36%	0%	0%	0%
Hingurahena (M)	41%	59%	0%	0%	0%
Keeriwalagama (M)	46%	51%	3%	0%	0%
Watugala (M)	58%	42%	0%	0%	0%
Kolontotuwa (G)	52%	38%	0%	5%	5%
Kosmulla (G)	50%	41%	0%	0%	9%
Warukandeniya (G)	38%	57%	0%	5%	0%

Table 61: Belief whether Sinharaja is sacred

		Reason for believing Sinharaja is sacred							
	Do you believe sinharaja is sacred	Saman gods range	Powers	Helps us live	Valuable/ services	I know /feel	People say	Have to watch our mouths	Other
All	84%	30%	12%	5%	19%	7%	9%	23%	19%
Ratnapura (R)	79%	35%	23%	0%	15%	19%	4%	31%	8%
Matara (M)	86%	28%	7%	7%	21%	3%	10%	21%	24%
Denawakkanda (R)	75%	38%	38%	0%	25%	13%	0%	13%	0%
Pelawatte (R)	83%	40%	30%	0%	0%	30%	0%	40%	10%
Pitakelle (R)	80%	25%	0%	0%	25%	13%	13%	38%	13%
Hingurahena (M)	90%	4%	0%	0%	24%	4%	28%	12%	32%
Keeriwalagama (M)	81%	38%	9%	9%	22%	0%	0%	22%	22%
Watugala (M)	92%	55%	18%	18%	9%	9%	0%	36%	9%

Table 62: Why do you think the forest should be protected?

	Services - incl water	NTFP	Extractive Res incl Timber	Aesthetic/ Existence/ instrinsic value	Our survival	Future generations	Other
All	62%	3%	1%	15%	13%	18%	11%
Ratnapura (R)	73%	9%	3%	9%	18%	18%	6%
Matara (M)	65%	0%	0%	11%	12%	19%	5%
Galle (G)	52%	5%	0%	23%	12%	17%	21%
Denawakkanda (R)	75%	0%	8%	0%	0%	25%	17%
Pelawatte (R)	67%	25%	0%	25%	25%	0%	0%
Pitakelle (R)	78%	0%	0%	0%	33%	33%	0%
Hingurahena (M)	62%	0%	0%	7%	14%	17%	3%
Keeriwalagama (M)	69%	0%	0%	10%	10%	26%	2%
Watugala (M)	58%	0%	0%	25%	17%	0%	17%
Kolontotuwa (G)	36%	0%	0%	27%	9%	18%	27%
Kosmulla (G)	57%	10%	0%	14%	14%	24%	19%
Warukandeniya (G)	61%	4%	0%	26%	13%	9%	17%

Table 63: What can you do to protect Sinharaja?

	Nothing	Inform if people destroying	Not harming it/protecting it	Other	Replanting
All	17%	32%	30%	22%	2%
Ratnapura (R)	24%	21%	21%	27%	3%
Matara (M)	20%	37%	26%	21%	2%
Galle (G)	5%	32%	46%	20%	0%
Denawakkanda (R)	25%	17%	0%	42%	8%
Pelawatte (R)	18%	27%	36%	18%	0%
Pitakelle (R)	30%	20%	30%	20%	0%
Hingurahena (M)	38%	38%	7%	17%	3%
Keeriwalagama (M)	7%	32%	41%	24%	0%
Watugala (M)	17%	50%	17%	17%	8%
Kolontotuwa (G)	5%	29%	57%	14%	0%
Kosmulla (G)	0%	50%	25%	25%	0%
Warukandeniya (G)	6%	31%	38%	25%	0%

Table 64: Action the government should take to protect Sinharaja

	What they are doing is sufficient/ nothing specific	Increase rangers/guards/make them more effective	Awareness	Continue to protect/further protect it	Enforce laws/strict laws	Stop destruction	Mark boundaries	Re-plant degraded areas	villagers to protect it/for conservatio	Other
All	7%	28%	13%	20%	25%	6%	11%	1%	2%	20%
Ratnapura (R)	15%	18%	24%	0%	15%	6%	6%	0%	3%	20%
Matara (M)	6%	40%	10%	16%	33%	8%	8%	1%	1%	18%
Galle (G)	3%	17%	11%	34%	22%	5%	17%	2%	3%	23%
Denawakkanda (R)	17%	17%	17%	0%	17%	8%	8%	0%	0%	17%
Pelawatte (R)	0%	27%	36%	0%	18%	0%	0%	0%	0%	17%
Pitakelle (R)	27%	9%	18%	0%	9%	9%	9%	0%	9%	27%
Hingurahena (M)	4%	38%	12%	12%	38%	12%	0%	0%	0%	12%
Keeriwalagama (M)	10%	45%	10%	14%	33%	2%	14%	2%	2%	17%
Watugala (M)	0%	25%	8%	33%	17%	17%	0%	0%	0%	33%
Kolontotuwa (G)	0%	14%	24%	29%	14%	14%	19%	0%	0%	14%
Kosmulla (G)	5%	23%	0%	50%	36%	0%	18%	5%	5%	14%
Warukandeniya (G)	5%	14%	10%	24%	14%	0%	14%	0%	5%	43%

Correlations

Table 65: Correlation between entitlement to land and forest use

Entitlement	Forest use
Entitlement	60%
No Entitlement	47%

Table 66: Correlation between community conservation and forest use

Involvement in community conservation	Forest use
Involved	54%
Not involved	58%

Table 67: Correlation between age and forest use

Age	Forest use
18 to 35	64%
35 to 69	54%
over 70	33%

Table 68: Correlation between knowledge and forest use

Level of knowledge	Forest use
Rank 0 (low)	50%
Rank 1	52%
Rank 2	48%
Rank 3	56%
Rank 4	55%
Rank 5 (high)	77%

Table 69: Correlation between forest use and belief that Sinharaja was sacred

Belief that Sinharaja is sacred	Forest use
Believe	61%
Don't believe	68%

Table 70: Correlation between education and forest use

Education	Forest use
No education	50%
Primary	61%
O Level	60%
A Level	56%
Further education	0%

Table 71: Correlation between income and forest use

Forest use	Income (Rs)
Yes collect	13,533
No don't	16,500

Table 72: Correlation between conflict and attitude towards wild boar

Conflicts	Don't like wildboar
Yes	52%
No	20%

Table 73: Correlation between conflict and attitude towards conservation of animals (level of agreement on whether animals should be conserved even if there are of no use to humans)

Conflict	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Yes	33%	47%	9%	8%	2%
No	28%	52%	13%	6%	1%

Table 74: Correlation between entitlement and when respondents moved to land

Entitlement	Since Birth	>50	31-50	11-30	3-10	<3	Don't know/Not specified
No	35%	7%	11%	22%	18%	5%	0%
Yes	34%	5%	12%	21%	19%	5%	2%

Table 75: Correlation between involvement in conservation projects and what respondents can do to protect Sinharaja

Involvement in community conservation	Nothing	Inform if people destroying	Not harming it/protecting it	Other	Replanting
No	21%	31%	28%	21%	2%
Yes	3%	36%	39%	21%	3%

Table 76: Correlation between drinking water source from forest and why Sinharaja should be protected

Water from forest	Services (incl. water)	NTFP	Extractive resources (incl. timber)	Aesthetic/ Existence/ intrinsic value	Our survival	Future generations	Other
No	52%	0%	0%	15%	13%	24%	11%
Yes	63%	4%	1%	15%	13%	16%	11%

Table 77: Correlation between forest use and level of agreement on whether "it is necessary to conserve certain areas for the benefit of future generations"

Forest use	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
No	41%	56%	1%	1%	2%
Yes	58%	40%	1%	0%	0%

Table 78: Correlation between forest use and level of agreement on whether "it is necessary to conserve areas for its natural beauty"

Forest use	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
No	27%	64%	4%	2%	1%
Yes	42%	56%	2%	1%	0%

Table 79: Correlation between forest use and how respondents would feel if Sinharaja was completely cut down

Forest use	Will become a desert/no water/drought/need it for survival	Great loss	We won't/can't let it happen	Will be difficult	Not good/against it/don't like it	Other	We are finished/we will die/won't be able to live/no future
No	53%	41%	10%	5%	9%	1%	10%
Yes	69%	34%	8%	1%	10%	1%	12%