# Transformative Learning Through Conservation: A Case Study of the Arabuko-Sokoke Schools and Eco-tourism Scheme, Kenya

By

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A Thesis
Submitted to the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements
For the Degree of

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# Abstract

Protected areas are seen as important tools for conserving biodiversity and species habitat, but the relationship between neighboring communities and these areas is often contentious, especially in Africa. It is being increasingly recognized that, if conservation is to be successful, conservation initiatives like protected areas should have the support of local residents. Studies have shown that support for conservation by residents is related to the level of benefit they derive from it and that this link is strongest when the benefits are more tangible. As such, there has been a concerted effort by conservationists to bring communities "on side," with a community conservation approach that attempts to involve residents in conservation in return for economic or other benefits. The ASSETS (Arabuko-Sokoke Schools and Eco-Tourism Scheme), operating in communities surrounding Kenya's Arabuko-Sokoke Forest, is one such conservation project.

Kenya's Arabuko-Sokoke Forest is an area of international conservation concern: an important bird area, and a stronghold of endemic species. However, residents surrounding the forest, among the poorest in the country, are facing a myriad of environmental and social challenges. Many residents have a negative view of the forest, often a result of the crop damage they endure from forest animals, and past studies have indicated that many residents would like the forest cleared for agriculture. ASSETS, a conservation program initiated in 2001, attempts to reduce dependence on forest resources and foster a more positive attitude towards conservation by channeling eco-tourism profits from the forest to community members in the form of secondary school bursaries.

Using a qualitative, case-study approach, this project assesses the impact of ASSETS in Kaembeni, Kilifi District, focusing on participant learning and the extent to

which such learning results in a more positive attitude towards forest conservation and the adoption of less destructive resource uses. Semi-structured interviews were conducted with a number of key informants, ASSETS participants and non-participants in Kaembeni, and a handful of participants in Mida. Other research methods, used to varying degrees, included transect walks and participant observation.

Participation in ASSETS resulted in instrumental learning (task or skills-oriented learning) and communicative learning (understanding what others mean when they communicate with you, understanding, questioning, and negotiating cultural and normative values), as described in the transformative learning theory. Instrumental learning outcomes included: learning new information about the forest and the species within; learning skills related to planting trees; and learning about the connection between deforestation and aridity. Communicative learning outcomes included confronting local cultural norms and speaking out for conservation. ASSETS participants took a variety of new actions on conservation issues after participating in the program, including planting trees on their farms, starting nurseries, and confronting those involved in illegal activities in the forest.

There was a sharp contrast between ASSETS participants and non-participants with regards to their opinion of the forest; after participating in ASSETS, many people expressed a new and enthusiastic support for the forest. However, ASSETS participants generally had no more ideas about how to "help" the forest than did non-participants, and many participants did not feel that the Arabuko-Sokoke Forest was under threat.

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# Glossary of Terms

| | |
|---|---|
| *Askari* | Swahili for *guard* or *warden* |
| ASFMT | Arabuko-Sokoke Forest Management Team |
| ASFADA | See FADA |
| ASSETS | Arabuko-Sokoke Schools and Eco-Tourism Scheme |
| *Casuarina* | A fast growing exotic tree planted as a cash crop in Kenya |
| DANIDA | Danish International Development Agency |
| *Kaya* | A sacred forest |
| *Kipepeo* | Swahili for *butterfly*; the name of a community conservation project near the Arabuko-Sokoke Forest |
| KSH | Kenya Shilling, the exchange rate was approximately 65 KSH to $1 CAD at the time this research was conducted |
| KWS | Kenya Wildlife Service |
| FADA | Forest Adjacent Dwellers Association (also Arabuko-Sokoke Forest Adjacent Dwellers Association); a local organization that is to represent residents in the PFM process |
| IUCN | The World Conservation Union |
| *Mazungu* (pl. *wazungu*) | Swahili term for Caucasians |
| NABU | Naturschutzbund Deutschland, the German partner of BirdLife International |
| PFM | Participatory Forest Management |
| NGO | Nongovernmental organization |
| *Shamba* | Swahili for *farm* |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |

# Chapter 1 Introduction

## 1.1 Background

The Earth's biological diversity (biodiversity) is increasingly under threat from human populations – through over-exploitation, pollution, habitat degradation, and large-scale habitat conversion (Norton-Griffiths 1996). Humans have always influenced their environment, but these impacts have intensified dramatically in recent decades as a result of a variety of local, national, and international forces, including changes in farming practices, population growth, road construction, structural adjustment, and globalization (Brandon *et al.* 1998). According to the IUCN (World Conservation Union) the current species extinction rate is estimated at 100 to 1000 times higher than historical background levels (IUCN 2006). Currently, 20 percent of described mammal species, 12 percent of bird species, 31 percent of amphibian species, and some 8390 plant species are described as threatened (IUCN Red List 2006).

In the face of a potentially unprecedented loss in species and habitats, the number of protected areas has expanded dramatically since the 1970s (Chape *et al.* 2003), to a total of over 44,000 protected areas worldwide (IUCN 2006). Many of the largest and most famous protected areas are found in sub-Saharan Africa, including Kruger National Park (South Africa), Zambezi/Victoria Falls National Park (Zimbabwe), and Serengeti National Park (Tanzania). African protected areas are impressive for their size and biodiversity; there are 1254 African protected areas, comprising 210.76 million ha, or 7.11 percent of the continent (UNEP 2002). These protected areas have had some success in conserving biodiversity (Brandon *et al.* 1998), but community support for conservation initiatives is often lacking (e.g. Parry and Campbell 1992; Infield and Namara 2001).

The conservation movement has been rejected by many African communities for a number of reasons. Firstly, conservation policies often have a strong colonial legacy (Hackel 1999). Many African parks were founded by colonial governments to provide hunting and recreation opportunities for Europeans while requiring the expulsion of African residents, leading to a situation where "many colonial subjects came to associate conservation with repression" (Esposito 2002, p. 43). Despite decolonization, government support for protectionist conservation policy remains through much of the continent (Gibson 1999). Furthermore, the modern conservation movement is dominated by European and North American organizations, which, many Africans feel, do not understand or care about African people (Adams and McShane 1992). The sentiment that people are less important than wildlife is widespread (Adams and McShane 1992).

Secondly, the establishment of a national park can have negative impacts on communities within and surrounding the designated area (Ghimire and Pimbert 1997). In addition to forced expulsions, a protected area designation generally prohibits farming and hunting, denying communities economic opportunities and effectively preventing them from upholding their culture (Esposito 2002). Communities surrounding protected areas also incur additional costs from wildlife damage (Norton-Griffiths 1996). Many studies have found that communities surrounding and within protected areas do not support the mandate of the park, harvest illegally, or support the abolition of the park and the conversion of the area to other, non-conservation, uses (e.g. Infield and Namara 2001).

There is a growing consensus that, in order to be successful, conservation initiatives should have the support of local residents (e.g. Ghimire and Pimbert 1997).

Community conservation projects, which attempt to involve residents in the management of wildlife habitat in return for economic or other benefits, are an increasingly popular alternative to traditional conservation approaches (Hackel 1999; Newmark and Hough 2000). The CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) program in Zimbabwe and the ADMADE (Administrative Management Design for Game Management Areas) program in Zambia are well known, but the shift towards community conservation is occurring across Africa (Hulme and Murphree 1999). The ASSETS (Arabuko-Sokoke Schools and Eco-Tourism Scheme) program, for example, aims to encourage the conservation of the threatened Arabuko-Sokoke Forest by providing conservation incentives in the form of secondary school bursaries and by offering forest related educational activities for recipients.

Community conservation projects have inspired hope that the goals of development and conservation can be simultaneously achieved (Adams *et al.* 2004). However, this optimism has dampened with the realization that the results of community conservation initiatives are, at best, mixed. Many scientists have argued that the move towards community conservation has eroded the conservation agenda (e.g. Spinage 1996). Also, despite the ethos of empowerment embedded in community conservation projects, they can reinforce existing power structures, contributing to a less equitable distribution of power within communities (Berkes 2004). Kellert *et al.* (2000) found that the benefits of community natural resource management projects in Kenya were unevenly distributed within the community, and that such projects rarely led to increased awareness or consideration of environmental knowledge by the community.

Furthermore, it is being recognized that protected areas alone cannot guarantee the conservation of species and ecological processes at a larger scale; consideration of the environment and the species within it cannot stop at the park gates. As Brandon *et al.* (1998) state:

> [P]rotected areas are extremely important for the protection of biodiversity, yet requiring them to carry the entire burden for biodiversity conservation is a recipe for ecological and social failure. (p. 2)

In response to the perceived limitations of current conservation efforts, many people now believe that a greater emphasis on individual and social learning is necessary in order to achieve more sustainable environmental outcomes, such as conservation (Finger and Asun 2001). In fact, such learning is tied to greater equity, empowerment and meaningful participation, which are key to successful community-based conservation (Twyman 2000; Diduck and Mitchell 2003; Berkes 2004; Keen *et al.* 2005).

Transformative learning, a theory of how adults learn, is a promising theoretical framework for approaching learning that promotes the social change necessary for sustainable development. The theory describes learning that produces a far-reaching change in the learner (Mezirow 1991, Clark 1993). It considers the process of learning and accommodates the social context within which learning occurs (Merriam and Caffarella 1999). Given the potentially powerful relationship between participation and learning in environmental management, some researchers have begun to apply transformative learning theory to the study of public involvement in environmental assessment (e.g. Sinclair and Diduck 2001; Fitzpatrick and Sinclair 2003), but the theory has not yet been applied to community participation in conservation.

## 1.2 Problem Statement

Access to education is a serious challenge facing many Kenyan children. A primary school education is technically free, but there are a number of associated costs including books, uniforms, and exam fees that put this education beyond the reach of some children. Secondary school accessibility is even more problematic; annual fees for one child are often higher than some families earn over an entire year. Secondary school completion rates are low, as many students cannot afford to complete their education and are forced to dropout. For many Kenyans, harvesting and selling natural resources like timber and animal products remains one of their few options to generate income for school fees and other expenses, and environmental destruction in the country is intensifying. In this context, the ASSETS program was initiated as a means of providing families with assistance for secondary school fees while simultaneously encouraging the conservation of the threatened Arabuko-Sokoke Forest.

## 1.3 Purpose Statement

The purpose of this study was to examine learning through participation in the ASSETS program and the role of such learning in contributing to conservation efforts by participants, both within and outside the Arabuko-Sokoke Forest.

## 1.4 Research Objectives

This study explored the following objectives:

1) To consider the types of public participation in community conservation projects and document different mechanisms that attempt to involve communities.
2) To examine if learning has occurred through participation in ASSETS, that is, if perceptions of conservation and attitudes towards the forest have changed as a result of this participation.

3) To examine the extent to which this learning has been transformative, that is, if it has resulted in changed behaviours, such as a greater consideration of environmental concerns and increased action on conservation issues.

4) To identify the characteristics of community conservation projects that facilitate learning.

## *1.5 Research Design and Methods*

### 1.5.1 Participatory approaches to research

This study took a qualitative, case study approach, examining the ASSETS project in coastal Kenya. Field research drew upon the methods of participatory rural appraisal, including methods such as semi-structured interviews and transect walks (Chambers 1994). The methods also incorporated a review of reports and published information, and key informant interviews. Qualitative data analysis was conducted using QSR NVivo coding software (QSR 1999-2002). Conceptually, this research dovetailed the people-centered community approach of populist development with the view of participation as empowerment.

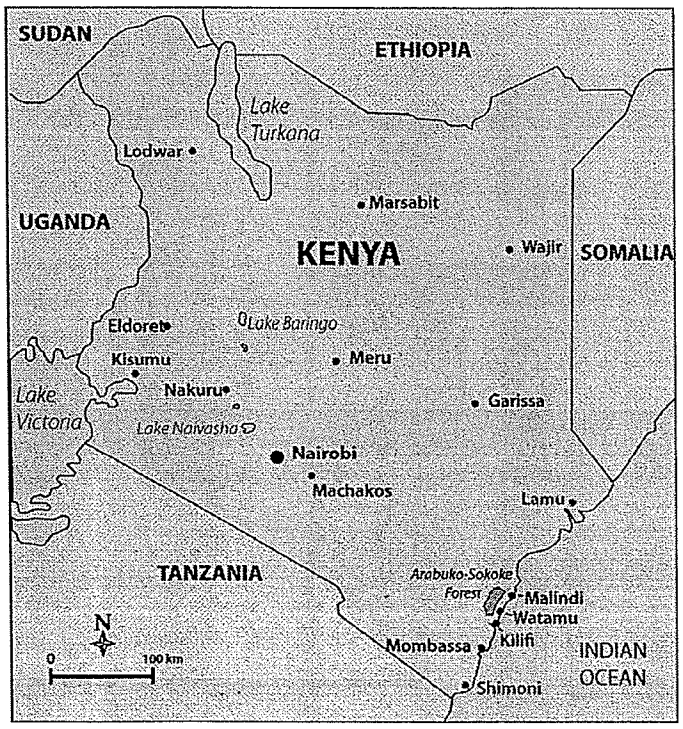

Figure 1: Location of the Arabuko-Sokoke Forest

### 1.5.2 Case study: ASSETS program

This study used a single-case exploratory case study approach, examining the

ASSETS program. The 41,676 ha Arabuko-Sokoke Forest (Figure 1) and neighbouring Mida Creek are biologically diverse and productive systems and home to numerous endangered species (Muriithi and Kenyon. 2002), as described further in Chapter 4. The forest is the largest contiguous tract of coastal forest remaining in eastern Africa, but it is under threat from logging, over-fishing, poaching and pressure for land clearance (ASSETS 2007). In response to these threats, A Rocha Kenya, an international environmental non-governmental organization, initiated ASSETS (Arabuko-Sokoke Schools and Eco-Tourism Scheme). The program provides secondary school bursaries, generated from eco-tourism activities in the forest, to families in need who live within 3 km of the forest or creek. In return for the bursaries, children and their guardians participate in educational meetings related to conservation and the environment, and commit to forest conservation. The origin and management of ASSETS is described in detail in Chapter 4.

## 1.6 Justification of Research and Contributions to Knowledge

This research aimed to promote an understanding of what and how people learn through participation in conservation initiatives, and how this might translate into other changed behaviours for sustainability. There is considerable interest in finding ways to improve and expand the role of communities in conservation (Twyman 2000); through the identification of features that enhance transformative learning this research has the potential to improve both the effectiveness and efficiency of community involvement in conservation. The results have implications for the design of community-based conservation projects by identifying reforms that can facilitate involvement and encourage learning among participants. A number of projects provide financial

incentives for conservation, but the provision of bursaries is fairly unique. This research contributes to an understanding of the comparative effectiveness of different conservation incentives; as, unlike other popular conservation incentives like wells and clinics, bursaries provide an individual, rather than community-wide, benefit. Furthermore, the research is of scholarly importance, as it contributes to transformative learning through the gathering of empirical evidence that extends the theory to the realm of community-based conservation. By undertaking the research in Kenya, this study addresses an identified weakness in the application of transformative learning theory by applying it in a cross-cultural context (Merriam and Caffarella 1999).

## 1.7 Organization

This thesis is organized into seven chapters. The first and second chapters provide an introduction to the project and review related literature. Chapter three describes the methods and research approach, while chapter four describes the case study site and project in more detail. Chapters five and six provide the results and discussion, respectively, while chapter seven provides a summary of the project, with conclusions and recommendations.

# Chapter 2 Biodiversity, Conservation, and the Role of Learning

## *2.1 Biodiversity*

### 2.1.1 Defining biodiversity

There is broad consensus among scientists, environmentalists, and governments that the Earth's biological diversity (biodiversity) should be protected (Wood 2000), but little agreement as to how this conservation could be accomplished (Brandon *et al.* 1998). The term *biodiversity* itself has been problematic – employed by disparate groups with divergent political aims (Brandon *et al.* 1998). The accepted definition of biodiversity has shifted over time, but the concept generally encompasses composition, structure, and function at the species, population, and ecosystem level (Groves *et al.* 2002). For the purposes of this project, I will use the definition from the *Convention on Biological Diversity* where biodiversity is:

> [T]he variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (United Nations 1992)

### 2.1.2 The current state of biodiversity

Between 1970 and 2000, populations of terrestrial species declined by 30 percent worldwide (WWF 2004). In the same period, populations of tropical terrestrial species declined by 65 percent overall and tropical forest cover was reduced by 7 percent (WWF 2004). Extinction is an essential component in the process of evolutionary change, but there are indications that species extinction rates have risen dramatically in recent decades and this rise is likely attributable to human activity (Pimm *et al.* 1995). Many of the most dramatic and rapid extinctions, the loss of tropical island flora and fauna for example, are undoubtedly a result of human activities (Pimm *et al.* 1995).

The calculation of species extinction rates is fraught with uncertainty, as not nearly every species is known and catalogued, and most studies focus on well-known taxonomic groups – vertebrates and vascular plants – that account for a relatively small percentage of the Earth's species compared to invertebrates and micro-organisms. Estimates of current extinction rates are generally based on "species lifespans" calculated from the paleobiological record, but this method is highly uncertain: the fossil record is incomplete, the fossil record is more extensively studied in some regions, some forms of species are better preserved than others, and whereas modern species are often differentiated based on such considerations as colour, song, genetics, or breeding patterns, species in the fossil record are differentiated based on morphology alone (Regan *et al.* 2001).

Some estimates have pegged the current extinction rate at 100 to 1000 times higher than pre-human levels (Pimm *et al.* 1995), while others, citing the underlying uncertainly in these calculations, have calculated considerably lower rates. Regan *et al.* (2001) used fuzzy math to show that mammal extinction rates, sometimes estimated to be nearly 100 times the historical background rate, were likely closer to 36-78 times the background extinction rate when uncertainties were considered. Nevertheless, the fact that there have been 490 recorded animal extinctions and 580 recorded plant extinctions since 1600 (May *et al.* 1995) is concerning for many.

Of the myriad of environmental problems facing our planet, loss of biodiversity and species extinction may have the most enduring impact on Earth, apart from a nuclear holocaust, as "evolutionary processes would not generate a replacement stock of species within less than several million years" (Myers *et al.* 2000, p. 858).

### 2.1.3 The causes of biodiversity loss

Addressing the decline in biodiversity is challenging, the problem is undoubtedly an issue of global concern but the actual loss occurs at a very localized level (Wood 2000), as rare and endemic species are most susceptible to extinction (Pimm *et al.* 1995). Biodiversity loss is occurring most intensely in tropical regions (WWF 2004), especially those areas with a high number of endemic species (Pimm *et al.* 1995). For example, Myers *et al.* (2000) showed that some 44 percent of known vascular plant species and 35 percent of known vertebrate species are confined to only 1.4 percent of the Earth's total land surface. In these so-called "hotspots", biodiversity is severely threatened (Myers *et al.* 2000).

The driving forces behind biodiversity loss are a complex combination of local, domestic, and international factors including: population growth, community isolation, poverty, immigration into a region, macroeconomic policies, the international political economy, domestic market factors, domestic policy failure, weak environmental law and enforcement, unsustainable development projects, and lack of local control of resources (Stedman-Edwards 2000). The three principle proximate causes of biodiversity loss are: 1) the extinction of individual species from overexploitation; 2) habitat modification from point source developments, road construction, and pollution; and, 3) most importantly, large-scale habitat conversion from an undeveloped to a developed state (Norton-Griffiths 1996). The introduction of exotic species has also been an important factor in some regions (Wilcove *et al.* 1998).

## 2.2 Protected Areas

### 2.2.1 Protected areas and biodiversity

The emerging international consensus on biodiversity is that current approaches to conservation are inadequate considering the accelerating scale and scope of the problem (Wood 2000). Accordingly, issues concerning biodiversity have received increased attention at the international level. In 1992, more than 150 countries signed the *Convention on Biological Diversity*, calling in part for an increased focus on conservation through protected areas (United Nations 1992). Subsequent IUCN (World Conservation Union) conferences and the World Summit on Sustainable Development in Johannesburg further indorsed these objectives (Roe and Hollands 2004).

The *Convention on Biological Diversity* defines protected areas as "a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives" (United Nations 1992). The term *protected area* is taken here to includes nature preserves, parks, game reserves, and wildlife sanctuaries. Since the establishment of the first such area, Yellowstone National Park, in 1872, protected areas have become the "cornerstone" of international biodiversity conservation policy (Brandon *et al.* 1998, p. 5). Many protected areas were initially established to preserve areas of scenic appeal or areas rich in wildlife, and to provide recreational opportunities. Over time, the mandate of protected areas has shifted, such that they are now seen as important tools for conserving biodiversity and critical species habitat (Phillips 2003).

The number of protected areas has expanded dramatically since the 1970s; there are currently over 44,000 protected areas worldwide, totaling nearly 14 million $km^2$, or over 10 percent of the Earth's surface (IUCN 2006). The amount of land under

protection now exceeds the recommendations put forward at the 1992 IUCN World Parks Congress (Roe and Hollands 2004), but a number of international organizations have recently called for a further expansion of the protected areas network in hopes of stemming biodiversity loss (e.g. BirdLife International *et al.* 2003). Many observers argue that, if biodiversity is to survive, further protection is needed (e.g. Pimm *et al.* 1995; Myers *et al.* 2000). According to Groves *et al.* (2002): it is "clear that more lands and waters need to come under conservation management if further losses are to be prevented" (p. 510).

However, despite the proliferation of protected areas, biodiversity has continued to decline (Roe and Hollands 2004) and the effectiveness of protected areas in preserving biological diversity remains hotly debated.

### 2.2.2 The protectionist paradigm

The literature on protected areas is expansive and often contentious, especially with regards to Africa. Essentially, the literature can be divided into those who argue for strict, protectionist policies where ecological concerns trump any social considerations, and those who argue that this approach is at best unrealistic (e.g. Wilshusen *et al.* 2002), and at worst, that it "reverberates with echoes of the early colonial era debate (then in the name of 'manifest destiny,' now 'global heritage')" (Alcorn 1994, p. 7).

The basic tenants of the protectionist paradigm, as outlined by Wilshusen *et al.* (2002) in a recent critique, are five-fold:

1. Conservation requires the strictly monitored and enforced protected areas;
2. Conservation is a "moral imperative";

3. Integrated conservation and development projects do not work to conserve biodiversity;
4. "Harmonious, ecologically friendly local communities are myths";
5. Desperate times call for desperate measures.

Numerous studies have been undertaken to assess the effectiveness of protected areas in conserving biodiversity. However, these studies often demonstrate a predictable bias: biologists and ecologists generally argue that parks work but there are not enough of them, while social scientists describe the cultural and social assumptions and consequences of protected areas. Given the innumerable differences between parks across the world, it is simply not possible to answer the question "do parks work to conserve biodiversity" with any certainty: sometimes they do, sometimes they do not.

While accepting that protected areas can preserve biodiversity at local levels, many critics argue that a protected area focused conservation policy is either inappropriate, due to the social and cultural implications of protected areas, or inadequate, as the broad problem of biodiversity loss requires a larger-scale approach.

### 2.2.3 Social impacts of protected areas

The dominant protected area model, based on Yellowstone, and exported around the world, is based on the assumption that society is fundamentally incompatible with nature (Phillips 2003). For this reason, the establishment of a protected area generally requires the expulsion of local residents, with often devastating consequences (Ghimire and Pimbert 1997). Generally, little or no compensation is given for expulsion, and communities are not provided with any strategies for alternative livelihoods (Cernea and Schmidt-Soltau 2003), "[v]ictims experience loss of all kinds of assets – shelter, social

networks, identity, livelihood, rights, and that vague but important piece of social security called place" (Geisler 2003, p. 73).

The number of conservation refugees, people displaced against their will in the name of conservation, is conservatively estimated to number at least 8.5 million people worldwide (Geisler 2003). While some protectionist proponents may argue that some displacements are necessary to conserve biodiversity and protect the "greater good" forced expulsions may, in fact, negatively impact the environment. Relocations contribute to over-population and unsustainable resource use outside of park boundaries, and encourage the shift from migratory lifestyles to permanent settlements, which have a greater impact on the environment (Cernea and Schmidt-Soltau 2003). Even the proponents of protected areas concede that the establishment of protected areas can increase local poverty, as the foreclosure of lands for future development can have "potentially significant economic opportunity costs" (Adams *et al.* 2004, p. 1146).

The irony of protected areas is that, although they are popularly understood as "pristine," this "natural" state is often of anthropogenic origin (Ghimire and Pimbert 1997). In fact, areas especially high in biodiversity tend to be inhabited or associated with indigenous people (Alcorn 1994). For example, rural people have defended and preserved more Amazonian forest than have protected areas (Schwartzman *et al.* 2000). The modern conservation movement may be evicting those people who are responsible for the presence of high degrees of biodiversity in the first place. For those residents who are permitted to stay and live within a protected area, a strict conservation designation generally prohibits hunting, fishing, farming, grazing, and firewood gathering by local

communities, which can prevent communities from upholding their traditional culture (Esposito 2002).

Protected areas have a strong colonial legacy in many African communities, as they were initially established by colonial regimes with little consideration for residents (Esposito 2002). These colonial conservation policies:

> [P]rotracted imperial hegemony and deprived local populations of access to land and natural capital...[these] schemes tarnished the concept of environmental protection, as over time, many colonial subjects came to associate conservation with repression. (Esposito 2002, p. 54)

Despite decolonization, the colonial era neglect of local residents in the name of conservation continues in many regions (Ghimire and Pimbert 1997), and some observers consider the pervasive role of Western-based conservation organizations in the developing world to be a new colonialism: eco-colonialism (Alcorn 1994). At the policy level, the biological issues associated with protected areas are given much more prominence than human issues; people receive "by far less legal protection and financial resources than [those] provided for the preservation of non-human species" (Cernea and Schmidt-Soltau 2003, p. 42).

A protectionist policy entails a strong role for government authorities in conservation. This situation, some observers argue, limits effective management given the bureaucratic nature of some governments (Hess 2001). According to Hess (2001), protected areas should not belong to governments, but "to those communities that have the greatest stake in them"(p. 180). Also, relying on governments to enforce conservation assumes that the government will act in the best interest of all its citizens, and "[ignores] the possibility that the military might use conservation as an excuse for territorial control and ethnic cleansing." (Wilshusen *et al.* 2002, p. 21).

It is being increasingly recognized that, if conservation initiatives are to be successful, they will need to have greater support from local residents. Some studies have shown that support for conservation by residents is related to the level of benefit they derive from it (e.g. Infield 1988) and this link is strongest when the benefits are more tangible (Gadd 2005). Negative opinions of conservation are often related to conflicts with wildlife (e.g. Parry and Campbell 1992), as well as negative encounters with park staff (Infield and Namara 2001).

### 2.2.4 Inadequacy of protected areas

Notwithstanding the social costs of protected areas, their role as the primary tool to prevent biodiversity loss has also been questioned. Some studies have found that parks do work to conserve biodiversity. For example, based on an analysis of 93 parks in 22 tropical countries, Bruner *et al.* (2001) concluded that protected areas were effective in protecting tropical biodiversity, by stopping land clearing, and reducing hunting, logging, and grazing. However, despite the proliferation of protected areas since the 1970s, the rate of worldwide biodiversity loss has not declined (Roe and Hollands 2004).

In the face of continuous human growth and industrial expansion, protected areas will likely become the last refuges of a number of species. However, a key component to biodiversity is function (Groves *et al.* 2002) and it is not reasonably possible to designate all those habitats required to sustain landscape and ecosystem function as "protected," especially with migratory species. If a rapid decline in biodiversity is to be averted, conservation must move beyond simply gazetting protected areas and embrace a broader concept of landscape conservation. According to Adams and Thomas (1996):

> "[N]ot all conservation interest can be represented within protected-area systems, and the management of the wider environment will have

> implications both for protected areas (at risk of ecological isolation and species extinctions), and for the potential for the maintenance of natural diversity at a regional scale. The management of ecosystems in these unprotected landscapes will depend on the success with which conservation goals are built in into economic development plans." (p. 140)

The conservation movement should shift from its exclusive focus on protected areas and embrace a broader policy of ecosystem conservation and more sustainable use. In order for this to be achieved, the wider population must begin to consider conservation in their day-to-day activities and biodiversity must not be seen as something that exists solely within the well-defined boundaries of a park.

## 2.3 Emergence of a Community Approach

With the emerging popularity of the "sustainable development" concept in the late 1980s, coupled with a growing recognition of the limitations of strict protectionism, the practice of conservation is becoming more inclusive. Human development and biodiversity loss are being recognized as linked problems requiring a coordinated response (Adams *et al.* 2004). The old "command and control pathology" (Holling and Meffe 1996) is giving way to new approaches such as community-based conservation, co-management, and collaborative management.

For Ghimire and Pimbert (1997), this new focus on community participation emerges from a growing recognition that:

> "Rural people deserve to have access to the resources required to meet their basic needs, economic safety and, where possible, upward social mobility. In other words, conservation programmes are only valid and sustainable when they have the dual objective of protecting and improving local livelihoods and ecological conditions" (p. 3).

The fundamental characteristics of the "new conservation" paradigm include:

- Protected areas with broad social, economic, recreational, and conservation objectives;
- An increased role for local people as partners, beneficiaries, and leaders in conservation;
- A recognition that broad scale requirements for conservation need to be balanced with local concerns;
- Greater inclusion of traditional ecological knowledge, along with scientific perspectives (Phillips 2003).

This approach to conservation is understandably appealing, as it seems to reconcile the conflict between anthropogenic and biocentric values. The shift towards more participatory approaches to conservation is occurring in many jurisdictions, especially Africa (Hulme and Murphree 1999). In practice, community conservation programs employ a wide variety of tools, like educational programs, micro-development projects, and programs to reduce wildlife damage to crops (Infield and Namara 2001), all designed to foster a more positive view of wildlife and conservation in the target community. Almost invariably, the programs provide economic incentives for conservation (Hackel 1999) by allowing communities to profit through trophy hunting, tourism, or employment.

One approach that is becoming increasingly popular are "tourism revenue-sharing" schemes. Essentially, these projects use funds generated from tourism (often eco-tourism) to "buy" support for conservation from local residents. This support can come in numerous forms, such as the construction of clinics and schools, drilling of wells, and funding of a wide range of local projects.

Given the favour participatory and community approaches have gained among international donors, many conservation organizations have adopted the parlance of community conservation, but have changed little else. The theory and practice of community conservation are firmly rooted in ideas of participatory management, but "many participatory approaches to conservation have failed to achieve meaningful participation in practice" (Campbell and Vainio-Mattila 2003, p. 417). The term "community conservation" is used very broadly, to describe situations where communities are granted complete autonomy over land and resources, to situations that Arnstein (1969) would describe as little more than tokenism.

### 2.3.1 The effectiveness of community conservation

Although the new paradigm for conservation has gained broad acceptance, there are growing concerns that while attempting to do everything – satisfying the requirements of communities and biodiversity – community conservation is failing both people and nature. According to Brandon *et al.* (1998), we must recognize that "[t]he win-win solutions promulgated by those desperate to advocate cost-free development do not exist" (p. 8).

After years of experimentation with community-based conservation there is no clear evidence that such approaches effectively preserve biodiversity (Nagendra *et al.* 2004). Zimbabwe's CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) and Zambia's ADMADE (Administrative Management Design for Game Management Areas) are two of the best-known community conservation projects. However, despite the attention they have received in the literature, ADMADE was in practice a top-down program that failed to meet its social goals (Gibson and

Marks 1995) and while CAMPFIRE has received some positive evaluations it did not devolve any actual decision making authority to communities (Murombedzi 1999). According to Murombedzi (1999), "CAMPFIRE is not community-based natural resource management, as is usually argued, but stands at present as a partially decentralized programme of wildlife conservation" (p. 292). As such, "the conditions for effective preservation of nature, namely, representativity and persistence, are unlikely to be met [through CAMPFIRE]" (Virtanen 2003, p. 187).

In an analysis of community based natural resource management projects in Kenya, Nepal, and the United States, Kellert *et al.* (2000) found that there were "serious deficiencies" (p. 705) in the projects with regards to both social and environmental indicators, which were much more pronounced in the Kenyan and Nepali contexts. Kellert *et al.* (2000) assessed equity, empowerment, conflict resolution, knowledge and awareness, biodiversity protection, and sustainable resource utilization and found that the Kenyan project failed to achieve broad empowerment and led to an uneven distribution of benefits, with power and benefits often concentrated in certain groups (Kellert *et al.* 2000). The project did not attempt to incorporate traditional ecological knowledge, and conflict between people and wildlife did not decline (Kellert *et al.* 2000). Furthermore, socioeconomic goals were given precedence over the concerns of biodiversity, and the project "rarely functioned as a more effective alternative to state controlled protected area management or traditional wildlife conservation" (Kellert *et al.* 2000, p. 711). Lastly, the project did not effectively promote sustainable resource use by the communities; pressure to exploit natural resources actually increased in some instances (Kellert *et al.* 2000).

In their study of participants in a community conservation project near a national park in Uganda, Infield and Namara (2001) found that community attitudes to the park were more positive in communities that had received intensive community conservation programming. However, nearly half of the respondents said they saw no benefit to living near the park, despite having received seven years of programming, and demands for access to natural resources in the park increased after the program (Infield and Namara 2001). The authors found that, although some community members changed their attitudes towards conservation and wildlife, they did not change their behaviour, as illegal activities within park boundaries continued, resulting in a decline of large mammal populations (Infield and Namara 2001).

In their study of tourism revenue-sharing projects near Ugandan national parks, Archabald and Naughton-Treves (2001) found that many respondents reported "improved" attitudes towards conservation. In contrast, Boonzaier (1996) found that local attitudes towards conservation were in fact more "cynical and ambivalent" (p. 307) following the establishment of a protected area with an eco-tourism and a revenue-sharing project near the Richtersveld National Park in South Africa.

## 2.4 Conservation in Kenya

Although Kenya is home to an impressive 8,000 species of plants (Kameri-Mbote 2005), the country is most famous for its diverse fauna – elephants, giraffes, leopards, lions, cheetahs, zebras, wildebeest and more. Conservation efforts from the colonial period to the present have been primarily focused on these large, charismatic animals.

In Kenya, land was traditionally held in common (Seno and Shaw 2002). Different groups and tribes were not granted land title *per se*, but rather, they had the right to use the land for hunting, gathering, and grazing (Seno and Shaw 2002). At a

larger scale, the system was based on inter-group reciprocity; groups would allow each other to use their land, to ensure that they too would have access to resources in times of hardship (Eriksen *et al.* 1996). This system was resilient and adaptive, as communities and their livestock could migrate in response to a changing environment, an important consideration in drought prone regions (Field-Juma 1996).

At the Berlin Conference of 1885, a number of European powers met in order to partition Africa into "spheres of influence." The area now known as Kenya was allotted to the British and in 1895 they established it as the East Africa Protectorate. At its peak, the British Empire spanned the African continent and beyond, but due to climatic, logistic, health and other considerations, European settlement was only contemplated in a handful of regions. The central Kenyan highlands, which enjoy a cooler climate than the African savannah, were deemed appropriate for agricultural production and large tracts of land were made available for European farmers. In 1920 the East African Protectorate became a colony, and was named *Kenya* after the country's highest peak: Mount Kenya.

Many of Kenya's modern patterns of land tenure and distribution can be traced to the 1932-1934 *Kenya Land Commission Report*, a comprehensive survey commissioned by colonial authorities to describe the location of different African tribes across the country. Areas that appeared to be unoccupied or under-occupied (a difficult distinction to make since many groups were nomadic) became Crown Land. The various Kenyan "tribes" were assigned "Native Reserves" based on their location as documented in the report and the most productive agricultural areas were reserved for European settlers (Eriksen *et al.* 1996).

Although some Europeans did come to Kenya to farm (many were actually white South Africans), compared to other British colonies, Kenya attracted a slightly different breed of "settler": the rich, privileged, and adventurous. By 1907 British East Africa was home to six Lords, with more to follow (Clayton 2005). The antics Lord Delamere and his cohorts, in an area of the country that came to be known as "Happy Valley" were legendary. In England, white Kenyans gained a reputation for eccentricity, if not debauchery, and the colony became something of a place for the rich to come and play. The safari – the big game hunt – was an important part of settler life in the colony (e.g. Huxley 1987).

Kenya was the big-game hunter destination of choice. By the late 19th century, East Africa was already home to an "intense" trade in wildlife products like ivory and rhino horn (Kock 1995, p. 242), leading to an 1898 regulation to control indiscriminate hunting. Following the 1900 *London Convention for the Preservation of Animals, Birds and Fish in Africa* the administration of the East African Protectorate established two formal game reserves, the rather unoriginally named Southern Game Reserve and Northern Game Reserve. The inhabitants of the area were not expelled, as "[t]he communities in the areas covered by the game reserves were [...] expected to co-exist harmoniously with wild animals" (Matheka 2005 p. 240).

In 1907 the British administration established the Game Department to oversee the regulation and licensing of sport hunting as well as the collection of ivory revenue (Spinage 1996). During this period, hunting by indigenous Africans was regulated by local district authorities.

Not surprisingly, the harmonious coexistence between people and wildlife envisioned by colonial authorities did not materialize (Matheka 2005). Conflicts between people and wildlife grew steadily in the 1920s and 1930s, especially among pastoralist peoples like the Maasai and the Samburu (Matheka 2005). The mounting tensions between people and wildlife led the colonial administration to found the Game Policy Committee in 1939 (Matheka 2005). The committee's subsequent report resulted in the establishment of Nairobi National Park, the country's first national park, in 1946.

Since that time, the number of parks and protected areas in Kenya has continued to grow. These parks epitomize the classic protectionist stance: people are not permitted to live within the parks; they have no rights to use resources from the park; all consumptive use of wildlife is prohibited; and people are not compensated for wildlife damages to their crops or livestock. After Kenyan independence in 1963, the new government retained much of the structure, personnel, and ideology of the colonial administration's conservation efforts.

Wildlife continues to be an important component of the Kenyan economy. Tourism, which is predominantly wildlife based, is the country's largest source of foreign exchange (Eriksen *et al.* 1996). The industry employs approximately 120,000 Kenyans and accounts for 12 percent of the country's gross domestic product (Sinclair 1990 in Akama 1999). However, apart from those Kenyans employed in the tourism industry, many residents do not benefit from the presence of wildlife or parks (Eriksen *et al.* 1996). For many Kenyans, national parks and the wildlife within are associated with severe negative externalities, as wildlife interferes with economic activities, through crop-raiding (elephants are notorious for this), killing domestic animals, transmitting diseases

to livestock, damaging property, and injuring or killing family members (e.g. Kock 1995; Eriksen *et al.* 1996; Norton-Griffiths 1996; Gadd 2005). There is currently no compensation for wildlife damages, except in the case of human death (Norton-Griffiths 2000).

Since colonial times, conservation in Kenya has been overwhelmingly focused on large animals, rather than plant or habitat conservation, but there are indications that this is changing. In 2001, the Kenyan government banned all harvesting from government forests due to environmental and conservation concerns. However, although 8 percent of the country is officially "protected" (Kock 1995), Kenya is nevertheless facing a myriad of environmental problems, from deforestation, desertification, population growth, to poverty and access to potable water, for which protected areas alone are surely not the solution.

## 2.5 The Role of Learning

In response to humanity's ever-increasing impact on the planet and the ineffective and insufficient nature of our current responses, many are now calling for an increased focus on individual and social learning to achieve more sustainable outcomes (e.g. Finger and Asun 2001; Keen *et al.* 2005). As Keen *et al.* (2005) outlined, "[s]ocial and ecological sustainability ultimately depend on our capacity to learn together and respond to changing circumstances" (p. 6). Learning contributes to the establishment of effective partnerships for environmental management (Maarleveld and Dangbégnon 1999; Keen *et al.* 2005), and learning experiences "re-establish the mental connections between our actions and environments, thus creating pathways for social change" (Keen *et al.* 2005, p. 8).

### 2.5.1 Transformative learning

Transformative learning describes how people construct more dependable interpretations of life, through a process of assessing the context of their beliefs and opinions, seeking informed or negotiated agreement, and making decisions based on the insight they have gained (Mezirow 2000). Critical self-reflection has the potential to lead to social change, through questioning underlying social norms, philosophies and ideologies (Sinclair and Diduck 2001). Transformative learning is different from other theories of adult education in that it focuses on the process and context of the learning, rather than just the learning outcomes (Merriam and Caffarella 1999; Mezirow 2000).

Habermas (1984 *in* Mezirow 2000) describes two primary domains of learning. The first, *instrumental learning*, is task oriented or skills-based learning, and includes learning new information, learning to deduce cause-effect relationships, and learning to share ideas and dialogue (Mezirow 2000).

The second domain of learning, *communicative learning*, includes learning to understand what someone means when they tell you something, and understanding, questioning, and negotiating cultural and normative values. As opposed to instrumental learning, where competency is measured in terms of being able to complete a given task, communicative competence "refers to the ability of the learner to negotiate his or her own purposes, values, feelings, and meanings rather than to simply act on those of others" (Mezirow 2000, p. 10).

Transformative learning occurs by means of a shift in frame of reference (meaning perspective), which are the "structure of assumptions and expectations through which we filter sense impressions" (Mezirow 2000, p. 16). Frames of reference have two components: *habits of the mind* and *points of view.* Habits of the mind are broad,

sociolinguist, epistemic, psychological, and cultural predispositions, and they are expressed as points of view – specific feelings, attitudes, beliefs and judgments that "determine how we judge, typify objects, and attribute causality" (Mezirow 2000, p. 18).

Transformative learning is the process of transforming "taken-for-granted" frames of reference, such that they become, "more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action" (Mezirow 2000, pp. 7-8). Both instrumental and communicative learning contribute to transformations in frames of reference (Mezirow 2000). Ultimately, transformative learning leads to more autonomous thinking (Mezirow 1997).

Mezirow (1994) has devised a linear, though not necessarily step-wise progression to describe the process of transformative learning (after Mezirow 1994, p. 224):

1. Disorienting dilemma
2. Self-examination
3. Critical reflection of your underlying assumptions
4. Recognition that your own feelings are shared with others
5. Exploring options for new roles, behaviours, and relationships
6. Planning a course of action
7. Acquiring the new knowledge and skills needed to implement your plan
8. Trying on of new roles
9. Negotiating relationships – renegotiating existing relationships or establishing new ones

10. Building confidence in yourself and your new role

11. Reintegration into one's life, based on the new perspective

Transformative learning has been investigated in a variety of contexts, from career changes to how people respond to an HIV positive diagnosis (e.g. Courtenay *et al.* 2000; Taylor 1997). Sinclair and Diduck (2001) and Fitzpatrick and Sinclair (2003) applied transformative learning theory to environmental management in the context of environmental assessment, but the theory has not been extended to participation in conservation.

Public participation in environmental management can provide opportunities for non-formal education, such as transformative learning (Fitzpatrick and Sinclair 2003). In the context of biodiversity conservation, a process of transformative learning could lead participants in a community conservation project to begin to question their attitudes towards conservation. For example, a participant who formerly had negative views of wildlife and conservation could begin to question the validity of those assumptions. This could potentially lead to a transformation of meaning scheme, where the participant decides that conservation of biodiversity is a laudable goal and, correspondingly, makes changes in their own life to help protect biodiversity. Even the process of benefiting financially from conservation could lead to critical reflection about the value of conservation – someone who had previously assumed that conservation was of no benefit people might change this assumption.

## 2.6 Conclusion

The continuing decline of biodiversity is one of the most serious threats facing our planet. Traditional protectionist approaches to conservation have not stemmed this loss and have been criticized for failing to consider the social impacts of protected areas.

Community conservation has emerged as a more inclusive approach to conservation, recognizing the needs of society and nature, and encouraging greater community input into the planning and management of conservation projects. However, the effectiveness of such projects has been questioned, and there is growing concern that community approaches are diluting the conservation agenda. Many now believe that a greater focus on learning is necessary in order to achieve more sustainable environmental outcomes, such as biodiversity conservation.

# Chapter 3 Research Approach and Methods

## 3.1 Introduction

This research took a qualitative, case study approach, focusing on learning by parents/guardians who participated in the ASSETS program in Kaembeni sub-location, Kilifi District, Kenya. The research was interactive and adaptive in nature, meaning that the methods and case selection were modified somewhat to suit field conditions (Nelson 1991). Methods were drawn from the participatory rural appraisal "tool box", relying primarily on semi-structured interviews, but including transect walks, key informant interviews and a review of relevant secondary data (Chambers 1994). In total, interviews were conducted with 22 ASSETS participant families, 14 non-participants, and 12 key informants.

## 3.2 Qualitative Research

Qualitative research, as described by Creswell (2003), uses multiple methods that are generally interactive and participatory, with a strong emphasis on building researcher rapport with the participants. Qualitative research is field-based and concerned with understanding "a particular social situation, event, role, group or interaction" (Creswell 2003, p. 198). Qualitative research is process oriented, and focuses on the experiences and perceptions of the participants, "the researcher enters the informants' world and through ongoing interaction seeks the informants' perspectives and meanings" (Creswell 2003, p. 198).

Qualitative research is most appropriate in situations where little is known about the phenomena under study. A qualitative approach to transformative learning allowed me to gather diverse, complex, and context specific data. In fact, the overwhelming

majority of empirical studies addressing transformative learning use a qualitative approach (Taylor 1997).

## 3.3 Case Study Approach

The case study is one of the strategies of inquiry used in qualitative research. My research employed a single-case exploratory case study approach as described in Yin (2003). The case study approach was appropriate for this project, as the project addresses a contemporary phenomenon that is heavily context-dependant (Yin 2003). Furthermore, as the researcher, I had no control over behavioural events, and the questions being asked were "how" or "what" questions (i.e. what did people learn through participation in community conservation and how did this translate into changed behaviours), satisfying Yin's (2003) criteria for the use of a case study as a research method.

### 3.3.1 Case study selection

The case study project was selected according to the following criteria:

1) The length of time that the project had been in operation
2) The degree of biological diversity and conservation interest in the region
3) The presence of communities with a history of resource use in the area
4) A history of local disagreement with regards to environmental management

The ASSETS program was chosen because it has been in operation since 2002 and a number of participants have been involved since its inception. Furthermore, it satisfied my criteria for case study selection because the Arabuko-Sokoke Forest and adjacent Mida Creek have high levels of biodiversity and there is local disagreement with regards to the management of the forest (Gordon and Ayiemba 2003).

### 3.3.2 Study site selection

The ASSETS program currently provides secondary school bursaries to students who attended one of five primary schools near the forest or creek, with plans to expand the program to all 36 schools within 5 km of the forest or creek by 2015. I chose to focus on the parents/guardians of one school only, as this allowed me to spend more time in the community, to gain a better understanding of the local context, and build relationships and establish trust with the participants. That study site school was chosen according to the following criteria:

1) *When ASSETS began at that school*: learning emerging out of the ASSETS program may be related to the amount of time the participant had been involved in the program. Choosing a school that became involved with ASSETS early on ensured I could interview ASSETS participants who had been involved in the program for a number of years;
2) *The total number of ASSETS recipients*: choosing an area with a greater number of bursary recipients ensured I would have sufficient data;
3) *Distance of the study site from Malindi/Watamu*: I was based in the Watamu area, as was my translator, and Malindi and Watamu are the largest centers near the Arabuko-Sokoke Forest and the nearest point from which I could purchase food, water, and other supplies;
4) *Accessibility of the site by public transportation from Watamu;*
5) *Other conservation projects operating in the area*: where there are a number of projects in operation it could be more difficult to link conservation behaviours/attitudes with ASSETS specifically;

6) *Anticipated response of participants to researchers*: some communities receive an inordinate amount of attention from aid and conservation organizations, residents from these communities would likely be unwilling to meet with a researcher unless they were paid.

By these criteria, Bogamachuko Primary School was chosen as the study site, as it was one of the original three ASSETS schools, and because it has the highest number of recipients of any of the schools (see Appendix A for a comparison between the five ASSETS schools).

I was partially based at *Mwamba* a field study centre operated by A Rocha Kenya in Watamu. Although I had to travel some 2 hours to my study site on the other side of the forest, having a base in Watamu allowed by to access a number of important stakeholders, including: A Rocha staff; representatives from the Forest Department; the forest warden; the residents' association; and representatives from non-governmental organizations, many of whom have offices at the Gede Forest Station, some 10 km from Watamu.

### 3.3.3 Forest or Creek?

The ASSETS program is aimed at conserving both the Arabuko-Sokoke Forest and adjacent Mida Creek, however, this research dealt largely with the forest only as Bogamachuko is located on the western side of the forest, not the eastern side (which borders the creek). On the whole, few ASSETS participants are located near Mida Creek.

## *3.4 Research Methods*

This research borrowed from many of the methods of participatory rural appraisal (PRA). PRA, which grew out of a dissatisfaction with institutionalized and reductionist approaches to gathering information, is a growing family of methods characterized by its

"bottom-up" approach and its focus on empowering local people and communities (Chambers 1994). Participatory approaches have gained tremendous currency among activists, developmental and non-government organizations. Participation, however, is not a panacea. As Cooke and Korthari (2001, p. 3) argue: "tyranny is both a real and potential consequence of participatory development." There is a growing concern among some scholars and practitioners that the empowering and democratic language of participatory approaches like PRA can be co-opted and used to impose an externally motivated agenda upon people and communities (Cooke and Korthari 2001).

In additional to these theoretical considerations, there are practical concerns about the implementation of participatory approaches, such as defining *who* constitutes a community. Furthermore, participatory approaches demand a great deal of time and energy from participants; in some cases participatory approaches seem to be used by organizations as a way of passing on research or program implementation costs to "participants" (Cooke and Korthari 2001).

This research project did not strictly follow the PRA approach, rather, I chose from among the PRA "tool-box" of methods, as outlined and justified below. These methods included approaches such as semi-structured interviews and transect walks. Other methods utilized in this study included key informant interviews, and a review of secondary data. While conducting this research I remained mindful of the potential limitations of PRA methods.

### 3.4.1 Semi-structured interviews

I used semi-structured interviews in order to gain a more personal perspective of the participants' understanding of conservation, their feelings about wildlife and living

near a protected area, how they perceive their attitudes and behaviours have changed as a result of participation in ASSETS. Furthermore, the semi-structured interviews provided participants with an opportunity to share their thoughts about the program in private.

Semi-structured interviews are similar to unstructured interviews in that the researcher is free to probe the respondent for further information and ask follow-up questions if the respondent raises an interesting point (Bernard 2002). However, unlike unstructured interviews, the researcher follows a written interview guide/schedule resulting in an interview process that produces comparable and reliable qualitative data, while retaining a certain degree of flexibility (Bernard 2002).

Semi-structured interviews were the primary source of data in this study. Interviewees were selected from among the parents/guardians of ASSETS bursary recipients in Kaembeni, whose child(ren) had attended Bogamachuko Primary School (Appendix B Participant Interview Schedule). I obtained a list of ASSETS participants in Kaembeni from A Rocha, and then obtained directions to these homesteads from the teachers and Head Mistress at Bogamachuko Primary School. After obtaining directions, I would simply visit the homestead, introduce myself and my translator, and make arrangements to conduct an interview. Thanks to the school officials, the participants were aware that I was present in the area and that I might visit them at some point. During the course of my research I was able to visit most ASSETS families in the Kaembeni area

The interviewees were generally the recipient child(ren)'s parents, but they were occasionally the child's non-parent guardian, such as the child's older brother. The extent to which the interviewees had participated in ASSETS activities/meetings varied

and was recorded. In some instances, the parent who had been attending the ASSETS activities was unavailable and the other parent was interviewed instead.

In addition to ASSETS participants, a number of Kaembeni residents who were not ASSETS recipients were also interviewed, in order to provide a baseline or snap-shot profile of attitudes towards conservation and the forest in the community at large (Appendix C Non-participant Interview Schedule). These non-participants were selected to correspond with the general location of the ASSETS participants in relation to the forest. As an additional validity check, a handful of ASSETS parents in the Mida community, on the other side of the forest from Kaembeni, were also interviewed. In total, 19 interviews with ASSETS parents in Kaembeni were conducted, representing 27 recipient students. Three interviews were conducted with ASSETS participant families in Mida, and 14 Kaembeni residents who were not ASSETS participants were interviewed.

In some instances, interviews were conducted with an individual in private, but given the communal manner in which people live, interviews were sometimes conducted with more than one person present, either both parents in the case of ASSETS participant families, or the adult members of the household in the case of the non-ASSETS families. In instances where more than one person was present, I attempted to record who said what, but the respondents tended to confer among themselves prior to answering any questions, so there was essentially only one response for the group. Both male and females were interviewed, however, interviews were conducted during the day and often only females were present at the home during this time. As such, more females than males participated in this study. All participation in this research was voluntary and anonymous.

A number of topics were addressed in the semi-structured interviews, including:

- *Tourism*: ASSETS bursaries are derived from eco-tourism funds. Questions pertaining to tourism in the forest were used as "warm-up" questions, and to provide some data regarding the participants' knowledge of the ASSETS program.
- *General questions about the forest*: These questions included topics such as the interest in forest conservation, problems associated with the forest, and participant attitudes and values related to conservation and the forest.
- *Resource use in the forest*: I attempted to address the issue of resource use in the forest. However, given the illegal nature of resource extraction, few people would openly admit to involvement in such activities. I tried to focus the discussion on attitudes and values, and how these changed as a result of learning through ASSETS, rather than the issue of illegal activities. If a participant alluded to illegal activities I would attempt to follow-up with further questions, but I did not make this the focus of my study.
- *ASSETS*: Questions regarding the ASSETS program related to participant perceptions of the goal of ASSETS, criteria for participation in the program, and participant understanding of why their children were selected to receive bursaries.
- *Activities, Learning and Behaviour Change*: A number of questions pertained to how, what, and why people learned or did not learn through participation in ASSETS, these included any changes in attitudes or behaviours resulting from participation.

- *Additional*: Information was collected regarding an individual's involvement in other conservation projects, their willingness to become more involved in ASSETS, and their opinion regarding the reporting of poachers. Some of these questions were included at the request of A Rocha staff.

Interviewees included adults only. Although ASSETS provides funding for children, the program is ultimately aimed at changing the behaviours of their parents/guardians, as it is the adults who make resource-use decisions for the family, and the children are often away at boarding school. Furthermore, transformative learning is a theory of adult education, maturity and critical reflection are prerequisites for transformative learning (Merriam 2004), and children are not considered capable of undergoing transformative learning.

### 3.4.2 Transect walks

A transect walk is a systematic walk with local residents through an area of interest: "observing, asking, listening, discussing, identifying different zones, soils, land uses, vegetation, crops, livestock... seeking problems, solutions, and opportunities" (Chambers 1994 p. 960).

My research involved transect walks with some of the interviewees in Kaembeni, in addition to semi-structured interviews. These walks helped me gain insight into the participants' resource use activities and their attitude towards conservation. I was unable to conduct as many of these walks as I had hoped, as many community members have had negative encounters with forest officials in the past and were very apprehensive about entering the forest. Furthermore, given the culture of the region, many people wanted to host their new guests (myself and my translator) at their own homes.

### 3.4.3 Participant observation

Participant observation is a field-based strategy of inquiry that "involves immersing yourself in a culture and learning to remove yourself every day from that immersion so you can intellectualize what you've seen and heard, put it into perspective, and write about it convincingly... [it] turns fieldworkers into instruments of data collection and data analysis" (Bernard 2002, p. 324). Bernard (2002) describes three different roles that researchers can take on in the field: complete participant; participant observer; and complete observer. During my stay in Kenya, I opted for the second role: participant observers "who participate in some aspects of life around them and record what they can" (Bernard 2002, p. 327).

Although I was based in Watamu, not Kaembeni, I travelled to Kaembeni for periods of 3-5 days at a time, camping at Bogamachuko Primary School, and participating in local life as much as possible. Additionally, when I visited people at their homes for the interviews, I tried as much as possible to help them with in their daily activities: gathering firewood, fetching water, preparing diner, picking vegetables, grinding corn into corn flour. Through these activities, I was able to interact with the research participants in a more casual setting, to better understand their lives, build trust and rapport, and help them with their often overwhelming array of daily tasks. If the topic of the environment/forest arose I recorded the details as soon as possible.

Unfortunately, I was unable to attend any of the ASSETS parents' meetings at Bogamachuko as my field season did not correspond to any of the parents meetings. However, I was able to attend a parents' meeting at Mida Creek.

### 3.4.4 Key informant interviews

Interviews were conducted with a number of key informants in order to gain a better perspective and understanding of the ASSETS program, as well as conservation and development issues in the region. In total, 12 key informants were interviewed, including A Rocha staff, government officials, and representatives from non-governmental organizations (Appendix D).

### 3.4.5 Review of secondary data

This research involved an extensive review of published information pertinent to the research topic. These sources included: academic journals and books; government policies and publications; publications from non-governmental organizations; and newspaper articles. Fortunately, the Gede Forest Centre had a library with many reports, theses, and government and NGO documents that would have otherwise been very difficult to locate. Topics included in the literature review related to: biodiversity loss globally and in Kenya; the history of conservation and protected areas; forests and forestry policy in Kenya; and the social and economic situation in Kenya. This review was conducted prior to, during, and following my field season, and this information was used for triangulation and verification purposes to increase the reliability of the study. An overview of this literature is included primarily in Chapter 2, though it was also used to inform Chapter 4.

## *3.5 Data Analysis*

Data analysis for this study was undertaken as outlined in Creswell (2003). The process of data analysis began in the field with the organization and transcription of the data. I then read through the data to gain a general sense of the emerging trends, concepts, and patterns prior to beginning the coding process. Data analysis was

conducted using QSR NVivo coding software (QSR 1999-2002). Emerging themes were then further elaborated upon, before making generalizations and forming a broad-scale interpretation of the meaning of the data. Unless otherwise indicated, the results as presented represent the opinion of the majority of respondents.

## 3.6 Results and Dissemination

Prior to my leaving Kenya I held a community "wind-up" with my research participants in Kaembeni. During this meeting I shared some preliminary results with participants, thanked them for their time and assistance, and shared with them some drinks and snacks. A "Thank-you" newsletter, containing a more detailed discussion of the results, was subsequently sent to research participants (in both English and Swahili) along with some photos from my stay. A technical report was submitted to A Rocha and other local partners in Kenya. The main output of this study is my Master's thesis and subsequent article for submission to an academic journal. Following the completion of the thesis, I will send a copy to A Rocha Kenya as well as the forest station library.

## 3.7 Limits to Validity

There are some limitations to validity associated with research in a cross-cultural context, such as language and communication barriers. English and Swahili are the official languages of Kenya, although English is widely spoken in urban areas and by younger Kenyans, Swahili is prevalent in coastal areas where I conducted my research. Furthermore, some Kenyans speak an indigenous language as their mother tongue and are more comfortable communicating in this language. The majority of residents surrounding the Arabuko-Sokoke Forest are Giriama people, speaking a Bantu language closely related to Swahili. A translator fluent in English, Swahili, and Giriama was

employed, allowing the participants to use the language in which they are most comfortable; the majority chose Giriama.

Working with a translator is always challenging, as there is the possibility that the translator will introduce his or her own biases into the study (Borchgrevink 2003). Translators may provide the responses that he or she believes the researcher wants to hear, or provide responses that he or she personally believes are correct. In order to minimize translator biases, I carefully prepared the translator prior to the interviews, stressing that I am interested in everything the participant says, even those details that seem superfluous. I probed the translator for further clarification if I suspected that some information was absent. Following each interview, I reviewed the participants' responses with the translator (debrief), an important step in limiting translator bias (Borchgrevink 2003).

Another potential threat to validity was my presumed affiliation with A Rocha, the organization administering the ASSETS program. Participants may have felt inclined to give a favourable review of ASSETS for fear that a negative assessment could result in the termination of their participation in the program and the financial benefits they derive from it. While conducting my fieldwork, I stressed that I was not affiliated with the organization, that all responses are confidential, and that a negative assessment of the program will not result in the participants' termination from the program.

Although I rarely asked about illegal resource use specifically, discussing the forest was a sensitive topic for many participants. I sensed that some participants felt uneasy answering certain questions, for fear their responses could get them in trouble with government or conservation officials. Some participants claimed to have been

harassed or assaulted by forest guards in the past, and were keen to avoid all contact with forest officials. In one instance I was told that a few years prior, someone had come asking questions about the forest, and that the people they spoke to were subsequently arrested. In order to minimize this threat to validity, I stressed that I was not associated with government, park, or conservation organizations and that all responses were confidential.

After I had spent a few weeks in the community word had spread that I was not affiliated with the government and could be trusted. Individuals I had interviewed early on told others that I was no threat, and the teachers and the Head Mistress of Bogamachuko Primary School, respected members of the community, had told parents and other community members that they should trust me and tell me the truth. By the time I left Kaembeni, community members would stop me along the main street, eager for me to come and visit their home so they could answer my questions as well.

# Chapter 4 Research Site

At the time this research was conducted, the ASSETS program was awarding bursaries to students graduating from one of five primary schools near the Arabuko-Sokoke Forest. As outlined in Chapter 3, this research focused primarily on the families of ASSETS students who had attended Bogamachuko Primary School, on the western edge of the Arabuko-Sokoke Forest, in Kaembeni Sub-location (Figure 2). In addition to describing the Arabuko-Sokoke Forest and explaining the ASSETS program in more detail, this chapter outlines the social and environmental situation in Kaembeni.

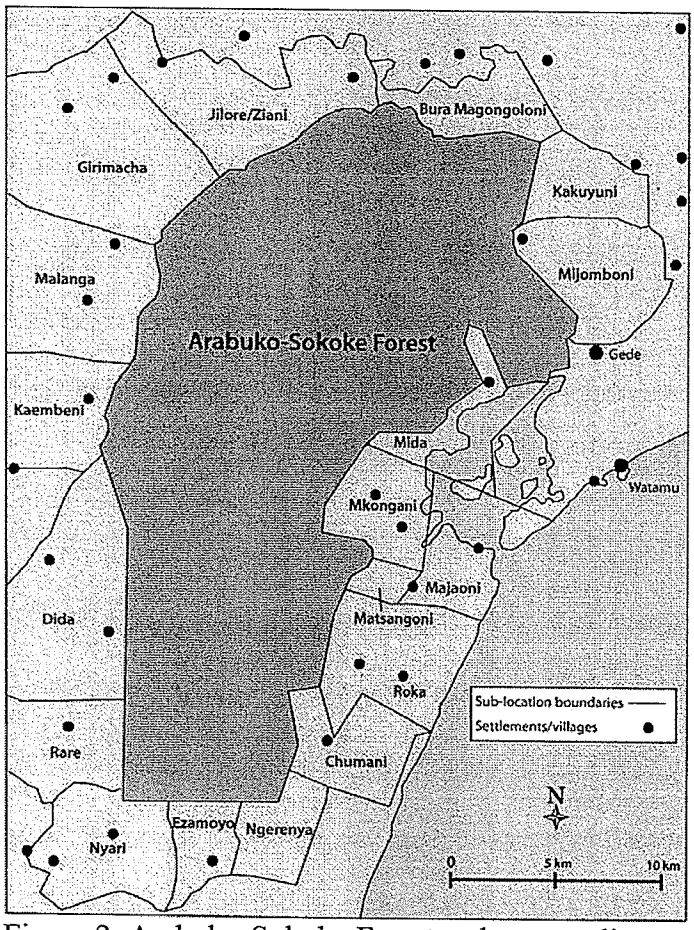

Figure 2: Arabuko-Sokoke Forest and surrounding districts

## 4.1 Kaembeni

### 4.1.1 Poverty, health, and social issues

Kenya is divided into a number of administrative jurisdictions; Bogamachuko Primary School is located in Kaembeni Sub-Location, Mwahera Location, Vitengeni Division, Kilifi District, Coast Province. Bogamachuko is the only primary school in Kaembeni, an administrative division home to an estimated 6200 people (5954 as of the

end of 2005) (Deri 2006). In 1997, households in the area had an average number of 13 people per homestead (Maundu *et al.* 1997), generally consisting of the head of the household (often the grandfather), his wives (polygamy is quite common), his sons, and his son's wives, and his grandchildren.

The Kilifi district is among the poorest regions in Kenya and residents are confronting a myriad of social and environmental challenges. The Community Capacity Support Programme, a poverty reduction program funded by the Danish International Development Agency (DANIDA), identified the main problems facing the community as access to clean water, health care, and orphans. The local government administrator identified food and education as the main concerns for area residents. These problems are only compounded by extremely high birth rates in the area. The observation made by the Arabuko-Sokoke forest warden that "here, people are uncontrollably giving birth," seems an apt description; between 1999 and 2005 the population of Kaembeni grew nearly 60 percent (through new births, not immigration).

According to the records of the local administrator, approximately 14 percent of Kaembeni residents were classified as "vulnerable" as of the end of 2005 (475 orphans, 205 widows, and 173 sick or disabled residents). Many of the residents are having difficulty meeting their basic food needs; World Vision began emergency relief food distribution in the area in 1996. As of July 2006, over 40 percent of Kaembeni residents were reliant on these distributions, which consist of 6-10 kg of maize and 3-4 kg of beans per head per month.

Approximately half of the community members have access to piped water, meaning that there is a water vendor within a reasonable walking distance from their

home. However, many residents cannot afford the cost of piped water (priced at 2 KSH (3 cents) per 20-litres) and opt for pond water instead (Deri 2006). Prior to the El Niño rains of 1997-98, fresh water was readily available from a number of water holes in the Arabuko-Sokoke Forest, however many of these ponds became salinized with the heavy flooding that accompanied El Niño. Many residents still rely on the remaining fresh-water holes, but this water is likely very high in water-borne diseases, as the water holes are commonly used to water livestock.

Basic health care services are available at a clinic in the neighbouring sub-location, a 6 km walk, but many residents rely on traditional doctors and medicines from the forest. According to local government administrators, the NGO Plan International is purported to begin working on health related issues in the community in the future.

### 4.1.2 Education in Kenya

The educational system in Kenya is made up of primary school (standard 1 to standard 8 – equivalent to grades 1-8) and secondary school (form 1 to form 4 – equivalent to grades 9-12 in the Canadian system). The Kenyan government implemented the "Free Primary Education" program in January 2003, but, although school fees have been eliminated, ancillary fees like school uniforms, textbooks, supplies, activity fees, and exam writing fees, make primary school education unaffordable for some families.

Secondary school education is even less affordable. In addition to the ancillary fees charged in primary school, the minimum annual tuition for secondary school children in Kaembeni in 2006 was 8,500 KSH (Kenya Shillings). However, most children in rural areas must board at their school, raising the annual cost to at least 20,900

KSH per year, not including ancillary fees. Given the high number of orphans in Kenya, the low gross national income and large family size, it is not surprising that secondary school is a struggle for many Kenyans. Nationally, secondary attendance is 50 percent in total, and 40 percent for girls (UNICEF 2005)

In 2006, Bogamachuko Primary School had 1086 students (576 boys and 510 girls), 66 of whom were in Standard 8 (45 boys, 21 girls). In recent years, approximately 60 percent of those who finished primary school at Bogamachuko and qualified for secondary school have actually attended. Of the forty percent who do not go on to secondary school, a handful join polytechnics, trade schools where students may learn trades like mechanics or tailoring, but many of students who qualify for secondary school simply cannot attend.

### 4.1.3 Community organizations

A number of international non-governmental organizations have had a presence in Kaembeni, especially following the devastating El Niño rains of 1997-98. These organizations include the World Vision relief food program and DANIDA funded nutrition and farming related programs. There are 22 registered community based organizations operating in Kaembeni, although not all of these are equally active. The organizations, which vary in size from 15 to 50 members, are generally "self-help" organizations including small businesses, village banks, "merry-go-rounds", and religious groups. A "merry-go-round" is a group where each member contributes a set amount each meeting, and a different member gets to keep the sum of contributed money each meeting.

### 4.1.4 Land use and economy

The Arabuko-Sokoke Forest was set aside as a forest reserve in 1932, when the area outside the boundary was still well forested. The Giriama settled the east side of the Arabuko-Sokoke Forest in large numbers in the 1950s and 1960s (ASFMT 2002). In Kaembeni, many of the farms were only cleared within the last 20 years and many residents do not have formal title to their land.

The residents of Kaembeni are predominantly small-scale, subsistence farmers. The area is semi-arid and not especially well suited for agriculture, but area residents grow maize, beans, cassava, with some oranges, mangoes, and other crops on farms often only a few acres in size – the original homesteads in the area were 12 acres (Maundu 1993), and the mean farm holding was 6.9 ha in 2002 (ASFMT 2002). The population density in Kilifi District grew from 47 to 60 people per $km^2$ between 1989 and 1997; the average farm-holding per capita is now only 0.5 ha (ASFMT 2002).

The farms surrounding the Arabuko-Sokoke Forest are drought prone and many families lost a number of their palm and fruit trees between 2000-2006 (Plate 1). Soils are largely exhausted, as land is rarely allowed to lie fallow, and maize, the most commonly planted crop and the local staple food, is very nutrient depleting. Most families keep chicken and goats on a small scale, and wealthier families have cattle, but tsetse flies limit cattle production. Livestock and farm production is generally for domestic and local consumption; facilities to package, store, and distribute agricultural products on a commercial basis are absent.

The forest is home to a number of animals including elephants, wild pigs, baboons, and monkeys. There is a marked decrease in food production with proximity to the forest. A 1993 study of communities on the eastern edge of the forest found that, in

some areas, loss from animal raids accounted for up to 81.8 percent of potential farm income (Maundu 1993). Due to the problem animals, people living near the forest edge have been forced to rent land in other areas and many have abandoned their *shambas* altogether (Maundu 1993). An electric wire fence has seen been installed on the eastern edge of the forest, but not in Kaembeni, though people have cleared swaths of land in excited anticipation of its arrival.

In 1993 approximately 75 percent of area households had at least one member with regular income from employment (Maundu 1993). Additionally, many residents obtain limited income from farm products such as weaving thatch (*makuti*), tapping palm "wine," and selling oranges, cashews, and mangos (Maundu 1993). Many area residents supplement their income by obtaining "free" resources from the forest. In 1993, approximately 61 percent of those residents interviewed obtained their fuelwood from the forest; 37 percent obtained poles (for building construction); approximately 17 percent obtained food from the forest (mushrooms, wild fruits, wild vegetables) (Maundu 1993).

## 4.2 Arabuko-Sokoke Forest

The coastal forests of eastern Africa, stretching from northern Mozambique to southern Somalia, are home to a disproportionately high number of endemic species: 550 species of plants; 6 species of mammals; 9 species of birds; 26 species of reptiles; 2 species of frogs; 79 species of butterflies; greater than 86 species of snails; and numerous species of millipedes (Burgess *et al.* 1998). Many of these species are highly threatened, with numerous species exhibiting single-site endemism (Burgess *et al.* 1998). Due to their incredible diversity, these forests have been interpreted as relics of ancient Pan African rainforests, and "not the result of recent evolution" (Burgress *et al.* 1998 p. 337)

Myers *et al.* (2000) identified the eastern arc and coastal forest complex of Kenya and Tanzania as one of the top 25 biodiversity "hotspots" worldwide – areas exceptionally rich in biodiversity experiencing significant habitat loss. Of the original 30,000 $km^2$ of coastal forest, only 2,000 $km^2$ remains intact, and these forests have the highest concentration of endemic vascular plant and vertebrate species per kilometer of remaining primary habitat of any area investigated worldwide (75 endemic vascular plant species per 100 $km^2$, and 6.1 endemic vertebrate species per 100 $km^2$) (Myers *et al.* 2000).

Within the coastal forests of eastern Africa, endemism is especially high in the 41,676 ha Arabuko-Sokoke Forest (Burgess *et al.* 1998). The forest is home to some 600 species of plants, 52 species of mammals, and 270 species of birds, including six globally threatened species (ASFMT 2002). In fact, the Arabuko-Sokoke Forest is ranked as the second most important forest for bird conservation in mainland Africa (ASFMT 2002). Soil and climatic conditions vary across the forest, leading to three fairly distinct forest regions: the dry, closed-canopy lowland evergreen *Cynometra* forest; the more open woodland *Brachystegia* forest; and the dense mixed forest.

Before the 20$^{th}$ century, the Arabuko-Sokoke Forest was considerably larger than its current boundaries (ASFMT 2002). Kenya became a colony in 1920 and European timber merchants began operating in the Arabuko-Sokoke Forest shortly thereafter (ASFMT 2002). Since that time, the composition of the forest has changed dramatically, due to heavy selective logging of commercially valuable hardwood species like *muhuhu* (*Brachylaena huillensis*), used in the woodcarving industry.

The Arabuko-Sokoke Forest was designated as a Crown Forest in 1932, and subsequently a Forest Reserve in 1944. As a forest reserve, the Arabuko-Sokoke Forest is managed in accordance with Kenya's forest policy, which requires forest preservation for watershed protection, forest products, and conservation purposes. However, this policy is often poorly implemented (Muriithi and Kenyon 2002). Additionally, as there has been an indefinite ban on timber harvesting within government forests since March 2000, there are no legitimate timber-based forest industries in the Arabuko-Sokoke Forest. A portion of the Arabuko-Sokoke Forest is an IUCN (World Conservation Union) Category II National Park, though this has little bearing on the day-to-day management of the forest. The forest is bordered by the Malindi-Watamu Marine National Reserve, an IUCN Category VI area managed for sustainable resource use (IUCN-WCMC and WCPA 2006b).

### 4.2.1 Sacred values of the forest

The main tribe surrounding the Arabuko-Sokoke Forest is the Giriama (or Giryama). The Giriama, one of the nine ethnic groups that form the larger tribal group known as the *Mijikenda*, inhabit the coastal area of Kenya from Malindi south to Mombassa. The original residents of the forest were the hunter-gatherer *Sanya*. Upon the arrival of the farming/cattle keeping Giriama, the Sanya moved into the forest and subsequently to the northeast corner of the forest where a small number continue to live today (Maundu 1993; ASFMT 2002).

Forests often have an important spiritual significance in Kenya. The Kikuyu people, for example, value Mount Kenya and its forests as the home of their god *Ngai*, and in the coastal areas some forest remnants, known as *kaya*, are used for religious

ceremonies (Waithaka and Mwate 2003). According to an elder member of the community, a *kaya* is a specific forested area where spirits live. Clan elders go to the *kaya* pray for rain, others can go to pray for something if they have a problem, but the practice is generally used to bring rain. Shrines are specific, large trees like a baobab (and sometimes caves) that are home to spirits; people visit a shrine to pray. Shrines can be found within *kaya* or locally, and are not limited to forested areas.

The *kaya* of the Giriama people are not located in the Arabuko-Sokoke Forest, but some distance away in Kaloleni. In an extensive study conducted in the early 1990s, it was found that, although the Arabuko-Sokoke Forest was likely of spiritual significance at some time in the past, today the "ritual and sacred value of the forest appears to be almost non-existent." (KIFCON/Forest Department 1992).

The elders interviewed indicated that although the Arabuko-Sokoke Forest may still have some spiritual significance for those living near the forest, that component of the culture is dying, and the sprits are leaving or becoming inactive from this neglect:

> "During the olden times, people used to go there several times. But now, since they're ignoring the culture of the shrines they go in the forest and cut down the big trees and the spirits go away. Spirits attract rain, and since they can't stay on young or small trees they go away. The rain has reduced because people have cut down the shrines... We feel that spirits are there, but people have not been going with smoke and rose water, so the spirits are inactive. We believe that the spirits are there, because sometimes you might go in the forest and lose your direction. That's the sprits' work; they can release your eyes so you can see the foot paths if they feel like it." (Elder and traditional doctor in Kaembeni)

Among the middle-aged and younger members of the community, including ASSETS parents and those non-participants interviewed, the Arabuko-Sokoke Forest seemed to have no spiritual significance. The imperative to conserve trees (the home of the spirits) to ensure plentiful rains also appears to have been lost.

### 4.2.2 Forest use and threats

The area surrounding the Arabuko-Sokoke Forest is home to approximately 104,000 people (ASFMT 2002). Although most subsistence use of the forest is illegal, it is not uncommon. Many residents use forest resources to meet their basic needs, and domestic consumption of firewood, small mammals, mushrooms, fruits, and poles is ongoing (ASFMT 2002). Commercial use of the forest is a greater concern to conversationalists; there is evidence of illegal logging and charcoal burning within the forest (Plate 2).

Despite a ban on forest harvesting, both domestic and commercial use of the forest appears to be increasing (ASFMT 2002). The growth of international tourism in the region may have exacerbated the problem of over harvesting, as wood is in demand for hotel construction and for carvings for tourists (Muriithi and Kenyon 2002).

Notwithstanding a recent move towards participatory forest management in the Arabuko-Sokoke Forest, there is a long history of conflict between forest adjacent residents and the forest conservation movement. Crop raiding by forest animals, especially elephants and wild pigs, is a major concern among forest adjacent communities; a 1993 study found that nearly 60 percent of residents interviewed would be happier if the forest were not there at all, and over 80 percent of residents supported clearing the forest for farming (Maundu, 1993). This is of concern to conservationists, as some Kenyan politicians have been known to excise portions of forest reserves for political or personal gain.

Plate 1: Kaembeni-area farm after years of drought

Plate 2: Charcoal burning site within the Arabuko-Sokoke Forest

Forest mammals are an important source of protein for households near the Arabuko-Sokoke Forest (FitzGibbon *et al.* 1995). Although Kenyan law does not permit the harvesting bush-meat, FitzGibbon *et al.* (1995) found that 62.7 percent of interviewed households living adjacent to the forest, and 33.3 percent of interviewed households living within 2 km of the forest were engaged in hunting and trapping activities within the forest. Similarly, although there is a ban on harvesting mangroves from Mida Creek, mangroves continue to be an important resource for households in the region, used for house construction, charcoal, boat building, fuel wood, furniture making, and medicinal applications (Dahdouh-Guebas *et al.* 2000).

### 4.2.3 Forest management

In 1991, the Arabuko-Sokoke Forest came under joint Kenya Wildlife Service (KWS) and Forest Department (FD) management with the signing of a Memorandum of Understanding (MoU). Since then, the MoU has expanded to include the Kenya Forestry Research Institute and the National Museums of Kenya. Under the Arabuko-Sokoke Forest *Strategic Forest Management Plan 2002-2025,*the Arabuko-Sokoke Forest Management Team (ASFMT) is to be responsible for forest management. The ASFMT includes the four government departments, as well as representatives from communities and non-governmental organizations. Joint KWS/FD teams conduct forest management activities, such as forest patrols.

With a new forest act in 2006, the Kenyan government is backing away from an exclusionist "fences and fines" approach and embracing a more participatory approach to forest management. The Arabuko-Sokoke Forest is the pilot site for participatory forest

management in Kenya. Participatory forest management (PFM) as it is envisioned in the Arabuko-Sokoke Forest is intended to be a multi-stakeholder process, with increased partnerships between governmental organizations and civil society, and greater transparency and openness in forest management decisions.

Community members are represented in the PFM process by the Arabuko-Sokoke Forest Adjacent Dwellers Association (ASFADA, or FADA). The area surrounding the Arabuko-Sokoke Forest was divided into 6 zones, 10 people are chosen from each zone to represent their area in FADA; the 6 executive positions in FADA are chosen from these 60 representatives through an election held among these 60 people. People can become a member of FADA by means of a forest user group. According to a FADA representative, there are some 300 user groups around the forest, ranging from 20 to 40 members per group. A person can no longer join FADA as an individual.

Dida and Kahingoni are the pilot sites for PFM in the Arabuko-Sokoke Forest. A number of projects have been implemented in these two sub-locations, but they have yet to extend to other sub-locations. In Kaembeni, which borders Dida, few people had heard of FADA or PFM.

### 4.2.4 NGO involvement and conservation initiatives

The Arabuko-Sokoke Forest has received considerable attention from international conservation organizations, most notably BirdLife International (formerly known as the International Council of Bird Preservation), an alliance of conservation organizations concerned about bird conservation that has been working in the Arabuko-Sokoke Forest area since 1983. NABU (Naturschutzbund Deutschland), the German partner of BirdLife, financed extensive construction and renovations at Bogamachuko

Primary School in 2003 to promote forest conservation. BirdLife International, with the European Union and the UK Department for International Development, contributed to the development of the Arabuko-Sokoke Forest *Strategic Forest Management Plan 2002-2007*, and continues to support Arabuko-Sokoke Forest conservation.

The United States Agency for International Development (USAID), through its Forestry Range Rehabilitation and Environmental Management Strengthening program (FORREMS), supported "enhanced forest management" in the Arabuko-Sokoke Forest. This project, which was administered by Nature Kenya (formerly the East Africa Natural History Society) on behalf of the Arabuko-Sokoke Forest Management Team, worked on a number of issues included participatory forest management and nature-based enterprises.

### 4.2.5 Nature-based enterprises

There are a number of nature-based enterprise projects surrounding the Arabuko-Sokoke Forest, the oldest and most well-known is the Kipepeo Butterfly Project. Kipepeo has operated adjacent to the Arabuko-Sokoke Forest since 1993. The project trains farmers living near the forest to raise butterflies, the pupae of which are sold on the international market. The project also operates a butterfly visitor and educational centre at the Gede ruins, a popular tourist site in coastal Kenya (Plate 3).

Rearing butterflies depends on the continued existence and health of the forest habitat, giving farmers an incentive to conserve the forest. The cumulative community earnings now exceed $130,000 and the project has had no impact on wild butterfly populations (Gordon and Ayiemba 2003). Overall, the programme has had "significant

positive effects on both livelihoods and attitudes [towards the forest]" (Gordon and Ayiemba 2003, p. 82).

Kipepeo has gained international recognition for its success, and a number of other nature-based enterprise projects have since been introduced in the area, including beekeeping, silkworm farming, mushroom farming, aloe farming, tourist "bandas" (tourist campsites), and eco-tourism guiding. At the time the research was conducted, a representative from Nature Kenya was most optimistic about the potential for beekeeping – there were over 1900 farmers in 110 beekeeping groups involved – however, beekeeping projects in Kenya have had a mixed record (Maurice 2006). Silkworm and aloe farming and the tourist *bandas* were still in the preliminary stages of development at the time the research was conducted.

Despite the array of organizations and projects working in and around the Arabuko-Sokoke Forest, residents in Kaembeni have been largely untouched by these projects, apart from the construction of Bogamachuko School. Some community members were unofficially involved in Kipepeo (they brought their pupae to a friend/family member who was a Kipepeo participant) and a handful of residents had their own beehives for domestic purposes. There are over 100,000 residents surrounding the Arabuko-Sokoke Forest, and according to a Nature Kenya representative only 3000 or so are actually involved in these income-generating projects. Overall, Kaembeni residents have had relatively little contact with the PFM process and the nature-based enterprises.

## 4.3 ASSETS

### 4.3.1 Program history

In 2001, A Rocha Kenya, the Kenyan affiliate of the international Christian conservation organization A Rocha, initiated the ASSETS program (Arabuko-Sokoke Schools and Eco-tourism Scheme) in communities surrounding the Arabuko-Sokoke Forest and Mida Creek. ASSETS uses funds generated from eco-tourism activities in the forest and creek to fund secondary school bursaries for children.

Concerned about declining biodiversity, A Rocha perceives the threats to the forest and creek – illegal logging, poaching, pressure for land clearance, over fishing – as a result of poverty and a lack of education about the forest and its importance (A Rocha 2005). The experience of the Kipepeo project operating adjacent to the Arabuko-Sokoke Forest since 1993, suggested to A Rocha that "economic benefits can change attitudes" towards forest conservation among adjacent residents (Jackson 2002).

Coastal Kenya is a popular tourist destination among Europeans and other international tourists (Plate 4). The Arabuko-Sokoke Forest and Mida Creek have been identified as potential eco-tourism sites, as they are convenient day-trip destinations for tourists staying at the popular beach resorts in Malindi and Watamu, a 10-15 minute drive from the forest/creek. Although visitation rates are increasing, and the sites are described in tourist guidebooks such as *Lonely Planet*, the tourist potential of these sites remains largely untapped (Fitzpatrick *et al.* 2003; A Rocha 2005). In the past, the communities surrounding the Arabuko-Sokoke Forest and creek saw little in the way of benefits from tourism, except for those employed as guides or by tour operators. It is now felt that there is potential to expand eco-tourism activities in the forest and creek in such a way that local communities benefit to a greater extent (A Rocha 2005).

Plate 3: The Kipepeo visitor centre

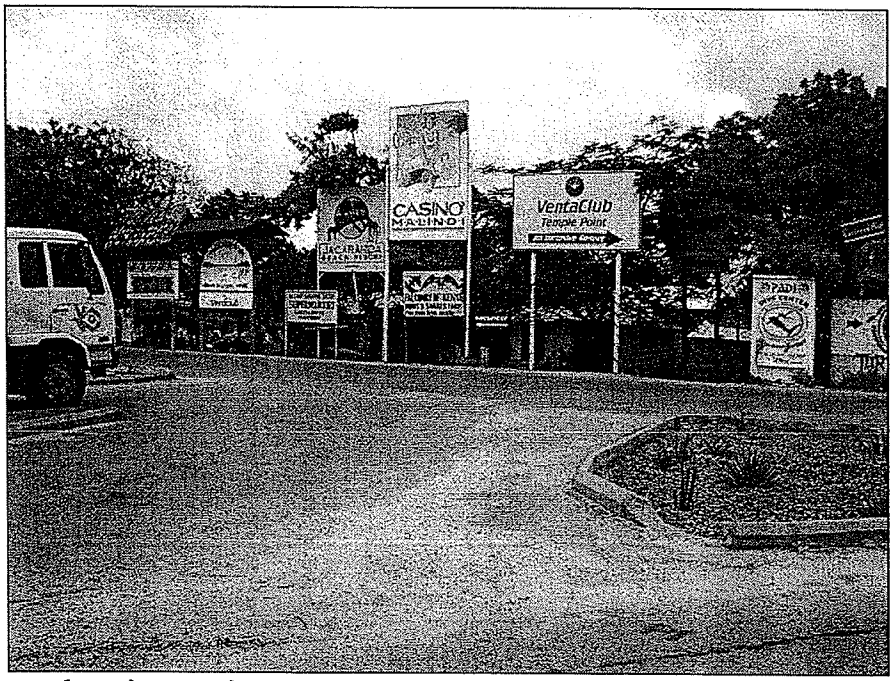


Plate 4: Hotel signs welcoming tourists near Watamu, Kenya

A Rocha proposed a "three-pronged" approach to addressing the conservation of the Arabuko-Sokoke Forest through eco-tourism by:

- Developing appropriate tourism ventures in the forest
- Developing the local capacity to manage these ventures (such as training forest guides).
- Establishing a mechanism by which tourism profits could benefit the local community, to "reinforce positive attitudes [towards the forest] through better education." (Jackson 2002).

The idea for a bursary scheme came out of discussions between the director of A Rocha Kenya, officials with FADA (Forest Adjacent Dwellers Association), and other local officials involved in conservation and environmental education. In other areas, eco-tourism profits have been used to benefit communities through the construction of community projects such as clinics, boreholes, or schools. But, in the opinion of A Rocha Kenya director Colin Jackson, "those only benefit a small number of people, and after a few years people have forgotten where the benefit came from," so although these projects may deliver important community services, they are not especially effective in terms of promoting conservation.

Given that secondary school fees had been identified as a major community concern (Julius Katana, personal communication 2006), a bursary scheme was suggested. This idea resonated with A Rocha and other local conservation and education officials and ASSETS was born. According to A Rocha, a bursary scheme has the potential to promote conservation, encourage more positive attitudes towards the forest and creek, address a noted local concern (school fees), and avoid some of the problems associated

with traditional bore-hole or clinic type projects – namely that they are forgotten within a few years time. As stated by A Rocha Kenya director Colin Jackson:

> "The beauty of a bursary fund is that the money can be generated in one place and be distributed equitably around the forest. It's small amounts, regularly, over a period of four years or more. The recipients are then open on a long-term basis on having input given about the forest and how to care for it. They have a vested interest in conserving it."

In 2001, FADA conducted a series of 12 awareness raising meetings in communities surrounding the forest and A Rocha was able to piggyback on these meetings to introduce the ASSETS concept to community members. Early ASSETS documents identify the goal of the program as: "to conserve biodiversity and to increase the benefits the local community receives from sustainable eco-tourism activities in Mida Creek and the Arabuko-Sokoke Forest" (Jackson 2001).

### 4.3.2 Project goals

ASSETS aims to reduce pressure on the forest and adjacent creek in a number of ways (A Rocha 2002; ASSETS 2005; ASSETS 2007):

- Bursary recipients and their families must refrain from illegal extraction and harvesting from the forest, therefore reducing the pressure on the forest and creek.
- Providing financial assistance to families lessens their need to harvest illegally.
- The bursaries are funded by eco-tourism. The ASSETS program raises awareness that this income is dependent on a healthy and diverse natural environment.
- Participant families are given seeds in order to plant their own wood lots, lessening their need to harvest firewood from the forest.

- Bursary recipients and their parents participate in a variety of conservation related activities, including videos, games, and facilitated talks, providing numerous opportunities to learn about conservation and the environment.
- By increasing education levels in the region, the program hopes to reduce poverty in the long run, further reducing demand on the natural resources in the forest and creek.

### 4.3.3 Construction of tourist facilities

A Rocha applied for and received a $45,000 USD grant from the GEF (Global Environment Facility)/UNDP Small Grants Programme to launch ASSETS and begin construction of tourist facilities at the Arabuko-Sokoke Forest and Mida Creek, including:

- **Mida Creek Bird-Hide** (Plate 5): a 260-meter boardwalk over the mangrove tidal area ending at a bird-hide, which overlooks a roosting site for some 5000 migrant waders and flamingos. The site, which opened in July 2003, boasts trained, local guides as well as interpretive materials and is becoming a popular tourist site. As of November 2005 the bird-hide had been visited by approximately 3700 tourists, the majority of whom were international tourists. Entrance fees from the bird-hide contribute to the bursary scheme and the site provides additional benefits to the community, as local residents are trained and employed as guides.
- **Arabuko Swamp Tree Platform** (Plate 6): a designated 2 km trail through the Arabuko-Sokoke forest, complete with interpretive signs (Plate 7), ending at a 12 m high viewing platform. The tree platform was opened in August 2005 and overlooks a seasonal swamp home to a number of bird species during the rainy

season. In theory, entrance fees from the platform should generate revenue for bursaries, but as of 2006, A Rocha and Kenya Wildlife Service (KWS) were unable to negotiate an agreement as to how revenue from the tree platform should be collected and distributed; the tree platform has not generated significant income to date.

### 4.3.4 ASSETS project management

In practice, ASSETS is primarily directed by the ASSETS coordinator and other staff and volunteers at A Rocha Kenya. The project management structure, as initially envisioned, consisted of three committees:

1. The Project Advisory Committee: was intended to be a broader, national level committee to provide overall guidance for ASSETS, but according to of A Rocha staff, "it quickly fell by the wayside". As of July 2006, it had not met for 4 years.
2. The Project Implementation Team: was intended to exist for the duration of the GEF/UNDP funding, and was primarily responsible for coordinating the construction of the bird-hide and tree platform.
3. The ASSETS Committee: consisting of members from A Rocha Kenya, the Arabuko-Sokoke Forest Management Team, the Forest Adjacent Dwellers Association, and others, it is responsible for the day-to-day management of the project, including the selection of the beneficiary students. The ASSETS committee continues to meet each term.

At this time, ASSETS participants are not formally represented on the committees.

Plate 5: Mida Creek bird-hide

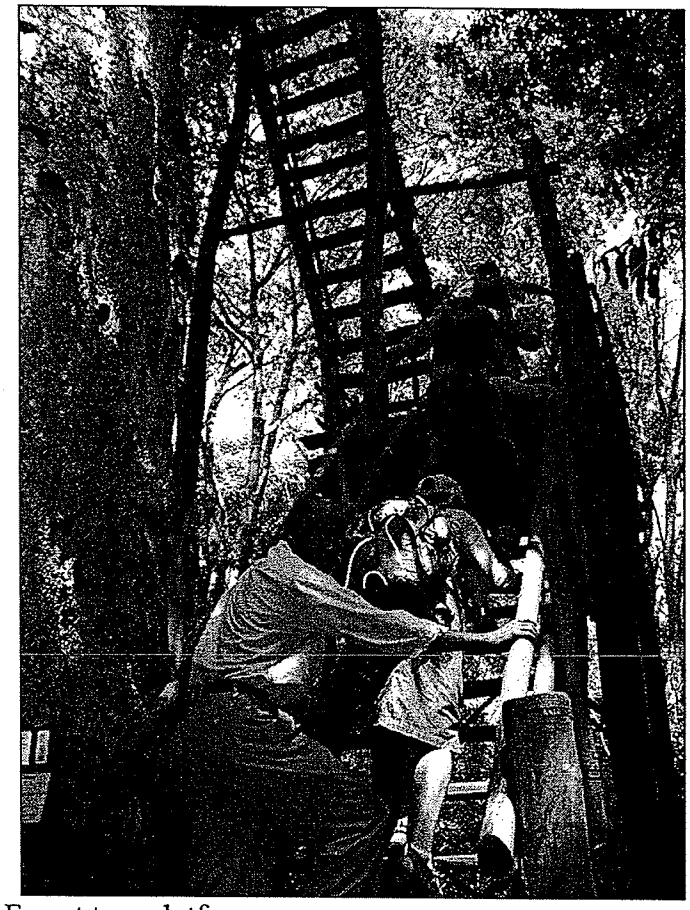

Plate 6: Arabuko-Sokoke Forest tree platform

### 4.3.5 Recipient selection

As of 2006, ASSETS had provided secondary school bursaries to 123 students graduating from five different primary schools, with plans to expand to all 36 schools within 5km of the forest by 2015. Students apply to the program through their primary school (Appendix E Application Form), and recipients are chosen based on academic performance and need (Appendix F Bursary Score Fund). The bursaries range in size, but are generally no more than one third of the students' tuition. The bursaries are generated from tourist entrance fees at the Mida Creek Bird Hide, as well as donations from abroad.

### 4.3.6 ASSETS components

There are a number of components to the ASSETS program; the schematic found in *ASSETS Technical Report, 2004* (Figure 3) is useful for understanding the program and its areas of operation:

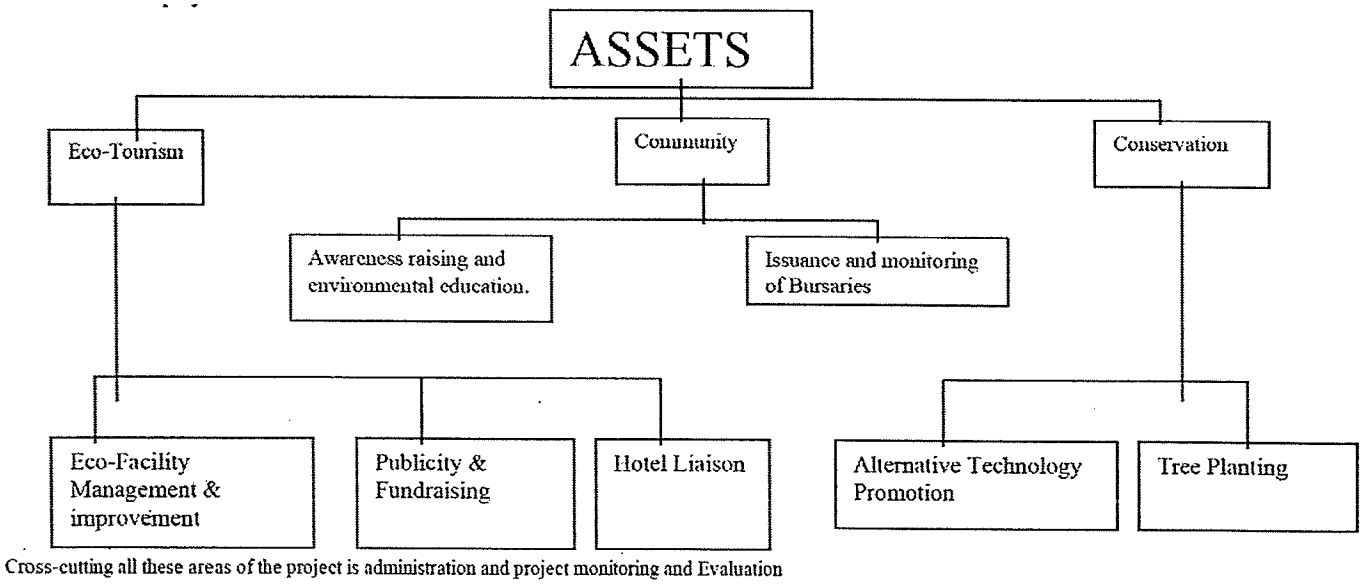


Figure 3: Structure of the ASSETS project (ASSETS 2005)

For ASSETS parents/guardians and bursary recipients, participation in ASSETS involves attending regular meetings and environmental education seminars. For the parents, this is often combined with the issuance of the bursary. The recipient children attend meetings with ASSETS officials each term, where they learn about the Arabuko-Sokoke Forest and participate in conservation related games and activities. The ASSETS students are also members of their school's "Wildlife Club", an extracurricular club where students learn about conservation, wildlife, and the environment.

At this point, ASSETS activities include the program participants only, though ASSETS/A Rocha officials are often present at community events, such as the "Forest Open Day", where they have contact with the wider community (Plate 8). Mechanisms for participation in ASSETS are discussed further in Chapter 5.

### 4.3.7 Appropriate technology

According to the director of ASSETS, "in an ideal situation, we would have regular and close contact with each family, to be able to bring them ideas and technologies, and to help them take [those new ideas/technologies] on". Such technologies and ideas could include: fireless cookers, energy saving *jikos* (stoves), introducing solar technologies, raising the standard of hygiene in kitchens, and organic farming ideas (like growing hot peppers to deter elephants). However, due to financial and personnel constraints, the appropriate technology component of ASSETS has not been extensively developed to date.

### 4.3.8 Tree planting

In 2001, all harvesting from Kenyan government-owned forests was banned due to environmental concerns; residents can now generate significant income from planting

fast-growing trees on their property. From an environmental perspective, planting trees on farms is beneficial as trees can be easily intercropped with other species or grown on grazing land, tree planting generates income, and tree planting lessens the need of families to go to the forest for their wood. During the first two years of ASSETS' operation (2002, 2003) when funds from the GEF/UNDP were available, participant families received seedlings in order to establish a wood lot on their own property, some 4800 seedlings were distributed to ASSETS beneficiaries during 2003 (ASSETS 2005). These consisted of primarily *Casuarina spp.* (whistling pine) a fast-growing exotic species that can be harvested in 3-4 years. Some *Gmelina arborea* (white teak) a fast-growing deciduous tree native to the Indian sub-continent was also planted. Beneficiaries near Mida Creek are involved in mangrove planting – during one such event in April 2004, 1300 mangrove seedlings were planted.

After the GEF funding was finished, new parents no longer received seedlings. Instead, ASSETS initiated tree nurseries at some of its participating schools with the intention of selling the resultant seedlings for profit, planting seedlings on area farms, or giving them to the school to plant on-site. Nurseries were initiated at Mida Primary and Mijomboni Primary, but not established at Bogamachuko due to low water availability at that school. These nurseries are now run down, but there are plans to re-establish tree nurseries, which will include some indigenous trees. According to A Rocha staff member Tsofa Mweni, "we are trying to start a tree nursery – for [parents] and by [parents]. They'll earn money from selling and can do enrichment planting in the forest. They can go and plant the indigenous trees in the forest and some of them in their shambas."

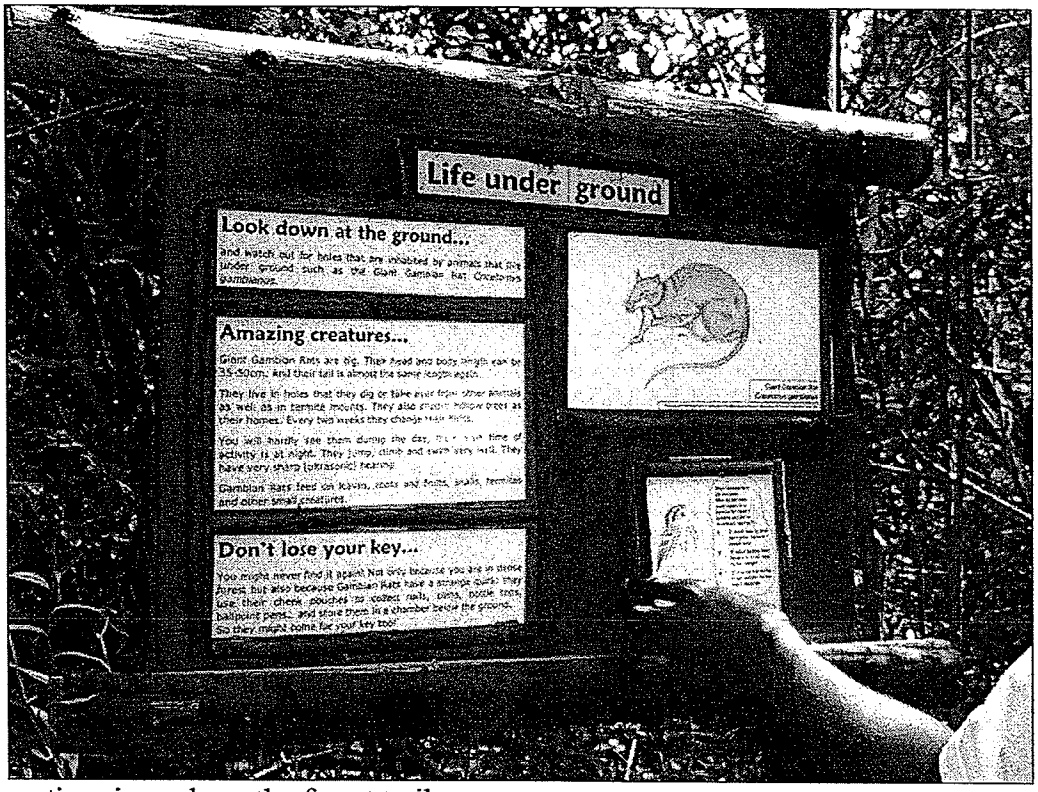


Plate 7: Interpretive signs along the forest trail

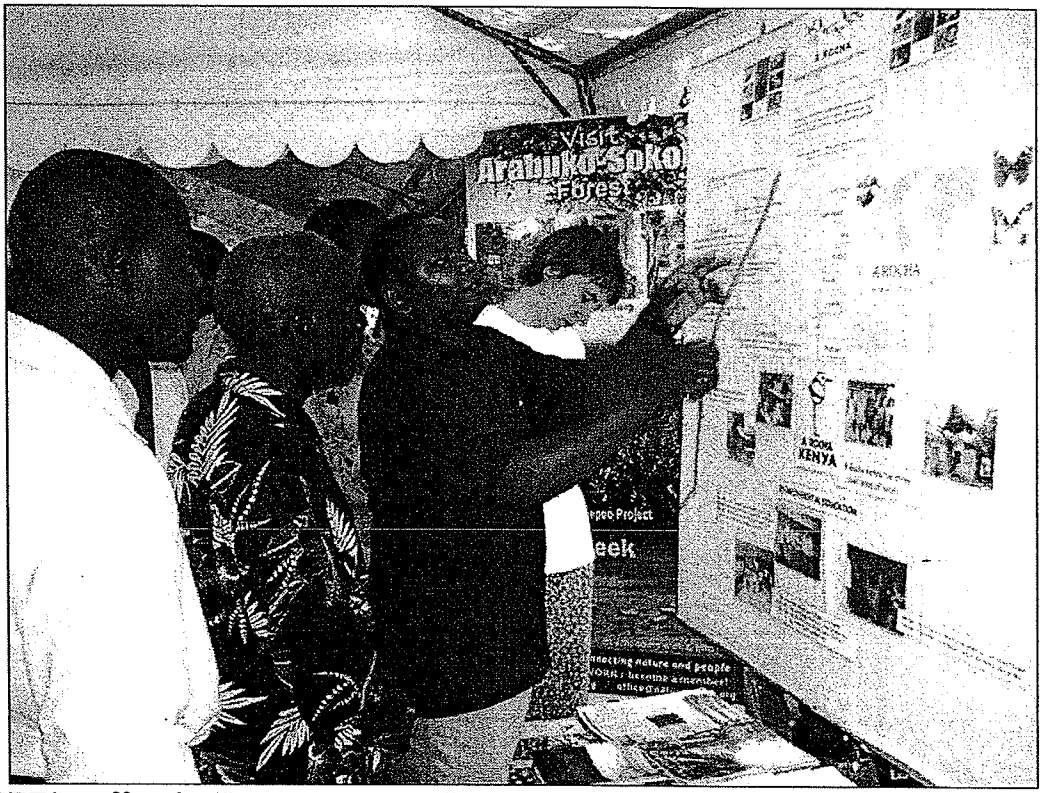

Plate 8: ASSETS staff at the "Forest Open Day"

### 4.3.9 Program funding

The original aim of the ASSETS program was to fund bursaries through eco-tourism profits generated from the forest and the creek. However, although entrance fees from the Bird Hide contribute to the bursary fund (approximately 8% of the operating costs over the past four years) the bulk of ASSETS expenses are covered by A Rocha UK (approximately 75 percent), with significant contribution from Turtle Bay Beach Club (accounting for 13 percent of ASSETS' costs).

## *4.4 Summary*

The Arabuko-Sokoke Forest is an area of international conservation concern, home to a number of endemic species and listed as a top biodiversity spot. Residents living in villages near the forest – over 100,000 people – are facing serious health, social, and environmental challenges. Poverty drives some residents to harvest illegally from the forest and many residents favour the conversion of the forest into farmland. Although a number of domestic and international organizations are involved in conservation and income-generation projects near the Arabuko-Sokoke Forest, these programs have a limited reach and many communities, like Kaembeni, have not benefited substantially from this programming.

As residents struggle to provide food and clean water for their families, a secondary school education remains beyond the reach of many children. In this context, A Rocha Kenya introduced the ASSETS program to provide residents surrounding the Arabuko-Sokoke Forest with a benefit from it – secondary school bursaries – in the hopes that this would change attitudes towards the forest and encourage residents to conserve it.

ASSETS has provided bursaries to Kaembeni residents since 2001, and the program continues to expand both the number of recipients and number of participant schools.

# Chapter 5 Understanding the Forest, Understanding Conservation, and Learning Through ASSETS

This chapter describes: participants' understanding of the forest, the conservation movement, and the ASSETS program; instrumental and communicative learning outcomes of the ASSETS program; and new action on conservation issues taken by ASSETS participants. The results presented in this chapter represent the opinion of the majority of respondents, unless otherwise indicated. Profiles of selected participants, outlining their individual learning, are also included.

## *5.1 Participant Demographics*

While conducting this interview I did not specifically seek to collect demographic information, but some such information was garnered during my time spent with the respondents. Aside from the gender of the respondent, demographic criteria were quite consistent among the interviewees. Apart from those participants who were the older siblings of the ASSETS recipients, most respondents were adults in their reproductive years and most had a number of school-aged children (and counting). Respondents were overwhelmingly subsistence farmers living with their extended family on family "compounds." There were very low levels of formal education – Kenyan schools are conducted in English, so in rural areas a person's level of education can generally be inferred by their proficiency in English.

This research did not consider gender specifically; more females were interviewed than males simply because they tended to be at home more often during the day, as the men are often away for months at a time, working or looking for work in cities. Although it was easier to build rapport with female interviewees, by helping them with

household cooking, weeding, and other chores, male and female responses did not vary markedly.

## 5.2 Mechanisms for Participation

For ASSETS parents/guardians, participation in ASSETS is currently limited to attending parents' meetings, which tend to occur less frequently than students' meetings. Parents' meetings are informal in nature: one or more of the ASSETS staff visit the local primary school and meet with the ASSETS parents to discuss a variety of issues, like how the program works (how the money is raised, what is expected of parents in terms of conservation and paying their 300 KSH participant fee), and environmental education about the forest, creek, and the environment (the role and importance of forests, species found in the forest, the water cycle, etc.). There are sometimes discussions about tree planting or other conservation projects in the area, like Kipepeo.

In my experience, ASSETS staff have a strong rapport with the parents. Parents are encouraged to ask questions, and the meetings often turn into informal discussions about different conservation related issues. In the past, ASSETS staff have shown videos about conservation and the environment, but such activities are limited by the lack of electricity and reliable transportation for necessary equipment like generators.

At a larger scale, the policy and direction of the ASSETS program is driven by A Rocha Kenya staff members. When I left Kenya, there was some discussion of establishing an ASSETS Parents' Associations in each participating community, but at the time of writing, there were no mechanisms in place to involve ASSETS parents in the project's management.

## 5.3 Conservation and the Arabuko-Sokoke Forest

### 5.3.1 Why conserve the forest?

Most of those individuals interviewed in this study were aware that the Arabuko-Sokoke Forest was being conserved, but were often unaware of why this was so. When asked to explain *why* the forest had attracted such conservation interest, the most frequently cited response was that trees and forests attract rainfall. The popularity of this response is not surprising, as ASSETS staff, government officials, the school curriculum, and traditional beliefs all stress the connection between trees and rain. Additionally, weather conditions in coastal Kenya have been quite arid in the years before my study. Many respondents recognized that deforestation had occurred in their region in recent decades, and some people are linking the recent aridity to this deforestation.

Another popular perceived motivation for the conservation of Arabuko-Sokoke Forest was the (non-bursary) financial benefits derived from the forest. Respondents understood that the forest generated income for the government, and indicated that that income was the motivation behind conservation efforts.

A number of respondents, both ASSETS participants and non-participants, felt that the forest was being conserved because of the animals living within it. This view is likely a relic of decades of mega-fauna focused conservation efforts in Kenya. While a handful of respondents felt that conservation for the animals' sake was an important goal, expressing sentiments such as "I've seen an elephant and a *dik dik*. It's a value to see and know the animals" (David, ASSETS participant). For the majority of respondents, animal conservation was not personally important, but a government objective: "the government and the *wazungus* own the animals so they want the forest to be conserved [because they benefit from it]" (Lisa, ASSETS participant).

Other reasons for conservation mentioned by participants included: the forest acts as a windbreaker; the forest should be conserved so that future generations can enjoy it; the forest brings the Kipepeo Project; the forest provides non-timber forest products like wild aloe and traditional medicines; the forest provides wood resources like firewood, timber, and poles; and the forest brings ASSETS bursaries. Aside from the bursaries, ASSETS participants and non-participants had very similar ideas about why the Arabuko-Sokoke Forest is being conserved.

### 5.3.2 Forest threats and solutions

Roughly a third of those ASSETS participants interviewed indicated that the forest was under threat, either because they knew of people who had been arrested for illegal activities in the forest or because they had noticed a change in the forest over time:

> "It's under threat because I know there are people who sneak in, even though it's restricted" (Karin, ASSETS participant).

> "There has been a change since I've been here: there's been a reduction of trees" (Diana, ASSETS participant).

> "[There's] a certain type of tree, I used to see when traveling from here to Matsangoni, but now, they are nowhere to be seen in the forest or around the homesteads. That tree is *Muhuhu*" (Abraham, ASSETS participant).

Most non-participants and a number of ASSETS participants indicated that the forest was "doing fine":

> "The forest is doing fine. If people were using it too much it would already be finished. The forest is still there, the trees are doing fine. The forest is the same as in the olden days" (Brandon, non-participant).

> "*How do you know the forest is doing fine?*
> Because I see it the way it is. I walk from here to Matsangoni; it's still the same way. People cut trees and it's still the same as it was. The trees are still there, the animals are still there, it's doing fine" (Lilly, non-participant).

"It's not under threat... when I see it, I see it's doing fine" (Lisa, ASSETS participant).

A number of those interviewees who lived further away from the forest indicated that they did not know how the forest was doing, because they do not go there.

**Table 1: Most popular ideas of how to "help" and "hurt" the forest (from most to least popular)**

| Hurt | Help |
|---|---|
| - Sneaking in to steal/cut trees<br>- Trapping/killing wild animals<br>- Starting a forest fire | - KWS/rangers should catch/stop people<br>- People should stop cutting trees<br>- People should be told of forest benefits<br>- Access to the forest should be restricted<br>- People should plant trees<br>- Find alternative sources of income for people who rely on the forest<br>- Report people involved in illegal activities |

Activities identified by respondents as threatening (or "hurtful") to the forest were not surprising: nearly every interviewee listed the cutting, clearing, or "stealing" of trees as the way people damage the forest (Table 1). This included cutting trees for wood as well as clearing the trees to make *shambas*. A number of people expressed sympathy for those engaged in illegal cutting, acknowledging that they have few alternatives: people are "cutting trees for charcoal and firewood to sell to get something to eat because people are hungry" (Sophie, Signey & Leslie, non-participants). Hunting and trapping wild animals and accidentally starting a forest fire were also given as threats to the forest.

Respondents identified a range of potential ways to "help" the forest (Table 1). The most popular responses among ASSETS participants and non-participants were that: the KWS and the rangers should be arresting people and guarding the forest; people who are currently harming the forest should stop; and access to the forest should be restricted (e.g. with a fence). Most suggestions on how to help the forest were not proactive,

although some interviewees did have more proactive suggestions for helping the forest, including planting trees to reforest the Arabuko-Sokoke Forest and planting trees on the *shamba* to lessen your need to go to the forest:

> "When you have a tree at home, there's no reason to go to the forest" (James, ASSETS participant).

Only two participants suggested that they should report those involved in illegal activities to the authorities, with one respondent adding, "you will become an enemy of the community" if you report someone (Martina, ASSETS participant). However, telling others about conservation and the importance of the forest was important to some ASSTES participants:

> "The community should all come together and keep an eye on each other. If we see someone cutting trees we should tell them to stop... if we could join together for conservation we could be heard and make some difference. Many voices are difficult to ignore, we have more strength together" (Rebecca, ASSETS participant).

However, others did not see this as a role for themselves or individual community members:

> "The government or people from another country should come and educate us about why we should conserve [the forest]" (Michael, ASSETS participant).

A number of respondents recognized that those who are dependent on the forest for their livelihoods would require alternatives if they are to conserve the forest:

> "If [organizations] would do projects like Kipepeo in the whole area surrounding the forest, then people wouldn't need to go to the forest" (Michael, ASSETS participant).
>
> In order to conserve the forest there must be "a project to help those that depend upon the forest for their food, through charcoal and firewood, so they don't need to go again" (Sophie, Signey & Leslie, ASSETS non-participants).

"[It's] hard to deny people access to the forest. People have different problems [i.e. poverty]. I don't have a way of helping the forest, I'm entirely dependent on it." (Brandon, non-participant)

### 5.3.3 Personal significance of the forest

In 1993, Maundu conducted a study of attitudes towards the Arabuko-Sokoke Forest in forest adjacent communities in advance of the Kipepeo Project. Three questions from this survey were included in this study in order to provide a comparison, including: *Is the forest of any value or significance to you?*; *Would you be happier if the forest were not there?*; and *Would you be happier if all or part of the forest was given out for shambas*? (Table 2)

**Table 2: Results of this study contrasted those of Maundu (1993)**

| | **Maundu (1993)** | **ASSETS participants** | **Non-participants** |
|---|---|---|---|
| **Is the forest of any value or significance to you?** | 48% yes, forest is of value | 95% yes, forest is of value | 57% yes, forest is of value |
| **Would you be happier if the forest were not there?** | 60 % yes, happier without the forest | 0% yes, happier without the forest | 50 % yes, happier without the forest |
| **Would you be happier if all or part of the forest was given out for shambas?** | 83% yes, clear forest for farms | 0% yes, clear forest for farms | 53% yes, clear forest for farms |

In 1993, roughly half of the forest-adjacent residents interviewed indicated the forest was of value to them and 59 percent indicated they would be happier if the forest were not there (Maundu 1993). In contrast, ASSETS participants expressed overwhelmingly that the forest was of value to them and removing it would not make them happier, as the forest: provides bursaries; attracts rain and acts as a windbreaker; provides resources to community members; contains animals, some of which are found nowhere else in the world; and because the forest brings projects like Kipepeo and the NABU-financed renovations of Bogamachuko school:

> "The bad side of the forest is that it keeps elephants that destroy crops. But, it attracts rain, so yes, it's of value" (Thomas, ASSETS participant).

Just over half of the non-participants indicated that the forest was a value to them (because of rain and access to resources) and they would not be happier in the absence of the forest, indicating that without the forest life would be more difficult or that they would not be able to get resources from the forest:

> "I would really want the forest there because it's a help to me. If I have no money, I go there for water. It's a help to me, I would be suffering if the forest were not there" (Carrie, non-participant).

> "It's of value to me, because one of these days I may be stranded [helpless] and then I can go to the forest to get something to sell for income" (Lilly, non-participant).

The remaining non-participants indicated that it was of no value to them, and that they would like to see it cleared, because of the damage they suffer from crop-raiding animals and because they want access to more farm land:

> "[T]o value something it needs to be a help to you. We get no assistance or benefit from [the forest], only problems: the elephants that will come and kill us in our homes. If it were to be divided it would be cleared so quickly with a machete and fire – we could see you in Gede [a town on the other side of the forest]" (Cathy & Sharon, non-participants).

> *"Would you be happier if the forest were not there?*
> Yes, because there would be no animals to destroy our crops. Now, [the forest] is there and it brings nothing apart from the animals that destroy our crops. It is better if it doesn't exist at all" (Joel, non-participant).

Only a handful of interviewees cited more intrinsic values associated with the forest – that they enjoy and appreciate living near a forest and knowing the animals living within:

> "I'm used to staying near here, I was born here, I grew up here. If [the forest] is removed I won't feel happy" (Elissa, non-participant).

"I wouldn't be happy – because animals like the elephant shrew – I wouldn't be able to know that they exist [if the forest were not there]" (Anna, ASSETS participant).

"*Would you be happier if the forest were not there?*
No
*Why?*
Because I wouldn't know about the animals in the forest... In the absence of the forest there would be no animals like elephant, bush babies, and dik dik.
*How is that a value to you?*
At least I've seen an elephant and a *dik dik.* It's a value to see and know the animals.
*Did you always feel that way about animals?*
After seeing them, because we always learned about them from books, but after seeing them [that's when I started to feel that way]" (David, ASSETS participant).

In 1993, Maundu found that 83 percent of those forest-adjacent dwellers interviewed favoured clearing the forest for *shambas.* None of the ASSETS participants interviewed favoured clearing the forest, because of the perceived connection between forests and rain, and because the bursaries would stop:

"No, because the area might become like a desert. Even if they offered me 10 acres I would refuse" (Esther, ASSETS participant).

"If the forest were given out to farming we would get some more *shamba* but there would be no rain. It's better we receive the rain on a small *shamba* than no rain on a big one" (Jacob, ASSETS participant).

"It's only 20 years ago that this area was full of trees, just like the forest. It only took a few years for it to be cleared, now the trees are gone and it's dry. So, if the forest were divided into *shambas* it would only take a few years, then it will be dry like here. Then, we'd have nothing" (Abraham, ASSETS participant).

Some participants indicated that it was only because they were participating in ASSETS that they wanted the forest to be conserved, and that those in the community who were not receiving assistance might not feel the same way:

> "For those people who are not receiving bursaries, they would be very happy if it were divided. To those people who are beneficiaries, they would not be happy because the bursaries would end and the animals would be homeless" (Anna, ASSETS participant).

Only non-participants indicated that they would favour clearing the forest for farming, either because they/others would get farms or because the animals would go away. Not surprisingly, those people who suffered the most damage from forest animals most strongly favored clearing the forest, with a number of residents recognizing that others, who do not suffer from the animals, would not feel the same way:

> "Yes, I would be very happy because once we grow our crops we get nothing because of the animals. But, those on the other side of the forest would oppose that because their crops do well.
> *But, you said you receive rainfall [from the forest], what if it's cut?*
> ... If [the forest] were not there and there was no rain it would still be better. I don't like the forest at all" (Joel, non-participant).

> "The people who would disagree with [clearing the forest] are the ones who live away, whose crops are not being attacked" (Virginia, non-participant).

A handful of ASSETS participants stated that it was only because they were receiving the bursaries that they wished the forest to be conserved:

> "According to me, I get an assistance, I would suggest not to cut it down for cultivation.
> *And without assistance?*
> I would suggest to cut it for cultivation" (Linda, ASSETS participant).

However, many participants indicated that they will continue to value the forest even after their children finish receiving ASSETS bursaries, as they now know the benefits of the forest, and "learning never ends" (Gloria, ASSETS participant) so they would like other children in the community to also have the chance to go to secondary school.

### 5.3.4 Community use of the forest

Due to the sensitive nature of the topic, it was difficult to assess the impact of ASSETS on illegal resource use in the Arabuko-Sokoke Forest. A handful of the interviewees were clearly involved in illegal activities in the forest – one non-participant had a carving workshop on-site – but I chose not to pursue the issue, as I did not want to pressure the participants. Conviction for an offense in the forest can result in a jail sentence, so participants were understandably uncomfortable discussing the issue with a researcher, and were unlikely to admit to involvement in any illegal activity. Nevertheless, evidence of illegal harvesting in the forest, such as charcoal burning sites and trees stumps, are fairly easy to find, so illegal harvesting in the forest is certainly occurring.

Hunting and trapping in the Arabuko-Sokoke Forest undoubtedly occurs, it is difficult to estimate the frequency of these activities but I did observe wild pig traps on the periphery of the forest. Some residents, especially young boys, use slingshots to hunt forest birds. However, according to school officials this is decreasing as the children are no longer allowed to bring their slingshots to school.

In terms of legal use of the forest, some respondents indicated that the forest was important to them as a source of fruit or drinking water. However, many people could obtain these things closer to home and indicated they had no use to visit the forest. One of the most frequently cited important "uses" for the forest was the walking path from Kaembeni to Matsangoni on the other side of the forest. For many, this was their only exposure to the forest.

A handful of interviewees were involved in collecting mushrooms and many people, especially children, collect and consume wild fruits like *vipo* (Plate 9) and *virori*

from the forest (coincidentally, they often use the small fruit with their slingshots). Generally, people collect fruit as they are passing on their way. The more destitute may go out and pick them in periods of hunger, but wild fruit are not processed or harvested in a systematic way.

Plate 9: The forest fruit locally known as *vipo*

### 5.3.5 Community enforcement and involvement in forest management

The Arabuko-Sokoke Forest is the pilot site for Participatory Forest Management (PFM) in Kenya. However, most residents interviewed were unaware of PFM and had never heard of FADA (or ASFADA, the Arabuko-Sokoke Forest Adjacent Dwellers Association) the organization that is to represent residents under PFM. Most of the programs associated with PFM have not reached the Kaembeni area, although some residents were aware of programs like beekeeping, and mushroom and *Aloe vera* farming in other regions.

Increased community involvement in forest management, where residents report those involved in illegal activities and are involved in enforcement activities, is sometimes seen as a way of decreasing such activities. While the majority of interviewees were aware of people being arrested or reported for illegal activities in the forest, they were generally hesitant to report someone themselves – those people who are reported are in "business," meaning they are involved in commercial carving and timber extraction, and they are reported by other people in "business" because of a disagreement or "jealously" – not out of any concern for the forest. Regular people would not generally report one another, as they sympathize with other members of their community and they do not want to cause a conflict, or "create an enemy" in the community:

> "*Why do they do it? [report each other]*
> Because they are jealous.
> *Can you explain that?*
> It's like, if they had a misunderstanding before that, you might report someone to get back at them...
> *Are people more likely to report locals or outsiders?*
> It's just within the businesses. So carvers just report carvers. It's mostly just for wood carvers and for timber.
> *So regular people going in?*
> Normal people around homes, they don't report one another. Not unless they have a disagreement" (Danielle, non-participant).

> "*What can people do to help? [the forest]*
> Reporting those involved in illegal activities, but the only problem is that you will become an enemy of the community.
> *Does that keep people from reporting?*
> People fear it because there are some things you rely on the community for, if you become an enemy they won't assist you if you need it" (Martina, ASSETS participant).

> "*If a Giriama reported another Giriama what would happen?*
> It would create a grudge between the one who reported and the person, because the person has kids and a family to take care of, and you sent them to jail. It would create an enemy" (Nathaniel, ASSETS participant).

> "*What happens if someone in the community catches someone doing something illegal in the forest?*
> The Giriama people are so sympathetic. They won't report another Giriama. Maybe you have a family, if you're reported what will they eat? That's the job of the rangers, to catch people, why should the community do their job? People would say bad things about you if you reported another person, they'd say 'those people who don't depend on the forest, they have income, they think they're so learned'". (Michael, ASSETS participant)

Due to corruption, reporting someone for the purposes of forest conservation may have little effect:

> "If you get caught, then you have to bribe the *askari* to solve the issue at the local level without going to the station. [After you bribe him] The *askari* tells you how they found out [who reported you], and then the fight begins" (Brandon, non-participant).

> "[M]any people get caught and bribe the forest rangers to get out of it. If [the rangers] were really strict, those people who are caught would go and look for jobs, but they know they can get out of it so they don't stop. It's a source of extra income for the rangers [the bribes]" (Michael, ASSETS participant).

> "Those people who collect wood for carvings and timber, they pay a percentage to the *askaris*. Those who don't pay get reported" (Brandon, non-participant).

## *5.4 Understanding ASSETS*

### 5.4.1 The organization and its goals

The majority of those ASSETS participants interviewed did not know who A Rocha was specifically; many understood the bursary scheme but did not differentiate between ASSETS (the program) and A Rocha (the organization). Of those that were aware that A Rocha is the organization behind ASSETS, some felt that the organization was primarily charity, missionary, or education oriented, while fewer thought that A Rocha was a conservation organization:

> "I heard who they were through the meetings. I know it's an organization that helps school children with bursaries" (Grace, ASSETS participant).

> "I know it's a group of white people, but I don't know anything else. I know they are the bursary people" (Rachel, ASSETS participant).

> "It's an organization made for conserving the forest and educating people about the importance of conserving it" (Michael, ASSETS participant).

Less than half of respondents felt that A Rocha started ASSETS for conservation purposes:

> "We've not been attending many meetings, but at the last meeting we were explained that A Rocha is a church organization that takes care of the environment and the animals in the Arabuko-Sokoke Forest and birds at the ocean in Mida" (Emily, ASSETS participant).

> "Schools that border the forest were given assistance because they [A Rocha] want to conserve trees in the forest. They felt that they could assist children in the schools, and in return, the children would conserve the trees in the forest (Jacob, ASSETS participant)."

> "I think that A Rocha started the program for bursaries so that people would sympathize with the forest. I think A Rocha decided to offer bursaries so the community would oppose the destruction of the forest. I was told not to cut and hunt, and to keep an eye out for others [doing these things]" (Nathaniel, ASSETS participant).

A number of participants felt that A Rocha started ASSETS in order to help poor families with school fees, making no connection with forest conservation:

> "They started the scheme because people are poor so they wanted assist them" (Lisa, ASSETS participant).

> "Because they thought that these children [here] don't go to school because they lack school fees, so they're offering bursaries so kids become educated" (Gloria, ASSETS participant).

> "ASSETS aims to help those that are not able to take their kids to school. So that children from families who can afford school and those that can't can have an equal chance in life" (Martina, ASSETS participant).

A number of participants felt that ASSETS was intended to act as a type of compensation for damage endured as a result of living next to the forest:

> "They started it because they wanted to assist those around the forest because our crops were being destroyed by animals from the forest" (Emily, ASSETS participant).

The overwhelming number of respondents saw the goal of ASSETS as strictly the education of children, with a handful mentioning the joint goals of education and forest conservation:

> "The major goal is to educate children, so they might get some jobs and the parents can depend on their children, not the forest [for their livelihoods]" (Esther & Michael, ASSETS participants).

A small number of participants indicated that the goal of ASSETS was strictly the conservation of the Arabuko-Sokoke Forest:

> "The main goal is to conserve the trees in the forest. When we meet, they emphasize that we need to plant trees in the *shamba* and that we should act as an eye [watch the forest] and disciples for A Rocha and tell other people to conserve the forest because it is a help to us" (Emily, ASSETS participant).

According to Colin Jackson, the director of A Rocha Kenya, "the conservation of biodiversity is A Rocha's goal, ASSETS is not just a bursary scheme." However, the results from this section indicate that a number of ASSETS beneficiaries do not perceive the program as conservation related, but rather a charitable program designed to help with school fees.

### 5.4.2 How does ASSETS work?

With a project like ASSETS, where benefits are derived from conservation/ tourism and funneled to community members, there is sometimes a concern that community members might be unaware that the benefits come from conservation. The majority of ASSETS participants understood that the bursaries were generated from tourist entrance fees at the forest and creek:

> "The tourists pay something to view the animals and plants in the forest. It's through what the tourists give that helps us [funds the bursaries]" (Grace, ASSETS participant).

Some parents were aware of other sources of income for ASSETS, such as the parents' 300 KSH contributions, as well as donations from abroad:

> "The money doesn't come from Kenya, it comes from Western countries to help people in Kenya. They money is donated. It works with the parents to assist the students" (Jacob, ASSETS participant).

While a handful of respondents indicated that they had seen tourists in the Arabuko-Sokoke Forest, many ASSETS participants had learned of bird watching and nature-based tourism from ASSETS, though many had never seen a tourist themselves. Non-participants were generally unaware of tourism in the Arabuko-Sokoke Forest.

The majority of ASSETS participants recognized that the bursaries were a benefit of tourism in the forest, but many indicated that that was the only benefit they received and that tourism did not benefit others in their community. Most non-participants indicated that they and their community did not benefit from tourism in the forest.

The ASSETS application form (Appendix E) contains a "confirmation" section, where applicants and their parents/guardians sign a form, declaring their commitment to conservation. When asked why their children were selected for the ASSETS program and whether there were any requirements to participate in the program, the vast majority of participants cited academic achievement as the sole requirement for participation in ASSETS. While good performance is a requirement, only one participant remembered the "confirmation" specifically. Another participant cited conservation generally, and two additional parents felt that their children were chosen because of the child's interest in conservation or because they were a part of Wildlife Club (which are indeed criteria):

> "We were given a form to fill and on that form it has some requirements that you perform well. There are some sentences on that form that say to protect trees in the forest, not to cut down trees in the forest, to plant trees in your *shamba*, and when your child gets a grade above C you take the organization the report and you get the bursary" (Emily, ASSETS participant).

> "There are some regulations like planting trees and conserving animals and restricting people and telling kids to stop killing birds, we were selected to be an eye out for these things" (Rebecca, ASSETS participant).

The majority of parents were unaware that involvement in conservation activities is a requirement of ASSETS.

### 5.4.3 School attendance

One of the goals of ASSETS is to increase local education. Parents were therefore asked whether their children would be in school without ASSETS, in order to assess whether the program is enabling children to attend school who would not otherwise be able to attend, or if the program is simply subsidizing students who could afford it. The economic situation of ASSETS participants varied; only a handful of parents indicated that their child would have easily gone to secondary school without ASSETS bursaries (by selling livestock for instance). Some participants indicated that their child might have gone to secondary school without ASSETS but with great difficulty, for instance only one sibling would have gone or the child would not have finished. According to their guardians, many children would not have gone to secondary school without ASSETS:

> "He would not have gone at all. The way you see me now is how I am. I have no husband. For my daily earning I go weeding a plot to get payment to feed myself. My first born only went to Standard 7. This one wouldn't have gone at all without the scheme [ASSETS]" (Lisa, ASSETS participant).

"The situation is bad; they wouldn't have gone without the bursaries. I'm praying that the number of tourists increases [because we need more help]" (Rachel, ASSETS participant).

"[In] the absence of ASSETS they would not have gone to school. God sent ASSETS because of me [my prayers]" (Constance, ASSETS participant).

## 5.5 Telling others about conservation

### 5.5.1 Children and their peers

ASSETS parents indicated that both they and their children tell others in the community about the program and conservation of the Arabuko-Sokoke Forest. When asked if their recipient child ever tells them about conservation or the environment, most of the ASSETS participants indicated that their children tell them regularly about the importance of the forest, and that they should plant trees and tell others about the benefits of the forest. The recipient children also tell others in the family, generally younger siblings, about the importance of the forest. A handful tell others in the community about the benefit they receive from the forest, with varying effect:

"It was just some few months ago that he [my son] was crying for school fees, and now he's there because of the forest. Don't you think he would tell the world about the importance of that forest? He is able to tell people about the importance of it because that's where he gets the bursary" (Lisa, ASSETS participant).

"[My son] tells [his siblings], 'I'm going to school because of the forest, don't let me come here and hear that you've been to the forest to kill those birds, I will beat you.' They listen to him, and he normally tells them, 'father passed away. I wouldn't be going to school without ASSETS. Don't you see the assistance I'm getting? It's through the forest'" (Charity, ASSETS participant).

"Yes, [my daughter] tells the small boys not to go for birds. They only listen when she's around, but when she's not there they still do it" (Jacob, ASSETS participant).

"[My son] always emphasizes that it is through the forest that he gets the bursary. He tells me I should tell the other people the importance of the

forest, and if I know of other people who burn charcoal or cut timber, I should tell them to stop... I normally emphasize the importance of the forest, but those who don't receive the bursaries don't see the importance. But I do tell them. I tell them that the forest brings money from tourists and they should conserve it because it contains precious resources that tourists come to see and when they leave, they leave us with money for our country" (Grace, ASSETS participant).

"There are some hunters in the forest, some openly and some in secret. It happened that one day my daughter met someone who went hunting and they had the game openly. She met them and told them, 'do you know it's these animals that give me an assistance and we have permission to report people we catch, so to be on the safe side can you please stop hunting.' Luckily enough, one of the students from that family was selected as a beneficiary this year. They were so thankful to my daughter because she told them about the organization. They've stopped hunting now" (Anna, ASSETS participant).

### 5.5.2 Parents and their neighbors

ASSETS parents are sometimes approached by friends and neighbours and asked how they can afford school fees, said one participant: "other people ask, 'your husband is dead and your son is in secondary school, how do you do it?' I tell them I have assistance" (Charity, ASSETS participant). However, given the cultural context, most participants are unlikely to share information of their good fortune too openly, "I tell only those that ask. I don't go telling everyone." (Abraham, ASSETS participant)

A handful of those parents interviewed mentioned that they tell others about the connection of the bursary to the forest:

"Others tell us we are lucky because our kids are beneficiaries ... we respond, 'yes, it's a benefit from the forest.'
*Are others interested in joining ASSETS when they hear about it?*
Yes, they like it, but we tell them, your daughters and sons should work hard. They normally see it as if we're selected, but you need to do more, and take your child to school and settle them and pay the contribution" (Rebecca & Daniel, ASSETS participants).

Most participants felt that ASSETS was well known in their community. However, most non-participants interviewed were not particularly well informed about the bursary program. More than half of the non-participants interviewed were aware that there was a bursary program available for students from Bogamachuko who perform well in Standard 8, but only one of the non-participants was aware of any connection between the bursary program and the Arabuko-Sokoke Forest:

> "I have heard there's a specific *mazungu* that offers bursaries for those who perform well on their final exams. That's all I know about it" (Roberta, non-participant).

> "I heard that those who perform well at Bogamachuko are taken by an organization for assistance. But, I don't know anything else, like why it started or how it works, or the name of the organization" (Julie, non-participant).

These non-participants had learned of the bursary program from other community members, from community meetings, and from their children attending Bogamachuko Primary School. Most non-participants indicated that they would join ASSETS if given the opportunity, as they would also like to receive benefits. Word of the economic benefits to be gained from ASSETS seems to have spread among community members; the connection of these benefits to the Arabuko-Sokoke Forest has not.

A number of participants suggested that they should act as "teachers" for other members of the community, explaining the benefits of the Arabuko-Sokoke Forest and its conservation. This could be especially useful for spreading the conservation message. ASSETS participants are willing and able to spread the conservation message to others, but would likely require some organizational aid on behalf of ASSETS in order to accomplish this.

## 5.6 Parents' Association

The ASSETS participants indicated overwhelmingly they would be interested in joining an ASSETS parents' association. When asked of the kinds of ideas they had in mind for the association, participants suggested a range of activities; in giving their ideas participants gave interesting insight into different ways they envisioned being proactive about forest conservation. Half of the respondents suggested that the parents' association could be involved in planting trees, for conservation or commercial purposes. Interesting ideas included reforesting the Arabuko-Sokoke Forest and surrounding areas with indigenous trees:

> *"What activities could you do?*
> Planting of trees
> *Which trees?*
> Indigenous
> *Where?*
> In the *shamba* and in the area affected by illegal activities in the forest" (Martina, ASSETS participant).

> *"What kinds of activities could [you] do?*
> [Getting] seedlings from indigenous trees to plant, that will make us different from other groups, and people will know we are ASSETS parents [because of the indigenous trees]" (Linda, ASSETS participant).

A number of respondents suggested that the ASSETS parents start a group nursery where they would rear seedlings as a group, keeping some seedlings to plant and selling others for profit:

> "...if you grow seedlings in a nursery it becomes easier as a group because some people might travel and some might not be able to afford water that day. Then, we should separate some of the seedlings as a group, with some to plant in your own shamba and some to sell as a group" (Emily, ASSETS participant).

Interestingly, some ASSETS parents suggested that the parents' association might act as a teaching organization by introducing non-participants to conservation and explaining the importance of planting trees and conserving the forest:

> "We should rear and plant trees. Then, we should act like teachers to other parents on how to plant. Others will see the benefits we get from trees so it will be an encouragement to them to plant trees as well" (David & Leah, ASSETS participants).

> "We could plant trees in the area and explain to the non-participants on how to conserve the environment. Then, we would tell them that it's through the trees that we get the assistance, so they can see the importance of it [the trees and forest]" (Abraham, ASSETS participant).

> "We should meet and teach others about nurseries, and then do a joint nursery and then take the seedlings to our own *shambas* to plant" (Daniel, ASSETS participant).

In addition to conservation related projects and tree nurseries, a number of parents suggested income-generating projects that the parents' association could pursue, including: butterfly farming (for the Kipepeo Project); beekeeping; a merry-go-round; chicken/livestock farming; and starting a shop/business.

Some participants had creative ideas as to how income-generating projects could be used to help others or contribute to the ASSETS program, such as:

> "We could get a business and then provide loans. We could provide money for school fees as a loan that needs to be repaid after a period of time [could use the profits of the business to provide the loans, not make a business of providing loans]" (Jaclyn, ASSETS participant).

> "We could raise seedlings, sell them, and we could create an account and give the profits to A Rocha as our participatory contribution to create more bursaries" (Rebecca, ASSETS participant).

The Arabuko-Sokoke Forest warden Francis Kirimi Mbaka suggested that area communities need to become involved in patrolling and protecting the forest, "so they feel it's theirs." When asked whether they would consider becoming community forest

guards, ASSETS participants were roughly equally split between those who would not be willing to conduct the patrols and those who be willing to conduct community forest patrols, provided they had proper permission from the appropriate authorities and that certain safety precautions were taken (e.g. they were in a large group). One parent, who was willing to do patrols, remarked wryly, "[i]f the forest rangers were doing their jobs right there would be no need [for a parents' patrol]" (Michael, ASSETS participant).

Some women rejected the idea of being a forest guard, as, "that's only for men. Women cannot go and chase men from the forest" (Karin, ASSETS participant). Other participants who were unwilling to act as community forest guards cited safety as the primary cause of their reluctance:

> "Those forest rangers doing patrols now have guns. At least they have some weapons to scare thieves. We have no guns, the thieves might gang up on us because we have no weapons to scare them" (Lisa, ASSETS participant).
>
> "I'm afraid of elephants, so I would not accept [being a patrol]" (Gloria, ASSETS participant).

## 5.7 Parents' Suggestions and Criticisms

Most participants were grateful for the support they received from ASSETS and hesitant to criticize a program that had helped them. However, a number of suggestions and criticisms of ASSETS emerged during the course of the interviews. A number of participants indicated that they would like to learn more about conservation and the environment, and that time spent with ASSETS staff was insufficient. Others felt that the program is too focused on the students, with too little attention paid to the parents:

> "Whatever they [ASSETS] are doing now is good, we normally ask questions in meetings and they answer them, but there is not much time. They spend a whole day with the students but only a few hours with the parents. If we parents were given the same amount of time as the students we could learn more" (Anna, ASSETS participant).

> *"Has your family received a lot of communication from ASSETS or not?*
> One meeting, one for the parents and 3 days with the beneficiaries.
> *Do they need to spend more time with the parents or is it fine now?*
> They should teach the parents more about conservation of the environment... they've not told us anything about the environment" (Abraham, ASSETS participant).

Some participants indicated that meetings were singly focused on financial issues, not conservation, "we [only] know the importance of paying the 300 KSH" (Jacob, ASSETS participant). While others felt that ASSETS had too narrow a scope, suggesting that the project should expand to other community residents:

> "It would help if ASSETS could give trees to participants and non-participants because the carvers still need the wood... I wish for ASSETS to continue forever, my children have been helped but I want my friend's children to be helped to get an education so they have something else to depend upon besides the forest" (Esther & Michael, ASSETS participants).

> "The involvement of A Rocha with parents should involve not only ASSETS parents, it should also include non-participating parents, especially parents with kids in lower classes, so that when they reach Standard 8 they will already know what the organization is and how it works" (Emily, ASSETS participant).

A number of respondents indicated that they wanted to be involved in a greater number of projects, while some only wanted ASSETS to help them access projects already operating in the area:

> "Our main problem is getting the beehives. We can pay the small money. Can ASSETS help us to get to the beehive people?" (Abraham, ASSETS participant)

> "I'd like to learn other activities, like when the environmental officer who came to teach us about nurseries. I'd really like to learn more" (Emily, ASSETS participant).

Some ASSETS participants felt that bursaries were not being issued in a timely manner:

"I send my part of the money, expecting that A Rocha will send theirs, but sometimes they are late to the point where the kids are sent home" (Gloria, ASSETS participant).

"The problem is you don't know when the bursary is coming, or it doesn't come soon enough... maybe your child goes to school and is sent away for school fees and they don't know then the fees will come" (Rachel, ASSETS participant).

## 5.8 Instrumental learning through ASSETS

As outlined in Chapter 2, transformative learning is a theory of adult education that describes the process by which people construct more dependable interpretations of life, through assessing the context of their beliefs and opinions, seeking informed or negotiated agreement, and making decisions based on the insight they gain (Mezirow 2000). Involvement in ASSETS contributed to instrumental and communicative learning.

Instrumental learning is task oriented or skills-based learning and includes learning new information, learning to deduce cause-effect relationships, and learning to share ideas and dialogue (Mezirow 2000). Participation in ASSETS lead to a variety of instrumental learning outcomes (Table 3):

| Table 3: ASSETS Instrumental Learning Outcomes | |
|---|---|
| New information | -New information about the Arabuko-Sokoke Forest; forest species; and forest ecology<br>-Trees can be grown on-farm and sold for income<br>-Understanding of ASSETS; its goals, operation and management<br>-Understanding of tourism in the Arabuko-Sokoke Forest; why tourists visit and what they like |
| New skills | -Tree planting: spacing; watering; protection from domestic animals |
| Deducing cause-effect relationships | -Connection between deforestation and aridity |
| Learning to share ideas | -Telling others about conservation and the importance of the Arabuko-Sokoke Forest |

### 5.8.1 New information about the forest

Through their attendance of ASSETS meetings and interactions with ASSETS staff, participants acquired a range of new information about the forest and species within. One participant was very knowledgeable about the birds of the Arabuko-Sokoke Forest and the ongoing bird ringing being conducted by biologists:

> "We heard that the forest has 273 species of birds and that some are only found in the Arabuko-Sokoke Forest... The forest attracts migratory birds and they are being identified by rings" (Michael, ASSETS participant).

A number of the participants were aware of the elephant shrew (*Rhynchocyon chrysopygus*) an endemic species found in the forest:

> "Through research that was done in all the other forests, they found that the elephant shrew was only found in this forest" (Diana, ASSETS participant).

Participants in Mida learned about the connection between the Arabuko-Sokoke Forest and the mangrove forests that border their shambas:

> "What I have learned is that the dry forest [the Arabuko-Sokoke Forest] and the mangrove forest have a connection with water absorption. When it rains in the Arabuko-Sokoke Forest the trees absorb the water and it drains into the ground. The water flows down into the ocean and mangrove, and the mangrove absorbs the cold water [fresh water] from the forest. The mangroves can't survive on salt water. The reason people have fresh water near the ocean is because of the water flowing from the Arabuko-Sokoke Forest. The second thing is, we were wondering 'why can't the water ever flow from the creek to the shamba?' We were told the mangrove has two portions, when it's high tide water can pass beyond the first portion of mangrove, but it's speed is reduced and when the water comes to the second portion of mangroves it can't go beyond. In the absence of the second mangroves, some have stones to stop the [salt] water from flowing onto the fields.
>
> What I've concluded is that the mangrove survives from trees in the dry forest. If the Arabuko-Sokoke Forest is cut down, then there will be no water into the mangroves, and the mangrove will also die. If it dies, the ocean water will come and destroy our crops" (Karin, ASSETS participant).

In addition to the role of forests in purifying water, some participants had learned about the importance of trees for air quality:

> "It has made a difference, we used to say, 'why would we plant indigenous trees when we could just plant orange trees and harvest oranges.' Now, through Assets we learned the importance of planting indigenous trees.
> *Why is it so important to plant indigenous trees?*
> To bring rain, for timber, to purify air for *hewa safi* (clean air)" (Michael, ASSETS participant).

Prior to their involvement in ASSETS, many participants had not realized it was possible to grow trees and sell them for money. Said one participant:

> "I learned that a tree is like an asset, you can sell it for income, or use it yourself [for firewood or building]" (James, ASSETS participant).

### 5.8.2 New skills

In terms of task-oriented learning, ASSETS participants learned about tree planting on their farm, such as how to space trees when planting them, how often to water trees, and how to protect young trees from farm animals. Although tree planting is not a major component of the ASSETS program, it is encouraged, as it provides farmers with extra income and lessens their need to go to the forest for wood products:

> "Through the education we received [through ASSETS], it has helped us. I have started a nursery and planted trees... We were given seedlings and taught about how to raise a nursery.
> *Had you ever thought to do that before?*
> I used to plant food trees like oranges, but after joining ASSETS is when I started planting [non-food] trees" (David, ASSETS participant).

> "I have changed, because a long time ago, I planted *casuarina* but now I know to plant them a certain space apart. I used to plant the close, but now I plant them further apart" (Gloria, ASSETS participant).

> "I learned how to take care of trees... I learned that you need to water during dry season until the trees grow big. I also learned about weeding" (Grace, ASSETS participant).

### 5.8.3 Cause-effect relationships

A perceived cause-effect relationship between deforestation and aridity was frequently mentioned by participants. When asked about the benefit of the forest, nearly all of the ASSETS recipients mentioned the "attraction of rain." Most of the recipients had "always known this," or had learned it long ago in school. However, a number of participants indicated that, although they had heard trees attract rain from other sources, ASSETS provided the "emphasis," and they had not fully believed it until participating in the program. At a micro-scale, at the farm level for instance, planting trees will not literally attract rain to a specific farm, though it may prevent erosion and topsoil loss. The introduction of the ASSETS program in Kaembeni happened to correspond with a severe drought in the region. ASSETS' message, that deforestation is connected with aridity and environmental degradation, seemed to have special significance to the participants given the environmental conditions they were experiencing. Said one participant:

> "During the olden times, there were so many trees and closed forests; we had good harvests. There were less people and less cutting of trees. We used to receive a lot of rain ... now, the harvests are very poor" (Diana, ASSETS participant).

Other participants came to a similar conclusion based on the history of harvests and deforestation:

> *"Do you believe it's true, that trees attract rain?*
> I can't understand how [this works], but during the past years we used to harvest a lot and now our harvest is poor, but we used to have more trees ... I see there is a difference in the weather conditions. I connect the poor harvests with the trees, but I don't know [the scientific details of this]" (Jacob, ASSETS participant).

### 5.8.4 Learning to dialogue and share ideas

Some participants had begun telling others in the community about forest conservation. Observes one participant:

> "Due to the ASSETS program, parents of this community have learned about the destruction of the forest and they now see it as their responsibility to protect the forest and teach others about it – to tell others that what they're doing [destroying the forest] is wrong" (James, participant).

As the act of confronting another community member about their activities in the forest is not generally culturally acceptable, the action of speaking out on conservation could also be classified as communicative learning, as it involves questioning and negotiating cultural and normative values.

## *5.9 Communicative Learning*

As opposed to instrumental learning, where competency is measured in terms of being able to complete a given task, communicative competence "refers to the ability of the learner to negotiate his or her own purposes, values, feelings, and meanings rather than to simply act on those of others" (Mezirow 2000, p. 10). Communicative learning, as outlined in Chapter 2, involves understanding, questioning, and negotiating cultural and normative values. While instrumental learning outcomes were more common, participation in ASSETS did lead to communicative learning outcomes in some participants. For example, some participants broke with the local norm and began to openly support the conservation of the Arabuko-Sokoke Forest. For others, participation in ASSETS led to a change in attitudes, as they began to see a value in the forest and its conservation.

### 5.9.1 Speaking out for conservation

As described earlier in this chapter, the issue of illegal extraction is highly sensitive and confronting another person about their use of the forest is uncommon. In fact, residents who openly support forest conservation have sometimes received death threats from neighbours (Gordon & Ayiemba 2003). Despite this, some ASSETS participants have begun telling others about the forest, and confronting those people they know to be involved in illegal extraction:

> "Before I joined ASSETS, I would see people coming out of the forest with poles or logs for carvings and I wouldn't pay any attention to them. But, after joining in ASSETS I have the confidence to tell people coming out of the forest about the importance of the forest and about conserving it, and I'm doing it...I normally tell them that if we destroy the forest we'll be missing some benefits from organizations like A Rocha that help us, and if we destroy the forest it will be gone forever and future generations will be told, 'there used to be a forest here'" (James, ASSETS participant).

This participant had visited a number of people he knew to be involved in illegal activities within the forest, telling them about the importance of it and warning them of the consequences of being caught. By his account, a number of them had changed their behaviour as a result of his actions. Another ASSETS parent took similar steps:

> "Before I joined ASSETS I would see people cutting trees for poles and I would think it's alright. But after I attended the meetings with A Rocha I can tell people about the importance of trees... I explain the benefits people can get and the destruction they can cause by cutting trees." (Marlene, ASSETS participant)

According to the participant, the three people she confronted about their illegal pole cutting in the forest had stopped this activity and were looking for alternative work to earn an income.

### 5.9.2 Changed values

Some ASSETS participants reported that they thought differently of the Arabuko-Sokoke Forest after having participated in ASSETS. The difference between ASSETS participants and non-participant opinions of the forest were evident throughout the research, for instance, participants were much happier with the forest and did not favour its conversion to agricultural uses. After benefiting from the forest through the bursaries and learning about the benefits of a forest, parents had a new appreciation for the forest and valued it differently:

> *"Is the way you think of the forest now the same as it ever was or different?*
> I have new thoughts, since the past years I have seen the forest as an area where people could get land for farming, but now, since joining ASSETS I see it as an area that should be conserved. Through participating in the meetings I have learned that even if the forest is given out to people as shambas, they will plant it, and in a few years the conditions will worsen here because there is no forest" (David, ASSETS participant).

> "I used to feel that people should go freely [without license] for firewood and for poles from the mangroves, but since joining [ASSETS] I feel that restrictions are better" (Martina, ASSETS participant from Mida).

> "*Is the way you think of the forest different?*
> Yes, because now I feel that the forest should be conserved. If everyone was thinking the way I am there would be no problem, we wouldn't need the guards. But, some people are caught by the government, which means that my thoughts are different from the thoughts of others" (Anna, ASSETS participant).

> "*Is the way you think of the forest changed or the same as it ever was?*
> Since before, I knew the forest was restricted. But, when I joined the organization that's when I felt like protecting the forest so that those items [plants and animals] in the forest can be preserved so they increase" (Lisa, ASSETS participant).

For one mother, participating in ASSETS led her to realize the importance of education:

> "Initially I knew it [the Arabuko-Sokoke Forest] was a forest, but now at least I now the importance and value of it... I never used to take my kids to secondary school, but since then, I've realized the importance of it. I feel like it's through ASSETS that I was able to take my kids to secondary. And it's not just my kids, I realized the importance of education for all of children... I'm blind, because I can't read letters because I didn't go to school. I'm deaf, because I can't understand English. I'm so sad that I didn't go to school. And now, here's ASSETS giving my daughters an education. For me, I'll stay [here] until the day I die because I didn't go to school. But at least my daughters will have a chance. At least they can read the destination on the side of a bus... I've changed the way I'm thinking. I used to think the forest was just a place for trees and animals, but now I can tell people the importance of it" (Constance, ASSETS participant).

For one participant, who had recently lost her husband, participating in ASSETS led her to realize that involvement in projects like ASSETS could be a benefit to her, and she went on to join other local projects:

> "I learned that I cannot survive on one project alone. I learned about Kipepeo. You take a larvae and leaf in a mesh bag, keep replacing the leaves until it grows into a pupae. Then you can take the pupae and sell it. I was so surprised [to hear this]... I am [now] aiming at joining other projects. My eyes have been opened and I see the importance of being involved in these projects...
> *You see the importance of being involved?*
> So I can improve my life. A long time ago I used to depend on my husband, but now he's dead, so I have to depend on myself" (Charity, ASSETS participant).

## 5.10 Demographic Indicators and Learning

Although demographic indicators, like age, income, and education were generally consistent among the participants, the ASSETS participants did vary in some ways: their relationship to the child (whether they were their parent or sibling); their involvement in other conservation projects; the number of years they had been involvement in ASSETS; the number of recipient children they had; and the number of meetings they had attended. While it is obviously difficult to quantify learning and make conclusive statements about the correlation between these different variables, a few generalizations can be made:

- Learning, and especially changed behaviours like planting trees, were more evident in participants that had been involved in ASSETS for a longer period of time. This may be a result of the fact that they had more exposure to ASSETS staff and that those who joined the program in the early years received seedlings to start their own woodlot, whereas those who joined more recently did not.
- ASSETS participants who were the parent of the recipient child tended to be more enthusiastic about the program than those participants who were the recipient child's sibling. People tend to be more committed to their own child's education, and less so about the education of a sibling. In a study of children in 10 African countries, Case *et al.* (2004) found that the level of schooling a child receives is highest when that child lives with his/her parents, and lower when the child's guardian is a non-parent relative, such as an uncle or sibling. It is not surprising that a child's parent would be more enthusiastic about a secondary school bursary than the child's elder brother.
- Participants who attended the ASSETS meetings generally learned more and took more action on conservation than those participants who had not attended meetings, although there were notable exceptions. This is not surprising, as participants who attended the meetings would have more opportunity to interact with and learn from the ASSETS staff members.
- Among non-participants, negative opinions of the forest were linked to proximity to the forest and, correspondingly, the degree of animal problems they suffered.

## 5.11 Profiles of Learning

### 5.11.1 "It's my kids... they keep telling me"

Diana has lived in Kaembeni since she was a young girl. The mother of two ASSETS recipients, her story demonstrates the initiative that some ASSETS parents have taken, but raises many interesting questions. In many ways, Diana's story is counterintuitive: she had never attended an ASSETS meeting, she did not know who A Rocha was, did not know why her children were selected, and was unaware that ASSETS was a conservation project (assuming the projects' goal was education). Nevertheless, she took more action on conservation issues than most other parents, because her children would not stop nagging her.

Diana is a busy woman, with her husband away, she is occupied with a part-time job, part-time business, and taking care of her family. She lives some distance from the forest, a walk of nearly an hour on the winding trails between property lines, but she still suffers attacks from forest animals and is visited regularly by elephants and wild pigs who destroy her family's maize, coconuts, and pineapples.

Given her distance from the forest, and the fact that she had locally available wood, Diana has had little to do with the forest, but she is aware of some benefits from trees, "I can see it from here, where there are less trees the wind is stronger, it can even lift the roof tops. I know trees attract rain, but I've always known that." She also indicated that she values the forest, and would not be happier if the forest were cleared for agriculture, as "[in] the absence of the forest the animals would come here and disturb me."

Diana has noticed a lot of changes in her area, noting the "reduction of trees" and changes in the weather:

"During the olden times, there were so many trees and closed forests, we had good harvests. There were less people, and less cutting of trees. We used to receive a lot of rain – trees attract rain clouds. Now, the harvests are very poor. In places were there are many trees, trees attract rain clouds. Now, the bushes are reduced so they don't attract rain, but we can see it raining on the forest."

However, although she has "always known" that trees attract rain, she only recently began planting trees herself. Diana started a nursery in her *shamba*, for the expressed purpose of reforestation. "After being told by my [children], I started the nurseries. So long as I could get the seeds, I felt that I should do it."

What separates Diana from other parents who began planting trees is the fact that she is not planting to earn income from the trees, stating, "[I did it to] create trees in the *shamba*, because I want trees in my *shamba*."

Diana showed a lot of personal initiative to find out how to start her tree nursery, and when her plan failed, she tried again:

"[We] got the information from a meeting, about how to plant cashew and other trees. I had the idea of planting trees in a nursery. I was interested, I tried, but only a few germinated. So, I called the agricultural officer on my own to show me how to raise seeds. I tried it again and I had a good response, I had high germination.
*Where did you get the seeds from?*
I got the *arborea* seeds from the *arborea* plants behind you. I obtained seeds from the *casuarina* trees in the *shamba*. You dry the pods in the sun, in a container, until they burst, and then you get the seeds.
*Where did you learn about that?*
I attended a meeting, the officer emphasized that we should buy seeds, but we asked if we could obtain them locally and that's what he told us to do.
*What kind of a meeting was this?*
It was a sub-chief *baraza* with a guest from the ministry of agriculture. We discussed trees and we asked him how to obtain seeds locally.
*At the barazas and the agriculture meetings, what did they tell you about the importance of planting trees?*
I went to the meeting late, when I arrived we were just asking questions.
*You've done so much work, so you clearly realize the importance of planting trees, where did that idea come from?*

> It's my kids, because they keep telling me 'mother, you should plant trees.' It's a reoccurring thing, so I felt that I should do it, I got interested.
> *Do you intend to use the trees for timber, or not?*
> No, it was specifically to create trees in the *shamba*... I'm planting them to help change the weather conditions."

In addition to nagging their mother to change and start a tree nursery, Diana's children succeeded in changing the behaviour of some of their extended family as well. Some of Diana's extended family were doing charcoal burning in the bushes surrounding their family compound, but:

> "They've changed their behaviours... after [the children] spoke to them they realized and no longer do charcoal.
> *What did they realize?*
> Because they have been staying here for many years, and they've noticed the difference because the bushes have been cleared for *shamba*. They noticed the changing conditions. After they were told it was because of forest destruction they stopped burning charcoal."

Why did Diana change? When asked if she valued or thought of the forest in a different way since her children started receiving ASSETS bursaries, she replied no. Although her children's involvement in ASSETS (and consequentially, their nagging) was the impetus for Diana taking action and planting trees, the underlying motivation for her action seems a desperate attempt to alter the local weather conditions, reoccurring drought, and the hardship, shortage and insecurity that comes with it.

### 5.11.2 "The rest will follow"

James' story has an almost cinematic quality to it: a local leader committed to education, he saw the effect that conservation organizations like ASSETS and NABU were having on schools and students in his area and decided to take action. An ASSETS parent himself and a participant in countless local organizations, James took up the cause of forest conservation and began preaching the word to his neighbours. When he became

aware of local residents involved in illegal activities in the forest he, along with one or two friends, began visiting these residents to tell them about the benefits of the forest and warn them of the consequences of being caught poaching. Although sometimes received warmly, he has also suffered "verbal abuse" from his neighbours. But when one such abusive neighbour was caught in the forest it was James and his friends who paid his fine.

James lives close to the Arabuko-Sokoke Forest, and although he is now retired, he continues to be very involved in his community. He speaks passionately and knowledgably about ASSETS, conservation, and the value of the forest.

What separates James from other participants was the action he took; standing up for conservation in Kaembeni involves questioning cultural norms:

> "Before I joined ASSETS, I could see people coming out of the forest with poles or logs for carvings and I wouldn't pay any attention to them. But, after joining in ASSETS I have the confidence to tell people coming out of the forest about the importance of the forest and about conserving it, and I'm doing it.
> *How do people react when you tell them?*
> They normally ask me questions and I answer them, until we come to an agreement and he says, 'yes, even me, I see the importance of the forest.'
> *What things do you tell them?*
> So, I normally tell them that if we destroy the forest we'll be missing some benefits from organizations like A Rocha that help us, and if we destroy the forest it will be gone forever and future generations will be told, 'there used to be a forest here.'
> *What types of questions do they ask? [when you confront them]*
> Like, 'why should we conserve it?' 'what benefit will we get?' some even say it should be divided into *shambas*. Some give the suggestion that if the forest is cleared there will be no elephants to destroy our crops.
> *Do you think many people have changed?*
> Yes... We have a neighbor on my other *shamba* who used to cut poles from the forest for his own use and for selling. After selling, he takes palm wine and I went to visit him with 2 others and threatened him that the consequences of being caught in the forest is a 50,000 KSH fine, or going to jail for two years, so what will your family eat [if you're in jail]? He listened to us and he stopped, and we advised him to give his children at least 1 hour every night to study. So, he gave them that time and then he came back to visit us and said thank you, and that he know understands

> the importance of the forest, and that he'll emphasize that his children perform well on the final exam next year [to be accepted into ASSETS]...
> *You go and visit the people you know who are in the business?*
> There was another incident, we saw someone cutting poles and we arranged to meet him. When we went to his home he was so harsh to us so we decided we couldn't speak to him. Unfortunately, later one day he went to the forest and was caught by the rangers. After this, he sent someone to each of the 3 [who had visited him] and asked for 1000 KSH each, we came up with 2000 KSH and gave it to him [to pay to get him released]. After he was released he came back and told us, 'that day I made a big mistake in yelling at you, maybe you cursed me and that's why I was caught.'"

Given that many residents are unlikely to report others for illegal activities, personal intervention from a respected community member has the potential to change way people view the forest. When asked why he took this action, James responded that he simply saw it as his duty. He had realized the importance of the forest in providing benefits to his community and decided he had tell others:

> "I was among the leaders of this community, if you're a leader and you mishandle important information then the rest will mishandle it. If you're the leader and you see the importance of it [the forest], it will start with you and the rest will follow."

## 5.12 Non-Participant Perspective

Fourteen ASSETS non-participants were interviewed for this research. Non-participant households were chosen to geographically correspond with participants, as someone's proximity to the forest (and proximity to animal problems) often corresponds with their attitude towards the forest. This by no means constitutes a statistically significant comparison, but the difference between participants and non-participants provides an interesting comparison, suggesting that ASSETS is having an effect on participants' attitudes towards the Arabuko-Sokoke Forest (Table 4).

While non-participant and participant responses were similar in some regards, for instance in their understanding of why the Arabuko-Sokoke Forest is being conserved,

they were markedly different in other regards. ASSETS participants were much more positive about the forest and its conservation: they were more aware of the benefits of the forest, were happier living near a forest and the animals within, and did not want to see the forest destroyed or converted to farmland.

**Table 4: ASSETS participant and non-participant perspectives contrasted***

| | ASSETS Participants | Non-participants |
|---|---|---|
| Why is there an interest in forest conservation? | Forest/trees attract rain; forest generates income (for government, from tourists) | Forest/trees attract rain; forest generates income (for government, from tourists) |
| Is the forest under threat? | Under threat/doing fine (tie); not sure | Forest is doing fine; not sure |
| How to help the forest | The rangers should catch people; people should stop stealing trees | The rangers should catch people; people should stop stealing trees |
| How to hurt the forest | Sneaking in to steal/cut trees | Sneaking in to steal/cut trees |
| Is the forest of any value or significance to you? | Yes, it is of value (95%) | Yes, it is of value (57%) |
| Would you be happier if the forest were not there? | No | Yes/ No (tie) |
| Would you be happier if all or part of the forest was given out for shambas? | No | Yes, clear forest for farms |

*Where more than one response is listed, the first was the most popular response

Without the benefit of a bursary, for many non-participants, the forest brings nothing but trouble. The story of Joel, below, exemplifies the non-participant experience with the forest.

### 5.12.1 "Value it for what?"

As the head of a large, multi-generational family Joel has a lot of responsibility, with many mouths to feed. Living next to the Arabuko-Sokoke Forest has been challenging and the family struggles to get enough food to go around. Primary school aged children are at home as uniforms, books, and exam fees are too costly.

Joel was generally aware of conservation and tourism ventures in the Arabuko-Sokoke Forest, though he had yet to see any benefits himself, stating that tourism profits are "taken by the government and the government gets the benefits." Joel's opinion of the Arabuko-Sokoke Forest and its conservation are tainted by his very negative experiences with forest animals:

> "[Elephants and wild pigs] destroy maize, cassava, and the coconuts. I have to go every night to chase the wild pigs...
> *When was the last time elephants came?*
> Last year... They cleared away everything – maize, cassava, banana, and pineapples. The wild pig and elephants increase the hunger in this area."

Joel and his family are trying to dig a trench to encircle their farm and keep out the wild pigs, but that will take a few years to complete and will not help the elephant problem; he dreams of an electric fence, to surround the forest and keep the elephants off his farm.

Joel recognizes that forest trees act as windbreakers and he has noticed that areas close to the forest receive more rain, but this does not change his opinion of the forest:

> *"Is the Arabuko-Sokoke Forest of any value or significance to you?*
> No. Value it for what?...
> *Would you be happier if the forest were not there?*
> Yes, because there would be no animals to destroy our crops. Now, [the forest] is there and it brings nothing apart from the animals that destroy our crops. It is better if it doesn't exist at all."
> *Would you be happier if all/part of the forest were given out for shambas?*
> Yes, I would be very happy because once we grow our crops we get nothing because of the animals. But, those on the other side of the forest would oppose that because their crops do well.
> *But, you said that you receive rainfall, what if it's cut?*
> No, we won't be receiving rainfall [if it's cut]. If it were not there and there was no rain it would still be better. I don't like the forest at all."

Joel remembers when the Arabuko-Sokoke Forest was being initially divided for shambas, and notes that the animal problems have only intensified since that time, as the forest once had sufficient food and water for the elephants.

Without personal benefits from the forest, benefits like increased rain and reduced wind are simply not enough for farmers like Joel. He finished our interview:

> "Even if you don't take anything I've said, take the wild pigs and elephants seriously. It's made us poor, there's no food, it's not for me alone, all those bordering the forest face these problems. It's come to the point where people are migrating to different areas."

## 5.13 Summary

Participation in ASSETS led to a variety of learning outcomes, including: learning new information such as the biology of the forest and that trees can be sold for income; learning new skills like how to properly space and water seedlings; and an increased recognition of the connection between deforestation and aridity. Some ASSETS participants took action on conservation issues after participating in the program, including starting nurseries, planting trees in their *shambas,* telling others in the community about the importance of the Arabuko-Sokoke Forest, or confronting those involved in illegal activities in the forest. Outcomes such as these are discussed further in the next chapter.

# Chapter 6 Facilitating Learning

This chapter will elaborate on the results described in Chapter 5, discussing the implications of this work in light of other conservation projects and exploring some of the obstacles to learning encountered in this research.

## 6.1 Learning Outcomes

Participation in the ASSETS program led to variety of instrumental and communicative learning outcomes, such as learning new information about the Arabuko-Sokoke Forest, learning new skills related to tree planting, and learning to question local cultural norms and speak out for conservation. Many ASSETS participants reported a new, more positive view of the Arabuko-Sokoke Forest, and participants' opinions of the forest were certainly more positive than the opinions of non-participants in the same community. Some ASSETS participants took action on conservation issues by confronting those involved in illegal activities in the forest, and by starting nurseries and planting trees on their own farms.

Most ASSETS participants engaged in instrumental learning, while communicative learning outcomes were less common. This is likely a result of the fact that the ASSETS program is focused on relaying information to the parents – how the forest can be of benefit; the connection between deforestation and environmental degradation; trees can be sold for income – rather than encouraging the participants to dialogue and think critically. For some, learning involved more than simply acquiring new information; some participants took action on conservation (like Diana, described in Chapter 5). Transformative learning occurred in only a handful of cases, the most notable example of which is described in Chapter 5 (James' story). James' learning emerged from his role as a community leader and his involvement in a number of

projects, including ASSETS. For James there was no singular moment that led to transformation, rather, change occurred incrementally, as his involvement in the community led him to increasingly understand the forest and the need for its conservation.

## 6.2 Participant Involvement in ASSETS

Thakadu (2005) found that effective community participation, especially during program mobilization, was a critical factor in the success of community natural resource management projects in Botswana. Compared to other conservation projects in Africa, participant involvement in ASSETS is quite limited. At a minimum, most community conservation projects incorporate community members by means of a project management board or committee (e.g. Kellert *et al.* 2000; Thompson and Homewood 2000; Archabald and Naughton-Treves 2001). For ASSETS beneficiaries, however, participation is limited to attending a handful of meetings each year. As ASSETS does not devolve any decision-making authority to beneficiaries or incorporate them into the project's management, ASSETS would be more accurately described as a tourism revenue-sharing project, rather than a community conservation project (although the definition of community conservation can be so broad that it generally encompasses such revenue-sharing projects).

A number of authors have criticized community conservation projects for failing to devolve decision-making authority to community members (e.g. Gibson and Marks 1995). However, it should be noted that ASSETS has no such power to devolve to the community; A Rocha is an environmental organization, not a government department or parastatal. Although A Rocha is an affiliate of an international organization, A Rocha Kenya is indeed Kenyan: based near the Arabuko-Sokoke Forest and employing

Kenyans. ASSETS is not managed by faceless bureaucrats in a distant capital; the ASSETS coordinator and the community officers are local, generally *Giriama* people and well known to ASSETS beneficiaries. Notably, research participants, including ASSETS non-participants, had much more familiarity with the ASSETS program than they did with Participatory Forest Management and the residents' association (ASFADA) that is intended to represent them in the PFM process.

In order to increase participant involvement in ASSETS, A Rocha could establish a mechanism to solicit participant feedback on the program. In order to ensure an honest assessment, participants will likely want to be sure that their responses will be confidential. Participant feedback is recognized as an important, though often overlooked, factor in successful aid and development projects (Easterly 2006), as participants know best what is working in a program, and what is not.

Finding ways to further incorporate ASSETS participants into the program will be challenging for A Rocha, but by and large, ASSETS parents are keen to do what they can. Parents were enthusiastic about conservation, but often unsure of how they could help. The establishment of parents' associations within ASSETS communities could be a positive step, helping to spread the conservation message beyond the current recipients. The structure of ASSETS, however, might complicate the establishment of parents' associations, as involvement in ASSETS is temporary by definition, lasting a maximum of four years (unless the parent has more than one child receiving a bursary) and children can lose their bursaries if their academic performance is poor. The ever-changing makeup of ASSETS beneficiaries helps to spread forest related benefits to a wider group of residents, but it does not facilitate forming a stable parents' association.

Given the reality of the ASSETS program, A Rocha should encourage conservation minded individuals, ASSETS participants or not, to form their own organizations and provide them with guidance and assistance as possible and appropriate. Importantly, A Rocha could help the local organizations tap into already existing programs in their areas, such as beekeeping.

## 6.3 Spreading the Word

A noted shortcoming of projects like ASSETS and Kipepeo is that the benefits are limited to a small number of residents; spreading the conservation message to the 100,000 people surrounding the forest is a challenge (Gordon and Ayiemba 2003). At present time, ASSETS is providing bursaries to a few hundred students surrounding the Arabuko-Sokoke Forest. If the program is to truly affect change in the area it must also affect non-participants. At the least, other community members should be aware that benefits like the bursaries are available to people in their region.

According to Jonathan Baya, A Rocha Kenya Assistant Community Officer, "[p]eople in this region have a 'let me struggle along with the others' attitude. If you don't share what you have with your neighbors there will be problems." In this context, people would rather not have the reputation for having something or receiving benefits beyond what other members of the community have. A major strength of the ASSETS program is that the recipient selection process is clear and procedurally fair – the student was in Standard 8 at an ASSETS primary school, they performed well, and they live within 3 km of the forest. This clear selection process allows parents to explain the bursaries to other community members, as the program is conceivably within everyone's reach.

Kellert *et al.* (2000) found that the benefits of community conservation projects in Kenya were not fairly distributed among community members. Thompson and Homewood (2002) found that revenue from tourism inside and around Kenya's Maasai Mara, intended for local projects, were often expropriated by local elites, with a high percentage of program budgets used for board member "allowances." ASSETS bursaries do not cover all of secondary school costs, so the program cannot help those in truly dire poverty who are unable to come up with the remainder of the tuition. However, as described in Chapter 5, ASSETS is helping send children to school who would not otherwise be there. Unlike conservation projects elsewhere in Kenya, ASSETS is helping a broad section of the community and not simply enriching local elites.

## 6.4 Understanding the Severity of Forest Threats

Someone who does not think the forest is under threat may be less likely to take action on forest conservation issues – less than half of the ASSETS participants interviewed indicated that they thought the forest was under threat, either because they knew of people who had been caught doing illegal activities in the forest, or because they had noticed a change in the forest over time.

Among the key informants, there was some debate as to whether threats to the forest are increasing or decreasing (with a number of government officials commenting that projects like participatory forest management have had a positive impact on the forest). However, the literature on the Arabuko-Sokoke Forest is quite consistent: the forest is not "doing fine" (e.g. Burgess *et al.* 1998; Myers *et al.* 2000). Although more ASSETS participants reported that the forest is under threat compared to non-participants, a surprising number of ASSETS participants reported that the forest was "doing fine" or that they did not know whether it was under threat or not. Considering

that these participants have attended ASSETS meetings and environmental education talks, it is interesting that they still felt the forest was "fine." This suggests that the ASSETS is not effectively communicating the true state of the forest to program participants.

Those ASSETS participants who did feel the forest was under threat cited specific examples such as the decline in hardwood trees like *muhuhu* (*Brachylaena huillensis*) while those who felt the forest was fine made only general observations (e.g. the forest is still there) or had not visited the forest for some time. ASSSETS could consider revising the parents' environmental education component to include guided walks in the forest, that point out specific threats – evidence of logging and charcoal burning, change in forest composition and age structure, and decline in specific species. If this is not possible, ASSETS meetings should focus on specific examples of change in the forest and environment over time.

## 6.5 How to Help

As outlined in Chapter 2, protected areas alone are not enough to ensure effective biodiversity conservation (Brandon *et al.* 1998). If the Arabuko-Sokoke Forest is to survive, conservation and stewardship outside the forest boundary – on the *shambas* – cannot be ignored. The *shambas* surrounding the west side of the Arabuko-Sokoke Forest are still comparatively well forested and many people have "bushes" on their *shamba* – small forest patches from which they can access firewood and poles, or make charcoal. However, these bushes are steadily being cleared, and a number of respondents indicated that they had recently "finished" their bushes (Plate 10).

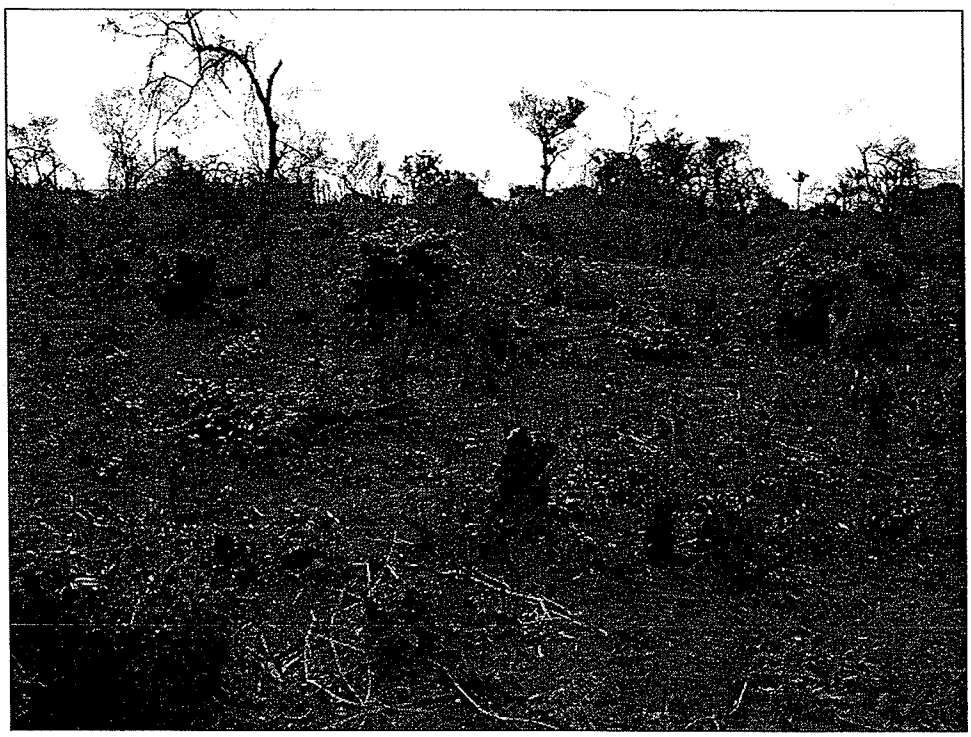

Plate 10: A shamba bordering the forest, cleared of most vegetation

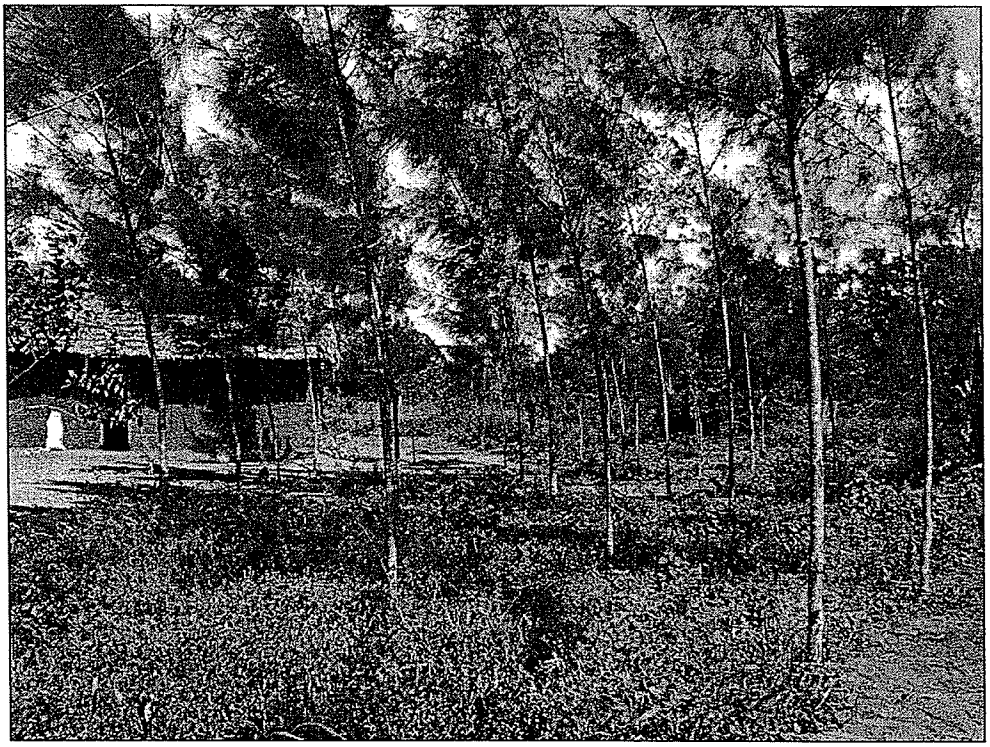

Plate 11: Trees planted by ASSETS participants on their shamba to help with the rains.

Although some of these respondents were passionate about the conservation of the Arabuko-Sokoke Forest and looking for ways to help the forest, they saw conservation as something that happens within the forest, not on their farms; there was no indication that they felt that their own "bushes" should be conserved. These areas are important for the maintenance of the forest and as habitat for its species, but ASSETS appears to be focused exclusively on the areas within the Arabuko-Sokoke Forest. ASSETS should consider expanding the scope of its programming, to include conservation beyond the arbitrarily defined boundaries of the forest reserve.

The majority of interviewees saw helping the forest as the responsibility of KWS/the rangers, or contingent upon those who are currently harming the forest to stop. When asked how *they* could help, they had few proactive suggestions. It seems that ASSETS is focusing on simply staying out of the forest, rather than encouraging people to actively partake in conservation. This is evidenced by the fact that, after participating in environmental education seminars through ASSETS, participants generally had no more suggestions on how to help the forest than non-participants.

As residents are repeatedly told they must "stay out of the forest" and "report those who go there" it is not surprising that they had few proactive suggestions to help the forest; if the biggest threat to the forest is illegal extraction and you are not involved in these activities, then you are already doing all you can. Reporting those involved in illegal activities is culturally quite unacceptable, not to mention potentially dangerous.

This is the epitome of "fences and fines" conservation and it is quite offensive, as it assumes that everyone is a would-be criminal and does not foster a local sense of stewardship. The shortcomings of this approach were described in more detail in Chapter

2. In the case of the Arabuko-Sokoke Forest, what this rhetoric accomplishes – it *is* rhetoric, the government cannot afford to adequately patrol the forest – is questionable. The people who are actually involved in illegal extraction are not deterred: they know it's just talk and that they can pay the *askaris* to find out if a patrol is coming and bribe the *askari* if they happen to get caught. The end result of the forest fear mongering is that the criminals keep going while regular people, and would-be advocates for conservation, are terrified to go in the forest for legal activities like mushroom and fruit collecting.

This brings up a larger question, who is ASSETS' target audience? Is the fundamental goal to provide financial assistance to families to lessen their need to harvest illegally, or to change community attitudes towards the forest? If it is the former, I would argue that the program is misguided, as the benefits of a bursary can not compensate financially for the amount of money people can earn by illegally harvesting forest resources. Rather, the strength of ASSETS is in changing community attitudes and values towards the forest to a point where community members themselves will not tolerate poaching in their forest.

As more people become involved in ASSETS and more of their non-participant friends and neighbors learn about the benefits that can come from the forest, the community's collective values may change and there may come a time where it is unacceptable to poach from the forest – rather than today where it is generally unacceptable to intervene and report those who are poaching.

## 6.6 Changed Values?

With projects that attempt to encourage conservation by providing material or monetary benefits there is sometimes a concern that this could result in a situation where people see the environment only in terms of how much it is worth to them; they are

willing to conserve, but only when it pays. Boonzaier (1996), for instance, found that participation in a South African community conservation project tended to make people more cynical about conservation and the environment. Participation in ASSETS led to a number of learning outcomes, but are parents now in favour of forest conservation because of a profound learning experience, or are they simply being pragmatic – favouring conservation only because they receive bursaries? Does it really matter?

If the forest is to survive in the long-term, it does matter. If personal financial gain is an individuals' sole motivator, they might easily abandon conservation when something more profitable comes along. In strict financial terms, conservation is not the most potentially profitable activity in the Arabuko-Sokoke Forest. In 2002, for instance, Wandago did an economic analysis of the Arabuko-Sokoke Forest and found that the most "profitable" use of the forest for adjacent residents would in fact be titanium mining.

While a handful of participants indicated that they only wanted to see the forest conserved because they benefited from it, and that without this benefit they would "suggest to cut it for cultivation" (Linda, ASSETS participant), these individuals were only a small minority. In contrast, most ASSETS participants indicated that the most important benefit from the forest were not the bursaries, but rather the "non-bursary" environmental benefits, chiefly, the perceived connection between trees and rain. An understanding of the environmental importance of forests and trees and the consequences of forest destruction were one of the main learning outcomes of ASSETS. The support for the Arabuko-Sokoke Forest voiced by participants are not fickle proclamations, but emerge from an appreciation of the environmental services that trees and forests provide.

The prevalence of the "trees bring rain" connection made by ASSETS participants undoubtedly emerges from their recent experiences with drought; people are desperate to do something, *anything*, to change the situation and many have latched on to forest conservation and tree planting as the solution to drought (Plate 11). Tree planting is certainly positive in a global sense and trees help to prevent desertification and erosion at a local level, but it is entirely too possible that participants' tree planting efforts will not lead to positive change in their area in terms of "fixing" the rain problem and preventing future drought. Although it is difficult to forecast the impact of climate change on precipitation at a local level, current global climate models predict that East Africa will experience significantly increased rainfall variability, contributing to increased water stress (Hulme *et al.* 2001). How will ASSETS participants react if their conservation and tree planting efforts do not lead to noticeable positive change? Will they stop?

If A Rocha wants to counter this situation and encourage ASSETS participants to value conservation even when they see no personal benefit from it, the program must begin to focus on more than materialist benefits to be gained from conservation, in a sense, they need to take a more spiritual approach to conservation. Religion is a very important part of public life in Kenya, and many participants indicated that Christianity was a central part of their identity and family life. However, although A Rocha is a Christian conservation organization, participants were generally unaware of the organization's faith-based approach to conservation.

Some participants, like Rebecca, described an appreciation for animals that would be in line with A Rocha's ethic of "caring for conservation," but this was not an outcome of their participation in ASSETS:

> "They [animals] are created by god. They were not created to stay in *shamas*, their homestead is in the forest. Why would we go taking their space from them?" (Rebecca, ASSETS participant).

Given the prominence of religion in Kenya, A Rocha could consider incorporating their "caring for creation" message into ASSETS. However, if this is undertaken it must be done with the utmost respect and sensitivity, so as not to upset, offend, or alienate the Muslim participants in ASSETS. Rather than undertake an explicitly Christian message into the program, A Rocha could explore the message of stewardship and respect for creation common to many religions, including traditional *Giriama* and *Mijikenda* beliefs. The message of "caring for creation" would be all the more powerful if it were shown to be common among different belief systems.

## 6.7 Bursaries as a Forest Benefit

Other means of delivering conservation benefits from a protected area to adjacent communities include revenue sharing in the form of cash payments (e.g. Thompson and Homewood 2002), and community projects like clinics, schools, or roads (Archabald and Naughton-Treves 2001). However, little work has been done to explore the comparative effectiveness of these different types of benefits in achieving conservation and community development goals. Kaembeni provides an interesting case study to compare the effectiveness of these different mechanisms, as in 2003 the German conservation organization NABU (Naturschutzbund Deutschland), in conjunction with the KWS, financed extensive renovations at Bogamachuko Primary School. These renovations were ostensibly undertaken in the name of forest conservation, though the link between the forest and the school is not clear. While many participants felt that ASSETS aimed to increase local education, and was not specifically a forest conservation project,

participants overwhelmingly understood that the bursary money was generated from the forest.

This contrasts strongly with the NABU project. Although the project was undertaken in the name of forest conservation – to provide community members with a benefit from the forest and to help offset some of the negative aspects associated with living near the forest – few people remembered the project. Research participants were given a number of opportunities to list the benefits of the forest or good things that come from the forest, but only a handful remembered the school construction. This, despite the fact that school renovations were extensive (Plates 12 & 13) and that Bogamachuko Primary School is the only primary school in community, so most participants would have had children attending the school at the time it was renovated. One respondent did remember:

> "Our kids have a place to read and learn, we no longer go for fundraising and we parents no longer have to bring *makuti* [thatch], and it's all because of the forest... When I [moved here] the school buildings were in tatters." (Tessa, non-participant)

In total, only six respondents identified the construction of the school as a forest benefit (of these six, most were employed by the school or very involved in the parents' association), suggesting that the project did not clearly link the school renovations with the forest. In contrast, ASSETS made a clear link between the bursary and forest, and participants understood the connection between the two.

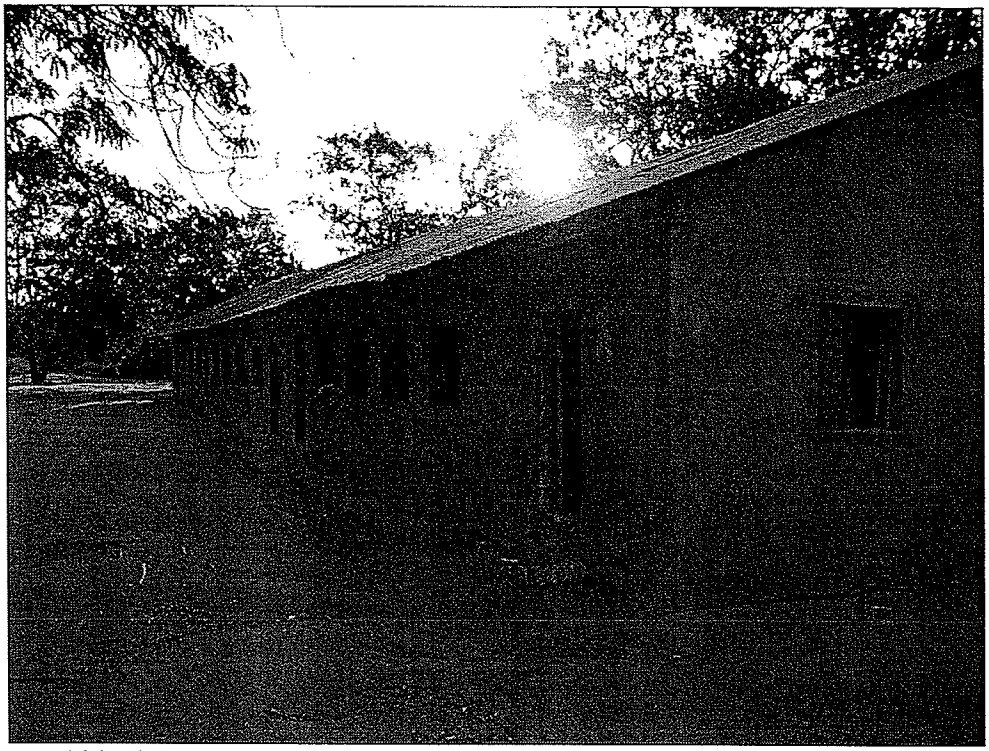

Plate 12: Renovated block at Bogamachuko Primary School

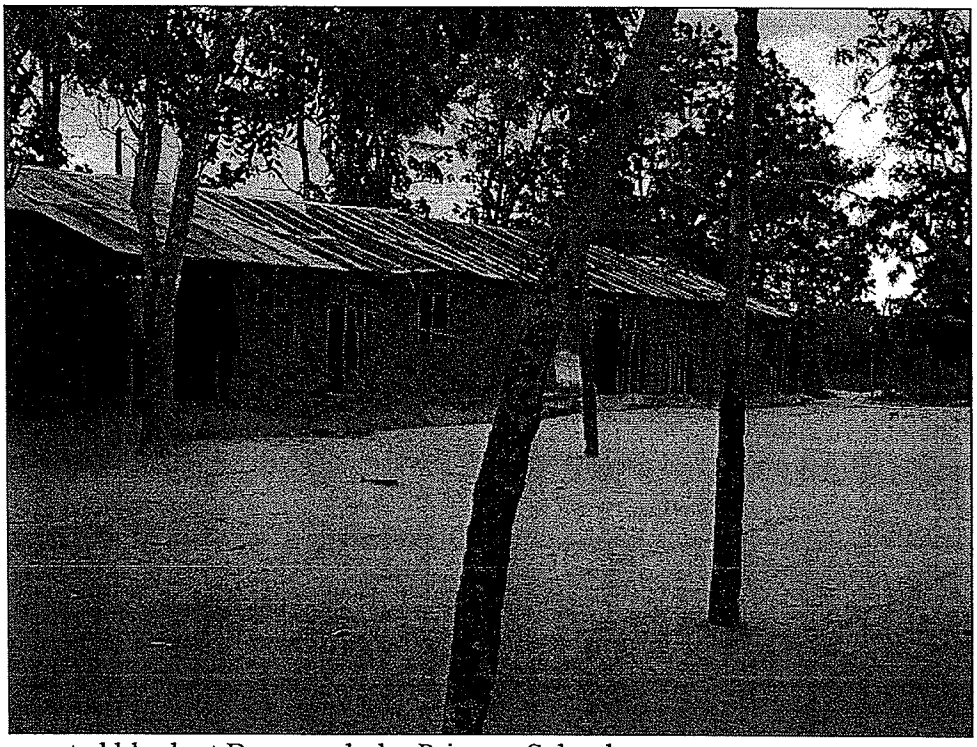

Plate 13: Un-renovated block at Bogamachuko Primary School

With NABU, the school was financed, a community celebration was had, the organization left, and within three years most people had forgotten that the school's construction was even linked to the Arabuko-Sokoke Forest, if they ever knew. Whereas NABU provided a general benefit vaguely linked to the forest, ASSETS bursaries are a personal benefit, with a clear link to forest conservation.

The personal nature of ASSETS bursaries, in conjunction with periodic follow-up meetings, has created a program that participants understand. Broader issues of whether ASSETS results in changed behaviours aside, the participants clearly understand how their benefits are linked to the forest and its' conservation, which is not always the case with such projects.

## *6.8 Obstacles to Learning*

A number of obstacles to learning were identified during the course of this work. Mezirow (1989) identified a set of ideal conditions for learning "as a standard against which to assess educational and social practices," (p. 171) but not necessarily as a prerequisite for learning. These conditions include individual openness, self-knowledge, and the ability to reason and reflect, as well as "accurate and complete information about the topic discussed [and] freedom from coercion" (Mezirow 1989, p. 171). A main obstacle to learning was the use of English and written communications with participants, as well as a lack of community trust in forest officials.

### 6.8.1 English

The majority of parents did not realize that involvement in conservation activities was a requirement of ASSETS and few recalled signing a confirmation where they pledged to support conservation of the Arabuko-Sokoke Forest and Mida Creek. This

may be a result of the fact that the declaration form was written, many parents are illiterate, and in English, a language that few parents understand fluently.

ASSETS periodically sends out written communications to the participants, many of whom are illiterate. I knew one ASSETS mother who would bring a letter to the local primary school so that a teacher could read it to her, but receiving a letter she could not read was a source of embarrassment to her, she later commented, "I'm blind, because I can't read letters because I didn't go to school. I'm deaf, because I can't understand English" (Constance, ASSETS participants). She is neither blind nor deaf, and should not be made to feel that she is.

A Rocha should be sensitive to the fact that they way they choose to communicate with participants has an effect, not only on how clearly they get their message across, but on how participants think of themselves. The organization could consider creative, perhaps more visual, means of communicating with parents, and should stop assuming such a high degree of literacy among participants.

### 6.8.2 Community relationship with forest officials

If the conservation message is to take hold in communities near the Arabuko-Sokoke Forest, residents should see the conservation ethic reflected by local forest officials and elected leaders. As James, an ASSETS participant observed, "if you're a leader and you mishandle important information then the rest will mishandle it. If you're the leader and you see the importance of it [the forest], it will start with you and the rest will follow."

Mismanagement and corruption are important, though often overlooked, considerations in community conservation projects. Tales of community funds being

embezzled by local officials and elites abound in the literature (e.g. Archabald and Naughton-Treves 2001; Kellert *et al.* 2001; Thompson and Homewood 2002). Smith and Walpole (2005) found that, although corruption is often cited as a concern by conservationists, little work has been done to document this corruption and to try and build precautionary measures into conservation projects to mitigate corruption. Externally funded projects with little oversight on the ground were cited as especially prone to corruption (Smith and Walpole 2005). Although some ASSETS funds come from outside the country, the program itself is locally managed with a high degree of oversight. Throughout my research, there were never any concerns about mismanagement of ASSETS funds.

As opposed to the ASSETS staff, who were trusted and respected by program participants, these participants did not place the same level of trust in the local forest officials. Responded one participants when asked if he has faith in the forest guards: "yes, but not all of them... some of them are associated with those who destroy the forest."

The fact that many participants have begun to think critically about the activities of the guards and those involved in illegal activities may be a sign of learning – these people sincerely feel that it is wrong to harm the forest. Recall that many non-participants were keen to clear the forest for cultivation, these individuals would not be upset that people were harming the forest, or that guards were not doing their jobs properly.

While conducting my research I would sometimes ask the respondents to take me into the forest, they were often hesitant and would respond with something like, "ok, but

only because I'm with you, a *mazungu*, so the *askari* won't do anything to us" (though I didn't actually witness any patrols during my stay in Kaembeni). Carrie, a non-participant, had a similar fear of going into the forest: "if they [the *askari*] get hold of you when you are returning from the forest with water you go to jail." These negative experiences with forest guards should be a major concern for A Rocha as, according to Infield and Namara (2001, p. 55) "a single incidence of negative behaviour by park staff can sour relations with a community for months or even years," impacting the community's view of the protected area as a whole.

## 6.9 Summary

The strength of the ASSETS program lies in its ability to change people's attitudes towards the forest as they learn how the Arabuko-Sokoke Forest is a benefit to them and their environment. The individual nature of the bursaries, as well as the clear method by which participants are selected, facilitated learning and speaking out about forest conservation. The use of bursaries as a means of channeling forest benefits to community members appears to be more effective than other conservation projects undertaken in the area, such as the construction and renovation of Bogamachuko Primary School. However, despite their involvement in ASSETS, many participants did not understand the severity of the threats facing the forest and few had any proactive suggestions on how to help the forest. ASSETS, like most conservation projects in the area, is focused mainly on conservation within the Arabuko-Sokoke Forest, largely ignoring the forest clearing taking place on forest-adjacent farms. ASSETS participant learning was hindered by the program's use of English, as well as poor community relations with government forest officials.

For many ASSETS participants, their new fondness for the Arabuko-Sokoke Forest and the new actions they are taking, such as planting trees, stem from a desire to "improve" the rain in the area. However, it is quite possible that these people will never see a noticeable change in their area. In order to ensure the long-term conservation of the Arabuko-Sokoke Forest it may be necessary for organizations like ASSETS to promote a vision of conservation based less on the utilitarian values associated with the forest.

# Chapter 7 Conclusion and Recommendations

The purpose of this project was to examine learning through participation in the ASSETS program, and the role of such learning in contributing to conservation efforts by participants, both within and external to the Arabuko-Sokoke Forest. The research objectives were:

*1) To consider the types of public participation in community conservation projects and document different mechanisms that attempt to involve communities.*

The types of public participation in community conservation projects were considered generally in the literature review; participation in ASSETS involved attending period meetings/environmental education seminars. There are currently no structures in place to incorporate ASSETS participants in project management

*2) To examine if learning has occurred through participation in a community conservation project, that is, if perceptions of conservation and attitudes towards protected areas have changed as a result of this participation.*

Participation in ASSETS led to a variety of instrumental learning outcomes, including new information about the forest, learning new skills related to tree planting, and learning about the connection between deforestation and aridity. Communicative learning outcomes included learning to speak out for the Arabuko-Sokoke Forest and its conservation

*3) To examine the extent to which this learning has been transformative, that is, if it has resulted in changed behaviours, such as a greater consideration of environmental concerns and increased action on conservation issues.*

Some ASSETS participants indicated that their opinion of and values related to the Arabuko-Sokoke Forest changed as a result of their participation in the program. This led some participants to take new action on conservation issues, such as confronting others about their use of the forest.

*4) To identify the characteristics of community conservation projects that facilitate learning.*

Instrumental and communicative learning outcomes were more common among participants who had been involved in the program for a longer period of time; who were the parent of the recipient student; and who attended the ASSETS meetings more regularly. Making a connection between deforestation and increased aridity appeared to facilitate learning among some participants.

Overall, ASSETS participants were very positive about the Arabuko-Sokoke Forest and its conservation. Participants and non-participants alike felt that the importance of the forest, and the interest in its conservation, was related to the connection between trees and rain. However, although many participants were enthusiastic about conservation, few had proactive suggestions as to how to further conservation, apart from "staying out" of the forest. Most ASSETS participants understood that the bursaries were generated from the forest, though many thought that the goal of the program was education, rather than conservation.

Among the wider community in Kaembeni, some non-participants were aware that there was a bursary program available for students at Bogamachuko Primary School, but they were unaware of the connection between the bursaries and the Arabuko-Sokoke Forest. However, many of the ASSETS participants expressed a desire to become

involved in an ASSETS parents' association, with a number of participants suggesting that their organization "act as teachers" to others in the community in order to spread the word about forest conservation.

## 7.1 Recommendations

### 7.1.1 Enhanced participation in ASSETS

The ASSETS application form contains a "confirmation" where applicants and their parents pledge to maintain a wood lot at home and to protect and conserve the forest. However, when asked about any requirements of the ASSETS program, only a handful of participants remembered the confirmation. This may be a result of the fact that the confirmation was in English, or the participants may have simply forgotten. In order to make this pledge more effective, in addition to the confirmation on the application ASSETS could consider administering a group "pledge" when they meet with new participants. Parents could sign and submit a confirmation at this time.

ASSETS should consider treating participation in the program as membership in an organization, by signing up a specific member of the family as the "ASSETS member." When a meeting is called, that person should attend, not simply the person for whom it is most convenient that day. It should be stressed that the ASSETS member should be a person who is often available for regular meetings, bearing in mind that ASSETS participants who were the parent of the recipient child tended to be more enthusiastic about the program than those participants who were the recipient child's sibling.

As discussed in earlier chapters, community participation in ASSETS management is limited. Greater community involvement in the program could be beneficial in terms of improving program delivery and increasing ASSETS' presence "on

the ground," as the ASSETS/A Rocha staff are limited in the amount of time they can spend in the different ASSETS communities. A first step to enhanced participation in ASSETS could be the formation of parents' associations. Participants were willing and enthusiastic to join a parents association – to help conserve the forest, to spread the word about the importance of the forest, and to increase local economic development. A Rocha should encourage the parents to organize associations and provide whatever support they can – financial, technical, organizational or otherwise. However, it may be difficult to form lasting, self-sustaining parents' associations, due to the temporary nature of participation in ASSETS. As such, the association should be open to current and former ASSETS participants, as well as other community members concerned about conservation. In some instances, it might be beneficial for A Rocha to partner with other organizations in the area, or at least provide ASSETS participants with the information they need to become involved in other projects (e.g. beekeeping).

As a component of the parents' associations, or separately, ASSETS should find a way of soliciting ASSETS participant feedback on how the program is working and how it could be improved. Ideally, this feedback should be obtained in a confidential manner, so participants do not fear losing their bursaries.

### 7.1.2 Improved conservation education

Many participants were very grateful for the assistance they received from ASSETS, but unsure of how they could help the forest; in their minds, the only thing they can do to help the forest is stay away. ASSETS should consider specifically defining things that people can do to be proactive and "help" the forest, such as conserving trees on their own *shamba* or planting indigenous trees in the forest or on their farms. Given

that ASSETS participants generally had no more ideas about how to help the forest than non-participants, this component of the program clearly needs to be strengthened.

The fact that many participants felt the forest is "doing fine" is concerning. Those interviewees who felt the forest was under threat used specific examples from their own experiences to illustrate how the forest had changed (e.g. there are fewer *muhuhu*), while those who felt that the forest was doing fine made more general observations – essentially that the forests and trees are still *there*, so the forest is not under threat. ASSETS environmental education could consider using more specific, local examples of how the forest has changed to better communicate the state of the Arabuko-Sokoke Forest. Many parents had not been to the forest in a number of years. It is difficult to understand and value a forest, never mind notice changes in it, without ever seeing it. ASSETS should consider revising the parents meetings to include hands-on environmental education, such as guided walks through the forest.

A Rocha Kenya is already undertaking some environmental monitoring in and around the Arabuko-Sokoke Forest as a component of its research activities. The organization could consider incorporating interested ASSETS participants in these activities. In other African settings, community-based ecosystem monitoring has been shown to be an effective method of involving community members in forest management activities (e.g. Topp-Jørgensen *et al.* 2005) as well as an efficient method of gathering scientific data (e.g. Gaidet *et al.* 2003).

Given the religious convictions of many ASSETS parents and the fact that A Rocha is a religious conservation organization, ASSETS could consider incorporating a more spiritual component to its conservation education, as described in Chapter 6, rather

than focusing on the material benefits to be had from the forest. Lastly, in order to improve dialogue and enhance their learning, future communications with participants should be in a language they understand fluently, not English. This should include the parents' section of the application form.

### 7.1.3 Improved relationships with forest officials

Negative encounters between area residents and officials can sour relationships between the community and the forest and undo the accomplishments of ASSETS and other conservation organizations. At the local level, ASSETS could consider educating participants about their rights and responsibilities related to the forest, and actions they can take when officials abuse their position. For example, community members should know that the guards are not allowed to detain them for collecting water, and who to contact if this happens.

ASSETS should try to facilitate dialogue between the community, other stakeholders, and forest officials by continuing to participate in events like the forest "open day," by becoming more involved with other conservation organizations in the area, and by attempting to play a bigger role in the Participatory Forest Management process.

## *7.2 The Future*

The communities surrounding the Arabuko-Sokoke Forest are facing a number of challenges: from rapidly growing populations and increasingly infertile soils, to health problems like HIV/AIDS. In such a context, will bursaries be enough? Much more is certainly needed, but the experience of the ASSETS program demonstrates that residents in communities like Kaembeni are eager to learn about their environment and enthusiastic about taking action on conservation issues in their area. Bursaries were shown to be an

effective means of dispersing the benefits of conservation to forest-adjacent communities. With time, as the number of people aware of and benefiting from ASSETS grows, the program may become a great force for conservation both within, and outside, the Arabuko-Sokoke Forest.

Future research on this topic could follow up with ASSETS participants some time after they the have completed the program to determine whether changes in attitudes and behaviours attributed to ASSETS were long lasting. Furthermore, as the results of this study suggested that individualized benefits, such as bursaries, are more effective than general community benefits in encouraging conservation, future work could consider the comparative effectiveness of different forms of "forest benefits" such as ASSETS, Kipepeo, and similar programs in the area. Lastly, considering the important role of institutionalized religion in Kenyan society, future research could explore the potential role of religion in enhancing conservation and environmental learning.

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# Appendix A: ASSETS Primary School and Community Comparison[1]

| School | Year ASSETS began | ASSETS students (since 2002)[2] | Distance from Watamu/ Malindi | Accessibility by public transportation from Watamu/ Malindi | Other conservation projects in area | Response to researchers |
|---|---|---|---|---|---|---|
| Bogamachuko Primary | 2002 | 49 | ~50km | Medium, some public transportation available | Some | Considerably less "fatigue" |
| Girimacha Primary | 2004 | 10 | ~49km | Difficult, private transportation only | None/very minimal | Considerably less "fatigue" |
| Mida Primary | 2002 | 22 | ~20km | Easy | High | High research fatigue, may expect money |
| Mijomboni Primary | 2002 | 36 | ~30km | Easy | High | High research fatigue, may expect money |
| Nyari Primary | 2005 | 6 | ~40km | Difficult, private transportation only | None/very minimal | Considerably less "fatigue" |

All schools are within 5km of Arabuko-Sokoke Forest or Mida Creek and all recipients live within 3km of the forest or creek. Residents near Mida School access the forest and creek, while residents in the other communities generally access the forest only.

Pressure on the forest varies between the more isolated northern communities (Bogamachuko, Girimacha, Nyari) and Mida and Mijomboni. Residents in the more isolated communities are generally poorer, relying heavily on the forest for timber, charcoal, firewood, and game meat, with few economic alternatives such as paid employment. Residents in Mida and Mijomboni have greater access to jobs and conservation projects (e.g. Kipepeo, beekeeping, mushroom farming, etc.). Mida and Mijomboni residents have also had more exposure to tourists and researchers; research fatigue is a concern in these communities and residents may expect remuneration for interviews.

[1] Jonathan Baya, A Rocha Kenya Assistant Community Officer, Personal Communication, May 23, 2006.
[2] A Rocha Kenya, 2005, Arabuko-Sokoke Schools & Eco-Tourism Scheme: A Summary of Programme Operations and Status for the Period 2002 – 2005.

# Appendix B: ASSETS Participant Interview Schedule

Obtain: name of child, the year they began ASSETS, length of time the family has lived in the area, their distance from the Arabuko-Sokoke Forest and/or Mida Creek, attempt to assess the extent and type of resource use if possible.

Tourism

-Have you ever seen a tourist in your area? (Y/N)

Were you aware that they visit the Arabuko-Sokoke Forest?

-Why do you think tourists come to the Arabuko-Sokoke Forest? What do they like and dislike?

-Does your community benefit from tourism in the forest? How?

General Questions about the Forest

-Why is there interest in conserving the Arabuko-Sokoke Forest?

-What can people do to help the forest? What can people do to hurt the forest?

-What, if any, good things does the forest do for you and people in your area?

-Does the forest bring any problems? Do you have any problems with animals? (Y/N, explain)

How often do they come?

Last time they came?

Damage done?

What do you see as the solution to these problems?

-Is the Arabuko-Sokoke Forest of any value or significance to you? (Y/N, explain)

-Would you be happier if the forest were not there? (Y/N, explain)

-Would you be happier if all or part of the forest was given out for farming? (Y/N, explain)

-Do you think that the Arabuko-Sokoke Forest should be closed off to people or should people be allowed to access certain things with regulations?

Which things?

Is the Arabuko-Sokoke Forest under threat or doing fine?

Does the Arabuko-Sokoke Forest belong to the people or the government?

Is that the way it should be?

Resource Use in the Forest

-What resources do you get from the Arabuko-Sokoke Forest?

-Suggest legal activities, such as mushrooms, honey, wild fruit, attempt to assess illegal use.

-Do you plant any non-food trees on your shamba?

Reporting

-Have you ever heard or anyone being reported or caught for illegal activities in the Arabuko-Sokoke Forest?

-Is it common for people in the community to report each other?

-Have you ever heard of a situation where somebody was threatened, hurt, or had their home or shamba harmed because they reported someone?

About ASSETS

-How and why did you become involved with ASSETS?

-Do you know who *A Rocha* is?

If no, then explained that it's the organization that administers the bursary program.

-Why do you think that *A Rocha* started ASSETS?

-What do you see as the goal of ASSETS?

-How does ASSETS work and where does the money come from?

-Why was your child given an ASSETS bursary?

Are you aware of any other requirements [to get the bursary]

-Would your child have been able to go to secondary school without this bursary?

Activities & Learning:

-Has your child [the recipient] ever told you or your family anything about the Arabuko-Sokoke Forest, conservation, or the environment? What?

-Did that make you think differently about the forest, or behave differently in the forest?

-Does he/she tell others in the community about the forest, conservation, or the environment?

-What types of ASSETS activities have you participated in?

-Prompt: recipient days, tree planting, parents meetings

How often? When was the last time?

-Do you think that participating in these activities is a good use of your time?

-Do you find that you learn while you are participating in these activities?

-Have you learned any new skills since you began participating in ASSETS?

Explain and expand: what, how, why, etc.

-Have you learned any new ideas?

Explain and expand: what, how, why, etc.

-Does participating in ASSETS make you think in new ways about your activities in the environment?

Explain and expand

-Have you changed any of your behaviours as a result of participating in ASSETS?

Explain and expand

-Has your involvement with ASSETS changed the way you use the forest? (Is the way you use the forest now the same as it ever was or different?)

Explain and expand

-Has your involvement with ASSETS changed the way you think of the forest? (Is the way you think of it now the same as it ever was or different?)

Explain and expand

-Do you know any other ASSETS parents?

-Would you be willing to be involved in an ASSETS parents association?

-What kinds of activities could they do?

-Would they be willing to do forest patrols?

-Do you other people in the community know about ASSETS?

What do they know? Do you tell other people about ASSETS? What? Has anyone you told changed their behaviours or attitudes about the forest? Do you think most other people would be interested in joining?

-Have you had any problems with ASSETS?

-What would you suggest to improve ASSETS?

Other conservation programmes:

-Besides ASSETS, have you been involved in any projects:

-Do you know of the following, and have you been involved with them:

Kipepeo
Aloe farming
Mushroom farming
Beekeeping
Silkworm farming
If yes, for how long, and what they learned about the forest and conservation

-Have you ever heard of FADA of ASFADA (Arabuko-Sokoke Forest Adjacent Dwellers Association)?

-Do you have any comments, anything to add, or anything to ask me?

# Appendix C: ASSETS Non-Participant Interview Schedule

Obtain: Name, distance from the forest, length of time in the area.

Tourism

-Have you ever seen a tourist in your area? (Y/N)

Were you aware that they visit the Arabuko-Sokoke Forest?

-Why do you think tourists come to the Arabuko-Sokoke Forest? What do they like and dislike?

-Does your community benefit from tourism in the forest? How?

ASSETS

-Have you heard of the ASSETS programme or A Rocha?

Prompt: it's a conservation programme that awards bursaries to secondary school students.

-Where did you find this out? What have you heard about it (+ve and –ve)?

-Would you want to join the ASSETS programme if you had the chance?

General Questions about the Forest

-Why is there interest in conserving the Arabuko-Sokoke Forest?

-What can people do to help the forest? What can people do to hurt the forest?

-What, if any, good things does the forest do for you and people in your area?

-Does the forest bring any problems? Do you have any problems with animals? (Y/N, explain)

How often do they come?

Last time they came?

Damage done?

What do you see as the solution to these problems?

-Is the Arabuko-Sokoke Forest of any value or significance to you? (Y/N, explain)

-Would you be happier if the forest were not there? (Y/N, explain)

-Would you be happier if all or part of the forest was given out for farming? (Y/N, explain)

-Do you think that the Arabuko-Sokoke Forest should be closed off to people or should people be allowed to access certain things with regulations?

Which things?

Is the Arabuko-Sokoke Forest under threat or doing fine?

Does the Arabuko-Sokoke Forest belong to the people or the government?

Is that the way it should be?

Resource Use in the Forest

-What resources do you get from the Arabuko-Sokoke Forest?

-Suggest legal activities, such as mushrooms, honey, wild fruit, attempt to assess illegal use.

-Do you plant any non-food trees on your shamba?

Reporting

-Have you ever heard or anyone being reported to KWS or the Forest Department for illegal activities? (ask for what, were they outsiders/locals, etc.)

-What do community members do when they catch someone doing something illegal in the forest? Does the chief get involved?

-Would most community members report outsiders for illegal activities? What about locals?

-Have you ever heard of a situation where somebody was threatened, hurt, or had their home or shamba harmed because they reported someone?

Other conservation programmes:

-Have you been involved in any projects in the community?

-Do you know of the following, and have you been involved with them:

Kipepeo
Aloe farming
Mushroom farming
Beekeeping
Silkworm farming
If yes, for how long, and what they learned about the forest and conservation

-Have you ever heard of FADA of ASFADA (Arabuko-Sokoke Forest Adjacent Dwellers Association)?

-If someone had a proposal to start an organization, what kind would you prefer?

-Is the way you use the forest now the same as it ever was or different?

-Is the way you think of the forest now the same as it ever was or different?

-Do you have any comments, anything to add, or anything to ask me?

# Appendix D: Key Informant Interviewees

A Rocha/ASSETS staff
Jonathan Baya, A Rocha Kenya Assistant Community Officer,
Stanley Baya, ASSETS Coordinator,
Colin Jackson, A Rocha Kenya Director,
Tsofe Mweni, A Rocha Kenya, Environmental Education Officer,

Bogamachuko/Kaembeni
Beatrice Baya, Head Mistress of Bogamachuko Primary School
Alfred Safari Deri, Kaembeni Area Sub-Chief
A local elder and healer in Kaembeni Sub-location (who wishes to remain anonymous)

Conservation/ Arabuko-Sokoke
Washington Ayiemba, Nature Kenya: East Africa Natural History Society
Joseph Bwana, District Forest Officer, Malindi District
Julius Katana, Forest Adjacent Dwellers Association (FADA) Secretary
Dr. Balozi Kirongo, Kenya Forest Research Institute
Francis Kirimi Mbaka, Forest Warden, Arabuko-Sokoke Forest

# Appendix E: Application Form

APPLICATION FORMS ARE **NOT** FOR SALE. THEY ARE PROCESSED BY ASSETS FREE OF CHARGE.

ASSETS

Arabuko-Sokoke Schools & Eco-Tourism Scheme
P.O. Box 385, Watamu. email: assets@arocha.org

## — BURSARY FUND APPLICATION FORM —

PRIMARY SCHOOL (CAPITAL LETTERS) .....

.....

Part 1: Personal Details of Applicant

1 (a) Name (in full)

.....

.....

1 (b) Date of Birth ...../...../19..... Place of Birth

.....

1 (c) Home Physical Address:

District ..... Division ..... Location

..... Sub-Location..... Home

.....

1 (d) Primary Schools attended:

| School | Year admitted | Class of admission | Year left | Class on leaving |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Last Primary School attended: ..... K.C.P.E. Index No.

.....

1 (e) K.C.P.E. Results.

English ..... Kiswahili ..... Mathematics ..... Science ..... G.H.C.R .....

*ASSETS Form # ABF.1*

Total Marks ..... Out of .....

1 (f) Extra-curricula activities involved in (Clubs, sports etc.)

| |
|---|
| |
| |
| |
| |
| |

## Part 2: Family Details

2 (a) Parents and/or Guardians (If deceased indicate in the occupation space)

Father (name): ..... Occupation

.....

Mother: ..... *Official* use form # Occupation

.....

Guardian: ..... Occupation

.....

Relationship (of guardian to applicant)

.....

2 (b) What are the other main sources of income for the family?.....

.....

.....

2 (c) Level of schooling of guardians:

Primary: ..... Secondary: ..... College/University: .....

2 (d) Size of immediate family:

No. of brothers ..... No. of sisters ..... How many of these are still dependant: .....

2 (d) How many of these people are still learning?

Primary: ..... Secondary: ..... College/University: .....

## Part 3: Fees Requirement

**NOTE: NO BURSARY WILL PROVIDE 100% FEES COVERAGE**

3 (a) Amount stated in the fees structure: (attach your fees structure to this form)

Term 1 ..... Term 2 ..... Term 3 .....

3 (b) If ASSETS is only able to contribute 30% of this amount would you still be able to afford to put your child through Secondary school?

(If your fees are Ksh. 21,000/yr, 40% would be equal to Ksh. 8400.) Yes ☐ No ☐

(Your answer will not affect your chances of getting a bursary.)

## Part 4: Recommendations

4 (a) HEAD TEACHER

Head teacher's name:..... School:

.....

4 (a.1) Applicant's status at school

Has the applicant been a pupil in this school for three or more years? Yes ☐ No ☐

4 (a.2) Applicant's ability & conduct

Comments on the candidate's academic ability, conduct and extra-curricula involvement esp. conservation related activities:

✦ (a.3) Other sources of funding

Is this pupil a recipient of any other bursary? Ye☐ ☐

If 'Yes', state amount and source: Ksh ..... per .....

from:

.....

.....

Head teacher's Signature and Stamp: .....

Date: .....

✦ (b) CHIEF / ASSISTANT CHIEF

Chief / Sub-Chief's name: ..... Sub-Location: .....

✦ (b.1) Please give:

(i) The location of the pupil's place of residence

.....

✦ (b.2) Has this pupil ever been convicted of any civil or criminal offence? Yes: ☐ No: ☐

If yes, state nature of offence

.....

Chief / Assistant Chief Signature and Stamp: .....

Date: .....

## Part 5: Confirmation

I certify that the information given above is true to the best of my knowledge and that I shall adhere to the following conditions set out by the ASSETS Committee which may be reviewed periodically:

- To keep a well maintained wood lot at home.
- To protect Arabuko-Sokoke Forest by not cutting down any trees from it, nor hurting wild animals or birds in it.
- To protect Mida Creek by not cutting mangroves, nor fishing with nets of undersized-mesh, and by releasing, in good condition, all turtles caught in nets.

- To be actively involved in conservation initiatives (e.g. mangrove planting, butterfly farming, bee-keeping, wildlife clubs etc.)
- To work in my holidays in order to contribute Ksh. 300 per term towards the conservation of Arabuko Sokoke Forest and Mida Creek.

Signature of Applicant: ..... Date:

.....

Signature of Parent/Guardian: ..... Date:

.....

**FOR OFFICIAL USE ONLY**
Comments & recommendations by ASSETS Co-ordinator:

Date recv'd:

Rejected @ Stage I: .....

Approved ⇒ Stage II: .....

Signature: ..... Date: .....

**ASSETS Committee Approval**

ASSETS Score:

Ksh:

Rejected @ Stage I: .....

Approved ⇒ Stage II: .....

Signature: ..... Date: .....
***Chairman***
Signature: ..... Date: .....
***Secretary***

# Arabuko-Sokoke Schools and Eco-tourism Scheme

## Bursary Fund Score Sheet.

Name ..... ABF I No. ..... Primary School .....

| Key: Score/Need Category | 22-30 / Absolutely needy | 16-22 / Very Needy | 9-16 / Moderately Needy | 6-9 / Conservation Needy |
|---|---|---|---|---|

Section 1: Applicant Suitability

| Scores | 1 | 2 | 3 | 4 | Scores |
|---|---|---|---|---|---|
| Family Details | Both Parents | Single Father | Single Mother | Orphan | |
| Size of Immediate Family | 1-3 | 3-6 | 6-9 | 9+ | |
| State of Fathers permanent house | Brick / Mabati | Brick / Makuti | Mud / Mabati | Mud / Makuti | |
| Discipline of Applicant | Poor | Fair | Good | Very Good | |
| Academic Ability | D+ and Below | C- to C | C+ to B | B+ and Above | |
| Please note the applicants school and average pass mark here. | | | | | |
| Willingness to partake in Scheme | Unwilling few resources | Unwilling many resources | Willing many resources | Willing few resources | |
| | | | | SUB TOTAL FOR SECTION | |

Section 2: ASSETS co-ordinator recommendations

| Level of schooling | University | College | Secondary | Primary or below |
|---|---|---|---|---|
| Mother | | | | |
| Father | | | | |
| Guardian | | | | |
| No of Siblings attaining each level. | | | | |
| **Employment Details** | **Full time** | **Part Time** | **Informal** | **Unemployed/Dependant** |
| Mother | | | | |
| Father | | | | |
| Guardian | | | | |
| No of Siblings employed at each level. | | | | |

Notes:

SUB TOTAL FOR SECTION: (Please circle answer)

1 2 3 4 5 6

Final Recommendation:

TOTAL SCORE: /30

ACCEPT:

REJECT:

Signed ..... Date .....
Chairman

Signed ..... Date .....
ASSETS Co-ordinator