

COMMUNITY PARTICIPATION IN TURTLE CONSERVATION IN SRI LANKA

Thushan Kapurusinghe

Turtle Conservation Project (TCP), 73, Hambantota Road, Tangalle, Sri Lanka.

Abstract

Five of the world's seven species of marine turtle come ashore to nest in Sri Lanka. They are the Green turtle (*Chelonia mydas*), Olive ridley turtle (*Lepidochelys olivacea*), Loggerhead turtle (*Caretta caretta*), Hawksbill (*Eretmochelys imbricata*) and Leatherback turtle (*Dermochelys coriacea*). Despite the protection of marine turtles under government legislation since 1972, marine turtles are still being exploited by Sri Lankan fishermen for their meat, eggs and carapaces.

The Turtle Conservation Project (TCP) has initiated conservation programmes in Sri Lanka, in order to conserve the marine turtles. TCP selected Rekawa, a small village on the South coast of Sri Lanka, approximately 10 kilometres eastwards along the coast from Tangalle, for (he community based turtle conservation activities as TCP's major project site. People of this village were collecting all the eggs and occasionally killed turtles. Major programmes initiated by TCP are the Rekawa environmental' education programme, school lecture programme and research and tagging programme. All these programmes were community based and successfully achieved the goal. Many programmes are ongoing presently and details of the programmes are described below. It is very important to note that the TCP has won a 'Highly commended' global award from the judge board of the 'British Airways Tourism for Tomorrow ' award scheme because of its success in community based conservation projects.

Introduction

Five of the world's seven species of marine turtle come ashore to nest in Sri Lanka. Despite the protection of marine turtles under government legislation since 1972, they are still being exploited in Sri Lanka for their eggs and their meat. Turtle rookeries are being disturbed by tourist industry development, and unsustainable harvesting is destroying feeding habitats such as coral reefs. Many turtles are accidentally caught and drowned in fishing gear each year. The critically endangered Hawksbill turtle has been hunted to the brink of extinction for its carapace in order to provide raw materials for the illegal 'tortoiseshell' trade.

The most widespread form of marine turtle exploitation in Sri Lanka is illegal poaching of turtle eggs. TCP surveys have revealed that for the past 20 years almost 100 % of the marine turtle nests on the South and Southwest coast of Sri Lanka have been robbed for their eggs by poachers. This stretch of coastline is Sri Lanka's largest marine turtle rookery. TCP surveys have also revealed that marine turtle populations are in decline at all of Sri Lanka's rookeries. As a result of egg collection alone, the TCP predicts that the marine turtle populations of Sri Lanka will decline to near extinction within-the next few decades.

However, Sri Lanka's marine turtle populations can recover from this inevitable decline, but only if effective conservation measures are carried out immediately and are continuous for at least the next 10 years. In order to facilitate recruitment of turtles into the local turtle populations, as many nests as possible must be allowed to hatch naturally and the hatchlings allowed to make their way to the sea. Where it is not possible to protect marine turtle nests *in situ*, scientifically managed hatcheries should be established. Marine turtle by-catch in fishing gear must be reduced, critical habitats must be protected and rookery-monitoring programmes must be established at the most significant rookeries. These measures will only be effective if the coastal communities of Sri Lanka are involved and informed. To achieve this, coastal communities must be educated about the importance of conserving the coastal ecosystems on which they depend.

The Turtle Conservation Project (TCP) in Sri Lanka was established in 1993 to address the issue of marine turtle conservation. The TCP aims to devise and facilitate the implementation of sustainable marine turtle conservation strategies through education, research and community participation.

Rekawa - The project site

Rekawa is a small village on the South coast of Sri Lanka, approximately 10 kilometers eastwards along the coast from Tangalle. Rekawa is located between the intermediate and dry climatic zones of Sri Lanka, and borders on a large saline lagoon surrounded by extensive mangrove forests. There are no electricity or telephone lines in the village and the majority of households do not have running water. Water is mainly obtained from roadside storage tanks.

The village is divided in to Rekawa East and Rekawa West, and the numbers of families in these divisions are 121 and 144 respectively (Foerderer 1996, in press). Income generation activities for the families in the Rekawa area include agriculture (47 %), lagoon fishing (10 %), sea fishing (18 %), coral mining (9 %) and others (17%) such as masonry, carpentry, government services and labour (Ganewatte et al. 1995).

The community of Rekawa has suffered several setbacks in the last decade. During the late 1980's and early 1990's, Rekawa was the location of political violence, which bereaved many families of their skilled men-folk. An irrigation system designed by the government to improve the quality of the agricultural land surrounding nearby Tangalle, drained Rekawa of its groundwater. The groundwater was eventually replenished by saline water from the sea and Rekawa lagoon, which rendered the land unsuitable for agriculture except after heavy rains. These events have resulted in low incomes for most of the families in Rekawa with approximately 57 % of the families dependent to some degree on government welfare (Foerderer 1996).

Rekawa's natural resources

Because Rekawa is located on the border of two climatic zones there is a high local level of biodiversity. As well as the mangrove forests, the local vegetation consists of scrub jungles, medicinal plants, fruit trees and a wide variety of wildlife including 150 resident and migratory birds, 27 species of mammals, 23 species of reptiles, many arthropods and aquatic life (Kapurusinghe T 1994 unpublished report)

Although coral mining is illegal in Sri Lanka, the coral reefs immediately offshore of Rekawa beach have been mined by the community for the production of lime. The mangrove forests have been extensively cleared to provide firewood for the lime kilns.

Rekawa Kalapuwa is a large lagoon of 250 hectares, which is surrounded by mangrove forests. The neighbouring villages of Netolpitiya, Medilla, Marakolliya, Kapuhenwela and Wellawatugoda also border the lagoon and the fishermen from these villages depend on the lagoon fishery. The fishery consists of several species of fish and the more economically viable shrimp. Community members have been involved in the removal of shells for lime production and sand for use in the construction industry. However, today, shells and lagoon sand are difficult to collect and this has led to local dependence on other resources (Ganewatte et al. 1995).

A causeway has been built across the narrow westerly section of the lagoon. "The causeway has increased accessibility to the village of Kapuhenwela but has reduced the natural exchange of sea and lagoon water. This has led to a change in the quality of lagoon water causing a recent dramatic reduction in the lagoon fishery's productivity. In order to maintain catch size many local fishermen now use nylon nets, a practice that has contributed to the over-exploitation of the lagoon fishery. The degradation of the fishery has meant that lagoon fishermen have had to look to other resources for income generation.

The 2 km of Rekawa beach immediately westwards of the Rekawa headland provides nesting habitat for populations of 5 species of marine turtle. For at least 20 years, local villagers have collected almost 100 % of the turtle eggs laid on Rekawa beach and some adult females have also been harvested (TCP Survey reports 1993-1996 unpublished).

Results of TCP community based conservation activities

Previous efforts have shown that if action is taken to stop the over-exploitation of natural resources in Rekawa, without the provision of any alternative income generation activities, the Rekawa community will either resist the action or begin to exploit other resources. Therefore, the TCP decided to take a holistic approach to conservation in Rekawa and implement a marine turtle nest protection programme that involved the Rekawa community in the conservation of marine turtles and provided them with tangible benefit. This was an innovative programme addressing both environmental and socio-economic problems in the area that would hopefully serve as a model for further marine turtle conservation efforts, and indeed conservation efforts in Sri Lanka generally.

i) An *in-situ* marine turtle nest protection and research programme:

This programme is managed by a fulltime *in situ* nest protection programme coordinator and supervised by 5 full-time research officers, 3 of whom were recruited from the University of Peradeniya, the Department of Wildlife Conservation (DWLC) and the National Aquatic Resources Agency (NARA).

The programme employs 17 former turtle egg poachers to assist TCP, DWLC, NARA and University of Peradeniya research officers in the collection of biological data and the *in situ* protection of marine turtle nests.

Summary of Key Marine Turtle Nest Protection and Research Results, September 2nd 1996 - February 20th 1999 - Total number of turtles tagged: 462

Table 1: Turtle eggs

Turtle species	Number	%
Green turtles	194,113	98.00
Olive Ridley turtles	1,919	0.98
Leatherback turtles	1,250	0.64
Loggerhead turtles	482	0.25
Hawksbill turtles	241	0.13
Total turtle eggs	198,005	100.00

Table 2: Nests laid

Turtle species	Number	%
Green turtles	1,977	96.30
Olive Ridley turtles	32	1.57
Leatherback turtles	31	1.53
Loggerhead turtles	6	0.30
Hawksbill turtles	6	0.30
Total nests	2,052	100.00

Total number of eggs laid = 198,005

Total hatchlings released to the sea = 98,198

NB: The data on hatchlings released refers to nests hatching in the reporting period and does not correspond to the number of nests laid in the reporting period. This is due to an incubation period

of between 50-60 days.

The primary aim of the project is to collect biological research data on nesting female populations of marine turtles and hatchlings of each species present at the Rekawa turtle rookery, with the aim of building a comprehensive database to assist the conservation of marine turtles both nationally and internationally. Specific areas of data collection and analysis include the following:

- number of nests per season (individual and population totals);
- monitor the size of nesting female populations;
- growth rates of individuals;
- longevity of individuals beyond tagging;
- mean breeding frequency;
- nesting behaviour;
- nest incubation periods;
- hatching success rates (*in situ* and hatchery comparative studies);
- examination of factors influencing hatching success rate;
- migratory paths and geographical range of nesting marine turtles.

Biological research data listed above were successfully collected and entered into a computer database. All hatchlings were released immediately to the sea from hatching nests. Threatened nests were moved to safe areas to avoid human consumption and predation from animals. Nests that were laid on adjacent beaches outside the project boundaries were collected and reburied within TCP protected boundaries. Within this project over a thousand personnel from universities, government institutions / departments and various NGOs, visited the Rekawa *in situ* programme receiving various degrees of education / training / experience in marine turtle biology and *in situ* research and conservation methodology according to their needs.

- ii) *Turtle night watch programme* — The TCP aims to achieve its sustainability by organising nocturnal 'Turtle Watches' for fee-paying visitors. TCP used the collection to:
- cover project wages when there was a lack of funding
 - initiate a loan scheme among the community members
 - organise field trips for community members
 - initiate new community based programmes
 - promote eco-tourism in the area

This programme includes the merchandise of TCP T-shirts, stickers, badges etc, and turtle adoption. After their visit all of the visitors had received new knowledge about marine turtles, the threats they face and the importance of conservation.

iii) *The TCP school workshop programme and Southwest coast beach survey*

The TCP has conducted a series of educational workshops for pupils and teachers in schools along the Southwest coast (phase 1). Pupils and teachers were invited to set up turtle conservation groups and we invited to participate in the TCP Southwest coastal beach survey (phase 2). So far, over 1,500 pupils and teachers from 130 coastal schools have participated in the educational programme. During this programme, the TCP distributed educational materials, which were produced by the TCP in cooperation with the GTZ and the Coast Conservation Department (CCD).

Fifteen school conservation groups have been identified and over 450 pupils and teachers have volunteered to participate in the Southwest coast beach survey. The TCP School lecture programme coordinator in charge of this programme predicts that there will be a total of approximately 50 school conservation groups when the series of workshops has been completed at all central schools within the extended programme boundaries from Kirinda to Puttalam.

The proposed third phase of this programme will aim at strengthening the turtle conservation groups and encouraging them to actively participate in the design, finding and implementation of turtle conservation and awareness raising activities in their local communities. The TCP also aims to undertake an extension of this programme to include the area between Colombo and Chilaw.

iv) Environmental education workshops

In October 1995, the TCP launched a wide-ranging programme of environmental education workshops in the Rekawa community. In March 1996, 14 Rekawa community members graduated from an initial 6-month training programme during which they were trained in educational methods and taught about various environmental subjects relevant to their locality.

These Community Environmental Education Trainers (CEETs) conducted environmental education workshops for school children and community groups in the Rekawa area. The workshops focused on the environment as a whole using techniques such as participatory resource mapping to identify conservation issues and seek sustainable solutions to problems of destructive exploitation.

The TCP currently employs 4 CEETs to run the core environmental and educational programmes such as model medicinal garden project, mangrove nursery, and free herbal drink project and library project in Rekawa.

English Classes for Rekawa Community Members — The TCP has been carrying out English language classes in Rekawa since January 1994. These classes employ volunteer teachers from the UK and are attended by approximately 350 community children, adults and English teachers from Rekawa and the surrounding area. With these classes, the TCP aims to improve the employment prospects of participating community members in non-resource dependent jobs and therefore reduce community dependency on environmental exploitation. The classes also helped improve the communication abilities of community members who are employed in TCP research and conservation activities in Rekawa, who will also act as tour guides for the nature trail programme.

v) *Marine Turtle Conservation Workshops/Exhibitions/Lectures* — The TCP conducted many workshops and exhibitions to increase awareness on marine turtle exploitation in Sri Lanka and the work of the TCP in trying to implement sustainable community participation strategies to combat threats to marine turtles. Many of these workshops were organised by CEETs for important government and non-government institutions such as the Teacher Training College at Unawatuna, the Ceylon Tourist Board, Fisheries Societies, Police Station-Tangalle, National Zoological Gardens, many local schools etc. TCP receives many invitations to deliver lectures on marine turtles and other coastal ecosystems.

vi) *TCP medical centre* — In 1998, TCP established a rural medicinal clinic at Rekawa. TCP voluntary medical doctors are conducting the clinics in weekends and two employed health assistants serve at the clinic during the weekdays. These health assistants were trained by the District Medical Officer of Tangalle (DMO) coordinator of this programme who is working hard to expand the capacity of the clinic.

Final assessment of project activities & results

At Rekawa, as the TCP continues to involve the community in sustainable conservation activities, any poachers who attempt to steal eggs will be prevented from doing so by joint TCP-community efforts.

- TCP managed to protect sufficient nests to allow 98,198 hatchlings to the sea. This is a mean success rate of around 72 %. This is an excellent figure, showing how successful nests are, when they are left where they are laid. Success rates for hatchery reared nests are significantly lower in Sri Lanka, often only between 40-60 %.

- However the TCP remains pleased by the fact that so many hatchlings have been released to the sea, and sees this as a positive continuation of this programme's achievements in its first years. More than 98,000 hatchlings have been released during this time when previously there were none.

- The number of nests recovered from outer areas similarly demonstrates this proactive approach to nest protection. Especially pleasing is the fact that National Park staff has often, while not on duty, protected nests they have discovered in out-boundary areas when going about their daily business, and also reported any marine turtle activity they were aware of.

- The TCP was very satisfied with the number of visitors from various government, NGO and higher education institutions to the *in situ* programme. The TCP provided them with various degrees of training in *in situ* marine turtle research and nest protection methodology, according to their needs.

Some personnel from these institutions wanted to simply learn more about marine turtles, threats and conservation efforts.

The TCP also received visits from some hatchery managers interested to learn about *in situ* nest protection. In addition, hotel owners from all over the south have come to learn how best to protect turtle nests laid on beaches near their property. All such educational and training progress will serve to farther marine turtle conservation in Sri Lanka.

- In addition to the institutional visitors there were many Sri Lankans and foreign visitors to the project. Many of them were school children, and many local people from the Tangalle area. Visits from local people and school children have high educational values that will assist future marine turtle conservation efforts. The *in situ* programme is proving an important field site for practical education and training that should prove to have a more lasting impression on visitors than 'classroom' education / training. The TCP has undertaken various marketing efforts within the Tangalle area, by distributing 'Turtle Watch' promotional leaflets to all hotels and guesthouses. In addition, the TCP has advertised nationally on the radio and within local Colombo 'events' magazines. The TCP has also contacted the main tour agencies in Colombo, Galle and Hikkaduwa to promote the programme.

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