

Marine Turtle Conservation and Ecotourism on Trinidad's North Coast

162/10/026

University of Glasgow
Darwin Initiative for the Survival of Species
Final Report



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Darwin Initiative for the Survival of Species

Final Report

1. Darwin Project Information

Project Title	Marine turtle conservation and ecotourism on Trinidad's north coast.
Country	Trinidad, West Indies.
Contractor	University of Glasgow
Project Reference No.	162/10/026
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2. Project Background/Rationale

This project is located on the north east coast of Trinidad in the small rural villages of Grande Riviere and Matelot. The surrounding area is mountainous rainforest. Although not far from the main town of Sangre Grande, the road leading to the area is long and pot-holed, and is viewed in the country as difficult and laborious to reach. Matelot is found at the end of the tarmac part of the Paria Main Road, although it does continue for 22km in the style of a narrow donkey track to the next village on the west side, Blanchisseuse (see Appendix VI, Figure 1). The track is used by local hunters and to access plantation estates in the forest. It is also sometimes used by hikers and campers.

The north east coast is an area of low employment, with the main occupation being fishing and farming – mostly for subsistence rather than wholesale. There is some tourism in the area; the two small hotels in Grande Riviere attract wealthy native and non-native tourists. It appears, however, that only a modest part of the income from these hotels filters down into the local community. Matelot rarely receives foreign tourists, although Trinidadian tourists have started to (in the last 5 years) visit around certain holiday times, mainly day-trippers or campers, as there are few accommodation or catering facilities available. Many villagers find this very frustrating, as there is no control over the visitors, and their presence generates few direct benefits to the community other than purchases in village shops.

The east and north coast beaches of Trinidad support a large population of leatherback turtles, and a smaller population of hawksbills (see Appendix VI, Figure 2). The Grande Riviere community has formed a turtle protection group who monitor the turtles on Grande Riviere beach and take tourists on tours to watch them (originally GREAT - Grand Riviere Environmental Awareness Trust, they went through some reorganisation and are now called GRNTGA (Grande Riviere Nature Tour Guide Association). Grande Riviere beach is a legally protected area, and the guides receive limited help from the Government to patrol it. Matelot does not have the advantage of having a turtle-nesting beach in the village. There are 4 main beaches where many turtles nest along the coast, however, and the local environmental group in Matelot (Pawi, Sports, Culture and Eco Club – Pawi Club) wish to make use of these areas for ecotourism, and to protect and

Current reports from around the world indicate profound long term declines in numbers of sea turtles. This information concurs with the apparent diminution of four of the turtle species using the north coast (hawksbill, green, olive ridley and loggerhead). However, from looking into the history of leatherback turtles in Trinidad, there is good evidence of a recent increase in population, not only on the north coast, but also on the eastern beaches. It is unclear why this is happening, but it may be due to pressures on nesting beaches elsewhere, e.g. coastal development and human disturbance. Trinidad is clearly a significant region for nesting leatherbacks, in the context of serious declines elsewhere. It is therefore vital that we work to avoid the occurrence, on these beaches, of the pressures that have led to population declines elsewhere. A long-term worry is a frequently discussed proposal to complete the tarred road along the north coast, and link Blanchisseuse to Matelot. The beach developments this would encourage could be very serious for the turtle population.

The project aimed to address several problems. Firstly, the local environmental groups wished to acquire the skills to effectively monitor the turtles on the remote beaches. At the beginning of the project, the GRNTGA were already carrying out some data collection and had received some tour guiding training from local initiatives. However the Pawi Club was a newly formed group with little formal training. This was partially due to lack of funds and early stages of organisation. Several other CBOs (Community Based Organisations) in Trinidad working on turtle populations are supported by the government, receiving a stipend for the monitoring work, including GRNTGA. One aim was to get the Pawi Club up to the same standard in time for completion of the project so that they too could benefit from the government's contributions.

Due to the low-employment status of the area, the generation of income and jobs for local community members was a priority – on the project itself, and by introducing ecotourism into the area. It was also an aim to raise awareness of the status of the endangered turtle populations amongst the local stakeholders and assess whether tourism was something that the community wanted as a whole.

No formal research on the turtle populations had ever been carried out on the remote north coast beaches and so one of the main aims of the project was to find out the actual numbers and species nesting there. Furthermore, it was important to find out the main threats to adults, nests and hatchlings on the beaches and coastal areas so as to identify the key conservation issues.

The need for this project was identified by Suzanne Livingstone and Roger Downie during a University of Glasgow expedition to Trinidad in 2000. Little recorded research had been carried out on the north coast beaches, aside from a brief survey carried out by Glasgow University exploration society in 1989 and 1991, reporting relatively low numbers of turtles. A more comprehensive study was completed in 2000. During the preparation period for the 2000 expedition, contact was made with Tacaribe Tour Operators (TTO) via an Internet turtle forum by answering a plea for help with turtle protection on the northern beaches. On arrival in Trinidad, TTO assisted by introducing us to two CBOs in the northeast coastal region, with whom we carried out all the fieldwork, and who became our project partners in the Darwin project.

The results of the 2000 study highlighted that the numbers of leatherbacks had increased substantially in the ten-year gap between surveys; this finding was supported by the local

knowledge of fishermen and people inhabiting the area. This discovery provided the main evidence for the demand for the work. With the new knowledge, the Wildlife Section was supportive of us doing the work to determine threats in the area and to enhance the Trinidad and Tobago National Marine Turtle Database with data from a currently un-researched area. The Wildlife Section did not have the manpower to carry out the work, and they were very supportive of the idea of local people being trained in data collection and monitoring. Wildlife had been instrumental in setting up similar programmes in other parts of the country. Commitment to the project from the Wildlife Section was strong from the beginning, and remained so throughout the duration for the project.

The local groups we came in contact with were self motivated, and had strong views on the protection of the environment in the northeast region. The group in Grande Riviere was already doing some collection of data, and were generating income through taking tours of visitors to view the turtles on the beach. The Pawi Club, a younger group created in 1997, had been promoting environmental awareness within their village, and wanted to do something about the turtles, as they had been seeing more and more washing up dead along the coastline. However, they were very short of resources and training, and therefore had not been able to be active previous to our involvement. The groups saw the potential of the project to enable them to development their organisations and build the capacity of their communities. This was enough to secure their commitment to the project.

3. Project Summary

The Logical Framework for this project can be found in Appendix V. The purpose of the project was to establish a sustainable turtle conservation programme on the north coast of Trinidad and link it to ecotourism, run by the local communities. The main outputs were the training of local people in turtle biology and the principles of ecotourism, the training of UK students in turtle monitoring, gaining experience of fieldwork and conservation work, and research into various aspects of turtle population and ecology.

The main objectives were as follows:

- To determine the population size and hatching success of each species of marine turtle nesting on the north coast beaches.
- To analyse the temperatures within leatherback turtle nests with regards to sex ratio, metabolic heating and hatching synchrony.
- To explore the extent of insect infestation of turtle nests and evaluate its threat to turtles.
- To address the conservation problems of the north coast of Trinidad and assess the main dangers to the turtle population.
- To educate and train the local people in turtle biology, conservation, research data collection and tour guiding.
- To investigate the ecotourism potential of the area, and to help the local groups establish a visitor-guiding scheme.

- To promote the effective management of the turtles as a resource of biodiversity and a source of alternative income.

The original objectives of the project were not modified during the project. The operational plan however was adapted in two ways in the early stages of the project. A change in the host country co-ordinator was an unexpected development. This was due to disputes between the original co-ordinator group (Tacaribe Tour Operators - TTO) and the community group (Pawi Club), which necessitated an unscheduled pre-project visit to Trinidad by the project leader and researcher. The disagreements initiated a very intensive series of pre-project meetings in January 2002. The meetings resulted in some changes of plan but a firm basis for proceeding. TTO's role was found to be no longer necessary as a mediator between the researchers and the community group in Matelot. After talks with the Government Wildlife Section, it appeared that it would be more reasonable for Stephen Poon (Wildlife officer in charge of marine turtle conservation) to take the host country co-ordinator role. There was little effect on the budget or the timetable.

One other notable problem encountered during the first field season was the absence of a boat and engine, required to access the remote beaches. On arrival in Trinidad, it transpired that the boat and engine that was originally meant to be used for the data collection (belonging to the GRNTGA) had gone into disrepair and was unusable. Due to this, project money was used to purchase a boat and engine. This affected the project from a budget perspective only. The timetable was not affected besides the data collection starting a couple of weeks later than planned. In fact, the boat equipment that was purchased for the fieldwork has turned out to be an excellent investment, having been passed onto the Pawi Club for the continuation of the work, rather than the original plan of having to give back the loaned equipment.

Both of these issues were discussed with DEFRA and approved.

The articles under the Convention on Biological Diversity which best describe the project are articles 6, 7, 8, 10, 11, 12, 13, 14 and 17. Please see a summary of the most relevant articles in Appendix I.

The project has been successful in terms of meeting its objectives. There is now a database set up for the nesting turtle species on the remote north coast beaches, which complements the data collected on other nesting beaches in Trinidad. The data collected during the project has shed much light on the previously unknown population size and hatching success in the area, adding to information on the global status of the leatherback turtle. The population of leatherbacks utilising the north coast is much larger than originally thought, making Trinidad a highly significant area for conservation. The project has also generated many questions on why this specific population has increased in recent years. An additional accomplishment for this objective was the setup of a tagging programme, which will generate important information on the population in the future. The main threats to the turtle populations in the area were also identified – the main one being the accidental catch of turtles in gill nets. Since this identification, and the assessment of the actual numbers caught in nets, future work is planned by the government to seek a solution for this, using different fishing methods and possible subsidy for the fishermen.

The research into incubation temperatures, sex ratio and insect infestation of nests was also successful. Interesting findings have developed from initial analysis. It is hoped that

the results will be published in the months following project completion. A post project field season in 2004 is generating the extra data required to obtain firm statistical results.

The training aspect of the project was very successful, leading to the proficient collection of data by the local groups and the learning of new skills such as group organisation, application writing and tour guiding. The initial training programme helped raise awareness of the conservation of marine turtles and the potential of the area for ecotourism and income generation. The Pawi Club attracted new members, including a youth group, who progressively became more involved with the project as time went on. The education programme within the local school also helped to raise awareness, and feedback from the both the pupils and parents was positive. The intensive training made available to the Pawi Club created other ideas included how to enhance the community, and several sister projects were developed during the project timeframe, assisted by project staff resources. Such ideas as a riverside complex for Matelot, the maintenance of forest trails, the creation of a community stakeholders group and the acquisition of a local derelict government building as a base for the Club. The Pawi Club have also benefited from the project training by attracting the attention of local initiatives, winning a prize in an environmental competition with the T&T Rotary Club, and securing a project entitled “Community based co-management of natural resources within coastal communities with emphasis on solid waste, marine debris and the conservation of the leatherback turtle” with CNIRD (The Caribbean Network for Integrated Rural Development), funded by British Gas.

The objective of helping local groups establish a visitor centre and assessing the ecotourism potential has been less successful. After the first year of the project it became clear that the Grande Riviere group needed less support in training terms than the Pawi Club and the Matelot community. Finances were also less of an issue as they had some income from the Wildlife Section and from tourists that went turtle watching. TIDCO (Trinidad and Tobago tourism department) also began to build a visitor centre in Grande Riviere village that is now up and running. Tourists are much more common in Grande Riviere due to the hotels there, and the turtle beach right in the village. Establishing a visitor centre in Matelot has proved to be more difficult due to the lack of accommodation, and lack of marketing. It is much more difficult to get people to visit when there is a lack of infrastructure set up for it. During the project, the project researcher brought out 2 trial ecotourism groups from the UK in order to test the area and the ecotourism programme. This went extremely well, but the Pawi Club are not yet at the stage where they can source tourists for themselves. They have however, since the end of the project, made some good potential contacts from the UK and from Tobago (the Republics sister island where the economy is based around tourism rather than gas and oil production) through the project staff, and will be pursuing these into the future. We feel that it is important to say here that progress on this objective was consistent throughout the project timetable, and that 2 years was too short a time to get much further with it, starting from a very low level.

A recent development from the 2003 field season is the discovery of the illegal progression of the north coast road on the west side at Blanchisseuse. This would explain a significant increase in tourists visiting the nearest beach from the road end - Paria. The tourists are generally from other parts of Trinidad, and are rarely foreign. In the last 5 years, the number of people frequenting this beach has increased hugely and so has the amount of rubbish. There is also some evidence to suggest that there are less turtles

nesting on the beach. However, this could only be confirmed over a longer timescale. The progression of the road has turned the walk to Paria from a difficult 2-hour hike to a relatively easy 1-hour hike, and the frequency of people camping over night has also increased. The other beaches remain relatively untouched apart from the odd hiker or hunter – a hike to the other beaches poses a much more difficult trek, putting most day-trippers off. People in boats also sometimes frequent the other beaches, but they are usually locals from the north coast and tend not to leave rubbish behind them.

There has also been a large increase in the number of native tourists visiting Matelot. This is not to do with advertising of the area for ecotourism or any tourism, but due to a recent move by holidaymakers to frequent the north east coast – like a well-kept secret, newly discovered. The NGO's move to create an ecotourism programme is an effect of the increase in tourism rather than the cause. It is now clear that the turtles are not the only things that will benefit from sustainable measures put into practice – the whole environment will. People come from all over Trinidad on national holidays to swim in the rivers and play on the beaches, bringing their own food (not buying from the local shops), leaving their rubbish, relieving themselves in the river and surrounding area, and then heading for home. The local villagers currently have little control over the visitors, gain few benefits from them coming, and have no facilities to accommodate them – not even bins or a toilet. It appears that these areas will become more heavily used over time, and there is a push by the Government to invite more tourists to Trinidad. In September 2003, the Prime Minister announced the completion of the Paria Main Road (linking Matelot to Blanchisseuse) to be made into an “ecotourist highway” - a contradiction in terms in our opinion. It is our view that, in the event that this project does go ahead, it is essential for the local communities to be as prepared as possible. It has been shown in many developing countries that short-sighted fast development such as this can be highly unsustainable without any formal training or education in environmental/conservation issues.

The majority of the Matelot community is very much against the construction of the road. Little, or no opinion from the local people has been sought by the Government. Only the occasional newspaper article has appeared telling propaganda tales of how the villagers of Matelot are desperate for development and wish for the road to be built to connect them to the rest of the country. Photographs such as a man on a donkey were shown implying under-development to the extreme to the rest of the country, while almost every house in Matelot now has electricity, running water; many with phone lines and televisions. The road would force upon the villagers an influx of tourists that they cannot cope with, and more than likely attract rich foreigners with development in mind. It is a large part of the future of this project, which is attempting to continue without Darwin funding, to fight against the road with a view to suggesting the north coast as a National Park instead. It is almost certain that the road will also have a seriously detrimental effect on the leatherback population nesting on the currently remote beaches – through easy access for poaching, development on beaches with lighting, and what may be uncontrolled disturbance from people on the beaches.

4. Scientific, Training, and Technical Assessment

Research

Suzanne Livingstone, project researcher, advised by the project leader, Dr J R Downie, carried out research for this project. Chris McLaren and Stephen Larcombe carried out two 4th year zoology honours projects on insect infestation of leatherback nests during the two project field seasons.

Insect Infestation

A preliminary study carried out on the east coast of Trinidad at Matura in 2001 found that flies infested 86% of turtle nests that were excavated. 5 fly species were identified, mainly from the family Sarcophagidae. Work conducted on the remote north coast of Trinidad in 2002 identified 10 fly species, and found that only 11% of excavated nests were infested. The reasons for this large difference in infestation levels are unknown, although it was suspected that it might have been caused by the mis-identification of infested nests at Matura resulting in an unrealistically high count of infested nests. In the 2003 field season, a repeat study of the infestation levels at Matura was carried out to investigate this, as well as a continuation of the data collection on the north coast beaches as a comparison. Controls were put in place to avoid misidentification. Results showed that 8.4% of the nests on the remote north coast beaches were infested, and 14% of nests were infested at Matura. These results are more analogous with previous studies in Trinidad and with the results from other studies elsewhere. Infestation levels were also recorded on Grande Riviere – a beach that has many visitors and tourists during the turtle season. It is the busiest beach for turtles in the whole of Trinidad sometimes getting up to 300 per night (the beach is only 1km long). 50% of the nests on this beach were infested. This suggests that human presence and/or nesting density may be a factor in determining levels of infestation. In 2004, a further investigation into this hypothesis is being carried out, as well as a larger scale project at Matura to increase the sample size of previously collected data.

Temperature and turtle development

Since this project began, several studies have been conducted in relation to the incubation temperature within leatherback nests: sex ratio, metabolic heating, and development speed. It is well known that incubation temperature determines sex in marine turtles, and that there is a concern that global climatic changes may be having harmful effects on hatchling sex ratio. In addition, there is evidence that in the enclosed space of the nest, metabolic heating increases incubation temperature.

Results from the 2002 and 2003 field season show that metabolic heating does indeed take place within leatherback turtle nests. However, past studies do not agree on the temperature change from the pivotal temperature required to affect sex ratio, making it difficult to predict whether metabolic heating would increase the nest temperature enough to affect the sex of the hatchlings during the sensitive period. It has also been discovered that nests laid earlier in the season tend to be slightly warmer, leading to a shorter incubation period, and an incubation temperature closer to the pivotal temperature. This may be due to the change in seasons from dry to rainy. None of the nests laid later in the season, in which temperature was recorded, ever reached the pivotal temperature.

Due to the endangered status of leatherback turtles, it is not possible to euthanise hatchlings for scientific purposes. This makes sexing the hatchlings near impossible, as

the only way to sex them is by histology methods. Several naturally dead hatchlings from temperature-logged nests were brought home from Trinidad for investigation. Using pivotal temperatures determined from other research, the results from the histology work and the temperatures taken from all the beaches over the 2 field seasons, an approximation of the sex ratio of hatchlings produced on the north coast beaches is being calculated.

Population study

In order to see trends within populations, data needs to be accumulated over a number of years. We can then estimate the number of nesting females for each marine turtle species nesting on the north coast beaches, examine the hatching success of their nests and determine the conservation importance of this area relative to other nesting areas in Trinidad and Tobago, and worldwide. Long term monitoring of the turtles will allow fluctuations and changes in the population size to be detected and possible causes to be identified.

The Nature Seekers organisation has been tagging the leatherback population on the east coast of Trinidad since 1999, with good results. The data from this goes into the National Sea Turtle Database of Trinidad and Tobago. We have now begun a tagging programme on the northern beaches, supported by the Wildlife Section and the data will be very valuable and reliable estimates of populations will be able to be made. This will involve training the local NGOs in tagging procedure, and how to manage a database. Over the years of the project we have recorded any tagged turtles we have come across and passed on the information to the National database. The number of tagged turtles visiting the north coast beaches (2.6%), and the number of returns at Matura (approx 20%) are very different. It is felt that a tagging programme on the north coast will give rise to a wealth of important information on the population. For example, is Trinidad's leatherback population a single group, using the different beaches interchangeably, or do some females exhibit strong natal beach fidelity?

Incidental catch of turtles in fishing nets

The incidental capture of sea turtles by fishing nets is considered a major threat to their survival. Population model studies have suggested that a reduction of turtle mortalities in sub adult and adult stages is crucial to population survival and recovery. There has been some work done looking at incidental captures from trawling and longline fishing, while little has been done on coastal fishing. The main employment along the villages of the north coast of Trinidad is gillnet fishing and it is clear that there are a large number of leatherbacks, and a smaller number of hawksbill and green turtles caught in fishing nets each season. They often drown in the nets, are killed by fishermen because they damage nets (mostly leatherbacks) or are slaughtered for meat (mostly greens and hawksbills). We are currently estimating how this may be affecting the turtle populations.

Genetic study of population (additional project)

A study of the global phylogeny of the leatherback turtle (*D. coriacea*) by Dutton *et al* (1999, Journal of Zoology, Vol. 248, p397-409) found evidence to suggest that some individuals nesting on the beaches of Trinidad belong to a unique Caribbean population, instead of being part of the larger South American mainland population. A total of 175 turtles were examined in the study from locations across the world, including 27 originating from Grande Riviere beach on the north coast of Trinidad. Of these 27, 11 individuals possessed a distinct haplotype for the control region of the mitochondrial

genome (mtDNA) suggesting the presence of a separate population. The authors point out that due to the overall low levels of mtDNA variation observed, loss of the Trinidadian population could result in the elimination of a large amount of the detected variation within the Atlantic region. Thus, if this variation is reflective of population structure the finding represents an important consideration for the design of conservation strategies for the species and highlights the further importance of the populations nesting in Trinidad.

A more thorough analysis of mtDNA variation in *D. coriacea* nesting at sites on the north and east coast of Trinidad is proposed. This will serve to amplify the findings of Dutton *et al* and will provide additional evidence of regional genetic population structure and inter-relationship. By including the east coast turtles, it is possible that a more complete analysis of the area will reveal the presence of additional populations, further highlighting the importance of the area as an international site of importance for leatherback turtles. 20 leatherback tissue samples were collected from each project beach in 2003. It is hoped that they will be analysed following the 2004 field season.

None of the research has yet been subjected to peer review. However, 3 papers are in preparation for the near future:

- The status of the leatherback turtle (*Dermochelys coriacea*) population on the northern coast of Trinidad, West Indies.
- Levels of invertebrate infestation in leatherback turtle nests in Trinidad, West Indies
- Incubation temperatures, sex ratio and metabolic heating in leatherback turtle (*Dermochelys coriacea*) nests on the north coast of Trinidad: implications for conservation.

Training and capacity building

Student training

Training in turtle nest data collection and monitoring was provided for two groups of UK students during each field season. The first group worked from April to late June; the second group from July to late August. This formed an informal part of their degree studies for most of them. Overseas experiences of this sort have a very valuable motivating effect on students, allowing them to gain important skills and to bring what they learn in the classroom to life. Two students also carried out their 4th year zoology research projects on infestation of marine turtle nests by insect larvae: the project forms a substantial part of the course degree assessment. Most students were selected after application through the Glasgow University Exploration Society.

We advertised several times for student volunteers from the University of the West Indies to participate in fieldwork. However, undergraduate students were restricted during these dates due to examinations, and then summer vacation, and were not enthusiastic about involvement without payment in such a remote location. Students from the University of the West Indies Biological Society do undertake marine turtle nest monitoring on the more accessible east coast beaches on a once a week basis in July and August, but work on the north coast is a much more substantial commitment.

CBO training

Training was provided on a volunteer basis for members of the communities of Matelot and Grande Riviere in the first project year. We had 22 participants in an age range from

18 to 60 years old. This was an intensive course in conservation biology, biodiversity, marine turtle biology and ecotourism. The course ended in a strict examination, and then a graduation ceremony. Passing the course, which all but one participant did, was a considerable achievement for many members of the community, since they had limited recent experience of formal education. Each participant received a certificate of course completion from the University of Glasgow complete with the Darwin Logo.

Although the training was successful in terms of learning attainments, it has so far proved more difficult to achieve conditions in which all participants can put their learning into practice. This will only really be achieved once there is a significant ecotourism presence in Matelot. This reservation does not apply to those participants (7) from Grande Riviere who are already involved in tour guiding.

In the second field season, a follow up course was offered to the participants of the previous course, and to any new people wishing to be involved in the project. This involved primarily practical fieldwork training, collecting data and monitoring. They also learned about turtle biology during the work. This was a successful training course, resulting in 8 people proficient in filling in the appropriate data sheets provided for the work. This course was deemed very important; to receive financial support from the Wildlife Section in the future they require these skills.

The Pawi Club also received tour guide training outside the classroom. The two trial ecotourism groups organised by the project researcher gave the Pawi Club first hand experience of ecotourists, the logistics of dealing with different sized groups of people (6, and 14), and organising trips for them. They also put into practice their tour guiding skills. The feedback from the ecotourist groups gathered by questionnaire was positive. However, there were lessons learned on both trips as to how to improve the ecotourism experience.

Work in Schools

In the second field season, we arranged with the principal of the school to teach the 3rd and 4th year students in the local community college. The youths ranged in age from 13 to 18. The course was a revised version of the one taught to the adult community group. The course content included turtle biology and conservation, ecotourism principles and the study of tropical ecosystems. As a practical exercise, students were asked to make posters of each different habitat found in Trinidad (examples below, figure 1.). This was a great success; the pupils were most enthusiastic and the feedback from both pupils and teachers was very positive.

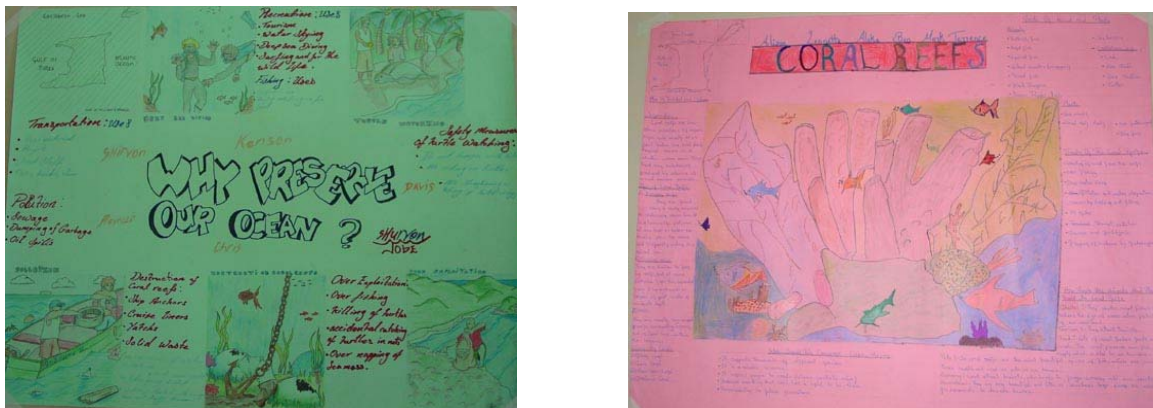


Figure 1. Posters drawn by students in local school.

We had hoped to do educational work with local children outside of school during the holidays but this proved to be more difficult. One of our adult course participants was keen to set up a summer children's group in Matelot, with our help. This got started, but did not develop significantly.

Capacity Building

Although there are several groups in Trinidad working on marine turtle conservation, they do not often come in contact with each other. The Wildlife Section works with each group, but there seems to be little exchange of information between groups. It was the project staff's belief that this was holding back progress that could be made nationally with turtle conservation, and that they would have a much stronger force acting together to make the Government take notice of their needs. For this reason we organised the first seminar involving all the relevant groups to hear what each other had to say, and to understand the different problems that each group faces. This was a partial success, and a set of clear objectives was developed during the afternoon session. The report was distributed to all participants. Unfortunately, nothing further has been done since the seminar. The full report can be found in Appendix VII.

5. Project Impacts

The project's purpose was to establish a sustainable conservation programme, linked to ecotourism. We feel that the project's achievements have partly accomplished this purpose. A conservation programme on the north coast beaches has been set up, and the local people are trained and able to continue this work unaided by the UK project staff. The Wildlife Section has acknowledged this, and it is hoped that the main Government body will release funds to help the community groups continue their work, in this way making it sustainable. The link to ecotourism planned to further strengthen the sustainability of the conservation work has not yet been fully established. Two groups of ecotourists visited the area (20 in total – not including various additional Trinidadian friends who came to experience the project) one school age, one over 50s. These were most successful, assessed by questionnaire returns, which were enthusiastic, rating the experience as “excellent value for money, and a once in a life time experience”. These results demonstrated the potential for successful ecotourism in the area, although the sustainability of the ecotourism does largely depend on the local community taking charge of this aspect of the programme. All tourists were sourced by the project staff. Despite all the training and capacity building that has been provided, we have some doubts that the Pawi Club are ready to run a successful ecotourism programme on their own. However, the potential for their group and the area is encouraging.

The goal of the project was to assist Trinidad to monitor and conserve its north coast marine turtle resources by designing a financially sustainable ecotourism programme, benefiting low income groups. It is felt that the goal has been achieved to the extent that we have monitored the north coast beaches, attaining new important information in an area previously unstudied, and discovered an extremely significant population of leatherback turtles, which no-one knew was there. The identification of this population, and information on its status and subsequent threats to the population has allowed us to consider the conservation issues, make recommendations and pass them onto the host country. This helps the host country meet its obligations under the CBD, and they now recognise the area as an important nesting site for leatherbacks, nationally and

internationally. The Wildlife Section has taken a specific interest in the area and has made it new policy to carry out field work there on a regular basis. They have begun to send wardens out to do inspections and track counts, and liaise with the local community groups. The Wildlife Section are also in the process of applying to the main Government body for extra funds to support the Pawi Club (project partner) based in Matelot to continue with data collection and tagging of the turtle population on the remote beaches. The data on the population size and conservation issues resulting directly from the project are being used to formulate recommendations and providing information in the compilation of a STRAP (Sea Turtle Recovery Action Plan) for Trinidad and Tobago, by WIDECAS (Wider Caribbean Sea Turtle Conservation Network).

An ecotourism programme has been designed for the area, and this has benefited the local community through the generation of income from the ecotourist groups, employing the project-trained guides, fishermen, local shop and venue owners and other community members. The ecotourist groups that visited also made donations to the Pawi Club directly, helping the group to fund some of their other activities. The project also helped the low-income communities directly from the Darwin funding itself by employing people on the project. Although the community may find it difficult to generate income from the ecotourism programme immediately, it is felt that they will benefit from it in the future with continued effort.

Appendix I shows the contribution made by different components of the project to the measures for biodiversity conservation defined in the CBD Articles.

The training and capacity building elements of the project improved local capacity to further the work in Trinidad a great deal. The group's skills and knowledge of marine turtles has improved from a low level, and have allowed the local participants to be able to manage the conservation and data collection programme successfully on their own. Other skills gained have been more general such as application writing, letter writing, and group organisation, which will aid them in the other ventures that they wish to pursue. Evidence for this is the training course examination results and their ability to use jargon and converse with people in the field of conservation and environmental studies. They have managed to secure some funding from local initiatives including the T&T Rotary Club and the National Carnival Association, and are also involved with a project funded by CNIRD to assess the solid waste on the coastline, and how this affects the environment.

From the initial training course that was offered, the 7 participants from Grande Riviere are all continuing to work on the beach monitoring and guiding. All the members of the Pawi Club that attended have shown great loyalty to the project and continued to train and work with the project. The Pawi Club have attracted several new members since the project started. Some participants have not had any further direct involvement with the project, although all have continued to give support and interest. These people were mostly women with family commitments. There will, however, be a role for these interested community members when/if the ecotourism aspect of the project becomes sustainable.

The UK students that received training are doing various things. All undergraduates have now graduated in either Aquatic Bioscience or Zoology and several have gone on to post graduate studies, both Masters degrees and PhDs. Three have continued to do conservation work on a volunteer basis.

The impact the project has had on the collaboration between UK and the local partners has been positive. The communities have gained a lot of skills and experience from the project, and have been very willing to collaborate in the future with the UK group. Indeed, a further field season in 2004 is currently being undertaken. The project has made positive headway with collaborations between local groups. This was due in part to the seminar organised in August 2003 (Appendix VII). The seminar brought all the groups working on turtles in Trinidad together, and at the very least made them aware of each other's aims and objectives. In this meeting, the groups that were being supported by the Government and those who weren't, were brought together, giving the unfunded groups the opportunity to present their case for gaining financial support. It was good for all concerned, getting several important points out in the open and to give the Wildlife Section the opportunity to explain the skew in resources. The project has not only improved relations with the project partners and the Government, but has helped to get them noticed in the first place.

In terms of social impact, the two CBO groups have benefited the most (Pawi Club and GRNTGA). The project has increased morale within the community by creating some employment and possibilities of more in the future. It is hoped that the fishermen in the village of Matelot and Grande Riviere will also benefit, as they are one group that is affected adversely by the turtle population. Accidental entanglement of turtles in nets damages their fishing equipment, which currently they get no compensation for. This is also the biggest threat to turtles in the area. UNDP (United Nations Development Programme) are interested in a project with the fishermen to assess different fishing methods to see if they can reduce the number of turtle deaths and the damage to the fishermen's nets. One unexpected negative was tensions between some groups in Matelot. This may be accounted for by jealousies, and resentment of the Pawi Club's advancement as a group. Concerning this issue, we tried to be as inclusive as possible to all members of the community.

The Wildlife Section has benefited by having access to new data, and for having a better relationship with the communities in the north. The project staff, have, in effect acted as mediators in some situations.

The UK students have greatly benefited from the experience of working on the Darwin project in terms of social impact. Firstly they gained data collection and monitoring skills and learned a great deal about marine turtle biology. They also acquired experience of field research and got involved with the design and implementation of experimental work. They learned about the workings of a conservation project within a local community setting, and enjoyed getting to know and understand a new culture and way of life.

The indicators for these findings have come from conversations and personal communication with members of the community, project partners and volunteers. Some of these points were also raised in community meetings.

6. Project Outputs

All project outputs are quantified in the table in Appendix II.

All details of differences in actual outputs against those in the agreed schedule can also be found in Appendix II.

All publications and material that can be publicly accessed can be found in Appendix III.

The information relating to project outputs has been disseminated in reports and in oral and poster presentations. This will continue to develop after the project completion – there are three manuscripts intended for peer-reviewed publication that will be submitted in the near future, and two more planned for the following months. There will be a PhD thesis produced partially from project findings, which will continue to develop after the project’s completion, and will be a means of information dissemination. A website is planned for the near future, containing information on all aspects of the project. The UK project staff (J.R. Downie and S.R. Livingstone) based at the University of Glasgow will be responsible for the continuation of project results and distribution. The costs for this are likely to be small and will be taken from R Downie’s departmental budget.

7. Project Expenditure

Breakdown	2001/2002	2002/2003	2003/2004	Total	Original	Difference
				£93,006.00	£93,006.00	£0.00

Agreed changes

* XX from TTO was originally supposed to get a larger amount for a salary, however due to a change of host co-ordinator early on in the project, an amount of money was paid to him for the work done in the early stages in the project and the rest was withdrawn. The new host co-ordinator, Stephen Poon, took on the role, but did not require a salary, as it was one of his employment duties at Wildlife Section to liaise with the local Trinidadian groups working on turtle conservation.

** It was agreed that due to the lack of a boat and engine for use on the project that one would need to be bought with project money.

Several sections of the project budget differ by $\pm 10\%$. Explanations for these changes are listed below:

Office costs: the University of Glasgow took many of the office costs up through indirects. The University of the West Indies also allowed the project to use their facilities while in the field.

Printing: same as above

Travel and subsistence: a pre-project trip was required in Jan 2002 in order to sort out partnership relations. Some extra cost was incurred due to this. Flight prices to Trinidad also increased from when the budget was first budgeted. Although this section is over budgeted, a large proportion of the food and subsistence costs were taken on by the Glasgow University Exploration Society's fundraising efforts.

Equipment: In our original application, our budget for equipment was higher than what we received. We found it difficult to reduce this which has resulted in an overspend. We in fact bought more equipment, but funded this from additional grant applications.

8. Project Operation and Partnerships

Originally the four main local partners working on project activities were Tacaribe Tour Operators (TTO), who were the initial contact and who introduced us to the local community groups in the north east region, the Pawi Club who were a relatively new CBO based in Matelot at the end of the paved road; GRNTGA, who were a group formed in Grande Riviere working on turtle conservation and tour guiding on the turtle beach in the village; and the Government Wildlife Section, who oversees all work carried out on flora and fauna and biodiversity issues in Trinidad, distributing work and collection permits. They supervise all work carried out on marine turtles in the country. Near the initial stages of the project, we decided that there was no longer a role for TTO, and although we continued contact with them, they no longer took on the role of host co-ordinator of the project. Mr Stephen Poon, the warden and officer in charge of turtle conservation at the Wildlife Section, filled this position. Wildlife was an active partner in the project, although not directly involved with project planning and implementation, they advised on several matters and always had an input into the direction of the project.

Partnerships with GRNTGA and the Pawi Club went ahead as planned, although the Pawi Club had a much larger involvement with data collection and monitoring on the remote beaches. They also took part in more of the training, as they were in need of learning more skills. The Grande Riviere group were often busy with their own beach and development in their village, and so became less involved in the remoter fieldwork. The Pawi Club and Matelot community were very active in this respect as they were the people that would be continuing the monitoring on the remote beaches and required more help in setting up the ecotourism side of the project.

Other local project partners were the Zoology department at the University of the West Indies (UWI), specifically Prof. Peter Bacon, who was the head of the Department, and a pioneer of turtle conservation in Trinidad. Unfortunately Prof. Bacon died at the end of 2003. In August 2004, a conference entitled "The Nature of the Island" is planned in his honour. The UK project staff were asked to organise an afternoon session on marine turtle conservation and life history on the 17th August 2004. There will be local speakers from Trinidad, and foreign speakers including Dr Scott Eckert and Dr Julia Horrocks, both well-known turtle experts. The project researcher will be giving a presentation on the Darwin Initiative project.

The project is now in contact with Dr Scott Eckert (Duke University) who has worked a great deal with sea turtles, and more specifically with Nature Seekers on the east coast of Trinidad. He is a well-respected turtle expert. Contact has also been made with Dr Karen Eckert, Executive Director of WIDECAS (Wider Caribbean Sea Turtle Conservation Network). These contacts have advised on occasion, and will hopefully be getting more

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involved in the future of the project.

Plans were modified significantly in the pre-project stages (Jan 2002) in response to local consultation. An urgent meeting involving all project partners and local stakeholders had to be called due to some disturbing changes made by TTO and a fall out between them and other project partners. This led to a change in host co-ordinator, but all other project planning remained the same.

The Darwin initiative had a good collaborative relationship with Nature Seekers based at Matura beach on the east coast of Trinidad. As the most advanced organisation working on turtle conservation in Trinidad, and with a successful ecotourism setup, they have been helpful with several different events during the project. They helped with the planning of the seminar the project organised in August 2003 and acted as hosts for the occasion. Some research was also carried out on their protected beach with their guidance. After project completion, the project staff organised to carry out a third field season as a continuation of the work with partners. Nature Seekers were helpful with the set up of a training course to teach tagging skills to the Pawi Club. The tagging programme on the north coast is running successfully.

The project has also had some contact with a group working on turtles in Tobago – SOS Tobago. We have exchanged some information and have initiated some communication between them and our project partners. They plan to do some work together in the future and SOS Tobago are invited to speak at the Nature of the Island conference in 2004 at UWI.

The host country Biodiversity Strategy is handled within the Wildlife Section; there is no separate office. As the Wildlife Section was one of our active partners, there was much consultation with them.

There was no extensive participation by international partners in this project. WIDECAS have been taking an interest in the project in the latter stages, however, they did not actively participate in any project activities. UNDP have shown an interest in our work since 2000, before the Darwin Initiative supported the project, and it is hoped that our NGO partners will soon be eligible for a GEF-SGP (Global Environment Facility-Small Grants program). UNDP have been waiting for the Pawi Club to be at a certain level of competence and development before they put any money into their programme.

The local partnerships have indeed been active after the end of the Darwin project. We have embarked on a third field season in 2004, in order to continue with data collection, training and capacity building. All partners have been involved in the furtherance of the project and their level of participation with the local biodiversity strategy process has been of a high standard. The Wildlife Section has also continued to be involved, and will be continuing to work with the community groups on a permanent basis under the prolongation of turtle conservation in Trinidad. More community participation is required for the sustainability of the project, especially in the establishment of the ecotourism aspect of the project. There will be a role in the future for the private sector, which will help to propagate the ecotourism and generate more income and employment in the area.

9. Monitoring and Evaluation, Lesson learning

In addition to the two six monthly and one annual report sent to the Darwin Initiative secretariat, the project has been monitored via annual reports within the University of Glasgow. The results obtained fall into several categories:

- Basic scientific information on marine turtle nesting numbers and success on the north coast of Trinidad; fundamental data on metabolic heating and insect infestation.
- Feedback data on the training provided in turtle monitoring, conservation and tour guiding.
- Feedback data and costings on the pilot ecotourism experiences the project had organised.
- A narrative on the north coast NGOs development process undergone by the north coast NGOs and an evaluation of the potential for further progress.

All the information obtained is new given the lack of previous work on turtles on the north coast, and is therefore clearly of high value, given the identification of this area as supporting a high proportion of the nesting population.

At goal level, the project has certainly assisted Trinidad to monitor and conserve its north coast marine turtle resources; an ecotourism programme has been initiated which has financially benefited the low-income local groups: the sustainability of the programme will be dependent on continuing support and sensitive infrastructure development.

During the project period, the work has been evaluated internally by the Wildlife Section and by the University of Glasgow. All feedback has been positive, although comments were made by the university on the diversity of the project's aims. External evaluation will be carried out by peer-reviewed journals in the near future, and the PhD thesis produced partially from the results of the project will also be subject to external assessment.

The key lessons to be drawn from the experience of this project are firstly that to develop a sustainable enterprise from a standing start in a grass roots organisation is likely to take longer than two years. Although a substantial amount of capacity building was put in place and progress was made throughout the project timeframe, it is felt that another two years would have made that extra difference to the sustainability of the project. It would have been rather frustrating to leave the project at what can be described as a critical point in the development of the local CBOs. We have however, managed to fund a third field season in 2004 through the University of Glasgow Exploration Society which has already helped the project move forward a stage. It is understood, however, that this lesson is not restricted to this project alone, and that at a Darwin Initiative conference in London in October 2003, time was indeed heralded as a major constraint, with events and progress often taking much longer than originally envisaged.

A positive experience from the project was the link that it had with the University of Glasgow Exploration Society. This enabled us to gain extra resources; both people and funding, and allowed the project to continue into a third year, which has been vital in making the project successful. We have also found that having the project run along side a PhD project worked well. DEFRA may well have good reasons for wishing to avoid such links, but it is not clear to us what the disadvantages are.

10. Darwin Identity:

The Darwin Initiative logo was printed on all documentation produced during the project. This included training material and reports. It was also used for all fundraising purposes including the printing of T-shirts to sell and for gifts to our Trinidadian counterparts. Over 2000 T-shirts were printed over the two years. The Darwin Initiative was mentioned in all presentations, oral and poster, and newspaper articles and interviews.

We presented Darwin Initiative funding opportunities within the Division of Environmental and Evolutionary Biology at the University of Glasgow, and encouraged colleagues to apply. This resulted in one successful application by a project on the conservation of birds in Bolivia (Dr R McLeod) and one which got through to the final round but was ultimately unsuccessful: a project on the flood plains of the Rio Parana in Brazil (Dr K Murphy).

Since the project's completion, the Darwin Initiative project has been highlighted on news briefs on the national Trinidad and Tobago news and is acknowledged with helping to put the programmes together.

Generally not many people were aware of the Darwin Initiative identity in Trinidad, but staff and the project volunteers did their best to tell everyone interested in the project about it. The identity was also explained at all host country presentations, seminars and community meetings. The Darwin identity in the host country was explained in detail to project partners; the community groups were briefed on the source of the funding, what the initiative stands for and the aims which it tries to achieve. They were asked to refer to the Darwin Initiative when disseminating any information about their activities.

The Wildlife Section had a clear understanding of the Darwin identity as a Government body. The University of the West Indies was also familiar with the Darwin identity, having had a previous project based there on the diversity of fresh water fishes. They have also closely followed the progress of this project.

In the context of biodiversity conservation, the project was recognised as distinct with a clear identity. No significant research on the turtle populations had ever been done on the remote north coast beaches previously, and so the Darwin Initiative project results are the first of this nature. The Darwin funding contributed the bulk of the project's budget. The project did work alongside several other groups and got involved with the national programme for conservation of marine turtles. The project worked hard to bring these other groups together.

11. Leverage

During the lifetime of the project additional funds from smaller funding bodies were attracted for the biodiversity work. We received funds from British Chelonia Group, People's Trust for Endangered Species, The Percy Sladen Memorial Trust and Blodwen Lloyd Binns Trust, primarily for the conservation of turtles and associated equipment for the work. There was no additional investment by the partners, as they lacked funds to invest. The Wildlife Section, however, will be applying for funds to the main government body to help support the continuation of the monitoring and data collection work on the remote north coast beaches. The Nature Seekers organisation has since made a contribution of 300

flipper tags, and the Wildlife Section contributed 150 PIT tags to the project to get the tagging programme off the ground.

In the early stages of the project, the UK project staff applied for extra funding to several agencies to strengthen the capacity of the partners. These were to BP Amaco and UNDP – GEF small grants programme. These were both unsuccessful however, due to the status of the CBOs – funders felt that they were not developed enough to deal with the financial aspects of the project without further training. Several attempts were also made to capture funds from international donors, e.g. the National Geographic Society, however these were also unsuccessful.

The UK project staff did secure some funds from the visitors that came to trial the ecotourism programme. This generated income within the communities and they donated some left over funds and 14 life jackets to the Pawi Club.

Nearing the end of the project, the capacity of the group to apply for funds and to write their own applications has greatly improved. With UK project staffs help they have now secured funds from British Gas and are in the process of gaining much needed equipment and beach shelters from Petrotrin (the Trinidad and Tobago national oil company).

There is also the possibility of future funding for the continuation of the tagging programme with funding from WIDECAS. This would include funding for several groups in Trinidad including the Pawi Club, GRNTGA, SOS Tobago and Nature Seekers.

12. Sustainability and Legacy

The project's achievements which are most likely to endure are the data collection and monitoring of the marine turtle populations on the remote beaches. This however will only be achieved with continued support from the Wildlife Section of the Government. The enthusiasm of the Pawi Club to do the work is robust, however the upkeep of the boat and engine and the effort and time put in by the members will need to be funded, or keenness to continue may diminish in light of the fact that other groups are receiving funding for similar work. If the ecotourism element of the project continues to progress, then this could potentially fund the data collection, which makes the project more sustainable. The Pawi Club have firm plans to use the contacts made through the project. One contact made through the project staff was with a gap year organisation called Madadventurer who take groups of school leavers and university undergraduate students abroad to experience conservation work throughout the year. Through this means they have a charity that helps community groups to fund their conservation work. The first group of this kind will be working with the Pawi Club in July 2004.

For many years, the Government of Trinidad and Tobago has been ambivalent about the development of the tourism industry. Tobago has been developed as a beach holiday island, but Trinidad has few developed facilities outside of Port of Spain, and concentrates on attracting visitors to the brief period of Carnival. However, the Government has recently embarked on a participative long-term planning process (Vision 20 20) with tourism development as a key section. The debates engendered by this process should allow the requirements for sustainable ecotourism development to be identified. We hope that the process may allow for the development of the infrastructure that marine turtle-based ecotourism on the north coast requires.

Once the project ends, the project leader will continue with his full time position at the University of Glasgow. The project researcher will complete her PhD by June 2005, and hopes to continue to work in the field of conservation. Stephen Poon, host co-ordinator will continue with his warden's post in the Wildlife Section. All the resources purchased for the project fieldwork have been passed on to the project partners of the continuation for the work.

The project partners will definitely be staying in touch. The host co-ordinator will continue to work with the local CBOs on a regular basis. The project leader and researcher will have continued contact with all Trinidadian counterparts, with possibilities of working together again in the future after the 2004 field season. It is likely that University of Glasgow Trinidad Expeditions in future will continue to work on the north coast.

The project's conclusions and outputs are being presented to international meetings and journals. The legacy of this Darwin project will go on, as it is this project which got the Pawi Club up and running, and which carried out the first substantial work on the marine turtle populations on the remote north coast beaches in Trinidad.

Additional funds are being sought from WIDECAST to continue the tagging programme. The small fund we are proposing to set up from the proceeds of selling the project's vehicle will be available to the Pawi Club, on application, for work aimed at continuing the project.

13. Post-Project Follow up Activities

We feel that an application for post-project funding to DEFRA would be premature at this stage.

14. Value for money

We rate this project as very good value for money. The evidence to support this can be seen by the physical outputs to the groups in terms of equipment, the large amount of information generated, and the number of people involved with the project.

15. Author(s) / Date

Suzanne Livingstone

Roger Downie

27th July 2004

16. Appendices

Appendix I: Project Contribution to Articles under the Convention on Biological Diversity (CBD)

Project Contribution to Articles under the Convention on Biological Diversity		
Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	5%	Develop national strategies which integrate conservation and sustainable use.
7. Identification and Monitoring	15%	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities which have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	10%	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	20%	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	15%	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	15%	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	10%	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.

14. Impact Assessment and Minimizing Adverse Impacts	5%	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such access and joint development of technologies.
17. Exchange of Information	5%	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Total %	100%	Check % = total 100

Appendix II Outputs

Please quantify and briefly describe all project outputs using the coding and format of the Darwin Initiative Standard Output Measures.

Code	Total to date (reduce box)	Detail (←expand box)
Training Outputs		
1a	Number of people to submit PhD thesis	None to date - Part of the work on the Darwin Initiative project, along with other work, will contribute to Ms Suzanne Livingstone's thesis (this was discussed with the Initiative Secretariat). This is aimed to be submitted in July 2005.
1b	Number of PhD qualifications obtained	None (see above)
4a	Number of undergraduate students receiving training	10 undergraduates received training – 5 in the two successive field seasons. They received training in all aspects of turtle biology, monitoring and general data collection as well as learning about any specific research being carried out. <i>All UK citizens.</i>
4b	Number of training weeks provided to undergraduate students	Both groups received 8 weeks of training.
4c	Number of postgraduate students receiving training (not 1-3 above)	2
4d	Number of training weeks for postgraduate students	12 weeks
6a	Number of people receiving other forms of short-term education/training (i.e not categories 1-5 above)	<p>22 – initial training course in 2002 7 – new members of Pawi that were trained in field data collection and monitoring. All Trinidadian local people from the Matelot, Grand Riviere area. The initial course included biodiversity, conservation, turtle biology, ecotourism, and tour-guiding - taught by seminars. Unfortunately, no Trinidadian undergraduates were able to join us (their financial problems were the cause – as many expected to be paid). The course was followed up with practical fieldwork. Several of the members helped with all the data collection throughout the project, although the work was too rough for some members (camping for several days at a time). New members were brought in throughout the project and trained in the field environment.</p> <p>48 – we taught for 4 weeks in the local high school (13-18 year olds). This was a revised version of the initial course. It was taught in the classroom during school hours, and included a practical field trip.</p>
6b	Number of training weeks not leading to formal qualification	<p>The initial training was over 5 weeks, with 2 three hour sessions a week.</p> <p>The follow-up field training was over 5 months - approximately one 3 day trip every 2 weeks for each member</p>
7	Number of types of training materials produced for use by host country(s)	Training material was in form of paper-based handouts and illustrations. This was linked to PowerPoint presentations. Technology available in village not high, so slide pack was not

Code	Total to date (reduce box)	Detail (←expand box)
		appropriate.
Research Outputs		
8	Number of weeks spent by UK project staff on project work in host country(s)	12 project leader 50 researcher
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1- An action plan for turtles in Trinidad is currently being compiled by WIDECASST. Work carried out on the Darwin project will provide information for this for the area of northern coastline.
11a	Number of papers published or accepted for publication in peer reviewed journals	Data not yet complete enough for any papers to be submitted, but well on track for at least 3 publications.
11b	Number of papers published or accepted for publication elsewhere	3 Paper accepted for Testudo – the journal for the British Chelonia Group. Reports have been included in the GU Trinidad Expedition 2002 and 2003 Report. In the original plan there was to be a paper based on outreach work with children – this will now not be a paper as there is not sufficient data.
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	1 – a database of turtle species recorded with descriptive information and tag data on the remote north coast beaches. This enhances the National Marine Turtle Database in which no data on the northern beaches was held. Additional data was also collected.

Dissemination Outputs		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	A seminar on Marine Turtle Conservation and Ecotourism in Trinidad was held in August 2003 towards the end of the second field season, and attended by all Trinidad turtle conservation NGOs and other relevant people.
14b	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/disseminated.	10 Project researcher has presented to: GU Divisional Seminar Series AGM of Glasgow Natural History Society A second year course in Conservation Biology X2 A Darwin Day event organised by GU for Glasgow school children. A fourth year course in Applications of Ecological Principles The conference of the British Chelonia Group in October 2003 A poster at the International Symposium for Sea Turtle Conservation and Biology in Costa Rica in Feb 2004. A Poster at the Student Conference on Conservation Science 2004 at Cambridge University. An oral presentation will also be made in August 2004 at the Nature of the Island conference at the University of the West Indies, in memory of the late Dr Peter Bacon. This is part of a seminar organised by project staff on marine turtle biology and conservation in the Caribbean.
15a	Number of national press releases or publicity articles in host country(s)	Trinidad and Tobago Guardian covered an account of the project.
15d	Number of local press releases or publicity articles in UK	2 Glasgow Evening Times story, based on Darwin Initiative

		<p>conference/press release (Project leader was personally interviewed).</p> <p>Local Newspaper in North Devon – Local school (Buckland Academy) provided the first trial ecotourism group to visit the project area, investigate the area's potential and assess the training of the local NGO.</p>
18a	Number of national TV programmes/features in host country(s)	<p>1</p> <p>A Petrotrin funded (T&T oil and gas company) TV film is currently being filmed to show the status of marine turtles in Trinidad and Tobago and will be concentrating on the work that is being done by local groups and foreign researchers. The Darwin project will be featured in this and the project researcher has been acting as an adviser to the research crew. The film is also being broken down into 7 minute programs to go on after the national Trinidad news on a weekly basis. First one went out 07/07/04.</p>
19c	Number of local radio interviews/features in host country (s)	<p>1.</p> <p>The Pawi Club were interviewed by the local radio station (Radio Toco) on the project activities.</p>
Physical Outputs		
20	Estimated value (£s) of physical assets handed over to host country(s)	<p>£7500</p> <p>Boat and Engine and life jackets (x14)</p> <p>Computer equipment</p> <p>Monitoring equipment and tagging equipment (with tags for following year)</p> <p>Tents and all camping equipment</p> <p>Trust fund</p> <p>Two computers were purchased: unfortunately, one was stolen and was not eligible for insurance. The second computer is being retained until the Pawi group have suitable premises for its maintenance and use. An air-conditioned room is required due to the corrosive nature of sea blast (the computer would not work for longer than a year). It was decided to donate the boat, life jackets, engine and associated equipment, plus camping gear and monitoring equipment, rather than the vehicle, because the need was more immediate and none of the group had a driving licence.</p> <p>In the budget the vehicle is costed at £3763 of which a significant proportion is repairs. The resale value of the van was £1140. It is this amount of money that we propose to be put into a trust fund for application by north coast turtle groups for further work on marine turtle conservation.</p>
23	Value of additional resources raised for project	<p>£5000 - Project leader: proportion of GU salary, based on time devoted to project.</p> <p>£5500 - Funds raised by student volunteers to cover flights, subsistence.</p> <p>£3800 - Successful small grant applications to purchase specialist equipment for experimental work.</p> <p>British Chelonia Group</p> <p>People's Trust for Endangered Species</p> <p>The Percy Sladen Memorial Trust</p> <p>Blodwen Lloyd Binns Trust</p>

Appendix III: Publications

Provide full details of all publications and material that can be publicly accessed. Details will be recorded on the Darwin Monitoring Website Publications Database.

Mark (*) all publications and other material that you have included with this report

Type *	Detail	Publishers	Available from	Cost £
<i>(e.g. journal paper, book, manual, CD)</i>	<i>(e.g. title, authors, journal, year, pages)</i>	<i>(name, city)</i>	<i>(e.g. contact address, email address, website)</i>	
Expedition report	Trinidad expedition report 2002 Suzanne Livingstone 2002	University of Glasgow, Glasgow, Scotland	Dr J.R. Downie J.Downie@bio.gla.ac.uk Graham Kerr Building University of Glasgow Glasgow G12 8QQ	Free
Expedition report	Trinidad expedition report 2003 Suzanne Livingstone 2003	University of Glasgow, Glasgow, Scotland	Dr J.R. Downie J.Downie@bio.gla.ac.uk Graham Kerr Building University of Glasgow Glasgow G12 8QQ	Free
*Report	Trinidad Marine Turtle Conservation Conference 2003 (TMTCC) Suzanne Livingstone 8 th Aug 2003	University of Glasgow, Glasgow, Scotland	S.R. Livingstone s.livingstone@bio.gla.ac.uk Graham Kerr Building University of Glasgow Glasgow G12 8QQ	Free
Training material CD	Conservation and Ecotourism on the North Coast of Trinidad Education programme for local people Suzanne R Livingstone April 2002	University of Glasgow, Glasgow, Scotland	S.R. Livingstone s.livingstone@bio.gla.ac.uk Graham Kerr Building University of Glasgow Glasgow G12 8QQ	Free
Journal paper	The status of the leatherback turtle (<i>Dermochelys coriacea</i>) population on the northern coast of Trinidad, West Indies. S.R. Livingstone and J.R. Downie	In Prep.		
Journal paper	Levels of invertebrate infestation in leatherback turtle nests in Trinidad, West Indies S.R. Livingstone, J.R. Downie, C. McLaren and S.	In Prep.		

162/10/026 – University of Glasgow. Final Report.

Larcombe.

*Journal
paper*

*Incubation temperatures,
sex ratio and metabolic
heating in leatherback turtle
(Dermochelys coriacea).
nests on the north coast of
Trinidad: implications for
conservation.*

In Prep.

*S.R. Livingstone and J.R.
Downie*

The three papers in preparation will be sent on to the Darwin Secretariat as soon as they are published.

Appendix IV: Darwin Contacts

Project Title	Marine turtle conservation and ecotourism on Trinidad's North coast.
Ref. No.	162/10/026
UK Leader Details	
Name	Dr J R Downie
Role within Darwin Project	Project leader
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Phone	
Fax	
Email	
Other UK Contact (if relevant)	
Name	Suzanne Livingstone
Role within Darwin Project	Field leader
Address	Flat 2/1 24 Hayburn Street, Partick, Glasgow, G12 0QW, Scotland, UK.
Phone	
Fax	
Email	
Partner 1	
Name	Stephen Poon
Organisation	Wildlife Section, Forestry Division, Trinidad Government
Website address	
Role within Darwin Project	Host country co-ordinator
Address	Wildlife Section, Farm Road, St Joseph. Trinidad, West Indies.
Fax	
Email	
Partner 2 (if relevant)	
Name	Renwick Roberts
Organisation	Pawi, Sports, Culture and Eco Club
Role within Darwin Project	One of the local CBOs which were trained, and assisted in field work
Address	C/O post office, Matelot village, Paria main road, Trinidad. West Indies.
Fax	
Email	

Appendix V – Logical Framework from original proposal

Project Summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal To assist Trinidad to monitor and conserve its north coast marine turtle resources by designing a financially sustainable ecotourism programme, benefiting low-income groups in Trinidad</p>	Sustainability of the scheme once established	Numbers of ecotourists; income generated (source-accounts of both NGO's)	Continued commitment of Trinidad government to turtle conservation, with north coast remaining an area not served by a metalled through road
<p>Purpose Establishment of a sustainable turtle conservation programme, linked to ecotourism</p>	Effects on local people; effects on the north coast turtle populations; impact on tourists.	Numbers of ecotourists; income generated (source accounts of both NGO's)	Continued interest of members of local NGO's in ecotourism: for example, new sources of local employment could be a distorting factor; or any source of adverse publicity affecting visitor numbers in Trinidad.
<p>Outputs</p> <ul style="list-style-type: none"> • Training of local people in turtle biology and ecotourism guiding. • Training of students in turtle monitoring. • Research reports that will highlight results both of turtle monitoring and of the innovative ecotourism scheme. 	Records and evaluation of training; submission of research reports	Databank of records maintained by the NGO's; research journals.	Most local people have received little formal education: it is a basic assumption that we can devise a training programme suitable for their needs.
<p>Activities Training workshops; beach patrols; educational work with tourists, local people and students; report writing.</p>	Activities undertaken on schedule and to planned specifications.	Project reports and feedback to DETR; papers published in scientific journals.	We propose to pilot our ecotourism scheme on students, but are keen to test it on real tourists. An assumption therefore, is that there will be a willing tourist population. Since tourism is still a small sector of the Trinidad economy, this cannot be guaranteed.

Appendix VI – Maps of Trinidad

Figure 1.
Map of Trinidad and Tobago



Figure 2.

Map of Turtle Nesting Beaches in Trinidad



Appendix VII



Community Conference
8th August 2003

**Trinidad Marine Turtle
Conservation Conference 2003
(TMTCC)**



Compiled by Suzanne R Livingstone (s.livingstone@bio.gla.ac.uk)

(With assistance from Dr J.R Downie, Debbie McNeill, Ross Culloch, Euan Riddell, Stephen Larcombe and Iain Fulton)

Organised by: University of Glasgow Darwin Initiative Project
and Trinidad Government Wildlife Section, Forestry Division

(With assistance from Nature Seekers Incorporated, Matura)

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1. Overview

1.1 History of Turtle Conservation in Trinidad

Five species of marine turtle are known to nest on the beaches of Trinidad and Tobago (Carr, 1956; Murphy, 1997). The leatherback turtle (*Dermochelys coriacea*) is the most common species nesting on the north and east coasts, nesting in relatively high densities. The hawksbill (*Eretmochelys imbricata*) also nests on these beaches, but in smaller numbers. Green turtles (*Chelonia mydas*), olive ridleys (*Lepidochelys olivacea*) and loggerhead turtles (*Caretta caretta*) have also been noted on these beaches in low concentrations (Bacon 1970b, Chu Cheong, 1990), although they have mostly been recorded nesting on the small Bocas Islands off the North West coast of Trinidad (Gyan, 1987). It is probable that Trinidad, is therefore one of the most diverse and important turtle nesting sites in the Caribbean.

Since the early colonial era, sea turtles have been observed nesting on sandy beaches and feeding in local waters. Records of exploitation date to the early 17th century (Fournillier and Eckert, 1997). These records are somewhat vague and discontinuous; however, they illustrate how indigenous and customary turtle fishing and utilisation were in Trinidad. Each year the nesting season represented an added source of income to a small and chiefly artisanal fishing industry; to some extent this is still true.

Historically and up to the present day, sea turtles have been both hunted at sea (using nests and harpoons) and on nesting beaches. All species are exploited for meat, organs and eggs, although the tender meat of the herbivorous green turtle has always been favoured. The shell of the hawksbill has long been used to fashion jewellery and household items. The extent of the harvest has never been effectively quantified and reviews by the University of the West Indies (UWI), the Forestry Division, Wildlife Section and foreign investigators, as well as a brief period (1969-1980) of landing data archived by the Fisheries Division, comprise all the available quantitative data (Fournillier and Eckert, 1997).

The Trinidad and Tobago Field Naturalists Club (TTFNC) implemented the first practical research undertaken on marine turtles in Trinidad. They began a formal programme of beach monitoring and sea turtle conservation in 1965 and published work followed soon after (Bacon 1967; 1969a; 1969b; 1970a). As awareness of the turtles' plight grew in the 1970's, so did pleas for conservation action. There was rising alarm that an unsustainable number of turtles, and especially gravid females were being killed each year. Bacon (1973b) estimated that 30% of turtles nesting at Matura and 100% of turtles nesting near villages on the North coast were slaughtered. Investigations by foreign researchers (Carr, A.F., Pritchard, P.C.H., Eckert, S.A. and Godley, B.J.) further emphasised the endangered status of sea turtles and the significance of the remaining populations both regionally and internationally. Despite persistent efforts by local conservation groups and Forestry officials, it was not possible to provide complete surveillance of prominent nesting beaches along remote East and North coasts (Lum, 2001).

Between 1982 and 1989, the Wildlife Section focused on law enforcement of regulations and nesting data were sporadically collected. The successful enforcement of a provision under the Forests Act followed in 1990, to declare Matura and Fishing Pond beaches, bordered with forest, as prohibited areas with restricted entry (Fournillier, 1992). Between 1990-1992, with no budget allocation to carry out beach patrols, the Wildlife Section adopted a new approach. James and Fournillier (1992; 1993) described a community-based approach to protect nesting sea turtles through ecotourism. Utilising the human resources of Matura village, an "Introductory Nature Tour Guide Training Course" was given to 11 participants to sensitise them to the potential ecotourism value

of turtles to Matura and the mutually symbiotic relationship that could be achieved. Nature Seekers Incorporated was created. The successful example of Nature Seekers in both turtle conservation and ecotourism has encouraged other communities to get involved in sustaining their natural resources – there are now active groups at Grand Riviere, Fishing Pond, Manzanilla, Mayaro and Matelot, and in other areas over the north east coast. The Institute of Marine Affairs is the archive for the nesting and tagging data collected by the Wildlife Section and the various groups. This information will help to evaluate the effect of current legislation and guide recommendations for further conservation work.

While the East coast and part of the North East coast of Trinidad are well documented, there is little information about the turtle populations nesting at other beaches in Trinidad. The North coast beaches between Matelot and Blanchisseuse are also very busy and accommodate a large percentage of the nesting turtle population. The main beaches on which turtles have been observed are Paria, Murphy's Bay, Madamas, and Grande Tacaribe although several other smaller bays are also used. Glasgow University carried out basic surveys in 1989 and 1991, which involved a single week in each year on the North coast (Godley, 1989; 1991a). A more detailed assessment of the North coast beaches was carried out as a follow up to this work in 2000 (Livingstone, 2000) with very interesting results. Consequently, a Darwin Initiative project was set up in 2001 supporting field seasons in 2002 and 2003. This project is ongoing, working with the Wildlife Section, the Pawi, Sports, Culture and Eco Club, the Grand Riviere Nature tour Guide Association, and collaborating with Nature Seekers on some scientific research.

Local legislation protecting sea turtles is found in the Conservation of Wildlife Act (1963), the Protection of Turtle and Turtle Eggs Regulations (1975), the Forests Order - prohibited areas (1990), and the Fisheries Regulation - Conservation of Marine Turtles (1994). Trinidad and Tobago is also a signatory to international protection agreements such as the Convention on Trade in Endangered Species of Flora and Fauna (CITES). All local species of sea turtle are listed in Appendix 1 of the Convention, the terms of which require that there be no commercial import or export of marine turtles or their products in signatory countries. Further international agreements include the Protocol Concerning Specially Protected Areas and Wildlife (SPAW) under the Cartagena Convention of 1983, which prohibits the taking, possession, killing (including accidentally) and commercial trade of any part of a marine turtle. While these cover many aspects of sea turtle ecology, the protection of females during the nesting season, habitat protection and incidental catch are limited in practice by available resources.

Currently the Wildlife Section funds several of the groups working on turtle conservation and monitoring. The funds go towards paying the guides to patrol the beaches at night and collect data. Not all the groups are funded however, and the funds that Wildlife receives from the budget to distribute between the groups have been cut consecutively over the last 2 years. With these restraints, it is frustrating for both Wildlife and the working NGO's.

1.2 Reasons for Holding the Conference

Many organisations are currently working hard to conserve and gather information on the marine turtle species nesting on Trinidad's East and North coasts. This conference was an opportunity to bring each of these groups together to share information and identify existing problems. It was felt that the meeting would be an extremely valuable exercise for both participating groups and the Wildlife Section to improve on available support, make contacts and unite resources. The purpose of this conference was intended as an information exchange, perhaps leading on to a larger-scale meeting in 2004 aimed at policy makers and potential funders.

1.3 Organisation of the Conference

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This conference was jointly organised by the Wildlife Section, Forestry Division and the University of Glasgow Darwin Initiative Project, with assistance from Nature Seekers, Matura. The conference was held on Friday the 8th of August from 10am till 3pm at the Nature Seekers offices in Matura village. Each group was invited to give a short presentation on their organisation and the work that they were currently undertaking. All groups were sent out an invitation letter two weeks in advance of the meeting to give them time to prepare a presentation. A data projector and PowerPoint facilities were provided by the Wildlife Section to assist the presentations. Most groups organised their own transport; however a maxi taxi was arranged to bring the Pawi group and Grand Riviere group from the North East coast area, subsidised by the Darwin Initiative Project. Lunch was provided by Nature Seekers and funded by the Darwin Initiative Project, as were notebooks and pens for all participants. The day was structured so that the majority of presentations were given in the morning, leaving the afternoon free for discussion and report backs.

2. Programme of events (intended)

- **10:00 – 10:05am** Opening prayer
- **10:05 – 10:10am** Welcome and opening remarks – chairperson
- **10:10 – 10:15am** Remarks by Stephen Poon (Wildlife Section)
- **10:15 – 10:25am** Presentation by Grand Riviere Nature Tour Guide Association
- **10:25 – 10:35am** Presentation by Fishing Pond Environmental and Community Group
- **10:35 – 10:45am** Presentation by Manzanilla Community Group
- **10:45 – 10:55am** Presentation by Pawi, Sports, Culture and Eco Club
- **11:05 – 11:15am** Presentation by Nariva Mayaro Hunters Group
- **11:15 – 11:25am** Presentation by Salibya Community Group
- **11:25 – 11:35am** Presentation by Toco Foundation
- **11:30 – 12:40am** Lunch
- **12:40 – 12:50pm** Presentation by Nature Seekers
- **12:50 – 1:05pm** Presentation by Darwin Initiative
- **1:05 – 2:30pm** Group discussions
- **2:30 – 2:45pm** Closing remarks/vote of thanks

It was unfortunate that not all groups managed to attend the conference. See Appendix 1.

3. Speakers

3.1 Chairperson, Dr J.R Downie, University of Glasgow

After the opening prayer by Susan Lakhani (Nature Seekers), Dr Roger Downie welcomed all the groups present to the first marine turtle conservation conference in Trinidad. Although he did not know many of the people there, he was hoping to get to know them during the day ahead. He introduced himself as a senior lecturer in Zoology at the University of Glasgow in Scotland. He had been visiting Trinidad to carry out research since 1981. He hoped that he would be a neutral figure to act as chairperson during the discussions.

Dr Downie began by announcing that the seminar, the first to bring together so many groups to discuss turtle conservation and its links to community development in Trinidad,

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was jointly sponsored by the Wildlife Section – who put a lot of effort into organising the meeting, and the University of Glasgow’s Darwin Initiative project on marine turtles and ecotourism on Trinidad’s North coast. He was also grateful to Nature Seekers for being willing to host the day.

He thought that perhaps some people might wonder how the University of Glasgow got involved in turtle conservation in Trinidad. This began back in 1989, when he brought a group of GU (Glasgow University) students to Trinidad to work on projects on quenk, pawi and marine turtles – the most successful of which was turtles: David Boodoo was very important to the success of the project. Brendan Godley, then a second year student, now a rising star in marine turtle research, led the turtle group. The group investigated leatherback nesting numbers at Matura, and also made a trek along the North coast from Matelot to Blanchisseuse, to make a spot-check of nesting turtles there. The following year, Nature Seekers was established at Matura, and Glasgow University like to think the information gained by the 1989 team was influential in that development.

Turtles were also a major focus of the 1991 GU expedition, focusing again on Matura and the North coast, but also visiting Tobago, Fishing Pond and Grand Riviere. Because of the successful development of community based turtle groups in Trinidad, Glasgow University gave turtles a miss for the next few years, but in 2000, got back to turtles, with a project based in Matelot, which served as the pilot study for the work that eventually became the Darwin Initiative [see section 3.8]. GU also worked with Nature Seekers in 2001 and again this year (2003). Dr Downie went over this brief history to show that GU has a long collaborative involvement with turtles and especially with the link between turtles and community development.

Dr Downie said he saw the purpose of the gathering as an exchanging of information; with each group getting the opportunity to say what they are doing, what their problems are and how they see their projects developing. It was important to discuss successes, but also problems and limitations – and how they can be dealt with. The idea was to concentrate on presentations in the first half of the day, and on discussions in the second.

Dr Downie said that he hoped that the outcomes of the day would be a report of the meeting that could be circulated to all participants, and a series of desirable action points highlighting what needed to be done next to develop turtle conservation and its link to community development in Trinidad.

3.2 Opening remarks, Stephen Poon Wildlife Section

Mr Poon began by apologising for the absence of Nadra Gyan (Head of the Wildlife Section) who could not attend the conference due to other commitments. He also was sorry to see that three groups that had been invited to the conference had not managed to turn up.

He then talked about early turtle conservation in Trinidad when Pointe-à-Pierre and the Trinidad and Tobago Field Naturalists began to do some beach patrols. The Wildlife Section started to get involved in the 1980s due to a lot of killing of turtles, but at this time they did not have suitable resources (monetary or man power) to deal with it on large scale. The idea of using local communities came to light, and so they trained and

empowered the surrounding communities to conserve the turtles with their support. Today there are 8 active groups in Trinidad working on turtle conservation. Mr Poon pointed out that a good example of these is Nature Seekers. He mentioned that Wildlife approached people from Mayaro to Matelot, and that they had links with, and supported all of these groups. These days they also provided money, links and resources for selected groups (Grand Riviere, Matura, Fishing Pond and Manzanilla).

It was voiced that Wildlife would like to see conservation grow in Trinidad and that this seminar was for the groups to gather a consensus on the direction of future efforts. It was also a prelude for a larger more public and media orientated conference for next year (2004).

Mr Poon saw the meeting as a chance for each group to say what they would like to see done, how they saw Wildlife's role, and their own role in turtle conservation. At the end of the conference, there should be a mandate of where to go to next.

3.3 Mr Len Peters, Grand Riviere Nature Tour Guide Association

Firstly Mr Peters apologised for his colleague not being at the meeting yet, but he was on his way.

When Mr Peters got the correspondence for this conference and saw who was coming to the meeting, his thoughts were on; what was the objective of the workshop? On the invitation he saw that there was an allocation for 35 minutes for prayers (in the original programme there was a mistake - compiler) – well for sure leatherbacks need lots of prayers from what he has observed at Grand Riviere beach. He personally has observed that over the years, leatherbacks are becoming more endangered, and wishes them to be managed by a marine turtle steering committee.

The project at Grand Riviere started as a conservation project due to the beach being one of the principal nesting sites in Trinidad. The group have worked to conserve both adults and hatchlings and effectively manage 5000 European visitors annually. They feel that their group does a lot on land and that there is adequate protection, but that the real threat is in the water, and that legislation does not protect turtles sufficiently in this medium. Mr Peters claimed that one of the main problems for the turtles are fishermen and their nets and that they need to convince the local community, concentrating on the fishermen, that the turtles need to be conserved. Mr Peters said that this has taken a long time, but that they are starting to understand and take notice.

A new problem on the scene is a new type of predator – developers who want to capitalise on turtle conservation. The main attraction to tourists in the area is the turtles, but the new developers moving in are not conservation-minded. They come into the community, use the resources, make money and then leave and move on. This is not sustainable. Areas that would have formed good habitat for turtle nesting have already been cleared for resort development, and the resorts themselves marketed for turtle conservation. In Grand Riviere most of the land bordering the beach has been earmarked for construction, as have areas in Tacaribe and Madamas. What is needed is some form of legislation to limit and control development. He seeks a development policy framework in areas near nesting sights, controlling factors such as light pollution.

There are currently two hotels on the beach at Grand Riviere. This already produces additional work on the beach for the guides as the lights disorientate both hatchlings and adults turtles; the guides are constantly having to take hatchlings out of hotel rooms at night, and on several occasions adult turtles have also got into rooms. Sherwin Ruiz protects the hatchlings that hatch during the day by keeping them in pots to release at night so that they don't get eaten by predators (e.g. frigate birds). However, once released at night they go for hotel lights instead of towards the sea. The group currently has good co-operation with the existing hotels that do try to keep the beachfront lighting to a minimum. Mr Peters is worried that the new breed of get-rich hotel-owners may not be so co-operative and it is a great concern how this will affect the turtle population.

Mr Peters felt that the different groups working on turtles in Trinidad don't seem to care what is happening to each other. But this seems to be silly as the turtles nest at all the beaches, and that they are all part of the one big population. The groups need to focus their energies and stop anti-leatherback killings and fight to protect the environment from developers. He wishes for all the groups to work together and to network and lobby to develop an overall policy to manage tourism as well as to fight unsustainable development as any current economic benefits gained through tourism will be lost should the turtle populations crash.

Comments from Susan Lakhan - Nature Seekers

Mrs Lakhan wished to make a comment at this point about lighting at the back of beaches. She used the case of Turtle beach in Tobago where the hotel owners use the turtles that nest there as a resource to attract guests. The turtle numbers there have decreased significantly, perhaps due to excessive lighting at the back of the beach and disturbance by people. Mrs Lakhan stressed the point that Trinidad groups have been working hard without funds to conserve the turtles, and then in come developers with money and do what they want in the area. She also feels that there needs to be control over these new developers, and that this is for the sake of the whole environment, not just the turtles.

3.4 Mr Brian Koonhow, Salibya Community Group

Mr Koonhow, like Mr Peters, wondered what his role would be at this meeting. The Salibya group is not currently doing any work on turtles. This is because they feel they are unable to do so, not because they don't want to. The group started basic monitoring and counting turtles three years ago, and although there is not the same density of turtles on their beaches compared to some others in Trinidad, there are enough to be important. At this time the group approached the Wildlife Section for help with the data collection, but did not feel that they received any, nor was advice forthcoming.

Salibya is an area of only 220 people with a high unemployment rate. Due to this, the group found themselves lacking funds to buy equipment, and lacking in enthusiastic volunteers. Mr Koonhow described how they wanted to construct a shed on the beach as a base for their volunteers for somewhere to rest and look out from. People tore down this shed on three different occasions and so they became disheartened and did not build it again. He also explained that the beach monitoring at night could be quite dangerous due to people smuggling drugs over from Venezuela. At this time they approached Wildlife

again, who this time supplied them with data sheets and promised to liaise with them and get them licenses to do patrols on the beach. They are still waiting. They became disillusioned with what they were really trying to do and stopped after a few months.

Recent developments at Salibya have been the construction of a new private spa. There have been some building problems, which have led to the sea consistently being coloured brown along with light pollution and retaining walls being built. Mr Koonhow said that some people came to have a look at it and then went away again – and nothing more has been done about it.

Mr Koonhow voiced his opinions on the lack of appropriate budget allocation by government, how he felt that money was wasted in other areas (e.g. CEPEP - Community-based Environmental Protection and Enhancement Program) and that a redefinition of government perspective was necessary.

Comments from Len Peters – Grand Riviere

Mr Peters wished to reply to Mr Koonhow: for the first 5 or 6 years at Grand Riviere all the work that the group did was voluntary with no funding at all. Some members left soon after things started and called the group names such as “turtle police”. Turtle conservation needs commitment and if you want to start straight away and get paid you are not going to get far. Mr Peters highlighted that new groups needed to show commitment and then they would become recognised. They need to spend time lobbying and advertising and showing people that they are serious, and not in it for the money. He advised Mr Koonhow not to lose focus and become discouraged, and that if he kept going, people would eventually listen.

Comments from Stephen Poon – Wildlife Section

Mr Poon also wished to reply to Mr Koonhow. Firstly he apologised for the lack of assistance in the past. It is important to keep in mind that Wildlife also have restrictions. Staff is a major constraint, and it is not that they are not willing to assist, but don't have the resources to do so and are unable sometimes to give support due to a limited budget.

Comments from Susan Lakhan - Nature Seekers

Mrs Lakhan remembers at the beginning of Nature Seekers that Wildlife could not support them with funding, but they did make the beach a protected area. They got no money, promises or resources, just the backing and support. They held on and got money from elsewhere. She wanted to encourage Brian to keep going – you need a good track record. She also felt that having no money in the beginning was a positive thing for Nature Seekers, as they would not have been around today if it had not been for the genuine commitment of several people, caring enough to stay without payment.

Reply from Brian Koonhow

Mr Koonhow agreed with all the feedback, but found it difficult to comment with an empty stomach.

Comments from Michael Als – Toco Foundation

Mr Als commented on the different circumstances of each different group. What will work for one group will not necessarily work for another. There needs to be the allocation of appropriate resources by the Government and he felt that the groups do need to be supported by the state.

Mr Als also felt that they needed to redefine the perspective on which groups got funding, and that the ones that really were doing the work should be funded. It is all very well that Nature Seekers had to struggle for 10 years before they were funded, but it doesn't have to be that way anymore. He felt that Nature Seekers should now take the time to invite people and show them how it was done. It can't take 10 years to learn again. The world has changed - so let them learn more quickly.

Comments from Dr Roger Downie – University of Glasgow

Dr Downie commented that he felt that it was difficult for small groups to be heard when dealing with Government changes. What they really needed was for all the groups to join together to form a large assembly to make a lot of noise and persuade the government do something.

3.5 Mr Renwick Roberts, Pawi, Sports, Culture and Eco Club

Mr Roberts began his presentation by thanking all those who had turned up to the meeting. He informed the audience that Pawi's main aim was to uplift the community and to protect the environment in the surrounding area through sustainable development. The group has 17 members as well as two branch groups of 8-11 year olds and 12-18 years olds. Since the group formed in 1997, they have been involved in various activities such as the Tidy T&T Rotary Club competition, in which they won a prize (2003), initiated a carnival revival in Matelot (2003), have begun developing a park for tourists in the village, and are a partner in a sustainable development and turtle conservation project with the University of Glasgow.

Mr Roberts felt that one of the main problems on North coast beaches concerning turtles is that it is very difficult to enforce any of the turtle protection laws; either in the sea or on land. He said that nobody actually knows what is illegal and what is not, and that more education is required to raise awareness. He felt it would be good idea for the Government to put up posters around the area and advertise on radio what the laws are.

There are currently some problems associated with tourists in Matelot. Many native tourists come up to Matelot to bathe in the river and swim in the sea. But the local community have no control over visitor numbers or activities, and there are not sufficient facilities i.e. toilets, changing areas or even bins. This often means that there is a mess left behind. Mr Roberts feels strongly about this and wishes to develop the area to accommodate for the rising number of visitors. More people are now also using the remoter parts of the North coast, and Mr Roberts thinks that all tourists unfamiliar with the area should employ local guides who are savvy with the terrain, prevailing winds and sea conditions. Mr Roberts said that the group thought it was a good idea to make the whole North coast into a National park and that they were against the completion of Paria Main Road and any major development in that area.

Pawi's future plans include a hatching programme involving the younger branches of the club, to work more closely with the fishermen, perhaps look for an alternative to gillnet

fishing at peak nesting season, and to promote ecotourism in the area. Finally Mr Roberts mentioned that the Pawi Club would like to be considered by the Wildlife Section for funding to continue recording data and monitoring the turtles on the remote beaches since they now have been helping to collect data since 2000 and have much experience having been trained by, and worked with the Glasgow University Darwin team.

3.6 Mr Michael Als, Presentation by Toco Foundation

Mr Als felt it was important to raise the point that more turtles are killed by Venezuelan fishermen with trawlers by catching turtles in nets and harpooning them, than are caught by Trinidadian fisherman (it is unknown where this information came from - compiler). It is true that turtles are difficult to conserve as they are a migratory species, and travel great distances, they don't just stay in Trinidad waters.

There is a programme supported by the Toco Foundation in which 20 young people protect the beaches from Salibya to San Souci. They are not supported by the Government. Mr Als feels that is not fair to financially assist some people, and expect others to work without pay, but is aware that there is a funding problem, and that Wildlife are not able to fund all the groups with the budget that they receive. Mr Als then made comparisons with funding for turtle conservation and the new Government CEPEP scheme which seems like a waste of money paying people "to paint stones white" when they could be putting money into something worthwhile like employing people to protect endangered species.

Mr Als is also worried about the development of delicate areas, and is concerned about the amount of work that has already illegally gone on at the Blanchisseuse end of the Paria Main Road.

3.7 Miss Marisa Ramjattan, Nature Seekers Inc

Miss Ramjattan, the secretary of Nature Seekers, gave a presentation entitled "Community Based Sea Turtle Conservation in Matura". She began by describing the beaches on the East coast. There is 7.4km of beach in the Matura area, which is divided up into 17 zones of 1,400 ft. There are mostly leatherbacks nesting there, but hawksbill and green turtles also use the beach. In the 70's and 80's there was a lot of slaughtering of turtles at Matura (up to 70% of nesting females were killed), and the Forestry Division did not have the human resources to have much of an impact. It wasn't till 1990 that Wildlife and the community of Matura got together and Nature Seekers was born.

These days Nature Seekers carry out a range of different activities on the beach to conserve and protect the turtles. The beach is now deemed a protected area by law, and no one is allowed on the beach without a permit. Miss Ramjattan described how the community gets together every year to do a beach clean up in preparation for each turtle-nesting season. Because Matura is on the east coast bordered by the Atlantic Ocean, it gets a lot of debris washed up. The beach clean up is to aid successful nesting, to facilitate safe viewing by visitors, and is used as a means of getting the community to work together and learn about marine turtles.

During the nesting and hatching season, there is also ongoing sea turtle monitoring and protection. This involves turtle tagging (successfully run since 1998) with both PIT tags and flipper tags. All the tag data collected goes into the National Sea Turtle Database of Trinidad and Tobago. It is not only data from Matura that goes into the database however. Sightings from all the main turtle beaches in Trinidad are also put in. So far 5151 turtles in total have been tagged in Trinidad, and the number has been increasing each year. Turtles that have been tagged in

162/10/026 – University of Glasgow. Final Report.

Trinidad have turned up in some faraway places such as Venezuela, France, French Guiana, Grenada and Spain and it is interesting to keep track of where else in the world they might turn up.

Helping adults with missing back flippers to nest successfully is one way of facilitating nesting that Nature Seekers do. They also relocate nests when they are laid in unsuitable positions e.g. too close to the tide. During the hatchling season, nests are excavated to help the last hatchlings out of the nest and are washed when mudslides encroach on the nest. The group also encourage scientific researchers that wish to investigate different aspects of turtle ecology.

Nature Seekers feel that education and community outreach is an extremely important part of what they do – getting the community involved in conservation work. They give talks in schools and run turtle watching tours for both local and foreign visitors interested in seeing the turtles come up and nest. The organisation, of course, must also be financially sustainable. Funds are raised directly from the ecotourism aspect of the group's work: from the turtle watching tours, as well as from selling souvenirs (photographs etc.), the Adopt-a-turtle scheme, and grants from funding organisations. The government also support the group financially by providing funds towards payment for the guides working on the beaches.

Many people volunteer to help with the different aspects of work that Nature Seekers do. The Earthwatch organisation sends volunteers from abroad to help with the work and data collection, which also brings in funds. Associate members of the group also help out, as do the local youths. Nature Seekers is a very positive component of the community of Matura, and as well as making available such things as library facilities and assisting schools, they have a constructive effect on the local economy and the capacity of the community to succeed and develop.

3.8 Miss Suzanne Livingstone, University of Glasgow Darwin Initiative Project

Miss Livingstone gave her presentation on the work that she was doing in conjunction with a Darwin Initiative Project. The Darwin Initiative for the Survival of Species is a scheme that was introduced by the British Government at the Rio1992 Earth Summit Conference and is run by the Department for Environment, Food and Rural Affairs (DEFRA). The main objective of the Darwin Initiative is to assist countries rich in biodiversity but poor in resources. This fitted in well with what had been said earlier in the day – that Trinidad has rich biodiversity and endangered turtles that need conserved, but that there is a lack of manpower and funding from the Trinidadian Government. The Darwin Initiative also states that projects will be collaborative, involving either local institutions or communities in the host country, and that they will have a real impact on the ability of the host country to meet its obligations under the Biodiversity Convention.

This Darwin project, based at the University of Glasgow, works with several groups within Trinidad. The host country co-ordinator of the project is Stephen Poon from the Wildlife Section who gives advice on the project set-up. The Pawi, Sports, Eco and Culture Club, a community based organisation (CBO) in Matelot, are the main group on the ground with whom most of the fieldwork is done. The Grand Riviere Group has taken part in some of the community development aspects of the project. Nature Seekers have also been involved in the project allowing some scientific work to be carried out at Matura and assisting with the organisation of the conference.

The beaches on the East coast and inhabited parts of the North coast are well documented. However, little work has been done on the sandy bays between Matelot and Blanchisseuse. The main turtle beaches on this section of the coastline are Madamas,

Grand Tacaribe, Murphy's Bay and Paria bay. This is where the majority of the research of the Darwin Initiative project has been based. The main research aims of the Darwin project are to determine the population size of each species of marine turtle nesting on the beaches, examine the hatching success and investigate the influencing factors, analyse the temperatures within leatherback nests with regards to sex ratio, metabolic heating and hatchling synchrony, and explore the extent of insect infestation of turtle nests.

It was Miss Livingstone's opinion that no conservation project could be truly successful without involving local communities. Therefore, other major aims of the project included the education and training of local people in turtle biology, conservation, research data collection and tour guiding, raising awareness of turtle conservation and environmental issues in schools, investigating the ecotourism potential of the area, and helping the local groups establish a visitor guiding scheme and promoting the effective management of the turtles as a resource of biodiversity and a source of alternative income.

The project is now in the second and final year of Darwin funding. One outcome of the work was that the natural threats to both adults and hatchlings had been identified. There was a relatively low level of hatchling predation from animals such as crabs, maniocou and dogs; vultures being a bit more of a problem for day hatching nests. Once in the water, it was difficult to assess the amount of threat, however frigate birds were occasionally seen picking up hatchlings from the surface, and sharks were observed in the surf waiting for them to make their journey into the sea. Erosion and sand build up was also a problem on some of the beaches. Madamas River is very dynamic and takes away a lot of sand, and nests with it. There is a similar problem in Grand Riviere during the rainy season. High water level on the beaches was a significant problem on several beaches this year – in particular Murphy's bay. This beach is very wide, but the smallest in length and very busy with adults laying nests there. It was not until the hatching season that it was discovered that almost all of the nests were waterlogged and only a small proportion of them produced live young - only the few eggs that were above the waterline in the nests hatched successfully. There were no real natural threats to adult turtles identified. These findings concur with the natural life history of the sea turtle: high predation for young, low predation for adults.

These threats alone would not be expected to endanger the turtle populations, but when added to human interference, they become serious. The human-related hazards identified were the slaughter of female adults - several carcasses were found on the north coast beaches (both hawksbill and leatherback), and one turtle was seen being carved up on Matelot bay for the annual Fisherman's Fete. The most serious problem for adult turtles, however, was the incidental catch in fisherman's gill nets where they often drowned or were chopped up to avoid further damage to nets.

Disturbance was seen to be becoming a much more serious problem on Paria bay where there was no patrolling apart from when the Glasgow group and the Pawi Club were there (this was perhaps once every two weeks for three nights over the season). There are many more people visiting Paria than there were four years ago. This is thought to be due to the furtherance of the road at the Blanchisseuse side making it easier for people to get there (this information concurs with what Mr Als and Mr Peters spoke of earlier in the day). Not only are the visitors disturbing the turtles by shining very bright torches, taking photographs and standing on their backs, but they also have been leaving all their rubbish

behind them, which the Glasgow and Pawi Club often gather up and take back to Matelot. Miss Livingstone said that there had been days when they had loaded up over six black bin bags full of garbage left on the beach. She was worried that the turtles would be so disturbed that they would not come back – and that there was some evidence over the last three years that, in comparison to the other beaches, less turtles were nesting on Paria than in previous years. It is good that Matura and Grand Riviere are protected areas. It was Miss Livingstone's opinion that the remote north coast beaches may benefit from this status in the future if the Paria Main Road is completed.

The population sizes of each species of turtle seen to nest on the North coast have been calculated to approximate values. The number of leatherbacks thought to use the beaches is around three thousand (nesting females). This is not inclusive of numbers from the east coast although some turtles do use both coastlines. This is known because some turtles that were tagged by Nature Seekers had been recorded. With current data, the number of hawksbill turtles using the beaches is thought to be approximately seventy. The number of green, loggerhead and olive ridley turtles using the beaches is unknown, however, a green adult was observed nesting in 2002, and an olive ridley was recorded nesting in August 2003 – which secured evidence that they do visit. The Glasgow group had no evidence for nesting loggerheads.

On the community development side of the project, there had been much progress. The Glasgow team had run a course based on conservation concepts, tour-guiding skills, the principles of ecotourism, and turtle biology. There were 21 participants from the villages of Grand Riviere, Matelot and St Helena, all of who passed the exam at the end of the course. There had also been a successful course taught in Matelot community college this year, getting the younger generations involved with the work. All the data collection and monitoring of the North coast beaches was carried out in collaboration with the Pawi Club, who are now fully trained in all the required skills. With regards to the ecotourism aspect of the project, the Glasgow team organised two tourist groups from Britain to test out the possibilities. One was an adult group and the other was a group of school leavers. Miss Livingstone was glad to say that the tours were met with enthusiasm from both the local community and the British groups, and this has allowed them to realistically assess the potential for ecotourism in the area.

Miss Livingstone felt that the project was going well, and that the interest in turtle conservation in the project area was increasing. She also felt that they were closer to the main project aim, which was for the local community to carry on with the data collection and education programmes from where Glasgow University leave, and for the project to be sustainable into the future. Although the Darwin funding finishes in March 2004, the Glasgow team are hoping to return in 2004 to continue with the research and protection on the North coast beaches, and also hope to work more with the other turtle groups if they are interested. It is also hoped that Wildlife will recognise the work that the Pawi Club have been doing with Glasgow over the last three years and will consider funding them to continue with the work.

4. Afternoon discussions

The afternoon discussions resulted in a set of clear objectives to be put into action.

4.1 Objectives

1. *Review of laws and legislation concerning marine turtles*

Enforcement of laws during the nesting season (1st march – 1st October). Currently it is the NGO's that are the enforcers of the law, not the police or Government. The NGO's would like to have more authority, or have the appropriate authorities take more of an interest. There seems to be no use having laws if they are not put into practice. There was also a call for a harmonisation of legislation between the Fisheries and Wildlife Acts.

2. *STRAP*

STRAP (Sea Turtle Recovery Action Plan for Trinidad and Tobago) has been in preparation since 1997. The document contains suggestions for the management of turtles in Trinidad and Tobago with recommendations to the Government. There is supposed to be a 2002 updated version for which the final review was planned for November (02) by the WIDECAST country co-ordinator, however Mr Poon has not heard anything recently. It is a priority to get the final document circulated to the NGO's working on turtles.

3. *Use of database*

To use the data that is held in the National Sea Turtle Database of Trinidad and Tobago to justify the funding of turtle conservation projects to the Government and other funding bodies. Scientific analysis can often give proposals added weight when applying for funding. There was also a discussion on when the data would be analysed, and by whom. No decisions were made at this time.

4. *Development of a turtle conservation network*

In order for all the groups to be heard, they need to join together to form a larger working committee. A core group will be created with one person from each of the different CBO's (Community Based Organisation) to follow-up this conference and co-ordinate the next steps forward. One person should be appointed to be the contact for the group so that person can keep all the groups informed. All agreed that Susan Lakhan from Nature Seekers would be an efficient person to take on the role and that email would be the best way to keep in touch. A contribution of tt\$1000 would be donated by the Toco Foundation for the administration costs (Michael Als).

5. *Identifying threats*

To identify the threats to the turtles in each different area, and to work to resolve these threats. The most important threats identified during the meeting were fishing nets and new development on beaches.

6. *Identify a channel of communication*

To identify a way for the groups to get more attention from the Government they could use COPE (Council for the Presidents of the Environment) as an umbrella organisation. Some people felt that this organisation was too big for the community groups, but it could be a focus for achieving some community group aims.

5. Conclusions

One of the main conclusions of the day was to recognise that each different group and area have different needs. Some beaches are busier than others, some are more remote, the communities differ, and what might work for one area may not work for another.

Wildlife said they wanted to know how they could help the groups more, and they received answers. The general consensus was that the people wanted more support and more funding for the work that they were doing, and thought that perhaps that the funds should be redistributed amongst the working groups. They were also unhappy about the decrease in funding over the last few years. Wildlife voiced that they too were discontented with the reduction of funds, however they still expected the NGO's to work as hard on conservation and monitoring. It is understandable that some groups have become disheartened, especially if they are completely unfunded when they are doing the same work as others who are. This raises the issue: just because the older more established groups struggled for years before funding was forthcoming, does not mean the others should have to do the same. If they can show they are genuine and committed, then why should they have to wait the same time again?

Education and raising awareness on the issues of sea turtle conservation in Trinidad needs to be continued and amplified, especially in communities around nesting areas. If ecotourism is to be a genuine source of income for the communities that work with turtles, provision needs to be made for both the comfort of the tourists that visit and the local people. The communities cannot be expected to support an ecotourism business without appropriate facilities and support from the Government.

Overall the conference was a success. The general outlook for turtle conservation in Trinidad is positive, although there is much to be done. It is important for all the groups to work together, to support each other and create a louder voice. It was a pity that not all the groups turned up for the meeting.

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7. Appendices

7.1 Appendix 1

List of each group present/invited to the conference:

- **Wildlife Section** – Mr Stephen Poon, Mrs Shemila R Lalla
- **University of Glasgow** – Dr Roger Downie, Miss Suzanne Livingstone, Miss Debbie McNeill, Mr Ross Culloch, Mr Euan Riddell and Mr Stephen Larcombe, Mr Iain Fulton and Mrs Naomi Barron.
- **Pawi, Sports Culture and Eco Club** – Mr Renwick Roberts, Mr Anthony Hollis Briggs, Mr Recardo Patrong, Mr Christopher Patron, Mrs Maria Penny
- **Grand Riviere Nature Tour Guide Association** - Mr Len Peters, Mr Nicholas Alexander
- **Fishing Pond Environmental and Community Group** (absent)
- **Salibya Community Group** - Mr Brian Koonhow
- **Nariva Mayaro Hunters Group** (absent)
- **Manatee Conservation Trust – Manzanilla Community Group** (absent)
- **Nature Seekers Inc** - Miss Marissa Ramjattan, Mr Dennis Sammy, Mrs Susan Lakhani
- **Toco Foundation** – Mr Michael Als