

## **Barbados National Report to the First CITES Wider Caribbean Hawksbill Dialogue Meeting (Mexico City, 15-17 May 2001)**

### **National Conservation Initiatives**

In recognition of the small number of hawksbills then nesting in Barbados compared to previous years, a conservation programme for hawksbills was initiated in 1987. This programme, now formally called the Barbados Sea Turtle Project, is an activity of the Barbados campus of the University of the West Indies and the Fisheries Division of the Government of Barbados. Since 1992, the Sea Turtle Project has been implementing the recommendations of the WIDECAST action plan for sea turtle recovery (Horrocks 1992). Activities include monitoring of animals on nesting beaches and foraging grounds, investigations into the genetic structure of nesting and foraging hawksbills, studies of between-country migrations as revealed by tagging and more recently by satellite tracking of nesting females, and an intensive education programme conducted by Project personnel on the beaches, in the schools, hotels and through the media.

Poaching of turtles on the beach, which has been illegal since 1904, declined markedly throughout the 1990s in response to the Project's activities and to the removal of the incentive created by international trade in hawksbill shell. In July 1998, the Government of Barbados passed an indefinite moratorium on sea turtle capture which will remain in place until the Government is satisfied that population recovery has occurred and that a sustainable harvest quota has been determined. These initiatives have together ensured that current poaching levels in Barbados are low, and indicate that, even when human and financial resources constrain full enforcement of islandwide bans, the combination of a ban on harvest, the removal of shell trade as an incentive to poach, and educational programmes can be highly effective.

## **What we have learned through monitoring programmes and research activities**

In 1992, based solely on public reports of nesting activity, we recorded 90 confirmed nests. In 1997 when our effort at beach coverage increased to present levels, we recorded 233 confirmed nests islandwide (representing 47-80 females at 3-5 nests per female). In 1998, we recorded 515 nests (103-172 females), in 1999, 717 nests (143-239 females), and in 2000, 855 nests (171-285 females). Data from our main index beach also support the suggestion that nesting frequency is now higher than in the early 1990s. This is encouraging, but should not be allowed to generate complacency or alter current policy. Increasing numbers of nests may occur if conservation efforts are ensuring that females survive long enough to lay all their clutches for that season. Increasing numbers of females can be recorded for a number of years, with no change in recruitment rate of new breeders, if females have had a higher chance of survival from one season to the next. We need to be sure that the apparent upward trend is real by continuing our monitoring programme, and we need to understand that an initial upward trend is not synonymous with population recovery, but is a sign that the population is beginning to recover. It is never sensible to cut the engines just after the plane has taken off!

Adults, and large juvenile hawksbills that are about to start reproducing, are extremely valuable to long term population survival. They have survived for 20-30 years, are fully armoured, and in the absence of human predation would live for many more years to produce sufficient young to at least replace themselves and perhaps add to the population. Bass et al (1996), using mtDNA from Barbados females as one component in their regional analysis, showed that nesting populations in the Caribbean are genetically distinguishable, and that each nesting population should therefore be conserved and managed as a distinct unit, since colonisation of females from other island nesting populations will occur only rarely. Barbados has taken steps to protect its nesting hawksbills from harvest through its education programme and through the moratorium on capture. However, a satellite study of 4 post-nesting females conducted in 1998 revealed that Barbados' nesting

females stay in the country for a few months only (Horrocks et. al. 2001). Once they have finished nesting, they establish themselves on foraging grounds in other countries, where they were recorded by our study as remaining for periods of 1-1.5 years. The countries were Grenada, Dominica, Trinidad and Venezuela. Only Venezuela protects hawksbills year round; the other three countries have closed seasons timed largely to protect their own breeding animals. The consequence of this situation is that Barbados' nesting females are protected whilst nesting, but leave to forage in neighbouring countries just as the latter open their seasons of harvest. Flipper tag returns confirm that these animals are harvested in our neighbours' fisheries. By contrast, hawksbills from other countries that forage in Barbados are protected in Barbados year round.

We are also keenly interested in understanding the population status of those hawksbills that forage in Barbados waters but nest elsewhere. Most of these animals are juveniles, simply using Barbados' reefs as stop off foraging grounds as they mature; they will go on to feed and nest elsewhere as adults. In-water monitoring of these animals began in Barbados in November 1998. The bank reef off the west coast of the island is dived 2-3 times a week to collect data on habitat use and residency of juvenile hawksbills, and to collect tissue samples for genetic investigations. The data indicate no significant change in abundance over the period November 1998-April 2001. It is important that this population monitoring be continued for several more years, to allow us to discern how the population is changing. Such changes will, like the abundance of nesting females, be affected both by what we do in Barbados and what is being done elsewhere in the Caribbean where these turtles range and nest. We believe that a necessary component of regional management of hawksbills is effective monitoring. Several nesting beach monitoring programmes are already underway, but more are needed. There are very few in-water monitoring programmes in the entire region. Both nesting beach and in-water monitoring programmes are expensive to maintain, and as a region we need to identify ways in which these programmes can be encouraged and supported.

**Barbados is still exploiting the hawksbill sea turtle resource**

As should be the goal for all countries in the region, Barbados is seeking to exploit all of its natural resources in a sustainable manner, and sea turtles have become an important ecotourist attraction in the country. Barbados is now known as a destination where a visitor has an excellent chance of seeing turtles both nesting on the beaches, and whilst diving on the reefs. Many local hotels are keen to develop a reputation for being located on sea turtle nesting beaches and for being environmentally sensitive to sea turtle nesting. They use sea turtles as an advertising tool, report numbers of nests on their websites and, through this, gain international recognition for their environmental responsibility. Barbados has chosen to derive economic benefit from the power that sea turtles have to attract tourists, many of whom report that seeing a nesting turtle is the highlight of their vacation. Whilst respecting our neighbours' rights to make consumptive use of the sea turtle resource, it is clear that consumptive use of a shared resource by our neighbours, and particularly consumptive use of Barbados' nesting females when they are resident elsewhere, can affect us negatively. A situation in which there are asymmetries in the level of conservation effort directed at regionally-shared depleted populations, in which all countries benefit from the stricter conservation efforts borne by others, and in which consumptive use of a shared resource is effected by some stakeholders and not by others, is potentially problematic. A step towards resolving this would be if countries in the region that retain a legal harvest could give consideration to the implementation of maximum size limits for harvest in order to protect large juveniles and adults (e.g. hawksbills > 60 cm shell length). Such an approach would protect the larger, more valuable size classes needed for regional population recovery, and would therefore benefit both those countries choosing to harvest, and those choosing to make non-consumptive use of the resource.

In closing, it is important to emphasise that, although over-exploitation is the primary reason for the collapse of hawksbills in the Caribbean over the past few decades, and must continue to be addressed as a priority, there can be no population recovery if the nesting beaches and foraging habitats of the turtles are degraded. Coastal zone management must therefore be an important component in the regional recovery of

hawksbills. Barbados' coastline is extensively developed for tourism. Beach space for nesting hawksbills has been significantly reduced, forcing them into sub-optimal nesting habitat, and lighting from beachfront hotels causes significant disorientation and mortality of hatchlings. Barbados now finds itself in the position of trying to solve problems caused by building too close to the high water mark, after the fact. In many countries in the region, tourism is being aggressively developed, but is still in its infancy. A regional recovery plan for turtles needs to emphasise the provision of adequate protection of important nesting areas before buildings are erected, as well as to emphasise the protection of important foraging grounds.

Bass, A., Good, D.A., Bjorndal, K., Richardson, J.I., Hillis, Z., Horrocks, J. and B. Bowen. 1996. Testing models of population structure and female migratory behaviour in the Caribbean hawksbill turtle, *Eretmochelys imbricata*, with mtDNA control region sequences. *Molecular Ecology* 5: 321-329.

Horrocks, J.A. 1992. WIDECAST Sea Turtle Recovery Action Plan for Barbados (Karen L. Eckert, Ed.). CEP Technical Report No. 12. UNEP Caribbean Environment Programme, Kingston, Jamaica. 61pp.

Horrocks, J.A., Vermeer, L.A., Krueger, B., Coyne, M., Schroeder, and G. Balazs. 2001. Migration routes and destination characteristics of post-nesting hawksbill turtles satellite-tracked from Barbados, West Indies. *Chelonian Conservation & Biology* 4(1) 1-7.