INTRODUCTION

The green turtle *(Chelonia mydas)* has feeding and nesting areas largely lying in the tropics and is considered "Endangered" by the World Conservation Union (Hilton-Taylor 2000). The phylogenetic structure of the species has been investigated using molecular methods (Bowen *et al.* 1992) suggesting a fundamental split into those populations from the Atlantic-Mediterranean and those from the Indo-Pacific. The major nesting colonies for the green turtle in the western Atlantic are: Tortuguero (Costa Rica; Bjorndal *et al.* 1999); Ascension Island (UK; Mortimer and Carr 1987); Suriname; (Shulz 1975); Aves Island (Venezuela; Sole and Medina 1989); and Trinidade (Brazil; Moriera *et al.* 1995). The knowledge of the breeding colonies in Africa is relatively limited.

In the Bijagós Archipelago of Guinea-Bissau, four species of marine turtle are known to nest: the green turtle, the olive ridley turtle (*Lepidochelys olivacea*), the leatherback turtle (*Dermochelys coriacea*) and the hawksbill turtle (*Eretmochelys imbricata*) (Limoges and Robillard 1991a; 1991b). Information regarding the other species is scant but data collected in recent years has shown the green turtle population nesting in the Bijagós to be of global importance. In 1995, 1650 females were tagged at Poilão Island during just part of the nesting season (Fortes *et al.* 1998). In 2000, approximately 7000 clutches were laid between July and November (Catry 2000; Catry *et al.* 2002). This places Poilão amongst the most important rookeries for green turtles in the Atlantic. The only other large colony as yet described in west Africa is that of Bioko Island (Equatorial Guinea; Tomas *et al.* 1999) but numbers of nests appear to be in the region of an order of magnitude less than Poilão.

Left: Remoteness of Poilão; arrival by boat. **Right**: High density nesting on Poilão.

Poilão is a traditional sacred site in the Bijagós culture. This, allied with its remoteness has helped to conserve the turtles nesting there whereas other sites in the region have been exploited. In addition, its importance to sea turtles was one of the main supporting arguments for the creation of one of the first marine protected areas of Guinea-Bissau: the João Vieira and Poilão Marine National Park (August 2000).

The local threats to green turtles in Guinea Bissau have not yet been fully quantified but include harvest of eggs and adults and the incidental catch of turtles in artisanal and industrial fisheries (Barbosa *et al.* 1998; Fortes *et al.* 1998). Anecdotal accounts from local people of the Bijagós Archipelago reveal that, although turtles are still numerous at Poilão, in recent years they have noticed the decline and sometimes disappearance of marine turtles from some nesting grounds. Constructive steps are being taken to minimise these factors. These will all be in vain if the turtles are being critically impacted in other parts of their range.

The life cycle of marine turtles involves movements over great temporal and spatial scales (see Musick and Limpus 1997 for review), taking decades for turtles to reach adulthood. Although adults from this population are likely to forage widely in African coastal waters their life cycle will involve periods in seas of other nations and shared coastal foraging areas with individuals from other nesting populations as has been found in other regions (Lahanas *et al.* 1998).

This is likely to result in the exposure to a number of fisheries and associated directed and incidental catch. The consumptive use in west Africa has been found to be common in recent research of coastal communities in all the nations of tropical West Africa (pers. comm A Formia). All populations studied to date have shown that distances separating nesting beaches from feeding areas involve hundreds or thousands of kilometres (Carr 1975; Luschi *et al.* 1998). Only with knowledge of these movements and the subsequent regional collaboration and co-operation of different nations, can the conservation of this endangered species be assured.

For decades the main tool which was used to gain insights into the distribution and movements in sea turtles was flipper tagging (Hendrickson 1958) and a great deal has been learned from this technique. Flipper tagging of nesting adults has given insights into reproductive behaviour (Miller 1997), pre and post breeding migrations (Balazs 1980; Carr *et al.* 1978; Limpus *et al.* 1992). However, despite extensive flipper tagging at Poilão, only three tag returns have been obtained: 2 from Mauritania and 1 from Gambia (Castro Barbosa unpublished data). However, as a result of recent technical advancements, the exploitation of novel technology has allowed greater steps to be made in the understanding of the ecology of turtles. The increased performance and reduction in size of satellite tracking units has allowed them to become of great utility in turtle tracking studies. Using satellite transmitters it has been possible to detail the post-reproductive migration routes of adult females and males (Balazs and Ellis 2000; Hatase *et al.* 2002a;2000b; Morreale *et al.* 1996; Sakamoto *et al.* 1997) and to ascertain the location and usage of foraging grounds of adult turtles, in neritic (Godley *et al.* 2002; 2003) and pelagic areas (Hughes *et al.* 1998; Nichols *et al.* 2000).

Against this background we set out to use satellite tracking technology to track individual turtles following nesting at Poilão. Our fundamental aim was to ascertain foraging grounds and migratory corridors for this population as outlined as a priority by Broderick *et al.* (1998). An ancillary aim was to gain insights into habitat utilisation between nestings. This work was expected to contribute towards section 4 of the Memorandum of Understanding Concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa < http://www.wcmc.org.uk/cms/>:

> *"Facilitate the expeditious exchange of scientific, technical and legal information needed to co-ordinate conservation measures; and co-operate with recognized scientists of international organizations and other Range States in order to facilitate their work conducted in relation to the Conservation Plan."*