## A shark management plan designed to avert a stock collapse

The recent huge increase in catches of sharks in waters off the eastern coast of the US gave rise to fears that stocks could collapse unless preventive measures were taken. Most sharks are slow growing, late to mature and have few young, characteristics that make them very vulnerable to over-exploitation. The five Regional Fishery Management Councils that are responsible for developing Fishery Management Plans in the Atlantic, Gulf of Mexico and Caribbean became aware that the situation was precarious and that to develop a management plan for sharks under a five-council regime would take too long. As a result they decided in June last year to ask the US Secretary of Commerce to start developing a Shark Fishery Management Plan as a matter of urgency. The resulting plan was released by the National Marine Fisheries Service on 20 October, 22 public hearings were arranged and it was hoped that the plan would be approved by the Secretary of Commerce and implemented in 1990 as interim strategy until the Councils can complete a permanent plan. To date, however, the plan has not been accepted because discussions have been bogged down by definitions of overfishing and it is reported that the shark catch this year has already risen beyond 1988 levels.

Shark fishing in US waters is not new but the fisheries were small and localized until 1938 when a demand for vitamin-A-rich shark livers sparked intensive activity. Most of these shark fisheries collapsed within a decade due to over-exploitation and the fact that ways were found to synthesize vitamin A.

In the mid-1970s new shark fisheries developed, fuelled by domestic demand for meat and foreign demand for fins. The gain in popularity for shark meat in the US had several causes: improved handling and storage at sea resulting in a better product, a rise in prices of other fish, and a federally assisted marketing campaign. Also in the 1970s the lifting of trade sanctions in China and increased Asian prosperity resulted in a boom in the market for shark fins. There is apparently an insatiable demand for this delicacy and fishermen can currently sell fins for $44/kg.

In the past 10 years shark mortality in US eastern coastal waters has every year surpassed the maximum sustainable yield (estimated at 16,250 tonnes in 1980) by an average of 5900 tonnes per year. A collapse has not yet occurred, because of the probable existence of a very large unexploited stock but the current level of fishing is likely to lead to one. Recreational fishing accounts for 43 per cent of the mortality, with about half this being landed and the other half being discarded dead. Commercial fisheries account for 57 per cent of shark mortality and of this 11 per cent is landed while 89 per cent is discarded as a bycatch in the swordfish, tuna, shrimp and squid fisheries. One development that has caused public outcry in the last 2 years is the growing practice of 'finning'. This originated in fisheries not directed at sharks but which caught sharks incidentally; the high prices to be gained for fins encouraged fishermen to remove the fins before discarding the unwanted sharks. This wasteful and inhumane practice was quite legal.

There are 72 species of shark in US Atlantic waters and the shark management plan addresses all of these but includes only 38 in the management unit. It was essential to treat them as a group because the current state of knowledge precludes a species approach. For the purposes of the plan overfishing is considered as occurring if shark mortality exceeds 16,250 tonnes a year. A commercial quota of 5800 tonnes is proposed for the first year plus a recreational bag limit of one shark per person per day. The incidental catch of sharks in other fisheries may also be restricted. It is hoped to eliminate finning by ruling that fins must be harvested in proportion to carcasses, i.e. fishermen are to be required to land the whole shark or nothing. The use of trawling efficiency devices (turtle excluder devices) in shrimp nets, restrictions on shark tournaments and a proposed reduction in the swordfish fishery will reduce mortality even further. An important recommendation is a public education campaign—the popular idea that a dead shark is a good shark must vanish.

Research is also needed and it must be done urgently. The maximum sustainable yield, which was calculated using an inadequate information base, may be quite unreliable and thus the proposed quotas might still lead to collapse. The research that is needed includes: mapping inshore pupping and nursery grounds; collecting information on age, growth and reproductive potential for each species; discovering age- and sex-related distributions and migrations; and identifying and assessing stocks.

There are bound to be problems even when the plan is implemented. The bycatch in other fisheries will still be a cause of mortality; even if finning ceases many unwanted and released sharks will still die after the trauma of capture. Lowering the bycatch in the huge longline and shrimp trawl fisheries depends on strict swordfish regulations still in the planning stage and the widespread use of trawling efficiency devices. Even then there will be hundreds of tuna longliners regularly hooking sharks and thousands of juvenile sharks that will not escape the shrimp nets.

The 38 species in the management unit were chosen because they are either frequently caught in commercial or recreational fisheries or their low fecundity and slow growth makes them vulnerable. Among the 34 species not included in the management unit are small deepwater species taken incidentally and two species—spiny dogfish *Squalus acanthias* and smooth dogfish *Mustelus canis*. Those latter two are taken in considerable numbers in directed fisheries but they are abundant, their fins are not sought, and they appear not to be overfished—yet. Even that could change. It might be salutary to consider that most of the US annual catch of spiny dogfish is exported to Europe. Britain imports dogfish to supply its fish and chips industry because it fished out its local spiny dogfish population earlier this century.

Current differences of opinion in defining overfishing need to be resolved quickly so that the management plan can be put into effect. It would establish the US as a leader in the field of conserving sharks.

*Editor.*

## International Tropical Timber Organization meeting, Bali, 16–23 May 1990

With the trade in tropical timber and its contribution to deforestation very much in the public eye, the activities of the International Tropical Timber Organization (ITTO) are coming under ever more critical scrutiny. While pledged to 'maintaining the ecological balance of the regions concerned', ITTO has continued to receive much criticism from those interested in conservation of tropical forests. Some non-governmental organizations have considered boycotting ITTO to avoid lending credibility to a body presiding over the acceleration of deforestation.

The meeting in Bali was attended by 259 participants representing a wide range of often conflicting interests. Following the launch of the FFPS Project Mahogany, the Society was a component of a strong group of NGOs, whose importance is fortunately clearly recognized by ITTO.

Following a period during which ITTO received continuous pressure from wildlife conservation and human rights groups, the organization appears to have finally acknowledged the need for a change in course. However, the task ahead is vast. In 1989 the international trade in tropical wood products rose in value by about 10.5 per cent to over $7 billion. It remains an open question whether ITTO has the will or the ability to adapt fast enough to play a significant role in conservation of tropical forests. Many voices including that of His Royal Highness the Prince of Wales are calling for a new, international, Tropical Forests Convention.

In addition to the massive trade in species used for general joinery, construction and furniture manufacture, the specific impacts of a trade in highly prized timbers such as ebonies and rosewoods need to be more closely addressed and monitored. The information available at present regarding the trade in specific timbers is paltry, trade figures usually showing timbers in more or less broad categories. This issue was brought to ITTO's attention by FFPS and is just one component

of a much broader approach that ITTO needs to take but seems at present unable to tackle.

A further component is the recognition of the rights and importance of indigenous peoples. This issue became particularly apparent with the presentation by Lord Cranbrook of the report of the ITTO mission to Sarawak. This report, perceived by ITTO as an important model for future investigations in other producer nations, has received severe criticism from many quarters. The mission was set up to assess the sustainability of logging operations in Sarawak (where tropical forests are facing severe threats), and followed the 1987 action of native people setting up barricades across logging roads to protect their own livelihoods. These disputes over customary rights continue, yet while the report acknowledges that the people of Sarawak are crucial to sustainability considerations, the report appears to give low priority to the needs of these people. Furthermore the mission largely failed to address the economic importance of non-timber products for the rural economy. The mission determined that a 30 per cent reduction in harvesting levels could result in sustainable forestry for Sarawak. Yet it has been calculated that the reduced harvesting rate would only mean that all primary forests assumed to be available for timber would be harvested by 2003 rather than 2001.

The central issue for ITTO in forthcoming years is 'sustainability'. While ITTO is now committed to a trade derived solely from sustainably managed resources by the year 2000, it has left open its definition of sustainability. Given the present rate of deforestation and the marked difference in the understanding of what is sustainable between logging companies and ecologists this target could well be far too little, far too late.

Although it can be argued that mixed-species plantations on already degraded land could supply all the world's tropical timber needs, in the short term it seems inevitable that primary and secondary forests will be the source for much tropical timber. Attaining 100 per cent sustainability may remain a pipe-dream. Nevertheless, the introduction of management techniques that cause minimum damage to ecosystems and allow retention of maximum biodiversity have to be introduced swiftly wherever forests are being destroyed or seriously degraded. Clear-felling and replanting with chosen species (or damaging large-scale logging operations followed by 'enrichment planting') may fall within a trader's definition of 'sustained-yield forestry' but are unacceptable as methods of conserving species and ecosystems. Resolving this difference of understanding has become perhaps the greatest task facing those conservationists who understand that the only hope for the future of the tropical forest outside the boundaries of well-managed reserves is to make it economically valuable when left standing. The ITTO is well placed not only to promote forest conservation but also to play a vital role in collecting and distributing significant funds and knowledge regarding sustainable forestry. It is a young organization holding an enormous responsibility, which it should not shirk.

*Mike Read, FFPS Consultant Botanist.*

## International Whaling Commission

The Fauna and Flora Preservation Society was represented at the 42nd Annual Meeting of the International Whaling Commission (IWC), 2–6 July 1990, in Noordwijk, The Netherlands, by Michael Sutton. Commissioners from 30 Member Nations were present at the meeting, and Canada sent observers. The Japanese delegation of 35 was by far the largest.

The non-governmental organizations' strategy at the meeting was twofold: to defer further review of the moratorium on commercial whaling until at least the year 2000; and to encourage the IWC to take steps to protect small cetaceans. The latter goal was assisted by the publication just prior to the conference of a report by the Environmental Investigation Agency, entitled *The Global War Against Small Cetaceans*. This received wide press coverage, particularly in Europe, and forced the conservation-minded delegations to devote considerable time to this issue. Regrettably, this distracted from what many NGOs saw as the principal goal this year, a resolution deferring

further review of the whaling moratorium for at least another 5 years. France came to the meeting willing to introduce such a resolution, but so much attention was focused on small cetaceans that the initiative fell through.

Although the ban on commercial whaling was adopted by the IWC in 1982 and went into effect in 1986, it was not universally observed until 1987, when Norway stopped hunting minke whales under threat of US sanctions. At this year's meeting, the battle lines were clearly drawn from the start. Japan, Norway and Iceland asked the Commission to overturn the moratorium and set catch quotas for certain stocks of minke whales. These moves were supported by St Lucia, St Vincent and the USSR. But a majority of the Commissioners, led by the USA and UK, refused to consider setting catch quotas for any stocks while the moratorium is still in place. Most Commissioners view the moratorium as indefinite until overturned by a three-quarters majority vote. This interpretation is vigorously contested by the whaling nations, particularly Iceland, who argue (unconvincingly) that the ban expired this year and catch quotas can be set at any time. The IWC is not likely to consider overturning the moratorium until the Scientific Committee completes work on comprehensive assessments of whale stocks and development of revised management procedures for whaling. For some stocks, that could be as early as 1991.

At press conferences and in the plenary session, Japan, Norway and Iceland made it clear that they are growing impatient. They repeated past threats to pull out of the IWC if they are not given commercial catch quotas for minke whales soon. Clearly, only the risk of US sanctions keeps those nations from quitting the IWC now and resuming whaling operations. Japan tabled a request for an 'interim relief quota' of 50 minke whales for its 'small-type coastal whaling' communities, but several Commissioners pointed out the commercial nature of the catch and the request failed to win approval.

The moratorium remains intact but its future is uncertain. The whaling nations argue that commercial exploitation of certain minke stocks is sustainable, and the Scientific Committee may soon have to agree. When stock assessments are completed and a revised management plan is in place, it will become difficult to maintain the argument that limited exploitation of whales is biologically unsafe.

Although efforts to defer further review of the moratorium faltered, we were successful in getting the Commission to adopt two resolutions on small cetaceans. The Japanese Commissioner said his country would 'faithfully observe' a resolution calling on the Japanese to reduce the excessive kills of Dall's porpoises in their coastal waters. In another resolution, the Commission also directed its Scientific Committee to begin gathering information on both the directed and incidental killing of all small cetaceans. The Scientific Committee has had a Small Cetaceans Subcommittee for several years, but until this year it did not have unambiguous marching orders from the IWC. Clearly, the majority of member nations want to explore further protection for small cetaceans.

The Scientific Committee recommended immediate action on four issues concerning small cetaceans: (1) the highest priority is the vaquita or Gulf of California harbour porpoise *Phocoena sinus*, probably the most endangered marine cetacean. They are killed by entanglement in gillnets used in an experimental Mexican fishery for the totoaba *Cynoscion macdonaldi*, an endangered fish; (2) the take of Dall's porpoise *Phocoenoides dalli*, in the Japanese hand-harpoon fishery is still far above levels that could possibly be sustained; (3) the government of Turkey is under pressure from fishermen to cull small cetaceans in the Black Sea because of perceived competition for fish resources; (4) harbour porpoises *Phocoena phocoena*, are threatened throughout their range by high levels of incidental kill in gillnets.

The IWC, while not the only vehicle for protection of small cetaceans, is potentially one of the most important. Most member nations agree that the Commission has the legal competence to manage small cetaceans, although this is hotly disputed by certain countries. It seems clear that we cannot expect much in the

way of domestic legislation from countries like Japan. Other international treaties, like CITES and the Bonn Convention, do not focus on cetaceans and are not as powerful as the Whaling Convention, which potentially reaches all waters where whaling operations take place.

Commissioners also approved a resolution supporting a United Nations call for an end to large-scale oceanic driftnet fishing by 1992. We worked hard to support this resolution in order to bind Korea, which is a member of the IWC but not the UN. Another resolution supported by NGOs called on member countries that conduct scientific studies of whales to redirect their research methods towards non-lethal techniques. In the past, NGOs have criticized 'scientific' whaling by Norway, Japan, Iceland and the Soviet Union as thinly veiled commercial whaling. The Soviet proposal to begin scientific whaling for fin and minke whales in the north Pacific this year came under fire at the meeting from both the NGOs and the Scientific Committee. Faced with mounting international protest and a proposed resolution condemning their lethal research, the Soviet Commissioner announced that his government would defer its plans until next year, when Soviet scientists will have the opportunity to present their research proposal to the Scientific Committee. The IWC also adopted resolutions inviting Norway and Japan to reconsider their plans to conduct scientific whaling this year.

The message from this year's IWC meeting is that the moratorium will be increasingly vulnerable in the next few years. The Scientific Committee will soon complete its assessment of whale stocks and its work on a revised management procedure. Conservationists will then be confronted with the question of whether we favour sustainable utilization of whale resources under any circumstances. To help provide answers WWF has issued a position document, *The Whaling Moratorium—How Long Should It Last?* It lists conditions that would have to be satisfied before the moratorium should be lifted. These conditions, taken together, will be very difficult to fulfil.

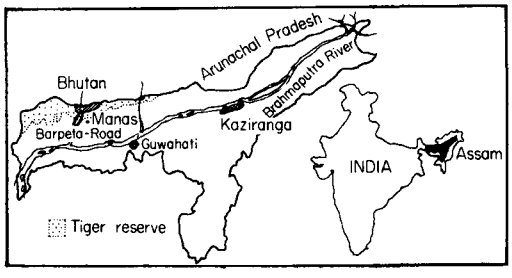
*Michael Sutton, WWF US Programme Officer.*

## India's Manas Tiger Reserve under threat

The Manas Tiger Reserve in Assam is one of the largest protected areas in India. It was one of the first reserves to be included in the network of reserves for Project Tiger, which was launched by the Indian Government in 1973, and in 1988 it was designated a site of international importance under Unesco's World Heritage Convention. Now its future is in much doubt, mainly because of occupation by militant tribal people.

The reserve covers 2837 sq km and at its core is the 391-sq-km Manas Wildlife Sanctuary. Apart from forest department camps and offices, no human habitation is permitted in the sanctuary, although there are numerous forest villages in the rest of the reserve, mainly inhabited by Bodo tribals, Nepali graziers and Bengali and Assamese agriculturists. There is some disturbance on the southern boundary of the reserve, which is bordered by agricultural land and a tea estate, but the northern boundary adjoins forest-covered hills in Bhutan, where the government of that country has also declared a 443-sq-km wildlife sanctuary. Thus, nearly 3300 sq km of contiguous forest are protected in the two countries.

Nearly 45 per cent of the Manas Wildlife Sanctuary is grassland, but the northern part is covered with moist mixed deciduous and tropical semi-evergreen forest. Manas harbours more than 40 species listed in Schedule I of the Indian Wildlife (Protection) Act 1972, and for many, such as the hispid hare *Caprolagus hispidus*, pygmy hog *Sus sylvanus*, wild buffalo *Bubalus bubalis* and Bengal florican *Houbaropsis bengalensis*, the wildlife sanctuary is the last major stronghold.




The location of Manas Tiger Reserve.



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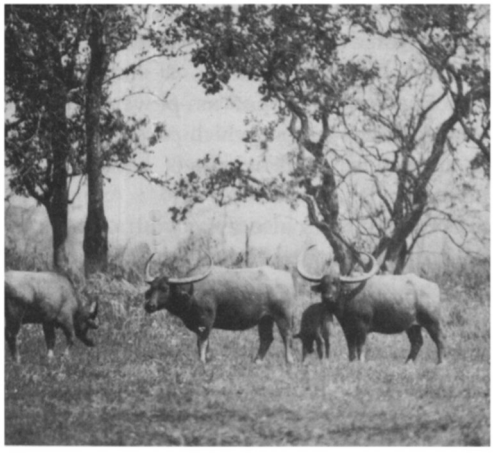
The Bodo tribal people, who live in villages in the buffer zone of the reserve, have for the last few years been agitating for an independent state. In February 1989 this agitation took a violent turn. Bodo militants occupied the sanctuary, attacking and burning forest camps and causing forest staff to flee. There are now virtually no forest guards in the core area of the sanctuary and 21 of the 40 forest camps have been demolished and others abandoned. At least one forest ranger and eight other forest guards, mahouts (elephant handlers) and game watchers have been killed and several others have been wounded. The Barnadi Wildlife Sanctuary is in similar trouble as it lies in another Bodo tribal belt.

Opportunistic poachers and timber smugglers are taking advantage of the disturbed situation and causing damage to wildlife and the forest. By December 1989, five rhinos, three elephants and innumerable deer were known to have been killed, and the total is probably many more. Thousands of trees have also been cut down for sale as timber and although police have caught 13 lorries loaded with trees, many more have escaped.

Although the tribal occupation is the gravest threat to Manas, it is not the only one. A large part of the buffer zone on the eastern and western sides of the Tiger Reserve is under encroachment and illegal cultivation and whatever forest is left in this area is highly degraded and disturbed. There is no buffer zone on the southern side and increased cultivation and settlement are putting more pressure on the core area. Even before the tribal agitation began, some of the areas under Panbari range were being affected by overgrazing by cattle and disturbance from villagers collecting minor forest products. Poaching was also not uncommon. The results are increasing human/tiger conflicts and crop-raiding problems involving elephants and hog deer, which are creating ill-feeling among cultivators who want to see the sanctuary abolished.

Another problem is the Central State Farm in Kokilabari, which was established in 1971 and occupies nearly 20 sq km in the eastern part of the core area of the sanctuary. In 1976



The alluvial grasslands of Manas hold the best population of the endangered wild buffalo (*Goutam Narayan*).

the Indian Government decided that this farm should be moved but there has been strong resistance from the farm managers who have refused to accept offers of alternative land. The presence of this farm is a continuing threat to the integrity of the sanctuary core. Before the farm was established large parts were open grassland and marsh and there were good populations of Bengal florican, pygmy hog and hispid hare, as well as tiger, elephant, rhinoceros and swamp deer.

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## Conservation attitudes of agro-pastoralists to Tarangire National Park in northern Tanzania

In 1981 a proposal was made to add the 60-sq-km Lake Burungi Area in northern Tanzania (Figure 1) to Tarangire National Park to make it easier to manage the northern corner of the park, where unlicensed charcoal burning and poaching were a serious problem. However, the people living next to Lake Burungi Area claimed that the area was of vital importance to them and the proposal was rejected.

The resistance among local people to

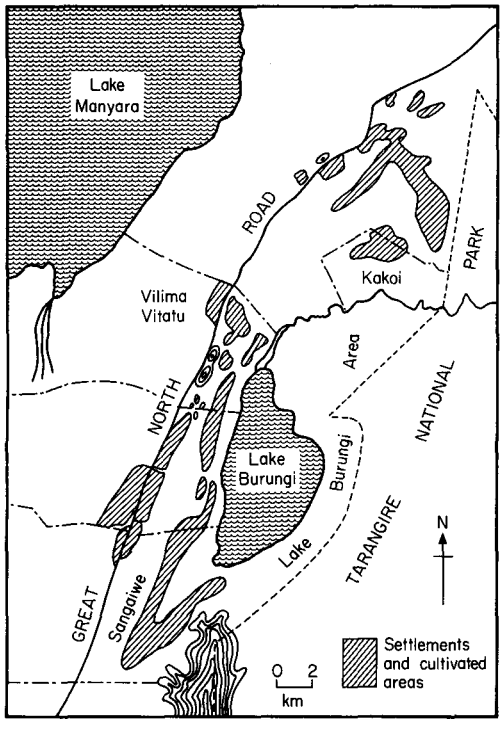


**Figure 1.** Location of villages surveyed and the approximate distribution of settlements and agricultural fields (based on aerial photographs from 1983) adjacent to Tarangire National Park.

expanding Tarangire National Park could be seen as evidence of a negative attitude towards conservation. To discover whether this was so, we conducted a study in 1987 in three villages, Kakoi, Vilima Vitatu and Sangaiwe, adjacent to Lake Burungi Area. We interviewed 60 people (20 in each village) and asked: (1) Should Lake Burungi Area be annexed to Tarangire National Park? (2) What are your views of Tarangire National Park? Should it be abolished, reduced, remain at its present size, extended or are you indifferent? (3) Do you get any help from Tarangire National Park in controlling wildlife that damage your crops? (4) Do you get any other benefits from Tarangire National Park?

The survey revealed that 90–100 per cent of villagers were against park expansion. This was not surprising since the Lake Burungi Area is used for collection of building poles, firewood, weaving material, honey and for livestock grazing (Kapela and Moe, 1988), and the people did not want to lose these benefits. In addition, many farmers wanted Lake Burungi Area to become farm plots for future generations. Immigration and population increase may contribute to land shortage in the area, where there has been an estimated 88 per cent increase in area under cultivation during the last 10 years (SEMP, 1987).

Given the negative response to the idea of park expansion one might also expect that the local people were against the existence of Tarangire National Park with its present boundaries. However, in our survey only one person wanted the park abolished, the rest wanted the park to remain, saying that they wanted future generations to enjoy the wildlife, and that the park brought in foreign exchange.

There were differences among the villages regarding the proportion who wanted the park to be preserved in its present size and who would like to reduce the protected area. In Vilima Vitatu, 80 per cent wanted to keep Tarangire National Park at its present size although few felt that they received any direct benefits from the park. With a mean household size of 4.1, a density of 8.8 persons per sq km and mean plot size of 1.3 ha, the land pressure was low in this area.

Kakoi village on the other hand, had the highest family size, density of people and plot size (7.8 persons/household, 36.1 persons per sq km and 13.9 ha respectively). Although the pressure on the land was very high, 60 per cent wanted the park to remain at its present size. This can be explained by the fact that Kakoi is located close to the headquarters of the park, and the people have ready access to park facilities (including a primary school, medical centre and transport).

In Sangaiwe village, 60 per cent of the people wanted the park to be reduced. Here, people experienced land shortage and the park was the only possible area for expansion. Also, being located further from the park headquarters, people felt they received few benefits from the park.

In conclusion, local people's attitudes to Tarangire National Park were on the whole



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positive. Their attitude varied according to the pressure they had on their land and the benefits they received from the park.

*Acknowledgments*

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## Problems for turtle protection on Zakynthos

Efforts to protect the largest Mediterranean population of loggerhead turtles, on Zakynthos in Greece, have been facing setbacks this year with the emergence of a new player in the arena. As an article in *Oryx* (**24**, 15–22) explained, turtle conservation work on the island has been fraught with difficulties despite the efforts of voluntary bodies and government authorities. Tourism has become so important for the local economy that efforts to restrict development on the turtle nesting beaches have met with strong local resistance. Illegal tavernas are still being built, sunbeds and umbrellas increase in numbers and pedaloes and canoes are being left on the beaches all night, all in contravention of the law.

Now some local landowners have formed what they call a turtle protection society (ZEMILDICA). They argue that, being islanders, they know best how to protect the turtles and they claim that the animals are not suffering from the tourist developments. Despite the fact that their claims are invalid, that they have no scientific expertise and that they are clearly motivated by a desire to expand and benefit from the tourist industry, the Greek Government this year gave them half the Dr2 million (which comes from Zakynthian authorities, the EC and WWF) allocated for sea turtle protection.

Meanwhile Sea Turtle Protection Society (STPS) volunteers have been threatened, some have been injured and some have received death threats; a beach information hut has been destroyed, and a landrover donated by WWF damaged. The Prefect of Zakynthos asked for police reinforcements from Athens to protect the volunteers and when this was refused he wrote to the Government saying he was unable to control the situation. He forbade the STPS volunteers to go on the beaches as he could no longer be held responsible for their safety. The volunteers are continuing their education and scientific work as best they can. Local hostility was diverted in early August to five Greek Ministry Topographers who arrived to establish precise ownership of land on each of the beaches. Having received threats similar to those directed at STPS workers they were granted the protection of 15 police officers from Athens, but the threats continued nonetheless.

At the time of writing support was arriving from various quarters. A Dutch Member of the European Parliament accompanied STPS volunteers on their morning watch on the beach and will be contacting her fellow MEPs. The Greek Ecology Party was also expected to visit Zakynthos and lend its voice to organized protests on behalf of the turtles. But the situation was still chaotic and the outcome uncertain. If the turtles are to have a future in the Mediterranean there must be a solution. It will be difficult to find but it must be one that the local landowners will be able to accept.
*Editor.*