

Saving the Hawksbill Turtle

Robert Bustard

The successful breeding of hawksbill turtles on experimental farms on islands in the Torres Strait, north of Australia, has persuaded the islanders to leave the turtle eggs (formerly taken for food) for the farms. The author argues the case for using eggs from the wild in these particular areas, and also urges the importance of allowing a turtle industry that will bring profit to the islanders — and no one else.

The present distribution of the hawksbill or tortoiseshell turtle 'is a ghostly outline of its primitive range', says Professor Archie Carr, the world's leading sea turtle research scientist and ardent conservationist. He considers *Eretmochelys imbricata* the most threatened genus of reptile in the entire world.

It was Professor Carr's papers that first interested me in sea turtles. In 1964 I started research work on the virtually unknown Australian populations. Six of the world's seven species of sea turtle occur commonly in Queensland waters and five are known to nest there. The work led to the total protection of all species of sea turtle and their eggs throughout Queensland, including that turtle's paradise, the Great Barrier Reef.

As a conservationist I support the rational exploitation of any biological resource provided it is carried out without cruelty. Rational exploitation means that the annual take is well within the limits the population can stand without decreasing in numbers. When I petitioned the Queensland Government successfully to give full protection to all sea turtles, I was accused of being a preservationist rather than a conservationist. But it was essential to give the turtles complete protection and stop the turtle industry before scientific management plans could be worked out and exploitation allowed where it was justified. I would always oppose a European-type turtle fishery which consists of taking breeding turtles on the beaches when they come to deposit several years' egg production over a breeding summer—an extremely short-sighted policy that should be banned everywhere.

I have been particularly interested in turtle farming as I believe that once the techniques have been worked out it should be able to offer very large amounts of turtle produce which would otherwise come from wild turtles. There is tremendous scope for farming and management of many kinds of animal. Man has been extremely conservative in scarcely adding to his farm animals over the last 5000 years and nowhere is the scope greater than in mariculture.

The Queensland turtle-resource study, which I am now completing, recently located important hawksbill rookeries in the Torres Strait, a maze of islands and reefs between northern Queensland and Papua-New Guinea, where hawksbills nest

throughout the year. The best island so far studied quantitatively gave nightly counts of up to seventy-five nesting turtles. Such an island is of major importance for the hawksbill turtle in world terms. But Torres Strait Islanders are great seamen and eat both turtles and their eggs. As their population inevitably grows, the turtles will be slowly wiped out, much as has happened in many areas of Fiji (*Oryx* X, 5: 316–322: 1970. But farming turtles might be particularly applicable to these people.

The whole subject of turtle farming was fully discussed at the 1971 meeting in Morges of the IUCN Survival Service Commission Turtle Group. So serious was the threat to the hawksbill turtle that I offered to investigate trial farming of that species. With IUCN backing and financial support from the US National Appeal of the World Wildlife Fund, I set up some trial hawksbill turtle farms. These have already shown that we can rear hawksbills both successfully and rapidly in captivity, individuals reaching a shell length of about 9–12 in (measured flat) within the first year. This has caused considerable excitement among the indigenous farmers, and has had the hoped for conservation impact. The leader of one island where green and hawksbill turtles nest, once he saw that the farms were to be a good thing, decreed that no one, under pain of imprisonment and fine, might take sea turtle eggs to eat any more; eggs could only be taken if needed for the farms. Other island communities have followed suit.

From a conservation viewpoint this is indeed heady stuff, and I suggest that a similar approach would work well in many other areas of the world, for the traditional European approach to the peoples of underdeveloped countries has been despicable. Sometimes conservationists appear to wish to deny indigenous people the right to food, let alone any cash crop; others seem happy with paper protective legislation which they know will never be enforced and which may even have been drafted in such a way that enforcement is impossible. Clearly the best possible conservation will come from the people themselves. Many native peoples lived as part of the ecology of their area for countless generations. By strict birth control and other taboos they never over-exploited their food resources. It is European man who has destroyed the 'balance'.

Turtles can be farmed in two ways. One method works as a closed circuit, keeping a sufficiently large number of breeding adults and not drawing on wild populations at all. (The world's first crocodile farm in Thailand operates in this way.) The other method is to take a number of eggs each year from the wild and replace them with a certain number of hatchlings, say at one year old, when the fiercest predation is over. The second method has its dangers; obviously it must be done under scientific control. But we do not know how many yearlings we have to release to replace a given number of eggs; we know that only two–three per thousand of natural green turtle eggs produce a turtle that will survive to about breeding size, and that the survival figure may be even lower than this. We do not know the survival rates between the first year



Roy Stephen beside his hatchling pool with some of his 300 two-months'-old green turtles



Above: Miss Katie Pau of Darnley Island, Torres Strait, with a 12-months-old hawksbill turtle she has reared.
Right: Miss Annie Oui with another captive-raised yearling



and breeding age either for wild or released captive-raised yearlings. What we can and must do is err on the cautious side and release many more yearlings than we think necessary. This means that until these figures are available we are operating a conservation programme. Other arguments in favour of using wild eggs are that in nature a proportion are laid below the fortnightly high-tide levels and will be destroyed by the sea. Also, on large rookeries, late arriving females may destroy so many incubating eggs when making their own nest (*Science* 163:939–941: 1969) as to make it worth while to remove eggs laid earlier. In Australia we have many situations of this kind, and since publishing these data a number of turtle workers elsewhere have also recorded this situation. Therefore, if turtle farmers (a) take only eggs that will not be allowed to hatch in nature, and then (b) are compelled to return an overly large percentage of the grown young to the natural environment, we are getting a free conservation programme, at no financial cost to the conservation movement and at no biological cost to the species.

I think we should back farming, subject to proper scientific controls, as a positive gesture. It should be coupled with rigid protection of adult turtle stocks. I would like to see exploitation of wild adults banned world-wide and any rational exploitation restricted to the eggs, as Professor John Hendrickson, another leading turtle worker, recommended many years ago, but, with the new technology of turtle farming fast looming up on us, I would extend 'rational egg exploitation' to include eggs taken under licence for farms.

We hope that in the first year of enlarged operations in Queensland we can raise 8000 hawksbills to a commercial size. Ten per cent of these will be returned to the sea at about one year old, when survival probability is excellent. I am quite certain that this side of the scheme will result in a substantial net gain in the size of hawksbill turtle populations in Torres Strait—this we will know as we will be monitoring them through our tagging programme. However, probably more important is the new conservation climate that the scheme is bringing among the peoples of the Torres Strait. Rich turtle rookery islands which only a few years ago I despaired about, as islanders and aborigines are exempt from the Fauna Acts in all states and may take fully protected game for their own use at will, now appear to have an excellent future, provided only that European conservationists understand what is going on and give the scheme their active blessing.

Hawksbill are the most tropical nesters of all sea turtles. Their future is tied in with these island communities. When one has no cash income whatsoever, messages from Europeans not to eat turtle or turtle eggs are meaningless, merely another example of white persecution.

It is our intention to offer the whole range of sound commercial items from our farmed hawksbills that come at present from wild ones. These will include whole, beautifully stuffed and mounted yearling turtles. This trade is death for wild populations and it is my

earnest hope that we can quickly take it over by shipping our product to the main demand areas of intensive European tourism in the tropics. Now I, personally, do not wish a stuffed turtle or stuffed anything on my TV, but I am prepared to admit that others do. If they can obtain them from farmed animals, without harming wild populations, and at the same time help a conservation scheme then I am happy for them to have them. It becomes like a voluntary contribution to WWF, with the important difference that many people who have never heard of WWF, and would never contribute if they had, will eagerly buy a stuffed turtle. Each one will have authentication that it was a farmed animal, and a story about the island farmer—and help hawksbill turtle conservation. These items would be marketed through normal tourist outlets, including ship and airport shops. One way to control the marketing of poached turtles is to produce a sufficient number of stuffed farm-turtles of superior quality and at a competitive price. In the long term the public can be educated in conservation principles and the farmed product will be more acceptable. This work, incidentally, should encourage governments to step up anti-poaching activities and thus attack the supply of poached products.

If we are to continue and extend this work in which conservation and employment for the Torres Strait islanders (who have no employment on these islands) are combined, we need people to campaign to ensure the success of our small farms, and for us at least in this part of the world, the continuance of large hawksbill turtle populations. For, if they are of no commercial value, the islanders will revert to eating them and they will disappear.

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Endangered Seals

The monk seals are the world's most endangered seals, it was agreed at a working meeting of the SSC's Seal Group last August. The Hawaiian is estimated to number between 700 and 1000, and despite total protection to be declining, probably as a result of human disturbance when the young are born; the Mediterranean is estimated at roughly 500–1000, but receives little protection and is persecuted by local fishermen; the Caribbean may already be extinct. The three fur seals in the *Red Data Book* were considered to need continued protection, closer surveillance and more detailed study; the Guadalupe and Juan Fernandez races were only recently rediscovered having been believed extinct, and numbers are only in the low hundreds; FPS information about the Galapagos race is that it is recovering fairly well. The Japanese sea-lion is probably extinct, but the Korean governments are to be asked to investigate on their eastern coasts. The one cheerful item was the Group's recommendation to IUCN to remove the Ross seal from the *Red Data Book*, numbers being higher than formerly believed and its protection adequate. Five resolutions on action to be taken were agreed: to study the possible effects of commercial fishing on seal populations; to monitor seal populations subjected to control; to curb pollution and development likely to impair the seal environment in the North Sea and the Baltic; to restrict human activity in seal whelping grounds—and provide an advisory service; and to encourage national programmes for seal research.