

Destination Turtle

Story and pictures by Norman J. Quinn and Barbara L. Kojis



The world's largest turtle, the leatherback turtle; inset: Maus Buang villagers watching a turtle laying eggs.

Most people do not have the opportunity to witness the phenomenon of nesting marine turtles, much less the giant rare leatherback turtle. However, in Morobe Province a short boat ride from Lae you can see it for yourself. On a stretch of beach from Busama to Labu Midi, about 10 turtles nest each night of the season from November to January.

The leatherback turtle, *Dermochelys coriacea*, is the world's largest turtle. It has a maximum shell length of nearly two metres and weighs around 600 kilograms. It is a highly-distinctive species with seven ridges running from the top of the shell near the head to the bottom near the tail.

The leatherback has a unique open water lifestyle. It is rarely seen near shallow water except during nesting which occurs on tropical beaches in the Atlantic, Indian and Pacific Oceans, occasionally in the subtropics and Mediterranean. Most nesting sites are located between 30°N and 20°S. Regular nesting has been reported on the north coast of New Guinea and on some of the larger islands, but always in low densities. The site at Maus Buang is the largest documented nesting beach of leatherback turtles in Papua New Guinea.

Most nesting occurs on relatively undisturbed beaches which have a stable platform, deep water approaches and heavy surf. The presence of deep water close inshore may ease the beach approach of this mainly pelagic species.

The female turtle emerges from the sea at night and ascends the beach mainly by

simultaneous heaving of her powerful fore flippers. Maus Buang villagers often use lights to guide the turtle to a suitable nesting location. The actual nesting process conforms to the stereotyped pattern shared by all sea turtles.

At Maus Buang clutch sizes range from 12 eggs by the first nesting turtles of the season in October to 145 eggs during the season peak in January. The average number of clutch eggs is 98 which is higher than the typical clutch size in other parts of the world. Eggs are white, usually spherical and about 53 millimetres in diameter. Their average incubation period ranges from 56 to 65 days with a hatching success rate of about two-thirds to three-quarters. Hatchlings are 55-63 millimetres in length. Leatherbacks are noted for producing fewer but larger eggs and hatchlings compared with other sea turtles.

The sea turtle population can be based only on an estimate of the total number of mature nesting females. Females or their nesting tracks can be counted readily. Males do not leave the water and are rarely identified at sea. Immature animals are similarly impossible to count at sea. The nesting track of leatherbacks is distinctive in that it is usually wider than that of other sea turtles.

While widely considered to be nearly extinct a few decades ago, continuing survey efforts have allowed the

minimum world population of breeding female leatherbacks to be estimated in 1971 between 29,000 and 40,000, allowing for undiscovered or uninvestigated nesting beaches. More recently, a survey carried out by the World Wildlife Fund has confirmed and extended the earlier report, raising the estimate of breeding female leatherbacks to more than 100,000. This figure may be an underestimate as many areas of Mexico and Melanesia have not been surveyed.

Although the total population of leatherbacks is larger than originally thought, it remains true that breeding populations are mostly of relatively small size (with only a few hundred females nesting annually), are widely scattered throughout the tropics, and are often subject to heavy exploitation for food. There are only four documented major leatherback nesting areas with more than 1,000 females nesting annually. The chelonery at Maus Buang is not as big as these but is still impressive.

Although the estimated world population of the species has tripled, it is still regarded as endangered by both the United States Department of the Interior and the Convention on Trade in Endangered Species of Flora and Fauna.

Prospects for the continued survival of the leatherback are better than for other sea turtles. Exploitation is less than that directed at the green tur-

tle, olive ridley or hawksbill, and there is virtually no international trade in leatherback parts or derivatives. Adult leatherbacks are not consumed by man as much as other species since their oily flesh is generally considered unpalatable.

In Morobe Province, adult leatherbacks are seldom killed or eaten. However, the eggs of observed nesting leatherbacks are taken by villagers who camp on the beach. About 70 per cent of the eggs harvested go to Lae market, 20 per cent are eaten by families and 10 per cent are left for hatching. After the eggs are collected

they are reburied at another location for three or four days until a large cache exists. They are then transported to Lae market where each brings a price of 10 toea. Nests from which eggs have been removed are marked with sticks.

Eggs and hatchlings are sometimes taken by crabs, pigs, sharks and crocodiles. Adult leatherbacks may fall prey to sharks and crocodiles while nesting. The tracks of crocodiles are often seen along the nesting beach at Maus Buang and occasionally the turtles are attacked and killed. About three turtles are







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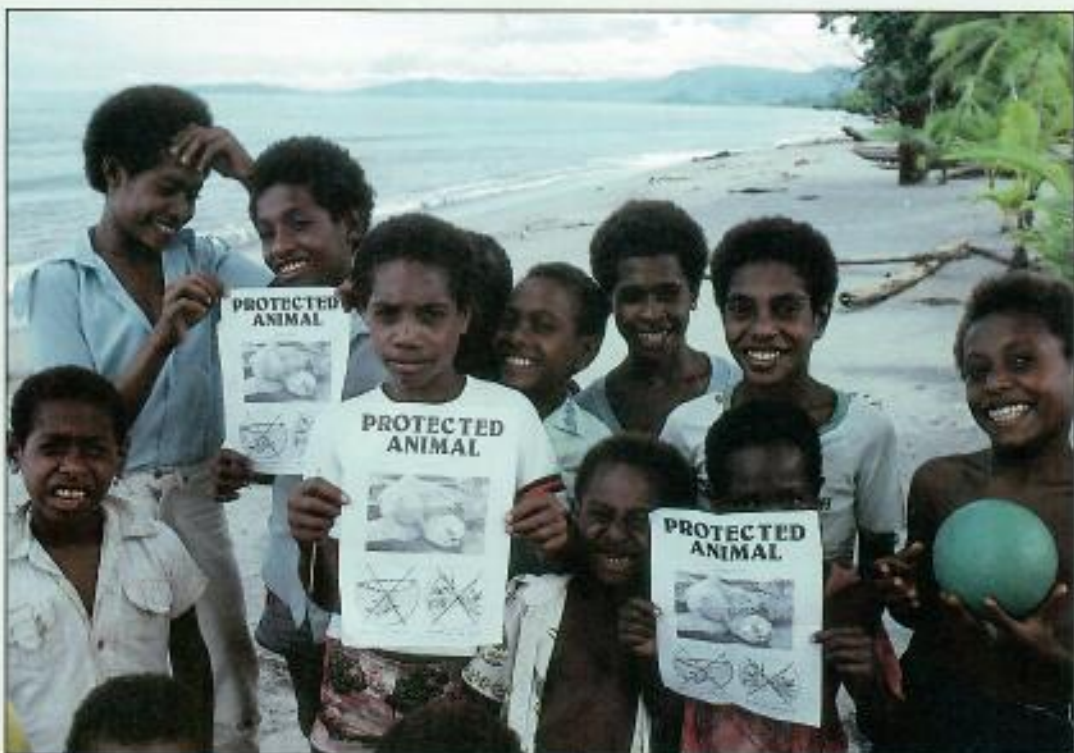
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Top left: A villager killing a green turtle at Green Island; **top right:** children with conservation posters at Labutal Beach; **below:** returning to the water after laying eggs.



taken each season. They are either dragged into the sea or to the nearby estuary, with the carcass being rarely left on the beach for more than a few days.

Villagers report that there are fewer turtles nesting than in the past. This decline is probably due to the excessive egg harvest.

Traditionally in Papua New Guinea the right to fish certain reefs and beaches was controlled by individuals, families, clans or chiefs. Sometimes, the right to fish particular species such as turtles, fish and dugongs belonged to particular families within a village and they regulated the exploitation of the resource.

In the Maus Province, egg gathering is a traditional practice with associated rules, but along the Morobe coast regulations have disappeared as villagers have found a market for the eggs at Lae.

Ownership rights rely heavily on respect for traditional authority within the villages. While transgressions were handled by force in pre-colonial times, today there is little physical enforcement by villages of traditional boundaries. Therefore, it has been necessary to introduce Wildlife Management Areas.

Special legislation was passed by the PNG House of Assembly in April 1974 to create large tracts of natural wildlife habitats. These remain in customary ownership, but people co-operate with the government to manage the wildlife and its habitat for continued production and preservation. Each area is governed by a Wildlife Committee appointed by people living near the management area. The Committee's function is to introduce and enforce rules which are understood by the people. Its decisions are recommended to the Minister of the Environment and as soon as the govern-

ment gazettes these areas the Committee's rules become law.

Under the Wildlife Management Area system the onus for conservation work is placed on the traditional owners. Through this system, the Wildlife Division has given traditional landowners the legal framework to reinforce traditional understandings.

Management areas for marine turtles have been set up in other areas of PNG such as Crown and Long Islands. In these areas most people were either sympathetic or indifferent to the Wildlife Management Area. Unfortunately, although the need for turtle

conservation is appreciated by the Maus Buang village elders, they do not possess the knowledge nor perhaps the village support to implement a Wildlife Management Area.

However, in the 1983-84 nesting season we initiated a program that would buy eggs as the turtle laid them for the current market price of 10 toea per egg. The eggs would then be reburied at another location near the village so that the villagers could watch to make sure that others would not dig up the nest. As a result of our interest, a village law was created declaring certain sections of the beach taboo for collecting eggs. With the support of the Papua New Guinea University of Technology we will continue our work this year. Perhaps we will see you walking the beach in search of these rare turtles.

Norman J. Quinn is from the Fisheries Department of the Papua New Guinea University of Technology in Lae and Barbara L. Kojis is from the University's Department of Chemical Technology.

*A baby turtle in its natural environment; inset
clockwise from below: newly-hatched
turtles collected from the beach; a villager
legally gathering eggs for home consumption;
a dug-out egg chamber; measuring the shell of
a female leatherback.*





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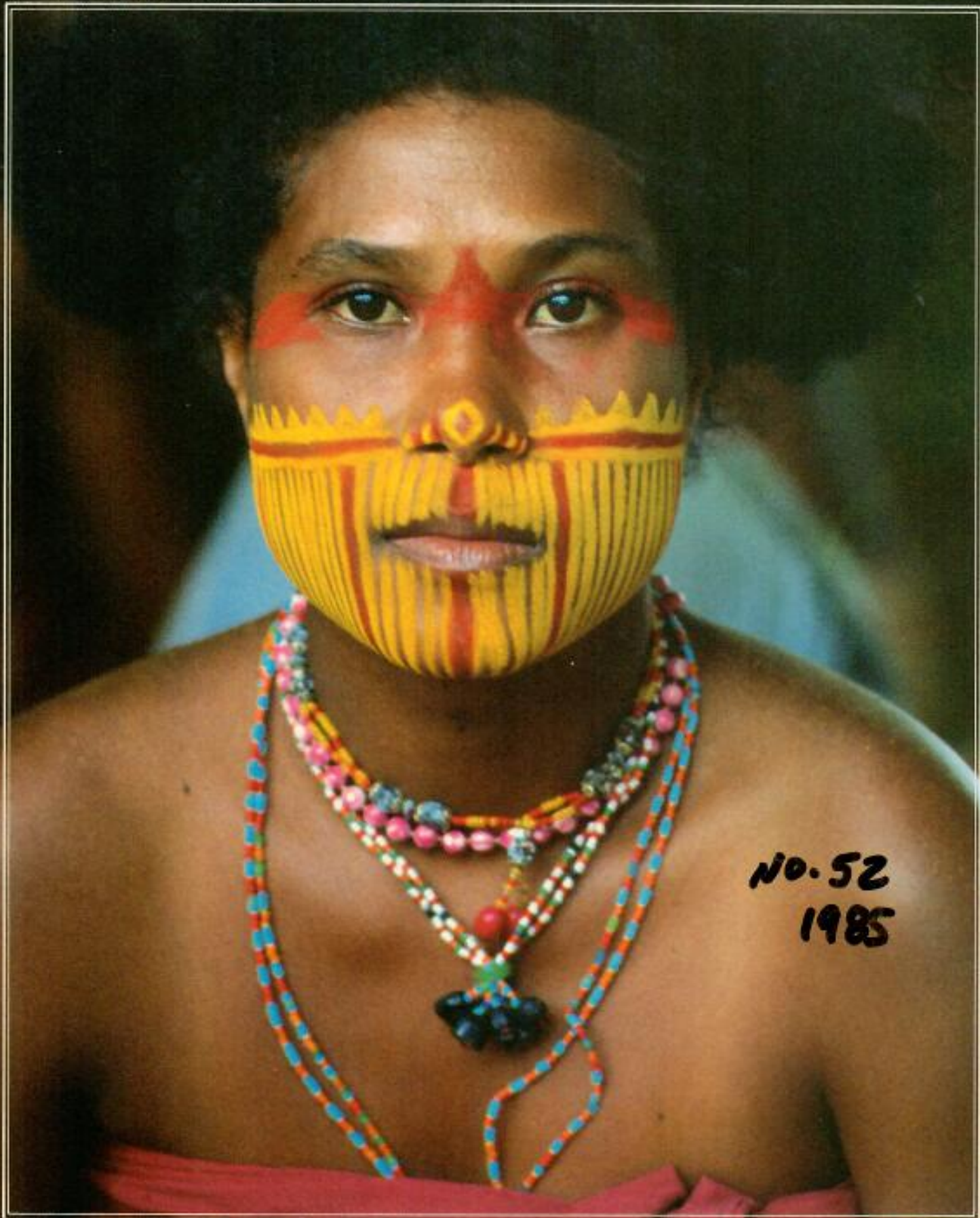
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