Margaritoulis, D. 1983. The inter-nesting interval of Zakynthos loggerheads. pp. 135-144 In: Adaptations to Terrestrial Environments, N. S. Margaris, M. Arianoutsou-Faraggitati and R. J. Reiter, eds). Plenum Press, New York.
Mertens, R. 1961. Die Amphibian und Reptilien der Insel Korfu. Senk. Biol. 42:1-29.
Mertens, R. and H. Wermuth. 1960. Die Amphibien und Reptilien Europas (Dritte Liste). Frankfurt a.M., Waldemar Kramer.
Ondrias, J. 1968. Liste des amphibians et des reptiles de Grece. Biologia Gallo-Hellenica 1:111-135.

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RECOVERY OF A TAGGED LEATHERBACK

During the late 1960s and 1970s, I tagged between 2000 and 3000 nesting females of each of three turtle species (Dermochelys coriacea, Lepidochelys olivacea, Chelonia mydas) in Surinam and French Guiana. In all cases the turtles were tagged on a front flipper with Monel cattle-ear type tags. Considerable numbers of the last two species were subsequently caught by fishermen and shrimpers, but only a few leatherbacks were recaptured, mostly from the eastern seaboard of the United States.

Recoveries of all species were typically made within a year or two of tagging, which I attribute to poor retention of tags rather than to poor survival of the turtles themselves. I ceased tagging in the Guianas in 1973, and it is several years since a single tag has been returned. It was therefore of considerable surprise to me to receive a letter documenting the recovery of tag E6227, which I had placed on a nesting leatherback in French Guiana on 14 June 1970. The tag was taken from a dead turtle at Sandy Hook, New Jersey (USA) on 5 June 1984.

While it is not necessarily surprising to learn that a leatherback can survive for 14 years after reaching maturity, this has apparently not been documented before. What is indeed noteworthy is that the tag stayed on; the soft skin of Dermochelys probably retains tags less well than that of cheloniid sea turtles, and the tagging location I used (the soft skin in the trailing edge of a foreflipper not far from the axillary region) has since been shown to be inferior to either the distal foreflipper position or to the edge of the hindflipper.

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SEA TURTLES AND DEBRIS: INGESTION AND ENTANGLEMENT

The impact of ocean debris on marine turtles was one of the many topics discussed at the recent "Workshop on the Fate and Impact of Marine Debris" (Honolulu, Hawaii, 26-29 November 1984). Short of severely curtailing the ocean dumping of all plastics, fishing gear and other material, there is probably not much that can be done to lessen the adverse effects of man-made debris on sea turtles. There are, however, a number of immediate activities that could be undertaken to improve our understanding of the nature of the impact. The following recommendations were made at the workshop:

The mean carapace length of the females was 81.2cm (N = 95; SD = 0.54); that of the hatchlings was 4.00cm (N = 221; SD = 0.17). Mean clutch size was 114.4 eggs (N = 52; SD = 7.33) and incubation periods varied from 49 to 69 days ($\bar{x}$ = 57.5; N = 6; SD = 6.26). The number of hatchlings leaving the beach daily was recorded for 35 days (i.e., about half of the hatching period) and the total was estimated at about 70,000. This represents 25% of the eggs laid (estimated at 280,000 by multiplying 114.4 eggs per nest by 2,460 nests). Direct observation of nests by digging them up after the hatchlings had emerged produced an estimated mean hatching success of 70%, though there may well have been a bias towards choosing more successful nests by this method.

During September 1983 I surveyed Cephalonia (some 40 km north of Zakynthos) for nesting beaches and discovered both adult and hatchling tracks on a single beach at the southeastern tip of the island. In 1984 with the help of some students we surveyed three beaches (5 km) and estimated that 150 nests were laid (calculated from our observations during two months of the nesting season, by multiplying the average number of nests per night times the number of nights in the season). In 1983 18 turtles were recorded nesting more than once in Zakynthos and 7 of these nested on different beachs, some of which were as much as 10km apart. One of the turtles tagged on Zakynthos in 1982 also nested on Cephalonia in 1984.

There are a number of other areas in Greece where loggerheads may breed. Those that are known with any degree of certainty are: the Peloponnese coast from Kyparissa to Pyrgos, especially north of Kaiapha; Antirron, north of Patras; Killini; parts of Crete; southern Corfu; and Paros.

Environmental protection of marine turtles in Greece began with the Presidential Decree of July 1980, which prohibits the fishing of all species of sea turtle, the collection of hatchlings, and the destruction of their eggs. Another Presidential Decree of January 1981 gives a list of species which are to be protected in Greece, and includes all species of marine turtle. Marine turtles are not exploited for food in Greece, and the number of adults killed is low -- usually the result of incidental capture in nets or damage by outboard engines. The percentage of eggs lost by flooding is also low due to the negligible Mediterranean tide and the predominantly calm waters in the area during the nesting season. The major conservation problem has been the increasing disturbance of the beaches by coastal development associated with tourism (MTN 19:14; 27:3). This situation has only become critical on one or two beaches (particularly Lagana on Zakynthos) and in the last year legislation has been passed preventing or restricting the construction of houses and hotels near the nesting beaches. However, there has been little attempt to explain the necessity of such legislation to the local people or to involve them in these proposals; nor have funds been provided to compensate those who have lost through this legislation.

Hirth, H. F. 1980. Some aspects of the nesting behavior and reproductive biology of sea turtles. Am. Zool. 20:507-523.

Marinos, P. 1977. Zakynthos, tourism and environment. MSc dissertation, Univ. Salford.

Marinos, P. 1981. On the distribution of sea turtles in Greek waters. MTN 19:13-14.

Margaritoulis, D. 1982. Observations on loggerhead sea turtle (Caretta caretta) activity during three nesting seasons (1977-1979) in Zakynthos, Greece. Biol. Conserv. 24:193-204.

1. There should be greater efforts worldwide to record stranded turtles and conduct necropsies aimed at documenting debris ingestion and entanglement.
2. Studies should be conducted that involve the controlled feeding of plastics and other debris to turtles in captivity in order to gain definite information on intestinal obstruction, absorbtion of plasticizers, and feeding behavior.
3. Field studies aimed at elucidating the pelagic life of sea turtles along drift lines should be undertaken north of the Hawaiian islands in the Pacific.
4. A more thorough assessment should be made of sea turtle interaction with jettisoned by-catch from shrimp trawlers and other fisheries.

Based on an extensive literature review and personal communication with other researchers, I tabulated 64 cases of ingestion and 55 incidents of entanglement, many of which involved more than one turtle. In a continued effort to maintain a file on sea turtles ingesting or becoming entangled in marine debris, I would greatly appreciate receiving reports (old or new) of any such occurrences at the address below.

GEORGE H. BALAZS, Southwest Fisheries Center Honolulu Laboratory, National Marine Fisheries Service, NOAA, P. O. Box 3830, Honolulu, Hawaii 96812 USA.

AIFRB AWARD OF MERIT

The American Institute of Fishery Research Biologists (AIFRB) awarded its 1984 Special Group Award of Merit to the Harvesting Technology Division, Southeast Fisheries Center, National Marine Fisheries Service, Pascagoula, Mississippi, USA. The award was given for the Division's development of the TED (i.e., "turtle excluder device" or "trawling efficiency device"), a cage-like implement that fits into a shrimp trawl net and reduces the incidental capture of sea turtles and other large by-catch (see MTN 22:1-2, 26:12, 27:6-7). (Based on information in AIFRB Briefs 13(5):4-5, October 1984).

ROLEX HONORS SATISH BHASKAR

Satish Bhaskar received an Honorable Mention in the 1984 Rolex Awards for Enterprise for his proposal to locate and conserve sea turtle nesting grounds in the Andaman Islands. (Based on information from Spirit of Enterprise: the 1984 Rolex Awards, Aurum Press, London, provided by N. Mrosovsky).

NEED NESTING BEACH VOLUNTEERS?

If you are in charge of a sea turtle nesting beach project in the US or abroad and would benefit from having non-paid volunteers work on your project, contact Emily Roet, Sea Turtle Rescue Fund, Center for Environmental Education, 624 9th St. NW, Washington DC 20001 USA. Each year the Center receives letters from supporters that would like to work as interns or non-paid volunteers on sea turtle nesting beaches and we would welcome the opportunity to refer their inquiries to projects which are in need of such help.

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MARINE TURTLE PROBLEMS IN BALI ISLAND

Five species of marine turtle occur in Indonesia. The three least commonly encountered species are: the leathery or leatherback turtle, Dermochelys coriacea, which has been protected under Nature Protection Laws since 1978; the olive ridley turtle, Lepidochelys olivacea; and the loggerhead turtle, Caretta caretta, both of which have been protected under Nature Protection Laws since 1980. All three species have limited distribution in Indonesia.

The two other species, the green turtle, Chelonia mydas, and the hawksbill turtle, Eretmochelys imbricata, have wide distribution and are not yet protected by law in Indonesia. However, the capture of these species and the collection of their eggs are being reviewed by the government so that they are not eliminated. In Denpasar and a number of other places in Indonesia (e.g., Manado and Jakarta) green turtle meat is eaten. In Bali in particular, the use of turtle for food continues and increased greatly in the 1970s, although it is hoped that the numbers slaughtered can be reduced with strengthened controls on illegal turtle hunting outside Bali.

Slaughtering is carried out at night by slaughterers in Denpasar in places overseen by the local government; the meat and entrails are sold to local people or to restaurants. The slaughter of turtles has been turned into a show for foreign tourists by the Bureau of Tourism and this has led to certain negative impressions among those foreign tourists who have never previously seen animals being slaughtered. It is not true that there is inhumane and cruel slaughter of turtles in Bali. The method of slaughter is the same as that used for cattle and other farm animals. What can be considered inhumane, however, is the method of transporting the turtles, during which they can suffer high mortality.

To oversee utilization of the green and hawksbill turtles so that they do not become rare or eliminated, the government has already taken some steps and hopes to expand these further by:

1. controlling illegal hunting of turtles throughout Indonesian waters;
2. setting up protected areas for turtles;