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Nesting of Hawksbill Turtles in Paraíba-Brazil: Avoiding Light Pollution Effects

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Projeto TAMAR – IBAMA (the National Sea Turtle Conservation Program of Brazil) has been working with sea turtles on a national scale since 1980 (Marcovaldi & Marcovaldi 1999) and recognizes four principal nesting areas for hawksbill turtles (*Eretmochelys imbricata*): the states of Rio Grande do Norte, Sergipe, Bahia and Espírito Santo (Sanches 1999). Our work, as part of “Projeto Tartarugas Urbanas” (Urban Turtles Project), shows that the state of Paraíba is another important area for the hawksbill turtle nesting in Brazil (Mascarenhas *et al.* 2003). Here we report on our conservation activities during the 2002-2003 nesting season, with an emphasis on our efforts to mitigate impacts of photopollution on hawksbill hatchlings.

We monitored a total of 2.9 km of nesting beach. We extended the total monitored area 700 m northwards (Ponta de Capina) and 400 m southwards (Praia do Bessa), relative to the 2001-2002 nesting season (Mascarenhas *et al.* 2003). The nesting season in 2002-2003 began on December 19 and ended May 14, for a total of 146 days. Fifty-seven crawls were observed during the nesting season, of which 56 were confirmed nests. The majority of clutches (76.8%) were laid in the southern half of the monitored area. Four clutches were poached. Of the other 52, 37 were left *in situ*, 14 were transplanted to a hatchery and one was relocated to a position higher up the beach. A total of 7,830 eggs were laid, with a mean clutch size of 150.6 eggs. A total of 6,246 live hatchlings were produced from all 52 nests, for an overall hatching success of 79.8% (range: 1.3-98.1%). The success rates for nests left *in situ* was higher than those relocated to the hatchery (Table 1). Besides the influence of the handling techniques, the amount of rainfall may have had an impact on incubation success. Most of the transplanted nests were laid between December and January, the hottest and driest part of the summer when success rates for *in situ* nests were also lowest for the season (Fig. 1).

Outside of the regular patrol areas, we encountered 7 additional hawksbill nests that were also monitored during incubation. They had an average hatching

success of 57.1% (range: 19.5-86.8%). Altogether in 2002-2003, a total of 63 nests successfully produced 6,800 hatchlings that were eventually released to the sea. This is greater than the 4,615 hawksbill hatchlings produced from 47 nests that reached the end of incubation in 2001-2002 (Mascarenhas *et al.* 2003).

Light pollution is a serious problem for sea turtles in the study area. There are streetlights, each composed of four incandescent bulbs, located at 45 m intervals along the beachfront, in addition to the other lights from residential properties along the seashore. During the 2001-2002 nesting season, all nests emerged at night and the hatchlings were kept in dry boxes to be released the following morning, to avoid the disorienting effects of artificial lights present on the beach at night (Mascarenhas *et al.* 2003). However, we were concerned that hatchlings that had emerged during the night but were not released until morning might have been negatively impacted, possibly through the needless expenditure of energy while waiting in the boxes (Nicholas 2001). Indeed, many of the hatchlings from the 2001-2002 season appeared lethargic when released. Therefore, in the 2002-2003 nesting season, we tried an alternative approach to the problem of artificial lights.

When possible, we divided nests into two groups: the first group (n=32) were those that were allowed to emerge at night and were kept in boxes until morning to be released to the sea, and the second group (n=31) were those removed from the nests prior to natural emergence and immediately released to the sea. For the second group, we checked each nest in the morning around the time we expected emergence to occur. If the hatchlings were within 15 cm of the surface of the sand, we removed them from the nest and released them on the beach to crawl to the sea. We measured the amount of time required by the two different groups of hatchlings to reach the sea after being released 3 meters from the current water line. Overall, hatchlings that emerged naturally but were kept in a box overnight required on average 36.3 minutes (n=32 nests) to reach the sea, while those hatchlings that were removed from

	<i>Nests</i>	<i>Live hatchlings</i>	<i>Dead hatchlings</i>	<i>Eggs with dead embryo</i>	<i>Eggs with no visible embryo</i>
In situ	37	87.4% (4839)	0.6% (35)	4.9% (277)	7.0% (368)
Hatchery	14	58.7% (1288)	1.5% (34)	24.8% (539)	14.9% (321)
Relocated	1	92.2% (119)	0% (0)	0.8% (1)	7.0% (9)
Total	52	79.8% (6246)	0.9% (69)	10.2% (817)	9.1% (698)

Table 1. Hawksbill hatchling production from nests laid during the 2002-2003 breeding season, expressed as percentages for each category. Numbers in parentheses are total number of eggs for each category. Note that 4 additional nests were poached soon after laying, and 7 nests were laid outside the area regularly monitored (data not included).

their nests early and immediately released required only 6.6 minutes (n=31 nests) on average to reach the sea. We suggest that holding turtles overnight after emergence may negatively affect their ability to move to the sea and may impact their post-emergence frenzy.

There are campaigns, legislation and methods to prevent and solve the light-pollution problems on nesting beaches (Witherington & Martin 1996). In Brazil, IBAMA (the National Environmental Agency) has established some laws to protect recognized nesting beaches. In our study area, the current environmental laws are not enough to protect the complete process of reproduction. There is intense urbanisation along the seashore, and illumination from public and private

developments is impossible to avoid for the time being. As a first attempt to minimize the negative anthropogenic influences on the turtle population in Paraíba, we are experimenting with alternative approaches to the field work, in the hope that we can one day eliminate artificial illumination of the nesting areas.

Acknowledgements: We are indebted to Valdi Moreira Silva, Adailton Gaudino, Marilene Nobre, Pedro Athayde, Luis Eduardo Pontes, Caio Graco Zeppelini, Beatriz Pereira, Louisa Ma. de Andrade e Souza, Cícero Machado da Silva and Francisca Maria Lemos for their volunteer work and support in the field work. We thank the editors and the two anonymous referees for their relevant suggestions and criticism.

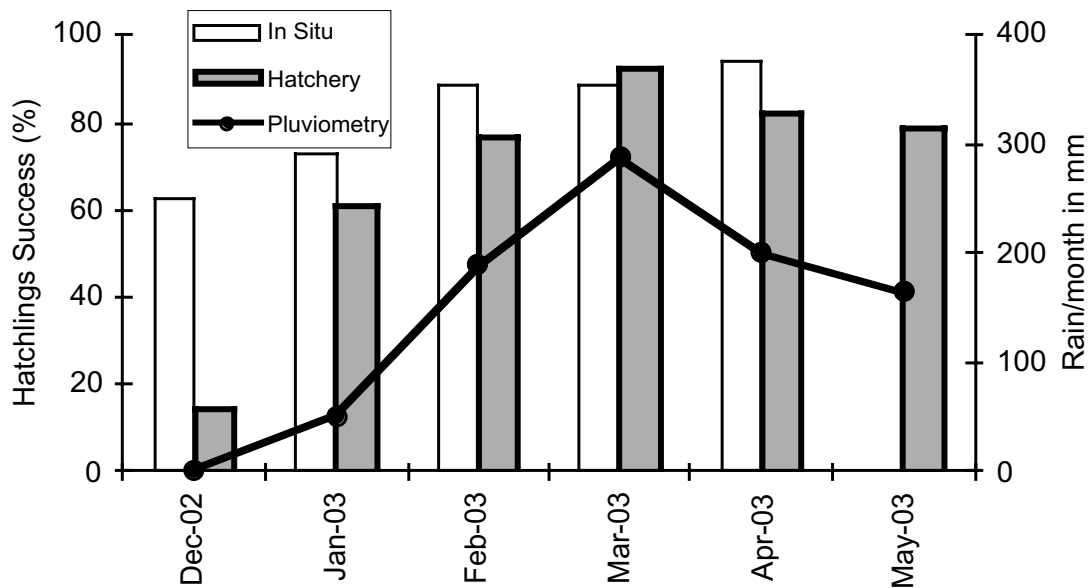


Figure 1. Pluviometric changes and hatching success through the nesting season.

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Stranding of Small Juvenile Leatherback Turtle in Western Australia

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Sightings and strandings of small juvenile leatherback turtles (*Dermochelys coriacea*) are rarer than those of larger sub-adults (Eckert 2002). The discovery of only the second small juvenile to be reported in Western Australia, which stranded on Shoalwater Bay beach (ca. 25km S of Fremantle, Western Australia) on the morning of 25 July 2002, is thus of wider interest. The turtle was moribund at time of discovery and died overnight despite attempts at resuscitation and further veterinary care. The specimen has been deposited in the Western Australian Museum reptile collection and is registered R112624. Measurements were CCL (over midline ridge) 305mm, CCW (lateral to lateral ridge - max) 200mm, body weight 1.85kg. Closer examination showed that the left eye was missing, and that the left nostril location had also been damaged, although these appeared to be old wounds that had healed. Photos are available from the author or can be found in the SEATURTLE.ORG image library <<http://www.seaturtle.org/cgi-bin/imagelib/index.pl?photo=748> and <http://www.seaturtle.org/cgi-bin/imagelib/index.pl?photo=747>>. By way of comparison, the previous juvenile specimen (WAM R86454), collected on 6 September 1983, was larger in size, weighing 3.3kg. Further details are available from the author.

There is considerable debate still regarding the rate of growth of leatherback turtles in the wild, but juvenile leatherback turtles do appear to grow much faster than Cheloniid sea turtles (Zug & Parham 1996). The two smallest specimens studied by Zug and Parham (see appendix in Zug & Parham 1996) closely overlap the size of the two small turtles recovered in Western Australia. The estimated ages of the animals described therein were ca. 0+ to 1 year old.

I noted some voided material adhering to the cloacal area of the turtle when received *post-mortem*. This material, plus the product of 3x hind-gut flushing using a 50ml syringe via the cloaca was collected and preserved in 70% Ethanol. The material recovered appeared to be remains of pelagic tunicates (Class Thaliacea). *Pyrosoma* sp. remains have previously been identified among gut contents of a larger sub-adult Western Australian leatherback turtle specimen (Prince, unpublished data).

The combination of southward flowing warm Leeuwin Current waters and the common intense mid-winter westerly storm systems is regularly associated with southward translocation and stranding around southwestern and southern Western Australia of post-hatchling sea turtles. Most of these are small loggerheads, but occasionally, other species are also recovered. These strandings are generally sourced from the coastal and offshore island sea turtle nesting beaches of Western Australia (Walker 1994; Prince & Crane unpublished data).

Leatherback turtle specimen WAM R112624 certainly stranded in association with a westerly storm system, and is perhaps a product of an undetected recent leatherback turtle nesting event within the Western Australian region. However, it is more likely that this turtle came from a nesting beach in either the South East Asian region to the north, quite possibly from eastern Indonesia (Spotila *et al.* 1996), or perhaps Malaysia (Chan & Liew 1996). A South African origin (Hughes 1996) is considered least likely, given that surface drift time across the southern Indian Ocean is typically 18 months, and usual sea surface temperatures found along that route are in the range 10° to 15°C

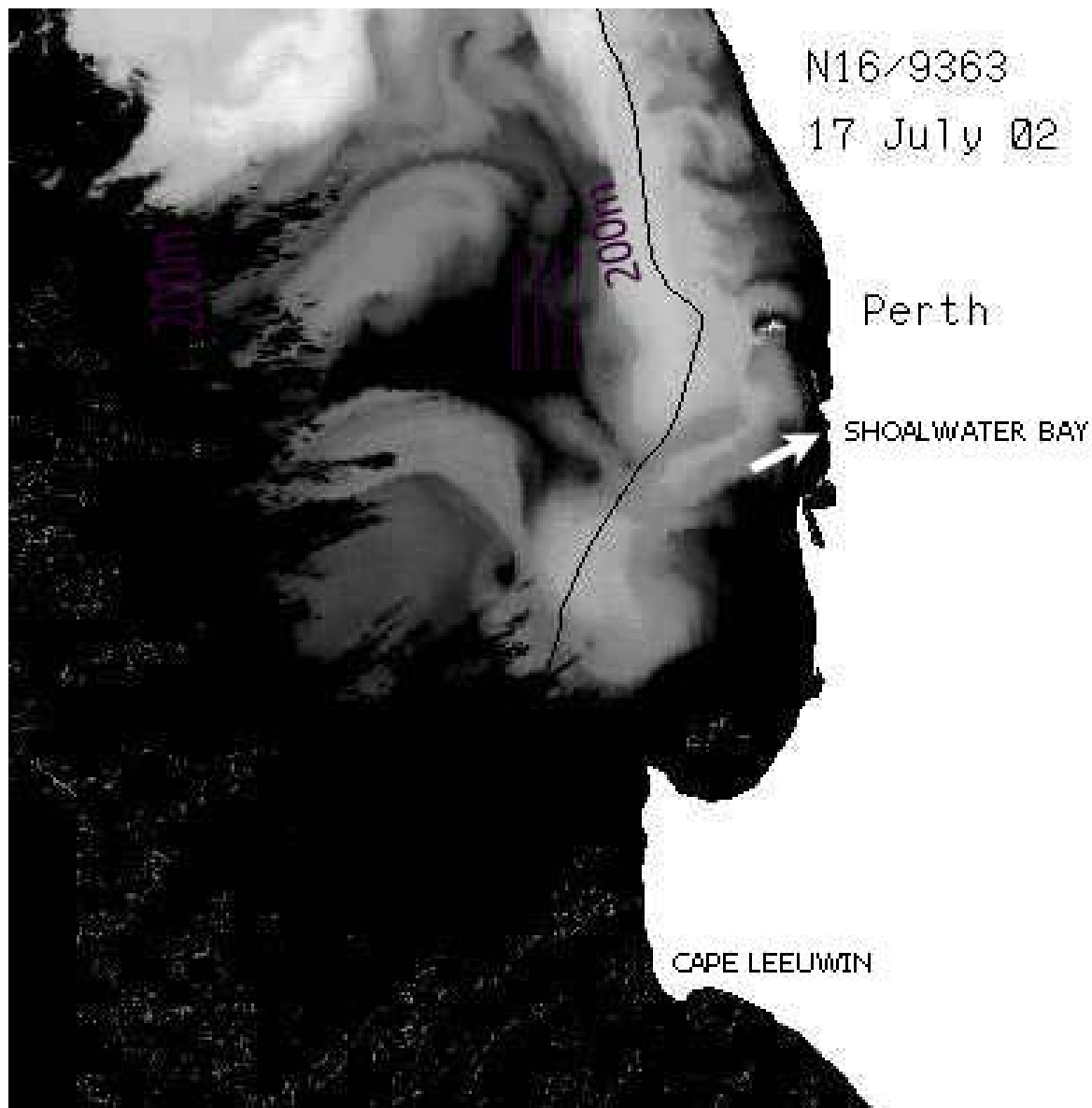


Figure 1. Leeuwin Current Imagery for 17 July 2002 – SW Western Australia: Shading is a relative brightness scale related to sea surface temperature, with the warmest water showing lightest shading and the coolest dark; cloud cover over the lower SW quadrant of the image shows black. Stranding location indicated: (Image courtesy of Alan Pearce: CSIRO, Perth.). A colour version of this graphic is available in the SEATURTLE.ORG image library <<http://www.seaturtle.org/cgi-bin/imagelib/index.pl?photo=753>>

(Alan Pearce, pers. comm.). Genetic sample material to help address this question has been retained. Whatever the origin, R112624 can be expected to have been chilled on entering a neighbouring cooler water mass somewhere off the southwestern Western Australian coast, which thus rendered it more vulnerable to passive displacement by surface drift. The Leeuwin Current flow state *ca.* 1 week before the stranding is indicated by the processed satellite image N16/9363 of 17 July 2002 (Figure 1). The main current warm water mass (*ca.* 22°C, in lightest shade) straddling

the 200m isobath is shown extending southward of Perth, with numerous tongues of relatively warm water pushing shoreward across the shelf from the eastern current edge. A current eddy of $\geq 21^\circ\text{C}$ located northward of the Shoalwater Bay beach stranding site is also shown with ‘fingers’ of cooler water closer inshore. The regional sea state and water temperatures indicated by the Figure 1 imagery is consistent with observations of marine science colleagues engaged in simultaneous independent field-work. There can be little doubt that our specimen was entrained for some

extended time in a water mass cooler than the 26°C suggested by Eckert (2002) as typical of locations for much larger juvenile leatherback turtles as it travelled down the Western Australian coast towards the Perth region. From that point on, it was apparently swept along in the storm driven surface drift into even cooler coastal waters until it stranded near death along with a wrack of dislodged macroalgae and seagrass at the point of discovery.

Acknowledgments: Rebecca Carter, who received the moribund turtle from unnamed beachcombers early AM, and correctly identified it as a leatherback, advised Deanne Pember (CALM Fremantle) of the stranding. Marine Ranger Chris Mather organised retrieval of the turtle from Shoalwater Bay, and delivery to the AQWA, Hillarys Harbour facility, as arranged by John Edwards. Gloria Jackson (AQWA) arranged veterinary consultation. Documentation detail for the find was provided by Chris Mather and Deanne Pember. I thank Mick Byrne, Rob McCauley, Micheline-Nicole Jenner, and Chris Mather for sharing their independent observations on regional sea temperatures and currents. I thank Alan Pearce for his comments on the sea currents and water temperatures relevant to this case, and for use of his Leeuwin Current imagery.

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Postnesting Movements of Green Turtles Tagged in the Turtle Islands Tawi-Tawi, Philippines

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The Philippine-Sabah Turtle Islands are considered the only remaining major green turtle (*Chelonia mydas*) rookery in the ASEAN region (De Veyra 1994a,b; 1996). It lies southwest of the Philippines approximately 950 nautical miles from Manila and only 40 nautical miles north of Sandakan, Sabah, Malaysia. The island group is composed of nine islands, which are shared by the Governments of the Philippines and Malaysia. Six of these islands (Baguan, Taganak, Lihiman, Langaan, Bakkungaan Besar, and Boaan) are in the Province of Tawi-Tawi, Philippines and three are within Sabah, Malaysia (Bakkungaan Kechil, Selingaan, Gulisaan). On 31 May 1996, a bilateral agreement was reached by Malaysia and the Philippines for the conservation and management of the marine turtle population in the Turtle Islands. This agreement established the Turtle Islands Heritage Protected Area (TIHPA; Trono 2000). Currently, there is a proposal to expand the TIHPA to include Derawan Island, Berau District, East

Kalimantan, Indonesia, which also serves as nesting grounds for marine turtles (locally known in the Philippines as “pawikan”).

On the Philippine side, the implementation of the bilateral agreement is carried out by the Department of Environment and Natural Resources (DENR)-Protected Areas and Wildlife Bureau (PAWB), through the Pawikan Conservation Project (PCP). In 1982, the PCP initiated marine turtle tagging in the Turtle Islands, Tawi-Tawi. The green turtle and hawksbill turtle (*Eretmochelys imbricata*) are the only species of marine turtles that nest in the Turtle Islands. Between 1982 and 2002, the PCP tagged 10,172 nesting marine turtles, of which most were green turtles.

Presented here are the previously unreported recapture data for 16 green turtles tagged on the Philippine side of the TIHPA (Table 1, Figure 1). Tag returns show that the green turtles that nest in these islands move throughout the Philippine archipelago. In

Tag Numbers	Date Release	Date Recapture	Interval	Recapture Location	Distance	Remarks
L-A0731	14-Jul-90	17-Apr-92	643	Brgy. Buburay, Dimataling, Zamboanga del Sur	608 km	Caught by bung (fish corral).
R-RP5052 L-RP5080	06-Aug-90	1992	513	Mantabuan, Sapah-Sapah, Tawi-Tawi	209 km	
R-RP6487 L-RP6475	07-Aug-91	16-Jan-94	893	Brgy. Semirara, Caluya, Antique	714 km	
''	''	18-May-96	1746	Calaogao, Caliling, Cauayan, Negros Occidental	614 km	
R-RP5419 L-RP5481	14-Oct-90	1998	2636	Jolo, Sulu	310 km	Caught by hook and line
R-RP342C L-RP343C	01-Jul-94	1999	1645	Keenapusan Reef, Tawi-Tawi	255 km	
R-PH0958 L-PH0960	21-Aug-99	25-Nov-99	96	Bulu-Bulu Island, Sitangkai, Tawi-Tawi	188 km	
R-PH0280	11-Aug-99	21-Jan-00	163	Tambulig Butun, Tapiantana, Sumisip, Basilan	390 km	Caught by bakl (fish corral).
R-RP3178	17-Nov-88	Sep-00	4306	Sitangkai, Tawi-Tawi	188 km	Caught by fishn
R-PH0643	24-Jun-99	No Date	*	Pasulutan Village, Patol, Jolo, Sulu	310 km	
R-P16942 L-P16943	31-Aug-00	No Date	*	Tagayo Reef, Sitangkai, Tawi-Tawi	188 km	Caught by fisher
R-PH0487 L-PH0489	15-Jun-99	No Date	*	Bongao, Tawi-Tawi	188 km	Tags taken, turtle released
R-RP519B L-RP521B	05-Oct-94	03-Feb-02	2678	Kulisi-an, Pangutaran, Sulu	240 km	Found on the sh
L-RP4803	03-Jun-95	10-Apr-02	2503	Karang Pulau Panjang (East Kalimantan, Indonesia)	390 km	Dead upon recap in Indonesia.
R-P15430 L-P15431	05-Jul-99	11-Jul-02	1102	Brgy. Don Pablo dela Rosa, Aroroy, Masbate	880 km	Caught by Bono (fish corral).
R-P16496	13-Aug-00	02-Sep-02	801	Wasig, Mansalay, Oriental Mindoro	770 km	Captured by fishermen.
R-RP6126 L-RP6140	14-Aug-95	09-Jan-03	2705	Murcielagus Bay, Baliangao, Misamis Occidental	623 km	Captured in bung (fish corral).

Table 1. Recapture data of tagged green turtles from the Philippine Turtle Islands. (L: left tag; R: Right tag; Date of release: date of the last sighting of the turtle in the Turtle Islands; Interval: minimum number of days between release and recapture; Distance: minimum straight line distance)

addition, a tag return had also been recorded from Karang Pulau Panjang, East Kalimantan, in Indonesia. Marine turtles tagged in the Philippine islands of the TIHPA are also encountered in the Sabah islands (De Veyra 1994a).

The longest recapture distance of a turtle originally tagged in the Philippine turtle islands (based on approximate straight-line distance) was 880 km (from Barangay Don Pablo dela Rosa, Aroroy, Masbate). Recapture records in Sitangkai and Bongao, Tawi-Tawi represented the shortest straight-line distance of 188 km. Four of 16 of the recaptured green turtles moved to this area suggesting that the province of Tawi-Tawi within the Sulu Sea also serves as a foraging area. Additional data (not presented here) have been gathered

on tag loss and interesting behaviour.

Tagging of marine turtles in the TIHPA is still ongoing. In the Philippines, the PCP is working in cooperation and collaboration with the DENR Regional and Field Offices (Provincial and Community Environment and Natural Resources Offices), non-government organizations (NGO), and local government units (LGU). It is hoped that with ongoing information collection and the education campaign conducted by the PCP, the resident and migrating marine turtles in the Philippines can be protected.

Acknowledgments: The PCP acknowledges all the DENR Regional and Field Offices, LGU, NGO, and private individuals who reported these tag returns.

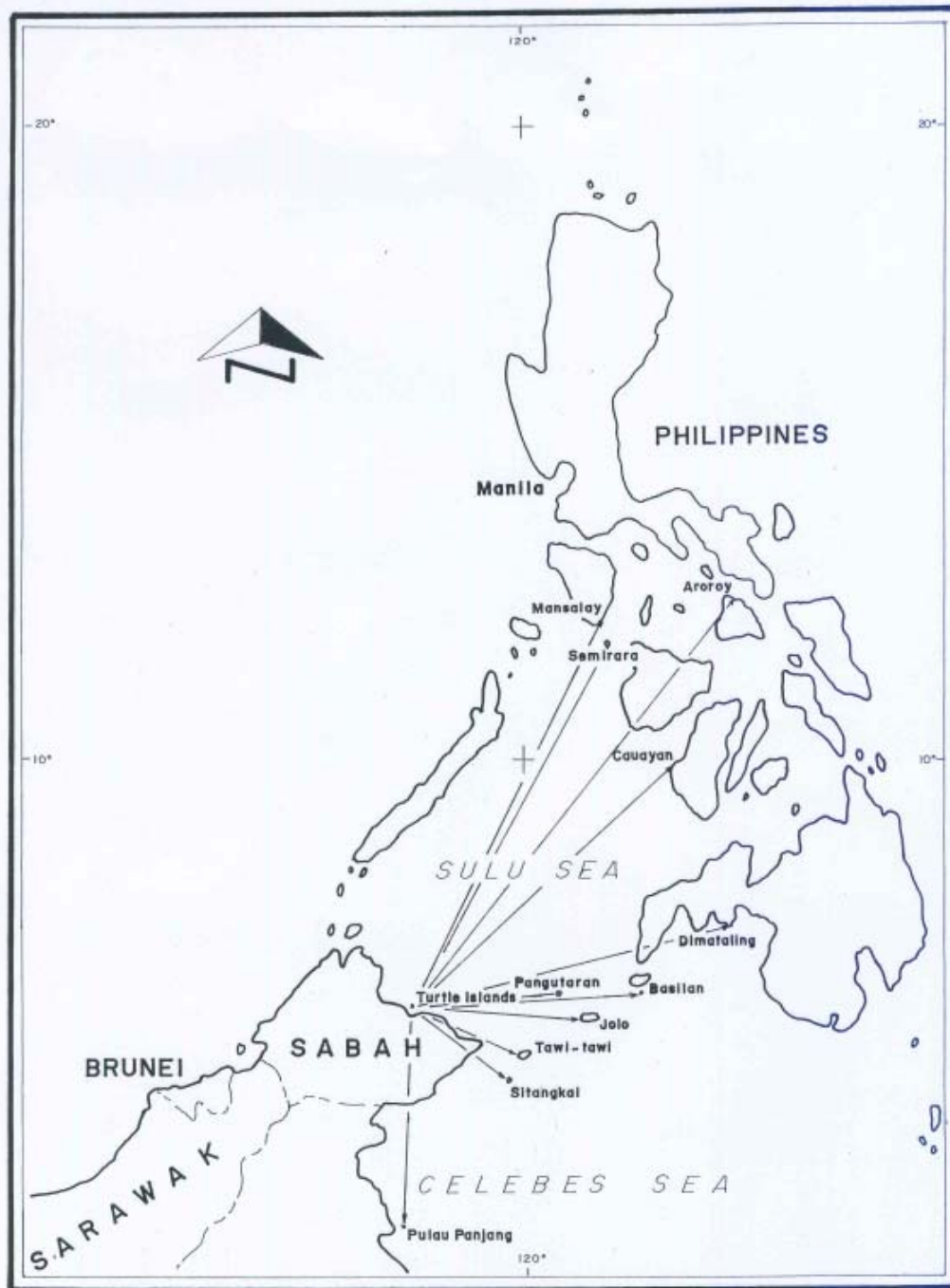


Figure 1. Graphical illustration of the data in table 1.

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Notes from Preliminary Market Surveys in Morocco

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Market surveys to assess availability of sea turtles or their products constitute a valuable tool not only to uncover biological information (e.g. species present, size distributions, seasonality, etc.), but also types of utilization and relative importance in the diet and/or income of people in a specific region (Tambiah 1999). Assessments of sea turtles in Moroccan markets have been few. Laurent (1990) reported finding seven carapaces in one crafts market in Tetouan after a search through fourteen markets in three cities along the Mediterranean coast of Morocco. A few fishermen along the Mediterranean coast admitted to the sale of carapaces to local markets and tourists, and to the sale of turtle meat to people in the Spanish city of Ceuta; overall local consumption of turtles was judged to be infrequent, at least in Mediterranean Morocco (Laurent 1990). Tiwari *et al.* (2001), during a survey of the Atlantic coast, encountered one vendor selling a carapace and three plastra at Agadir port; other fishermen encountered reported that local consumption of turtle meat was uncommon. A recent review on sea turtles in Morocco did not include any additional references on sea turtles or their products as commodities (Fretey 2001). Nor did a recent survey for wildlife in a central market of Marrakech mention sea turtles or their products, although that investigation focused on land tortoises (Shipp 2002). Given that the most recent systematic surveys were conducted in the 1980s (Laurent 1990) and were restricted to the Mediterranean coast of Morocco, that many of the towns have since expanded, and that national legislation recently changed in 2002 to protect sea turtles in Morocco, we decided to investigate the presence of turtles and/or turtle products in various shops/markets throughout Morocco. Herein, we report preliminary results from surveys of 37 different shops in artisan/craft markets at 6 different locations in Morocco in 2003.

We located and visited 8 artisanal shops in Tetouan along the Mediterranean coast of Morocco between June and July 2003, and found only two had carapaces

for sale. In the first shop, two loggerhead, *Caretta caretta*, carapaces (CCL=60 cm and CCL=50 cm) had been used to make guitars and were being sold for 700 dirhams (=US\$72 at current exchange rate) each (see front cover photograph). At the second shop, the shopkeeper had a photograph of a loggerhead carapace (CCL = approx. 50 cm) set in copper, recently sold to tourists as a decoration piece. These carapaces had been collected from beaches close to M'diq, a fishing village 15 km north of Tetouan on the Mediterranean coast. One of the shopkeepers informed us that he was expecting more carapaces from the fishermen at M'diq. When we visited three shops in M'diq in September 2003, one shop had 8 loggerhead carapaces for sale (CCL range = 32-82 cm), with prices ranging from 400 to 1200 dirhams (=US\$46-140). We also visited one shop in Martil, 10 km north of Tetouan, in August 2003, where we found one loggerhead carapace (CCL = 79 cm) for sale for 350 dirhams (=US\$38); this animal had stranded on the Martil coastline. At a small restaurant on Fnideq beach, 40 km north of Tetouan, a loggerhead carapace (CCL = 47 cm) was on sale as a decoration piece for 300 dirhams (=US\$31). The restaurant owner reported that this turtle had been caught live 3 years ago in fishing nets in Fnideq and the meat had been delicious!

An initial search through the fish market of Tangier, along the Atlantic coast, revealed no sea turtle products for sale. Following this, we visited approximately 15 artisanal shops in a separate market, and two of the bigger stores had two carapaces each. All four carapaces were fitted with a metal frame and designed to be used as decorative wall lamps (see front cover). The metal frame prevented a standard curved carapace length measurement, so curved carapace length was measured from the underside of the carapace. Three of the carapaces measured approximately 29.5 cm, 43.4 cm, and 50.5 cm. The last carapace could not be measured because of the shopkeeper's annoyance with our lack of interest in purchasing it, but its length was

estimated to be between 50 and 60 cm. These measurements may be slightly shorter than the standard curved carapace measurement; nonetheless, they suggest that the animals were juveniles and subadults. The prices of the carapaces ranged from 600 to 7000 dirhams (=US\$62 to \$722). Both shopkeepers claimed that the carapaces came from turtles stranded dead on the beach near Tangier.

At Casablanca port we were informed that some fishermen may have contacts in markets to whom they supply turtles. We visited 9 shops at two artisanal markets, but no sea turtle products were found. Fewer shops were surveyed in Casablanca because it was soon evident that all shopkeepers were interconnected, much more so than was apparent in Tangier and Tetouan. We were strongly perceived as tourists searching for sea turtle carapaces and since our interest appeared to inspire shopkeepers, we abandoned our search out of fear of creating an artificial demand for sea turtle products. This highlighted one of the difficulties in conducting market surveys: we tried not to come across as tourists while at the same time we did not wish to be perceived as investigative officials lest the shopkeepers hide their items for fear of prosecution.

In all, from the 37 shops visited to date (including the restaurant in Fnideq), only 7 had sea turtle products for sale. In the case of Tetouan, a smaller city in Morocco, we are confident that we investigated nearly all artisanal outlets for turtle products, both in and around the city. Only 5 out of 13 shops visited had carapaces for sale. In the larger cities of Casablanca and Tangier, we were unable to exhaustively investigate all markets or artisanal shops, but we plan on more extensive surveys in these cities in the future. We found no evidence of turtle meat being sold in fish markets, although availability may be restricted to certain months or seasons outside of our visits. Informal interviews with fishermen on the Mediterranean coast revealed that fishermen do occasionally eat turtle meat, but only when fish catches are low, their revenue is restricted, and they are not likely to be caught by enforcement officials.

Our preliminary results indicate that animals tend to be juveniles or subadults and loggerheads are the most common species seen. Nevertheless, artisanal products made with sea turtle are generally difficult to find suggesting that demand for them is low. This is in strong contrast to Mediterranean spur-thighed tortoise, *Testudo graeca*, whose carapaces were found in virtually every shop surveyed. However, one shopkeeper informed us that we were guaranteed to find sea turtle carapaces

in the market of Marrakech further south. Fretey (pers. comm.) reported finding a loggerhead carapace, approximately 27 cm in curved carapace length, for sale to tourists on a brief visit to the Marrakech market place in 2002. More in-depth surveys of various urban markets in southern Morocco and Western Sahara are planned in the near future.

Current carapace prices are relatively high; the GDP per capita was US\$3,900 in 2002 (CIA World Factbook, 2003). This suggests that the carapaces are primarily for sale to tourists. There appears to be no major nesting in the country that could supply a demand for eggs (Tiwari *et al.* 2001). Limited use by artisans and the seemingly occasional consumption of meat locally suggest that sea turtles may have minimal commercial importance in Morocco, but a more extensive evaluation is to be undertaken.

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Recoveries of Two Post-Hatchling Loggerhead Turtles in the Northern Adriatic Sea

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Significant numbers of loggerhead turtles (*Caretta caretta*) are accidentally captured in the Adriatic Sea. The northern and central Adriatic sea are primary foraging habitats and they may also be of importance as an overwintering habitat (Affronte & Scaravelli 2001; Lazar *et al.* 2000a). This area is listed as a critical marine habitat for sea turtles within the revised “Action Plan for the Conservation of Mediterranean Marine Turtles” (RAC/SPA 1999). No current nesting is confirmed from the Adriatic Sea although it may persist in Croatia (Lazar *et al.* 2000b).

On December 11th, 2002, on a beach near Ascoli Piceno (Grottammare, 42°59'20" N – 13°52'9" E, Italian coast of the Central Adriatic Sea), we recovered a live loggerhead turtle. The post-hatchling specimen measured 9 cm in total length and Straight Carapace Length (SCL) was 5.8 cm (Photo available from author or in SEATURTLE.ORG image library <<http://www.seaturtle.org/cgi-bin/imagelib/index.pl?photo=745>>). Unfortunately, the turtle died in captivity 20 days later. On January 3rd, 2003 we found in Rimini (44°3'19" N – 12°34'12"; about 160 km north of Grottammare, where we found the first specimen) another stranded post-hatchling loggerhead, already dead and slightly larger than the previous one (7 cm SCL). The presence of such small juvenile loggerheads has not previously been reported in the central-northern Adriatic Sea.

In order to investigate the possible nesting colony affiliation of the two loggerheads, we also carried out a genetic analysis of mtDNA, which has demonstrated the occurrence of genetically independent nesting aggregates in the Mediterranean (Encalada *et al.* 1998; Laurent *et al.* 1998). The sequence variability of the mitochondrial DNA control region was widely employed as genetic tag to infer the population structure among the Atlantic and the Mediterranean loggerhead turtle stocks (Laurent *et al.* 1993; Laurent *et al.* 1998). Briefly, genomic DNA was obtained from both individuals. The 5' end of the mtDNA control region (at least 390 bp) was PCR-amplified and sequenced using primers and reaction parameters reported by Encalada *et al.* (1998). Sequences were then compared with the

sequence variants deposited in GenBank and in the current literature (Bolten *et al.* 1998; Encalada *et al.* 1998; Laurent *et al.* 1998). Data were equivocal as both the individuals showed the sequence variant corresponding to the haplotype B reported by Encalada *et al.* (1998), that is the most frequent in the Mediterranean Sea but is also shared with the Northwestern Atlantic rookeries (Bolten *et al.* 1998; Encalada *et al.* 1998; Laurent *et al.* 1998).

We assume that the specimens hatched in the season of 2002 (July-October). These findings could mean that there have been unreported nestings on the Apulian coast, or elsewhere in the Adriatic Sea (see for example Lazar *et al.* 2000b) during 2002. Otherwise the nearest nesting colonies would be Greece, which would mean a minimum 850 km straight line travel distance (for the Grottammare specimen). On the other hand, in the Adriatic, the main current moves northward along the Albanian and Croatian coasts and southward along the Italian coasts (Zavatarelli *et al.* 1998), so the distance travelled if current borne may have been much longer. Although adult migration patterns from nesting beaches in Greece to the northern Adriatic Sea are known (Affronte & Scaravelli 2001; Lazar *et al.* 2000b), this is the first record of post-hatchling specimens in the area. It is not known, however if such occurrences are a normal part of the life-cycle of this species as so little is known of this stage within the Mediterranean.

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Green Turtle Nesting on the Gulf of Oman Coastline of the Islamic Republic of Iran

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The Islamic Republic of Iran has a coastline of 780 km of which 270km (Siatan and Baluchestan Provinces) border the Gulf of Oman. Unfortunately, there has been little specific study on sea turtles on this coast in recent years. In 2003, prospective surveying was carried out along this coastline in an attempt to determine probable nesting sites and feeding habitats. As nesting of hawksbill turtles in the Persian Gulf starts in March, we surveyed sporadically from April to December, where possible collecting information from local people.

Local people informed us that nesting of sea turtles in the area starts in July, after the monsoon season. Based on the presence of tracks and pits in September, green turtle nesting sites were confirmed at:

1. Cholotr (25°21'N, 59°51'E): 8 sets of tracks.
2. Ahmad Rizeh (25°63'N, 61°15'E): 2 sets of tracks.
3. Kohpansar (25°14'N, 60°52'E): 14 sets of tracks.
4. Kachoo (25°14'N, 54°25'E): 9 sets of tracks.
5. Karatti (25°24'N, 59°52'E): 10 sets of tracks.

Most of these nesting beaches were very narrow and prone to tidal inundation with coastal erosion further lowering the quality of the nesting sites. Egg harvesting is carried out by local people, which may account for most of the nests. The eggs are used as traditional

medicines. Only one green turtle was observed and was recorded in mid September at Cholotr. This is the first such record for Iran in recent times. She measured 103cm curved carapace length, 99cm curved carapace width and weighed 160kg. The clutch consisted of 103 eggs with a mean egg weight of 57.0g and mean egg diameter of 48.5mm. After October no green turtle nesting was recorded and it seems that the nesting season of green turtles in the area is from late July to late October. It is remarkable that there are anecdotal reports of the at-sea capture of turtles with tags from the Sultanate of Oman. Additionally, no signs of hawksbill nesting were recorded during our surveys.

Based on available information from local people and our direct observations of incidentally caught and stranded turtles the following sites appear to constitute important foraging areas for the species listed:

1. Tang (25°21'N, 59°53'E): green and olive ridley turtles.
2. Pozm (25°21'N, 60°18'E): green turtles.
3. Djodd (25°26'N, 59°30'E): green and olive ridley turtles.
4. Miami (25°81'N, 61°29'E): green and olive ridley turtles.

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Confirmed Nesting of the Loggerhead Turtle in Corsica

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In the Mediterranean, loggerhead turtle (*Caretta caretta*) nesting sites are concentrated in the Eastern and Central basins, whereas the waters of the western basin host large number of turtles for feeding activities in oceanic and coastal habitats (Margaritoulis *et al.* 2003). The possibility of historic nesting of the loggerhead turtle in Corsica has been investigated by Delaugerre (1987). According to information from the Monaco Oceanographic Museum and from oral testimony, it is thought that some marine turtle nesting may have occurred on the eastern sandy coast in the first half of the 20th century. Despite a review of literature and field oral inquiries, no substantiating evidence could be unearthed.

On the 20th of November 2002, local resident Eva Poli found 4 shell remains and 2 eggs scattered along 200 m of the seashore at "Plage des Lumières" on Palombaggia beach south of Porto Vecchio, southeastern Corsica. One shell was floating, the other shells and eggs were lying amongst fresh *Posidonia* leaves on the strandline. A turtle embryo could be seen in one of the open eggs. One egg and two shells were subsequently collected and sent to the Paris Natural History Museum for verification by Roger Bour. The egg contained an advanced stage loggerhead embryo (photograph available from the author or can be found in the SEATURTLE.ORG Image Library <<http://www.seaturtle.org/cgi-bin/imageLIB/index.pl?photo=749>>). Specimens are registered in the collections of the Paris Museum: MNHN 2002-0181 (egg containing the embryo); MNHN 2002-0182 (shells).

Considering their disposition, the eggs and shells probably came from a clutch deposited on the Palombaggia beach or its close surroundings even though no nest or tracks were reported. It is likely that the nest contents had been washed away by the sea from this narrow beach (15-20m wide) and some of the eggs drifted back onshore. The timing of the laying of the clutch is unknown as no reports of turtles or turtle tracks in the area were made despite the fact that the area is visited by large numbers of tourists. The site is within the border of a natural protected area (Réserve Naturelle des Bouches de Bonifacio) and part

of the future International Marine Park of Corsica-Sardinia.

This is the first documented evidence of a loggerhead turtle nesting both for Corsica and metropolitan France. It supports the speculation that Corsica may have once hosted a nesting population of loggerhead turtles (Delaugerre 1987). This Corsican record is one of the very rare nesting occurrence in the Western Mediterranean (Llorente *et al.* 1993; Tomàs *et al.* 2002) and the northernmost recorded nesting locality in the Mediterranean.

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Marine Turtles in Iran: Results from 2002

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Marine turtles are relatively unstudied in the Islamic Republic of Iran. Here I report preliminary findings of short surveys carried out at five potential nesting sites in 2002: in the Mond Area: Ommolkaram and Nakhiloo Islands; in the Booshehr Province: Nayand Bay; in Hormozgan Province: Shidavar and Hendourabi Islands.

Ommolkaram Island (27°50' N 51°34' E)

This Island has an area of some 10-12 sq km. I visited this site on 10-18 May 2002. It is surrounded by 14km of sandy beaches suitable for marine turtle nesting although the southern and eastern parts are more heavily used, especially a stretch of 6-700 meters on the east coast where I counted 12 hawksbill turtles (*Eretmochelys imbricata*) nesting in 2 nights (11- 12 May) with no other species apparent. Morphometric data were collected. Curved carapace length ranged from 67-74.5cm (mean \pm SD 71.9 \pm 2.4cm, n=9), curved carapace width ranged from 62-70cm (66.2 \pm 2.9cm, n=9) and body weight ranged from 28-49kg (39.1 \pm 5.8kg, n=9). Given that the season for nesting at this site extends from April to June then it is likely that this rookery will produce more than 100 clutches per season and perhaps considerably more. It has to be considered one of the most important turtle nesting sites in Iran. It is also a nesting site for considerable numbers of birds (Reef Heron: *Egretta gularis*, Crab Plover: *Dromas ardeola*, Greater Crested Tern: *Sterna bergii*, Lesser Crested Tern: *Sterna bengalensis*). Interesting natural history observations at this site included turtles emerging from the sea from 16:00 in the afternoon and the fact that turtles emerge at all points in the tidal cycle even if this meant crawling over rocks. Threats at the site include egg collecting by local fishermen and entanglement in set nets.

Nakhiloo Island (27°49' N- 51°28' E)

This small island has an area ca. 6 sq km, has a sandy coastline of some 8km, and is 5km distant from Ommolkaram. I was able to visit it for a few hours on 14 May 2002 and saw body pits and tracks signifying considerable hawksbill turtle nesting with several tens of activities in evidence. This is obviously another important nesting site.

Nayand Bay (27°13'N-52°33'E)

On the 20 May 2002 I visited the mainland beach of Nayand Bay which is 20km long with numerous small sandy coves less than 1km in length. Parts of this bay are suitable for hawksbill nesting and tracks/pits consistent with several tens of nests were evident. Egg loss due to human take and predation by wild canids in the area is likely to be high.

Shidvar Island (26°48'N-53°25'E)

This island has an area of 8 sqkm, a coastline of 5.5 km of which 2km of the northern and eastern shores are suitable for the nesting of turtles. On the 23 May, I observed one hawksbill nesting with CCL 74.5 cm, CCW 68.5, weighing 44kg. The total number of the eggs in the clutch was 87 normal and 14 yolkless eggs. In addition, several tens of tracks and pits consistent with considerable levels of hawksbill turtle nesting were in evidence. Although this island is one of the most important nesting areas for turtles in Iran, neighbouring Lavan Island is used for the petrochemical industry causing pollution in the area. On the basis of these preliminary findings, a field visit was made to the island in 2003 (Mobaraki 2004) which confirmed the highly important nature of this island for regional biodiversity.

Hendourabi Island (26°40'N-53°40'E)

This island has a coastline of 20km of which some 2km is suitable for marine turtle nesting. In the past there has been a great deal of nesting of the hawksbill turtle at this site but egg collection and killing of adult females is rife. During a survey on 25 May, only a few tracks/ nesting pits were in evidence as well as body parts of 6 dead hawksbills killed for their meat.

In summary, these data undoubtedly confirm that there is still significant hawksbill turtle nesting in Iran. It is hoped that further work at these sites will yield status information and allow prioritisation of conservation efforts.

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Sightings of the Leatherback Turtle off the Southern Coast of Rio de Janeiro, Brazil.

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A number of sightings of leatherback turtles (*Dermochelys coriacea*) off the coast of Brazil have been reported, for example, from Rio Grande do Norte (Sanches *et al.* 2001), from Bahia (Barata & Fabiano 2002), from Santa Catarina (Soto *et al.* 1997 quoted in Barata & Fabiano 2002), from Rio Grande do Sul (Soto *et al.* 1997 quoted in Barata & Fabiano 2002; Bugoni *et al.* 2001) not to mention some of the offshore islands (Sampaio 1999). There are no known reports of any sightings of leatherback turtles off the south coast of the state of Rio de Janeiro.

On 18th November 2002, a team from the project Monitoramento de Baleias por Satélite working in the area adjacent to Ilha Grande (23° 35' S; 43° 43' W) sighted three leatherback turtles (*ca.* 1.5-1.7m in body length).

The observations were made from the fishing vessel *Trimar II* (20m length) using Minolta 8x-20x50 or Sterm 7x35 binoculars. The actual sightings were made at a distance of *ca.* 32 nautical miles from the coast and the depth of water at that point was 80 m. The turtles were *ca.* 10-15m from boat.

The first turtle sighted had an extensive white scar on the posterior right flank that, at the observational distance was consistent with a shark bite. The area where the sightings were made was covered with numerous jellyfish (Coelenterata, Schiphozoa). As these constitute a very important component in the diet of the leatherback turtle, it is suggested that the turtles were in this area for the purposes of feeding.

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MEETING REPORTS

The 24th Annual Sea Turtle Symposium: Largest Ever Gathering of Sea Turtle Biologists, Conservationists and Enthusiasts (San Jose, Costa Rica - February 23-27, 2004)

Roderic B. Mast

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With registrants from some 78 nations alongside invited guests and local luminaries, the La Paz room of the Herradura Hotel's International Conference Center was packed to capacity for the Inaugural Ceremonies of the 24th Annual Sea Turtle Symposium (STS) on Monday, February 23, 2004. A stirring solo jazz performance by Costa Rican piano virtuoso, Manuel Obregón, was followed by speeches from the Symposium Sponsors: Minister Carlos Manuel Rodríguez (Costa Rica's Ministry of Environment and Energy-MINAE); Peter Seligmann (Chairman and CEO of Conservation International); and International Sea Turtle Society (ISTS) President, Roderic Mast. Several treaties and agreements were signed, and CCC Director David Godfrey presented the 2004 Archie Carr Award to Costa Rican sea turtle conservation pioneer, Billy Cruz.

Costa Rica was selected as the venue for the 24th STS for a number of reasons. First, to recognize the country's significance as the birthplace of modern sea turtle biology and conservation. Moreover, to showcase the work being done in and by Costa Rica to address what is perhaps the most burning issue in sea turtle conservation today, the vertiginous decline of the American Pacific leatherback turtle (the mascot of the 24th STS). Lastly, the organizers wanted to give STS participants a chance to experience first-hand that which provides so many of us with our ultimate source of inspiration, Nature. We were heartened to see so many people take advantage of the packaged tours provided by our travel partners, Manaca and Neotropical Expeditions, and also pleased to see how many people participated in the pre- and post-Symposium events at Ostional and Playa Grande, where the olive ridleys and leatherbacks came ashore right on cue to greet us.

At the close of the Inaugural Ceremonies, a videotaped welcome message from Costa Rican President, Abel Pacheco set the tone for the event - "Sea turtles have lived in harmony with Nature for more than 100 million years," said Don Abel in his overview of Costa Rica's role in sea turtle conservation.

"The human species has much to learn from sea turtles about how to adjust our own behavior to assure that the planet survives... Our own survival depends on it." Thus was launched a week-long, nonstop odyssey of sea turtle related scientific presentations (approximately 350 oral and poster presentations all told), regional and technical sub-meetings, social and cultural activities, media events, training workshops, fun, food, and field trips for the more than 1000 sea turtle biologists, conservationists and enthusiasts that came from the far-flung corners of the planet to make this the largest gathering in history dedicated to the charismatic marine chelonians that inspire us all.

The theme for the 24th STS was *Sea Turtle Lifescapes*, (described in MTN 101: 42-44). With this in mind, the organizers strove to assure the participation of a broad array of *human partners (inescapable components of sea turtle lifescapes)*, ranging from corporations like Intel, Gap and Tarrazú Coffee, to government agencies and officials, artists and musicians, fishermen, and of course the very residents of local communities that share their habitats with sea turtles. The technical sessions were designed to lead us into the future, and all speakers were invited to comment on what actions would be needed *next* to assure the conservation of sea turtles. An important recurring theme at the 24th STS, beginning with the opening remarks and ending with the message of the keynote speaker, Steven Hock, was that of *synergy and organization* - the need for all of us that are part of this sea turtle "movement" to focus on the big picture, to do all we can to assure that our collective conservation impact as individuals and institutions is greater than the sum of our parts.

Demonstrative of this, a new effort was unveiled, called the State of the World's Turtles Initiative (SWoT, for short), that brings together the ISTS and its hundreds of members who gather annually, with Duke's OBIS/Seamap Program, the IUCN's Marine Turtle Specialist Group (MTSG) and Conservation International, to

gather, analyze and put global-scale, geo-referenced sea turtle data to work for our movement as a powerful conservation instrument. Through another strategic partnership, with the Inter-American Tropical Tuna Commission, NOAA Southeast Fisheries Science Center, the ISTS and others, a day-long workshop was convened with over 90 participants on the theme of “Reducing Turtle Bycatch: A Workshop on How to Organize and Educate Fisherman” – a bold and necessary new alliance that tackles one of the principle threats to sea turtles worldwide.

The sections that follow highlight some of the other noteworthy results and accomplishments of the 24th STS.

Outreach and Communications: Much as conservation communicators have used pandas, tigers and primates to draw attention to terrestrial conservation issues, sea turtles are the charismatic megafauna of the sea that best represent the full range of marine ecosystems we strive to conserve, from beaches, to reefs, to seagrass beds, deep sea mounts and the open sea. From the earliest days of planning for the 24th STS, a strategy was formulated to make the Symposium a focal event to leverage global media attention to “get the word out” about sea turtle and global marine conservation issues. The strategy drew upon the skills of a team of experts from CI’s Communications Division, representatives of the “Defying Ocean’s End” effort, and creative professionals from New York-based Green Team Advertising. Fact sheets and press kits were produced and distributed widely; op-ed pieces were drafted and circulated with the help of President Pacheco and others; a B-roll of sea turtle footage was compiled for distribution to televised media; a timetable of news releases was developed to assure momentum throughout the weeklong Symposium; and press conferences were held. A grant from the Moore Family Foundation (MFF) helped the ISTS to bring journalists and media professionals from several countries, and the results were better than we could have imagined. Several major international wire services covered the event, including *Reuters*, *The Associated Press*, France’s *Agence France Press*, Spain’s *ACAN/EFE* and Japan’s largest wire service, *Kyodo News*. *Reuters* alone services more than 450,000 media outlets and corporate clients, which in turn send the news along to millions of readers; *Kyodo News* feeds more than 70 newspapers in Japan with a combined circulation in excess of 50 million; and *EFE* reaches 113 million readers in Latin America and Spain. Major outlets also

covered the event including: *National Geographic Online*, *BBC Online* and *The Los Angeles Times*. Journalists from Mexico and Brazil – two key sites for marine turtle awareness and conservation – were on hand for the entire week. Marcelo Leite from Brazil’s *Folha de S. Paulo* (circulation 400,000-700,000) wrote four articles about the event. Antimio Cruz from Mexico’s leading newspaper, *Grupo Reforma*, wrote more than six stories about the event, including a front-page article in Mexico City’s leading paper, the *Reforma* (approx. circulation 126,000) and Guadalajara’s *Mural* (approx. circulation 25,000).

Thanks to the support of MINAE’s press office, the national media in Costa Rica was also fully engaged in publicizing the 24th STS and its conservation message. The nation’s leading newspapers, including *La Nación*, *El Heraldo*, *Diario Extra* and the *Tico Times* covered the symposium. Television and radio also generated extensive coverage - the country’s only nationwide television station, *Canal 13*, broadcast a half-hour interview with ISTS President Roderic Mast and the directors of Ostional (Carlos Mario Orrego) and Baulas de Guanacaste (Rotney Piedra) National Parks. The largest commercial station, *Telenoticias*, covered the opening of the event. Finally, 80 radio stations that are part of the *Cadena Nacional* network simultaneously broadcast a 15-minute feature piece about the symposium on the day after its termination.

Literally hundreds of millions of readers, viewers and listeners across the globe were reached with our message, and the coverage continues. Stories were largely focused on the decline of the leatherback turtle in the Pacific and reasons for the decline, demonstrating to readers how they as individuals will be affected, and how they can help. To date, dozens of media hits have been registered in Brazil, Canada, Colombia, Costa Rica, Ecuador, England, France, Germany, Japan, Mexico, Nicaragua, Panama, Scotland, South Africa, Spain, the United States and Venezuela, to name a few, demonstrating the importance of the Annual Sea Turtle Symposium as a nexus for generating the media attention that will be a critical ingredient in assuring the success of sea turtle conservation efforts into the future.

Technical Sessions: Due to the upsurge in threats to sea turtles and their habitats, and the increasing importance of our STS in shaping conservation solutions and responses to these threats, a few modifications were made this year in the technical program in an attempt to better leverage new advancements and collaborations using the vast human resources of the ISTS and the

quarter-century tradition of this gathering. Perhaps the single most important change this year was the increased importance and responsibilities of Program Session Chairs. The schedule of events and session topics were designed in advance around the Symposium theme using a scheme suggested by Nat Frazer in an article appearing in the Centennial Issue of the Marine Turtle Newsletter, entitled *Concerning Those Things Which We Ought To Have Done: Reflections on the Future of Sea Turtle Research*. Seven sessions of oral presentations were designed, with three concurrent poster sessions. Each session theme had one to three Chair(s) responsible for constructing a successful and productive day long or half-day long series of presentations that addressed the goals of the session and reflected the Symposium theme. It is important to recognize these Session Chairs, who formed this year's Program Committee, along with Michael Coyne, Brian Hutchinson and Kartik Shanker, the latter three providing crucial organizational input and data management throughout.

Sea Turtles in Costa Rica – Mini Symposium
(Roldán Valverde and Mario Boza)

Sea Turtles and Socio-Economics
(Lisa Campbell and Peter Pritchard)

Sea Turtle Assessment and Monitoring
(Sally Murphy, Dave Owens and Frank Paladino)

Global and Regional Sea Turtle Conservation and Research
(Karen Eckert and Doug Hykle)

Sea Turtle Modeling and Prediction
(Selina Heppell and Milani Chaloupka)

Technology and Sea Turtles
(J. Nichols and Didiher Chacón)

Novel Insights in Sea Turtle Research and Conservation
(Nat Frazer)

Of 405 abstracts received, 112 were accepted as orals, 278 were accepted as posters (resulting in 255 posters presented), and 15 abstracts were rejected. It is important to note that rejections have become a necessary part of Symposium protocols. At one point in its history the ISTS justly prided itself on accepting

all of the submitted abstracts. However, as a natural result of our growth, and the fact that the ISTS Board of Directors has chosen to stick to a format of “no concurrent sessions”, some rejections, albeit very few, are necessary.

Awards and Recognition: The ISTS considers it of utmost importance to assist those scientists from around the world whose resources might not be sufficient to be able to attend the STS. As a result, for several years, grants have been made for worthy participants to travel to the Symposium. A Travel Committee of six, Chaired by Jeffrey Seminoff, reviewed dozens of applications this year and was able to provide funding totaling \$90,000 in the forms of both financial assistance and hotel accommodations, to fully 149 participants from 52 countries. Those receiving travel funding contributed to over 100 oral and poster presentations and many provided volunteer support for the symposium and associated workshops and side meetings. We are grateful to the generosity of the Homeland Foundation, Conservation International, and the NOAA/NMFS Southeast Fisheries Science Center. In addition to these grants, the annual auction is a major source of revenue in support of student travel grants – this year was no exception, as the auction, which lasted fully 4.5 hours, fetched an impressive \$14,200. We want to thank all of you who donated items and all of you who purchased items, not to mention Arlo Hemphill and the Nova girls (our bartenders), whose indefatigable service in support of the cause assured that people like Jim Spotila were in proper form for purchasing things like the classic sea turtle toilet-seat cover, which sold for a handsome \$190. An honorable mention for this year's auction goes out to belly-dancing Belinda Dick and her troupe, and to Turtle King and Queen, Kike and Ana, for honoring us with their royal presence. A portion of this year's travel support was also made available through the generosity of Disney's Wild Animal Kingdom to launch a new program – The Disney International Fellowship Award – to recognize leadership, passion, and outstanding contributions in the field of sea turtle biology and conservation. This year's winners were Angela Formia (UK); Jesús Tomás (Spain), Joanna Alfaró Shigueto (Peru), Manjula Tiwari (USA), Richard Adjei (Ghana), Robert Van Dam (Bonaire, Netherlands Antilles), Huang Tsung-shun (Taiwan), Abigail Moore (Indonesia), Stephen Poon (Trinidad) and Omar Chassin (Mexico).

As in years past, the ISTS teamed with The Chelonian Research Foundation to award prizes for the best student papers. Lisa Campbell and Jeanette

Wyneken Co-Chaired the effort, and were assisted by 20 judges who carefully reviewed the work of all the applicants. This year, the Archie Carr Student Paper Competition received a total of 105 applications, split equally between conservation and biology. Fully \$3500 in prize money was awarded to 10 winners, 4 in the conservation category and 6 in the biology category. In addition to their cash prizes (\$500 first place, \$250 runner up), winners received a subscription to Chelonian Conservation Biology. The winners in the conservation and biology category were Kiki Jenkins (1st - oral); Zoë Meletis (runner up – oral); John Wang (1st – poster) and Hoyt Peckham (runner up – poster). For the Biology Category, the winners were Manjula Tiwari (1st - oral); Bill Irwin and Toshinori Okuyama (runners up, oral); Judy Gocke (1st – poster) and Lesley Stokes and Cameron Ralph (runners up, poster).

Lastly, the 24th STS was chosen as the venue for awarding Conservation International's 2004 Neotropical Conservation Leadership Awards. CI President, Russell Mittermeier and Peter Pritchard took the stage to explain the history of the Neotropical Conservation Award, and to bestow plaques and \$1000 cash awards to two husband and wife teams for their outstanding leadership in sea turtle conservation in Costa Rica: Rotney Piedra and Elizabeth Vélez, for their efforts to conserve leatherbacks in the Baulas de Guanacaste National Park and vicinity; and Randall Arauz and Isabel Naranjo, for their work that has drawn global attention to the problems and solutions of fisheries impacts on turtles and sharks in Pacific Costa Rica.

Training and Special Events: A number of training events took place at the Symposium, including a lunchtime session on Fundraising Techniques, hosted by MTSG Co-Chairs, Nicolas Pilcher and Roderic Mast; the aforementioned workshop entitled “Reducing Turtle Bycatch: A Workshop on How to Organize and Educate Fisherman”; and tutorials were provided all week long at a booth hosted by SWoT Coordinators, Ben Best and Colette Wabnitz in the use of the technical tools for interfacing with the SWoT database.

Regional meetings were tacked-on to the beginning and end of the week for Asia, Africa, Latin America (Retomala – held in Ostional February 18-21), Mediterranean and the Caribbean (Widecast). A lunchtime session on Freshwater Turtle and Tortoise Biology and Conservation, hosted by Chuck Schaffer; and a *cumbre* of partners in the implementation of conservation measures in the Eastern Tropical Pacific Seascape (ETPS) hosted by CI. Finally, a special event

was held at Playa Grande on February 28 to launch the local *Festival de la Tortuga*, complete with speeches by Minister Carlos Manuel Rodriguez, local MINAE officials and community leaders, theatre and songs performed by children from surrounding communities, food and drink prepared by the local women's cooperative, and a night time beach walk with park personnel and local guides to see the last nesting leatherbacks for the 2003-2004 season.

Acknowledgements: The organizers (ISTS, CI and MINAE) have many to thank. First, the *core* saviors: Clara Padilla, Brian Hutchinson, Carlos Manuel Rodriguez, Mario Boza, Michael Coyne, Ed Drane (ISTS Treasurer), the Program Committee, the Travel Committee, the Press Corps (especially CI's Jim Wyss and MINAE's Patricia Alpizar), and the volunteers (Belinda, Gina, Etilma, Grethel, Angela, Morrison & Terrill, y todos los demas - we *especially* worship all of you). The Artists - installation artist, Cali Rivera, provided the “Prayer Flags” that adorned the Conference Center and dais; Maestro, Manuel Obregon touched our hearts with his inspirational improvisation at the Inaugural Event and his jazz quartet at the opening cocktail; and Alvaro López, the percussionist who called us to order each morning, was better than caffeine. The traditional dancers at the Banquet were provided by our friends at Coopetarrazu, and the rockin' salsa band that kept us all up until 02:00 after the Awards Banquet was Marfil. We recognize the donors: Coopetarrazú; Disney Wild Animal Kingdom; East Bay Community Foundation; Bob, Randi, Lexie, John and Emma Fisher; GAP Foundation; Gary Goldring; Homeland Foundation; Hotel Herradura; Componentes Intel de Costa Rica, S. A.; Landmark Vineyards; The Leatherback Trust; Moore Family Foundation; NOAA/NMFS Southeast and Southwest Fisheries Science Centers; Offield Family Foundation; Oceanic Resources Foundation; Portland Brewing Company; Radiográfica Costarricense, S. A. (RACSA) and Anders Rhodin (Chelonian Research Foundation). Mauricio, who did the banners, the program and the Spanish posters – you rock. As do Ted Goodridge, Chris Heltne, Fernando Urrea and John Martin, CI's graphics team, who created our logo and image. And we would be remiss if we did not express our gratitude to the turtles themselves, without whom none of this would have happened.

Future Symposia: Each year the Symposium has a different President whose job it is to “make it all

happen,” thus an integral component for ensuring our success into the future is the Nominations Committee. The Nominations Committee for the 24th Annual Symposium consisted of Manjula Tiwari (Chair), Dave Owens, Brendan Godley, Mark Hamann, and Ana Barragán. The following slate of officers were nominated, approved by the Board of Directors of the ISTS, and accepted at the Plenary Session on February 27: President-Elect (2006) - Dimitris Margaritoulis (Greece); Secretary - Manjula Tiwari; Treasurer - Ed Drane; New Board member - Nancy FitzSimmons; Nominations Committee Chair - Mark Hamann; Nominations Committee members - Dave Owens, Brendan Godley, Neca Marcovaldi, and Matthew Godfrey. Congratulations to all. The Annual Symposium

has come a long way in the past 24 years. Under countless dutiful leaders supported by innumerable dedicated volunteers, we have evolved from a 15 person gathering in the backwaters of the Southeast US to an International Society represented by over a thousand members from nearly 80 countries. We have much to be proud of, and must keep these successes in mind as we look to the future and continue to evolve in a positive direction. But alas, the time has come to pass the torch (or trowel as the case may be), into the unwitting hands of the 25th Symposium President, Thane Wibbels, with a blessing and a deep sigh of relief. While we are sad to see it end, we are equally pleased to report that Thane is already hard at work in planning yet another successful Symposium. See MTN 104: 26.

First Meeting on Research and Conservation of Sea Turtles in the Southwestern Atlantic Ocean (ASO)

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The Southwestern Atlantic Ocean (ASO) nations comprise Argentina, Uruguay and Brazil. This region includes developmental/foraging habitats and migratory corridors for five of the seven species of sea turtles: *Caretta caretta*, *Chelonia mydas*, *Dermochelys coriacea*, *Eretmochelys imbricata* and *Lepidochelys olivacea*, all of which are threatened due to human-related causes such as habitat loss and incidental and direct fisheries capture of juveniles and adults.

The First Meeting on Research and Conservation of Sea Turtles in the Southwestern Atlantic Ocean (ASO) was held on 3 and 4 October 2003 in Montevideo, Uruguay. The meeting was attended by approximately 50 participants representing Argentina, Brazil and Uruguay, including representatives from the government, scientific sector, fishing communities and nonprofit organizations. The main objective of the meeting was to share scientific information about the biology, conservation and rehabilitation techniques of sea turtles, as well as to standardize working methods and scientific protocols between projects in order to improve management practices and strengthen collaboration among researchers within the region. In addition, Dr. Carlos Drews facilitated the creation of a “Regional

Action Plan for the Conservation of Sea Turtles in the ASO” and the formalization of a steering committee for its implementation, to complement the actions already performed individually in the region. To promote the development of the Action Plan a representative for each country was designated along with the creation of a web page of the ASO. In addition, it was agreed that further meetings were welcomed, and San Clemente del Tuyu, Argentina was elected as the location of the Second Meeting in October, 2004.

The First Meeting on Research and Conservation of Sea Turtles in the ASO was supported by the following organizations: British Petroleum Conservation Programme, National Fish and Wildlife Foundation, World Wildlife Fund (WWF-Latin American), International Sea Turtle Society, IUCN/SSC Marine Turtle Specialist Group, Convention on Migratory Species (CMS), Projeto TAMAR-IBAMA, IUCN Uruguayan committee, Ministry of Foreign Affairs, Embassy of Brazil, Navy School, PROFAUMA and Museo del Mar.

Central & South American Terrestrial & Freshwater Chelonian Session: 24th International Sea Turtle Symposium 2004

Chuck Schaffer

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This special lunch event, in its second year, offered several excellent presentations, followed by questions and discussion in the hallway. Although the Asian Turtle Crisis, focus of last year's session, occupies the majority of headlines, terrestrial and freshwater chelonians are impacted worldwide. As Central and South America receive relatively little coverage, this session was especially welcome. As with last year's session, the opportunity to examine the plight of non-marine turtles by the marine turtle community was accented by the presence of researchers who might not otherwise have attended a conference of this type. As the aim of the session was to provide a forum for the exchange of ideas, field methodology, and philosophy between in and ex-situ, marine and non-marine chelonian researchers and conservationists, we appear to have succeeded

again. This year's speakers covered topics with threads common to terrestrial, freshwater and marine turtles. Chuck Schaffer provided a brief summary of early chelonian studies, common to marine and non-marine turtles, following their images from Europe the 1400s to the Rich Coast in the 1600 to 1800s. Rafael Arturo Acuña Mesén presented an overview of the Central American chelonian fauna, dispelling myths and replacing them with the cold hard reality facing both marine and non-marine turtles. Anny Chaves considered habitat, another important shared issue. Andres Estrades covered the illegal trade in Uruguayan turtles. And Peter dwelled upon the ultimate reality of just how rare an extant chelonian can be – in the case of the Pinta Island tortoise – reduced to a single individual.

Third Reunion of Mediterranean Sea Turtle Specialists in San Jose (Costa Rica), 22 February 2004

Dimitris Margaritoulis

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For three consecutive years, the Reunion of Mediterranean Sea Turtle Specialists within the context of the Annual Sea Turtle Symposium has brought together scientists, conservationists and students working with sea turtles in the Mediterranean. These gatherings establish a forum for free discussions, promote dissemination of information, and create a basis for planning and organizing regional projects. This year's meeting was held in San Jose (Costa Rica) at the venue of the 24th Sea Turtle Symposium (Herradura Hotel), on 22 February 2004. Twenty three people (of which 3 were observers) from 9 countries participated but, regrettably, there was no representation from North Africa/Middle East. Dimitris Margaritoulis (DM) chaired the meeting and Wayne Fuller kept notes for drafting the minutes.

The meeting began with a discussion of the tasks undertaken since the previous meeting in Kuala Lumpur (Margaritoulis 2003: MTN 101: 38-39). The team on tagging standardization reported the outcome of their

efforts to reduce tag code redundancy; it was decided that the planned approach to tag manufacturers might be better suited to come from the Archie Carr Center for Sea Turtle Research, as it is the institution that manages the Tag Inventory. The two working groups on Research and Conservation priorities reported that it had been rather unfortunate to split research and conservation; it would be much better to have one group because the two items are so closely linked.

The working group on the Cooperative Monitoring Programme at Sea reported that they had prepared a detailed proposal, posted to MedTurtle but to facilitate a wider participation, it was decided that a simpler version should be produced.

The regional work of Barcelona University on genetics was presented; samples were received from several projects, throughout the Mediterranean, and analysis has begun.

On the Second Mediterranean Conference, it was reported that despite the willingness of Turkey to host

the conference in autumn 2004, there seemed to have been little progress on the organization of this important event thus far.

Dimitris Margaritoulis presented the pdf draft of the Proceedings of the First Mediterranean Conference (held in October 2001 in Rome), which will be printed soon in Nicosia, Cyprus.

On the creation of a network of sea turtle rescue facilities in the Mediterranean, the general opinion was to start by posting all known facilities and relevant individuals in SEATURTLE.ORG in order to have a basis for communication.

Carlos Drews of WWF-Centroamerica, invited to the meeting, reported on the work of the 11th Latin American Reunion, and Alvaro de los Rios y Loshuertos

reported on the African meeting.

Dimitris Margaritoulis requested assistance in the organization of the next Mediterranean gathering in the course of the 25th Sea Turtle Symposium (Savannah, Georgia, 2005). Paolo Casale expressed his willingness to help.

The minutes of the meeting will be posted soon in MedTurtle, for participants' comments, before their finalization.

Acknowledgements: I thank all participants for their active involvement, Wayne Fuller for drafting the minutes, and the Symposium organizers for supporting coffee breaks and lunch for the day of the meeting. Paolo Casale made valuable comments to a draft of this article.

IUCN/SSC Marine Turtle Specialist Group News First Quarter 2004

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Roderic Mast and Nicolas Pilcher were appointed as Co-Chairs of the group in May, 2003. With the help of member Michael Coyne and former Chairman Alberto Abreu, they immediately began to consolidate the member email listserv, MTSG-L. The listserv has since become a valuable communication tool for distribution of SSC policy documents and for generating member discussion, including a recent broad interchange on the topic of sustainable use.

Several new members were appointed to assure appropriate regional and thematic representation of the Group. These include: Charlie Manolis (Australia), Grahame Webb (Australia), Lalith Ekanayake (Sri Lanka), Mario Boza (Costa Rica), María José Barragán (Ecuador), Zahirul Islam (Bangladesh), Basudev Tripathy (India), Ana Barragán (Mexico), Jose Miguel Donoso Pastor (Chile) and Carlos Drews (Costa Rica). Additionally, we hired a Washington D.C.-based Program Officer, Brian Hutchinson, to help fill the void left by Marydele Donnelly, whom we thank for her many years of faithful service.

The last time you heard from us we were knee-deep in preparations for the MTSG Vision Meeting. We are happy to report that this meeting was held from 16-19 December 2003, in Shepherdstown, West Virginia, USA, and was a grand success. Thanks to MTSG

member and USFWS employee, Debby Crouse, we were able to hold the meeting at the state of the art National Conservation Training Center. Over 30 MTSG members and relevant non-members from 9 countries participated in the retreat. Among those invited were representatives from the SSC, including SSC Chair, David Brackett.

This very productive meeting was an important step in getting the MTSG realigned with its new leadership, and allowed us to re-assess our vision and mission, as well as tackle some lingering issues. In the near future, a full report and minutes of this meeting will be posted on the MTSG Website and circulated to the entire membership for review and comment. In the meantime, below are some of the outputs of the Vision Meeting. These include a new Vision Statement, Mission Statement, and an expert opinion-based, ranked list of "Burning Issues" for global sea turtle research and conservation.

· New Vision Statement - "We envision marine turtles fulfilling their ecological roles on a healthy planet where all peoples value and celebrate their continued survival."

· New Mission Statement - "To develop and support strategies, set priorities, and provide tools that promote

and guide the conservation of marine turtles, and their ecological roles and habitats.

· We accomplish this by:

1. *Providing advice and practical support to those who manage and conserve marine turtles;*
2. *Using and synthesizing the best multidisciplinary science and information and innovative approaches;*
3. *Ensuring that conservation is guided by the biological constraints of marine turtles such as delayed maturity, long distance migrations and dependence on multiple habitats;*
4. *Building and promoting diverse and dynamic partnerships among stakeholders including local communities to ensure effective networking and synergy;*
5. *Promoting universal appreciation of the values of marine turtles and their habitats through varied means to diverse people;*
6. *Building capacity to educate, inspire, and empower people to conserve marine turtles and their habitats;*
7. *Recognizing that marine turtles are a shared international resource;*
8. *Promoting conservation and population monitoring efforts that are long-term in nature and anticipate environmental change;*
9. *Integrating local, national, and international conservation efforts;*
10. *Recognizing that marine turtle conservation is integrally linked to broader conservation issues.”*

<i>Issue</i>	<i>Total Weight</i>
Reduce/eliminate fishery by-catch	123.92
Outreach to all stakeholders	100.52
Protection of habitats	95.64
Scaling up investment in sea turtle conservation	88.36
Monitoring conservation (does it work?)	78.01
Use	72.72
Interdisciplinary	65.15
Mapping	45.23

Table 1. “Burning Issues” in marine turtle **conservation**, prioritized based on a “paired ranking” exercise:

<i>Issue</i>	<i>Total Weight</i>
Bycatch and direct take	210.86
Migration routes	156.68
Population dynamics/demography	156.41
Foraging ground assessments	151.36
Socio-economic	135.04
Successful programs	133.48
Interdisciplinary research	132.21
Nesting beach assessments	130.11
Adaptive management	119.29
Ecological roles	107.86
Compile data	75.04
Global warming	74.31

Table 2. “Burning Issues” in marine turtle **research**:

· **Species-based** “Burning Issues” - NOTE: This list was made based on expert opinion and did not involve detailed analysis. It must be emphasized that the list is not considered comprehensive or representative of the opinion of the entire membership. It is principally intended as a tool for fundraising.

- Leatherbacks of the Pacific
- Hawksbills of the Eastern Pacific
- Pacific Loggerheads
- Western Atlantic Olive Rيدleys
- All East Atlantic / West African Turtles
- All Southeast Asian Turtles
- Mediterranean Green Turtles
- Orissa Olive Rيدleys
- Leatherbacks of the Southern Indian Ocean

A number of recommendations came out of the meeting such as improving communications within the MTSG and the SSC, clarifying membership roles, increasing transparency, recognizing minority opinions, and others. We are already working hard to address these issues and will continue to do so.

Most recently, the MTSG Annual General Meeting was held on the final day (27 February) of the 24th Annual Sea Turtle Symposium in San José, Costa Rica. Minutes have been circulated via the MTSG-L email listserv and are posted on the MTSG website: <http://www.iucn-mtsg.org/meetings.shtml>. Highlights from this meeting include a partial report of the Vision Meeting, a presentation from Michael Coyne on member information sources, and the MTSG “Personality of the Month” feature.

We look forward to another productive year working with the MTSG. If you are a member and would like to request hard copies of any of the above mentioned documents, including meeting minutes and materials from the website, please contact Program Officer, Brian Hutchinson, whose contact information is provided above.

BOOK REVIEWS

Title: Loggerhead Sea Turtles

Year: 2003

Editors: Alan B. Bolten and Blair E. Witherington

Publisher: Smithsonian Institution Press

ISBN: 1-58834-136-4

Pages: 319pp (hardback)

Price: \$55 USD

To order: http://www.sipress.si.edu/books/titles_books/1-58834-136-4.html

The stunning photo on the cover of the Loggerhead Sea Turtles book, coupled with its generic title, might lead one to believe that this is a book for popular audiences. But please don't judge this book by its cover. This is a serious technical volume of 18 multi-authored chapters that resulted from the special session on the biology of the loggerhead sea turtle, convened during the 20th Annual Symposium on Sea Turtle Biology and Conservation, in Orlando, Florida, USA in 2000, organized by the editors.

Why, you may ask, do we need yet another technical sea turtle book that follows so closely on the heels of the successful Biology of Sea Turtles volumes I & II? While the B of ST I & II provide thorough, synthetic reviews of major themes in biology, ecology and conservation pertaining to sea turtles, they do not, and indeed could not, delve into lengthy details about any of the species. The Loggerhead Sea Turtles provides such details. It is organized into three sections: (1) biology and ecology, (2) geographic distribution, abundance and population status and (3) syntheses.

The biology and ecology section is comprised of 9 chapters, beginning with two informative chapters on the genetic and morphological definitions of a loggerhead turtle. One of the strengths of this first section is the wealth of information presented and beautifully summarized to describe the advances in our understanding of the early life history of loggerheads, a period of time that for many years was referred to as the "lost years". We now know more about the early life history of loggerheads than we do for any other sea turtle - from the time eggs are oviposited on beaches to the time they hatch and orient towards the oceanic zone and then travel in the open ocean for several years before returning to the neritic zone. The sub-adult and

adult life stages are also represented in this section, with information presented about foraging areas, interesting habitats, and reproductive migrations.

The contributing authors to the second section of this book reflect the broad and global distribution of the species: from the western Atlantic to the Mediterranean to the Indian Ocean. These chapters provide valuable information on the distribution and current status of loggerhead populations in each of the respective regions, as well as details of the current threats and conservation efforts in the region.

The last section consists of 4 synthetic chapters that examine the role of loggerheads in marine ecosystems, their population dynamics, population models and finally conservation challenges and opportunities. These chapters tie together information presented in the first two sections of the book, they are masterfully written, and immensely valuable contributions to the literature.

My one criticism of this book is its organization. I suspect the editors planned their symposium before they planned their book and this likely drove much of its organization. I would have structured the biology and ecology section differently and would have added some more topics, but perhaps these will appear in "Loggerhead Sea Turtles II" ?

Regardless of my one criticism, I believe that this book is one that every one should have on their shelf. Despite the fact that loggerheads are crusty and taste bad (as Witherington so eloquently describes in the last chapter) more is known about this species than any of the other sea turtles and we all can learn from and compare to the results of studies undertaken to learn more about this fantastic animal.

Reviewed by: **Pamela Plotkin**, East Tennessee State University, Box 70565, Johnson City, TN 37614.

Title: Saga of the Sea Turtle

Author: Edison Cruz, Sr.

Publisher: Turtle Kraals Museum

Pages: 307

Price: US \$23.00

To order: Online at <http://www.seaturtle museum.org/store.htm>

If Archie Carr is the grandfather of sea turtle conservation, then who are the great aunts and uncles? A few names immediately come to mind: Robert Bustard, Tom Harrison, John Hendrickson, Joop Schulz. Another candidate for such a title might be Edison Cruz, aka "Blackie Cruz," whose book *Saga of the Sea Turtle* provides a fascinating look at fisheries and turtles in the Florida Keys during first half of the 20th century. A self-taught naturalist, Blackie Cruz confesses in his book that often while lying awake at night, or any slow moments, he would be thinking about how he could learn more about sea turtles and their eggs. This obsession translated into action, largely through observation and some intervention. During his experiences throughout the Keys from the 1920s through the 1960s, Blackie Cruz uncovered several interesting facts concerning sea turtle reproduction, including: egg incubation takes roughly 50 days, there is a 12-24 hour window after laying in which eggs can be relocated without greatly affecting hatching success, the inter-nesting period for loggerheads is about 14 days, etc. In his later years, Blackie Cruz helped establish a head starting facility on Ramrod Key, where a total of 10,000 head started turtles (largely loggerheads) were eventually released. This facility was also involved with Archie Carr's Operation Green Turtle, although Blackie Cruz was less than impressed with the way that some members of Operation Green Turtle were handling the green turtle eggs that were transported from Costa Rica to Florida. By this time his own personal experience made him one of the experts on how to handle sea turtle eggs.

There are some factual errors in the book. For instance, he suggests that the age of maturity for green turtles is about 10 years (p.255), also that loggerheads can neither hear nor see (p. 241-242). However, he freely admits on several occasions that he hasn't had enough time to fully observe or conduct research, and that some of his ideas may be at odds with those of zoologists or biologists. But one should not approach this book as a biological review of sea turtles. Rather, it is a historical account of fisheries, fishermen, and turtles in the Florida Keys from the pre- to post-World War II

years by an eyewitness and participant. As such, there is much to be gleaned from these pages, such as how different fisheries were run and what the prices were 70 years ago, and also how turtles were captured, maintained on-board and eventually sold in the active turtle fishery in Florida. I was personally fascinated with the accounts of the "warts" on green turtles, otherwise known as fibropapillomatosis: it was seen by Blackie Cruz as early as 1913 in the Keys, and he reported that older fishermen had seen these tumors on turtles in the late 1800s. He also noted that it could be transmitted from wild-caught turtles with the tumors to captive-reared turtles if they shared the same tank and/or tankwater in captivity. All in all, Blackie Cruz's book is enchanting and engaging, and I recommend it to anyone interested in historical accounts of fishing and sea turtle conservation.

Reviewed by **Matthew H. Godfrey**, North Carolina Wildlife Resources Commission, 307 Live Oak Street, Beaufort, NC 28516 USA

Title: Celebrate the Sea

Author: Various young poets

Publisher: Marine Conservation Society and Cheltenham & Gloucester

Pages: 70

Price: US\$9.00 including packing and postage

To order: Contact Pam Bridgewater, MCS Company Secretary with order and credit card details at pam@mcsuk.org

Poetry is something that most people have specific opinions about. I have two strongly held beliefs on the subject. First, poems are best understood and appreciated when they are read aloud. This was made abundantly clear once when I heard Al Purdy reading his poems. Second, poems involving turtles are usually not very good. In fact, I had practically given up the search for a turtle poem that appealed to me when a friend recently showed me *Celebrate the Sea*, a collection of poems written by 4-11 year olds from Great Britain. The book contains works selected from a larger group submitted to a national poetry competition held in 2002, under the theme of conservation of sea turtles and other marine creatures. I opened up the book to a random page and read (aloud) the following poem by 9 year old Georgina Brooks, entitled "Turtles":

Turtles walk,
Turtles talk,
Turtles fight,
Even in the night

Turtles swim,
Some turtles are very slim,
They glide through the water
Sometimes with their daughter.

Turtles are cool,
Turtles are never a fool,
Turtles are very clever,
Turtles are never called Trevor.

Here at last was a wonderful poem about turtles. I turned to another poem, by Chloe Adcock called "In

the Ocean" (page 59). Then I read another poem, also called "Turtles" but written by Samantha Humphries (page 52). Two more gems!

All the poems in this little book are great (my personal favorite is the one printed above). The book itself is small and sturdy, and its pages are interspersed with magnificent drawings made by the poets. It is perfect for reading aloud with young and old alike, and would be easy to take with you on field trips: a good short poem does wonders for morale and mood. The proceeds go to the Marine Conservation Society, an organization committed to the protection of marine environment and its wildlife. Highly recommended.

Reviewed by **Matthew H. Godfrey**, North Carolina Wildlife Resources Commission, 307 Live Oak Street, Beaufort, NC 28516 USA

ANNOUNCEMENTS

A New Resource Devoted to Tagging Sea Turtles is Now Available on SEATURTLE.ORG: <<http://www.seaturtle.org/tagging/>>

The tagging section of SEATURTLE.ORG has been divided up into more than a dozen different sections, each focused on a specific topic or issue related to tagging. The particular topics include: metal flipper tags, PIT tags, satellite tags, living tags, data analyses, rewards for tag returns, and more. The web pages give specific information on where to get different kinds of tags and provide advice on how and where to apply them. There is a section on tips and suggestions to help improve tagging efforts, and several researchers have contributed specific advice related to tagging. We encourage researchers to share their practical tips by sending them to (tagging@seaturtle.org).

The site features a bibliography of publications and reports dealing with tagging issues. This downloadable file is updated regularly. If you have papers or publications not included in the bibliography, please send the references to (tagging@seaturtle.org), so we can include them in the next update. The site also hosts the outputs and images from the tagging workshop (Godfrey *et al.* 2003) held at the 23rd Annual Sea Turtle Symposium in Kuala Lumpur. This includes downloadable versions of the various presentations and handouts.

The new section devoted to tagging of sea turtles goes hand-in-hand with the other resources available

on SEATURTLE.ORG, particularly Tagfinder <<http://www.seaturtle.org/tagfinder/>>, a searchable database of tag numbers and IDs that have been deployed by a variety of different projects, and the Satellite Tracking and Analysis Tool <<http://www.seaturtle.org/tracking/>>, an invaluable resource for managing and analyzing data obtained from satellite tags deployed on sea turtles. Please contact Michael Coyne if you would like to have your tag series listed in Tagfinder (tagfinder@seaturtle.org) or would like to make use of the SEATURTLE.ORG satellite tracking data management tools (tracking@seaturtle.org).

The tagging pages are the result of a collaborative effort between Michael Coyne, Matthew Godfrey and Brendan Godley. Your help is requested to improve this resource. Please send all comments and suggestions to (tagging@seaturtle.org). Also, if you have interesting images of tags, tagging and illustrations of any of the aspects covered in the pages, please consider placing them in the SEATURTLE.ORG image library at <<http://www.seaturtle.org/imaglib/>>.

GODFREY, M.H., L.M. CAMPBELL, B.J. GODLEY & N.J. PILCHER. 2003. Report from the Tagging Workshop at the 23rd Symposium on Sea Turtle Biology and Conservation, Kuala Lumpur, Malaysia. Marine Turtle Newsletter 101: 35-36.

First Announcement:

25th Annual Symposium on Sea Turtle Biology and Conservation (Savannah, Georgia, USA, January 16-22, 2005)

Thane Wibbels

*President (2004/2005), International Sea Turtle Society,
Department of Biology, University of Alabama at Birmingham, USA
(E-mail: twibbels@uab.edu)*

It is with great pleasure that I invite you to attend the “25th Annual Symposium on Sea Turtle Biology and Conservation”. This is our “Silver Anniversary”, and it will be reflected in the theme of the meeting: “A quarter century of advancements that propel us into the future.” The 2005 symposium will be held at the Hyatt Regency on the Savannah River in the historic district of Savannah, Georgia, USA. We were fortunate to find a great facility in an excellent location at a reasonable price. For more information see < <http://www.savannah.hyatt.com/property/index.jhtml/>> In addition to a large auditorium, the hotel includes a Harborside Center that overlooks the river and will be an ideal location for socials, poster sessions, and coffee breaks. The hotel is situated directly on the historic riverfront near the location where Savannah was founded as the first city in Georgia in 1733. A wide variety of restaurants, galleries, shops, and pubs are within walking distance of the hotel. There are also numerous historical sites nearby. In fact, Savannah has been listed by travel magazines as one of the best cities in the USA for historical and cultural walking tours. Additionally, there are a number of wildlife preserves in the area, including the Savannah National Wildlife Refuge, as well as the Savannah Coastal Refuges. Several of the coastal refuges include nesting beaches for the loggerhead sea turtle. We anticipate having a variety of tour activities available for meeting attendees.

In order to obtain optimal room rates and complete access to all of the hotel’s meeting facilities, we have scheduled the symposium for one month earlier than the 2004 symposium. It will be held the third week of January, 2005, with full day sessions currently being planned for January 19th, 20th, and 21st, and a half day session (e.g., MTSG meeting, etc.) planned for the 22nd. We anticipate that the regional meetings (e.g. African, IOSEA, Latin American, Mediterranean and WIDECAST) will be held during 16th-18th of January. This is usually a very nice time of year to visit Savannah since there should be comfortable temperatures and

the camellias will be in bloom. Savannah is centrally located along the Atlantic coast of the USA, so it is within driving distance for many of the attendees who live in the eastern or southeastern USA. Savannah also has a new international airport that is located a short distance from the hotel, and receives direct flights from locations such as Miami, New York, Chicago, Dallas, and Houston.

Emphasising the theme of the meeting, the schedule will include invited speakers that will highlight the advancements in sea turtle conservation and biology over the past 25 years. Invited speakers will also describe state-of-the-art technology used in sea turtle conservation and biology, including their projections of where research will lead us in the future.

So please mark your calendars and begin planning your trip to attend the 25th Annual Symposium. **Since the meeting will be held in late January, the deadlines for registration, abstracts and application for travel support will be shifted accordingly and will be October 1 2004.** A full announcement will appear in MTN 105, on CTURTLE and where possible on other regional e-mail dissemination lists. It is suggested that overseas applicants apply as early as possible for their visas. In the near future we will have a web page <<http://www.seaturtle.org/symposium/>> that will provide all the necessary specific information regarding the meeting. I look forward to seeing you at what should be an exciting and informative “Silver Anniversary” symposium.



Organizational Profile: The Western Pacific Regional Fishery Management Council, Sea Turtle Conservation Program

Irene Kinan

*Turtle Program Coordinator, Western Pacific Fishery Council, 1164 Bishop St. #1400, Honolulu, HI 96822, Hawaii,
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The Western Pacific Regional Fishery Management Council is one of eight Councils established by the Government of the United States of America in 1976, to manage fisheries in federal waters (3 to 200 miles from shore) of the USA. There are five Fishery Management Councils in the Atlantic and three in the Pacific. Our Council comprises Hawaii, American Samoa, Guam, Northern Mariana Islands, and other remote island areas of the Pacific (Johnston, Wake, Kingman, Midway, Palmyra, Howland, Baker and Jarvis). Our largest fisheries primarily target highly migratory tuna and tuna-like species managed by international cooperation and multi-national negotiations. Under the 1996 Magnuson-Steven's Act, the Council is dedicated to ecosystem based conservation, protection of essential fish habitat, and sustainable fishery management.

Sea turtles migrate vast distances across ocean basins, living successively in varying life stages on the high seas and within coastal habitats around numerous Pacific nations. Consequently a collaborative approach to management and conservation between nations is essential for the recovery of sea turtle populations. Due to stringent endangered species legislation in the USA, the continued operations of pelagic fisheries of the USA in the Pacific (one fleet among many which interact with sea turtles) are contingent on the recovery of Pacific sea turtle populations. Although the United States of America dedicates an increasing amount of resources to the preservation of endangered species, conservation and management of sea turtles requires more than a strongly focused domestic program. Sea turtles are a shared international resource and their management requires cooperation across the Pacific region.

In November 1999, a federal court order severely restricted the Hawaii-based longline fishery due to its interactions with sea turtles, and by March 2001 the swordfish component of the fishery was effectively closed. Although the Western Pacific Council had been working for several years to reduce protected species interactions with Hawaii-based longliners, this closure highlighted the need for a greater focus on sea turtles. The Council has worked in partnership with the National Oceanic and Atmospheric Administration's National

Marine Fisheries Service (NOAA Fisheries), industry (Hawaii Longline Association) and international collaborators to develop gear modifications and technological solutions to reduce bycatch, implement research to better understand migratory sea turtles, and promote sea turtle conservation activities.

It soon became clear, however, that traditional fishery management strategies were not going to be enough to recover turtle populations. Thus in February 2002 the Western Pacific Council convened the *Western Pacific Sea Turtle Cooperative Research & Management Workshop* to initiate direction for their sea turtle conservation program. In May 2003, a full-time coordinator was hired to oversee the program, and a Turtle Advisor Committee (TAC) was formed to direct and advise the Council in its turtle conservation activities. This TAC is comprised of seven experts members (Colin Limpus, George Balazs, Peter Dutton, Milani Chaloupka, Jeffrey Polovina, Naoki Kamezaki and Laura Sarti Martinez) who have long-term commitments, exemplary experience and expert knowledge in sea turtle biology, ecology, conservation, management, and oceanography with cumulative expertise of all six Pacific turtle species.

Recommendations from the February 2002 workshop and the TAC concluded that the Council's conservation efforts be directed towards international projects with a focus on those species that are of greatest likelihood to interact with the Hawaii-based longline fishery, namely loggerhead and leatherback turtles. For leatherback turtles, the emphasis is on the western Pacific leatherback stock because the majority of interactions with the Hawaii-based longline fishery have been with this stock (16 out of 17 sampled turtles have been from the western Pacific stock). Conservation measures for loggerhead turtles focus on the north Pacific (Japanese) stock because all fishery interactions have been with this population, with emphasis on juvenile loggerheads as this is the life stage with which the fishery interacts.

During the TAC's first meeting, five sea turtle conservation measures were discussed and considered to hold great scientific merit and high conservation value. These programs involve nesting beach management, emphasize the protection of adults and

sub-adults in foraging grounds, and are all implemented by local community based NGO's. Specifically, leatherback nesting beach management and monitoring at Warmon beach in Papua, and at the Kamiali Wildlife Conservation Area, Papua New Guinea; and loggerhead nesting beach assistance in Japan. In addition to nesting beach protection, which is a necessary component of any conservation and recovery program, conservation measures emphasize the reduction of direct harvest and incidental capture. These programs include protection of adult and sub-adult leatherback turtles in foraging grounds at the Kei Kecil Islands, western Papua, and the reduction of incidental capture of juvenile loggerhead turtles in the halibut gillnet fishery of Magdalena Bay, Baja California, Mexico.

The Council is also involved in the rehabilitation of SPREP's (South Pacific Regional Environmental Program; 20 member countries) turtle tagging database through the development of a new *Regional Sea Turtle*

Tagging Database. This database is expected to be available by mid 2004 for use and distribution by parties of SPREP and ASEAN-SEAFDEC (Southeast Asian Fisheries Development Center; 10 member countries).

The reduction of incidental capture of protected species in longline fisheries remains at the forefront of fishery management objectives for the Council. In addition to implementing conservation measures and supporting research and fishery experiments, assistance has been provided to numerous international sea turtle meetings (including the Annual Sea Turtle Symposia). Additionally, the Council has coordinated the second and third International Fishers Forums, which work to increase awareness and find solutions to reduce bycatch (IFF3 to convene in early 2005). For more detailed information on the Council's sea turtle conservation program and fishery management activities, please refer to their web site at <<http://www.wpcouncil.org>>.

Proposal for a Cooperative Mediterranean Monitoring Programme on Sea Turtle Interaction with Fisheries and Relative Abundance

Paolo Casale¹, Carlos Carreras², Abdulmaula Hamza³, Bojan Lazar⁴, Aliko Panagopoulou⁵, Sara Pont⁶, Jesús Tomás⁷, Michael White⁸

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The work of several teams for many years has produced a good deal of information about the distribution of sea turtles in marine habitats of the Mediterranean and threats at-sea. However, some information necessary for focusing the efforts in conservation of these animals is still missing. This is basically due to the great difficulty in obtaining data and the limited efforts that research groups can carry out individually. In particular, turtle catch estimations are available only for some areas and fishing gears, and in most cases they were obtained through short-term studies. In order to provide an overall estimation and to have a wider geographical definition of this problem in the Mediterranean, data on turtle catch by different fishing gears from more areas and more fishing seasons are highly desirable. Another important issue is the trend of populations at sea. Although in the Mediterranean data exist from long term studies in some nesting beaches, there are no long term data sets useful for detecting trends of abundance at sea. But only at-sea trends may indicate the contemporary status of the populations (mostly juveniles), in contrast to nest trends, which

reflect past populations trends, due to the long maturation time of these animals.

To reach these goals studies at sea are required. However, they are very difficult to carry out, so a long-term project on several Mediterranean areas is unlikely to be possible if it included expensive activities, like specific surveys. For this reason, we investigated and here propose the possibility of taking advantage of the 'sampling' effort normally carried out by fishing vessels. Naturally, this approach should be intended as one of several possible, and the contemporary carrying out of studies addressing the same issues through different methods is highly desirable.

The main characteristics of this proposed cooperative programme are:

Low-cost: voluntary collaboration of fishing vessels (captains) providing all the data needed.

Large geographical coverage: broad involvement of Mediterranean turtle working groups.

Medium/long-term temporal coverage: participation of permanent working groups, which can guarantee continuity

Cooperative approach: teams involved in the programme should share the interest to achieve the goals, adopt the same methods, and periodically publish or make available their results independently. Coordination not strictly necessary.

One unit of sampled fishing effort is the same as available fishery statistics (e.g. vessel), in order to estimate total turtle catch in the sampled stratum.

Sampled fishing effort is also standardized according to standard units of fishing effort, in order to make spatio-

temporal comparisons. This standardization is made converting units of fishing effort directly recorded into other units through average values.

Questionnaires rather than monitoring could be used to gain a preliminary assessment of the total catch made by fishing gear with a presumed low catch rate per vessel.

The full proposal, with is available as a pdf file from <<http://members.seaturtle.org/CMMP/>>. Persons interested in joining the working group and starting a monitoring activity should please contact Paolo Casale.

IOSEA Interactive Mapping Sytem

The Interactive Mapping System (IMapS) developed for the Indian Ocean-South-East Asian Marine Turtle Memorandum of Understanding is now available online <<http://www.ioseaturtles.org/mapping>>. The system gives an unprecedented overview of decades of data on marine turtle nesting and migration, vital for informed decision-making on issues affecting the conservation and management of marine turtles in the region.

The Marine Turtle IMapS enables users to query data on turtle nesting sites and numbers, along with other vital information such as the location of seagrass beds, coral reefs and protected areas. The system is fully integrated with the IOSEA MoU Website, which provides additional information on projects being undertaken around the region.

The initiative is the result of a fruitful collaboration between the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC), the Convention on Migratory Species (CMS), and Dr. Colin Limpus (Australia), who has provided data collected and compiled from co-workers during 30 years of research. Scientists and conservationists working on marine turtles will be able to input their data to the system and draw regional and global analyses, while retaining ownership and credit for their own work. There are plans to extend the Marine Turtle IMapS to cover other regions for which data are available, such as the Atlantic Coast of Africa, the Western Atlantic and the Pacific Ocean.

NEWS AND LEGAL BRIEFS

This section is compiled by Kelly Samek. You can submit news items at any time online at <<http://www.seaturtle.org/news/>>, via e-mail to news@seaturtle.org, or by regular mail to Kelly Samek, 127 E 7th Avenue, Havana, Florida 32333, USA. Many of these news items and more can be found at <http://www.seaturtle.org/news/>, where you can also sign up for news updates by E-mail.

GLOBAL

Coalition Calls for UN Moratorium on

On November 24th, the UN General Assembly approved a resolution encouraging the "banning [of] directed shark fisheries," and "action to reduce or eliminate by-catch to conserve non-target species taken incidentally in fishing operations" such as sea turtles, marine mammals and other species. A moratorium on Pacific longline fishing has received wide support from the international scientific community. Source: *Sea Turtle Restoration Project* press release, 2 December 2003.

AFRICA

Ascension Islanders Repel Pirates

Fishermen and other community members on Ascension Island, one of the most important marine turtle nesting sites in the Atlantic, have been undertaking direct action in a brave attempt to repel pirate high-seas fishermen, protecting both their fisheries and the giant green turtles, which swim 2,000 km from Brazil to lay their eggs. At least two vessels, as yet unidentified, have moved into the coastal waters of Ascension Island illegally deploying long-lines with baited hooks aimed at a lucrative tuna catch. They have been deploying gear

within 100 metres of the shore when it is illegal to carry out such fishing within 200 nautical miles of the land unless licensed and only artisanal fishing is allowed within 12 nautical miles. A total of 8 turtles have been released from entanglement in the hooks, lines and associated flotation buoys when islanders took to the sea to remove the gear. Additionally, turtles are now coming up the beach to nest with hooks embedded in their flesh and local volunteers are patrolling the beaches to locate and assist animals. (Source *SEATURTLE.ORG Press Release* 6th February 2004).

THE AMERICAS

Firm to Design \$2 Million Ecosystem Center

By early 2005, the ecologically curious can visit a \$2 million center to learn why some sea turtles prefer South Beaches to anywhere else. Brevard County has reached an agreement with an Orlando firm, VOA Associates Inc. of Orlando, to design the 5,700 square-foot center, about three miles north of Sebastian Inlet. The county will pay \$215,376 to design the center. Construction is expected to start next spring. The center includes a gift shop, lecture hall, exhibit space, classrooms, three offices, an outdoor wet laboratory, a boardwalk and 38 parking spaces. The Caribbean Conservation Corporation, will run the center's gift shop and education programs, including nighttime sea turtle walks. Source: *Florida Today*, 4 November 2003.

State Weighs Partial Gillnet Ban

The Hawaii Department of Land and Natural Resources is considering a partial ban on the use of lay gillnets in Hawaiian waters. Gillnets have been a divisive issue in the fishing community, and a statewide series of public meetings is expected to draw heated comment. While supporters say that gillnets, properly used, are an efficient, appropriate way for families to gather marine resources for food, opponents argue that the nets are indiscriminate in that they catch much of what swims by, including protected species such as turtles. Source: *Honolulu Advertiser*, 8 December 2003.

Sea Turtle Numbers Surprise Scientists

Researchers in Nova Scotia say they've seen a surprisingly high number of leatherback turtles off the East Coast of Canada. The endangered species nests in the South Atlantic and comes to eastern North America for several months a year to feed on jellyfish. This year, researchers documented 500 of the animals off the coast – more than double what was previously recorded in the area. Source: *CBC*, 1 December 2003.

Army Corp of Engineers OKs Controversial Plan to Widen Broward Beaches

A controversial plan to widen Broward County's beaches has received a favorable environmental impact statement from the Army Corps of Engineers, despite evidence it will bury coral reefs and could harm sea turtles. The plan calls for scooping 2.5 million cubic yards of sand from pits offshore and spreading it over 11.8 miles of coastline from Hillsboro Inlet to Hallandale. Work on the southern segment is expected to start in June. Environmentalists were disturbed by the results of the review and said they likely will head to court to challenge the project. The work could destroy sea turtle nests and discourage female sea turtles from approaching the shore to lay eggs, according to the environmental impact statement. About 13 acres of near-shore habitat for juvenile sea turtles will be buried. Source: *South Florida Sun-Sentinel*, 6 January 2004.

Virginia Sea Turtle Deaths Stump Researchers and Wildlife Experts

More than 500 sea turtles died on the Virginia coast this year, by far the highest number since scientists started counting carcasses in 1979. Wildlife experts and researchers are stumped by the sudden upturn, coming the same year that federal regulators imposed a controversial two-week ban on pound-net fishing along the Chesapeake Bay, a move intended to cut turtle deaths. A spokeswoman for the National Marine Fisheries Service said the agency is concerned about the increase and would likely announce proposed measures as early as January to stem the tide. Source: *Seafood.com*, 16 December 2003.

Mexican Fury over Turtle Massacre

Mexican authorities have put out this warning to citizens: "Do not order turtle meat in restaurants, do not eat their eggs and do not buy boots or belts made out of their skin." Mexico's Environment Ministry has been repeating the message all this month to curb the killing of hundreds of sea turtles who lay their eggs along Pacific Coast beaches. Mexican authorities estimate more than 500 turtles were shot to death in the first few days of this year in Guerrero state, 400 miles from the capital. Their carcasses were found scattered along a four-mile stretch of beach. Television images of the remains outraged Mexicans. Diana Ponce, a government prosecutor who handles crimes against the environment, said there are only about 300 environmental inspectors to cover 7,456 miles of coastline. Source: *AFP*, 25 January 2004.

2003 Was Tough Year for Sea Turtles

Florida's sea turtles sure are going through a rough patch. 2001: A record 1,347 debilitated or dead sea turtles washed ashore on Florida beaches. 2002: A near-record 1,276 stranded. 2003: A record-shattering 1,807 sea turtles had stranded as of Dec. 20. Lee County was not exempt from bad sea turtle news in 2003. From 1999 through 2002, an average of 54 sea turtles a year stranded on county beaches. In 2003, the number jumped to 86, ranking first on the west coast just ahead of Collier County with 84. Brevard County was No. 1 in the state with 367 strandings. Source: *Ft. Myers News-Press*, 2 January 2004.

ASIA

Prestigious Getty Prize Awarded to Five Conservation Leaders

Conservation leaders from Russia, Indonesia, Chile, Papua New Guinea and China will share this year's J. Paul Getty Wildlife Conservation Prize, the World Wildlife Fund announced today. The annual prize honors outstanding contributions to international conservation and carries with it an award of \$100,000, which will be equally divided among this year's awardees. Established in 1974 by the late J. Paul Getty, the prize recognizes conservation excellence and innovation by individuals and groups. Among those sharing this year's prize is Haji Masdjuni of East Kalimantan, Indonesia for his achievements in sea turtle protection. Source: *U.S. Newswire*, 19 December 2003.

Hong Kong Struggling to Save Sea Turtles

Hong Kong banned consumption of turtle eggs in 1976 hoping to save the highly endangered green turtles. Efforts have been stepped up through the years and Hong Kong is even tracking some of the turtles by satellite. But some worry that the campaign to save the turtles could be too little, too late. Many turtles have been killed by boat propellers and fishing nets in Hong Kong. Conservationists are calling the government to set up a marine park around Sham Wan that would ban trawlers using nets that can entangle the turtles, while keeping out illegal fishermen and cutting back on pollution. A spokeswoman for the Agriculture, Fisheries and Conservation Department, Susanna Ho, said officials finished a study on life in the waters around Lamma Island about a year ago but had not decided if a marine park to protect the animals would be set up. Source: *Associated Press*, 10 November 2003.

Fewer Sea Turtles Nest on Japanese Shores

Fewer loggerhead turtles are laying their eggs on Japanese shores and their number has dropped off sharply since 1990, the Sea Turtle Association of Japan said. At the country's biggest nesting beach on Yakushima Island in Kagoshima Prefecture, the number of times the endangered sea turtles laid eggs dropped from 830 in 1990 to 405 in 1999, the association said. Source: *Kyodo News*, 7 November 2003.

EUROPE

Illegal Driftnets Continue to Kill in the Mediterranean

Gland, Switzerland - WWF today warned that illegal driftnets are still killing thousands of dolphins and other vulnerable species every year in the Mediterranean, despite the EU's ban on driftnet fishing from 1 January 2002 and a UN moratorium on large-scale driftnets from 1992. A new WWF report, *Biodiversity impact of the Moroccan driftnet fleet in the Alboran Sea*, reveals that, with 177 boats, the Moroccan driftnet fleet is the most lethal for Mediterranean marine biodiversity. Dolphins are its prime by-catch victims. Driftnets run for kilometres. Each net could be anywhere between 7 and 14 kilometres long. According to the WWF report, about 23,000 sharks are also captured annually by the Moroccan driftnet fleet in the Alboran Sea, and another 77,500 are caught in neighbouring areas. It has been calculated that one shark is caught for two swordfish, the main catch of the Moroccan fleet. Loggerhead turtles are also affected by the country's driftnet fisheries. Source: *WWF press release*, 20 November 2003.

OCEANIA

Three Men Charged in Poaching of Sea Turtles

Three men face federal charges for allegedly taking two green sea turtles, which are protected by the national Endangered Species Act and local laws. The men, in an arraignment hearing pleaded innocent to charges of taking a threatened species and possession of a threatened species. Guam Department of Agriculture conservation officers caught the three men taking the turtles Jan. 7 from waters near Rizal Beach in Agat. Noncommercial poaching carries a \$250 fine, while commercial poaching carries a \$5,000 fine and possible jail time of up three years, files state. The U.S. Attorney's Office is handling the case. Source: *Guam Pacific Daily News*, 10 January 2004.

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It is requested that a copy of all publications (including technical reports and non-refereed journal articles) be sent to both:

- 1) The ACCSTR for inclusion in both the on-line bibliography and the MTN. Address: Archie Carr Center for Sea Turtle Research, University of Florida, PO Box 118525, Gainesville, FL 32611, USA.
- 2) The editors of the Marine Turtle Newsletter to facilitate the transmission of information to colleagues submitting articles who may not have access to on-line literature reviewing services.

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