

# INDIAN OCEAN TURTLE NEWSLETTER

ISSUE 26

JULY 2017

ISSN 0973-1695

The Indian Ocean Turtle Newsletter was initiated to provide a forum for exchange of information on sea turtle biology and conservation, management and education and awareness activities in the Indian subcontinent, Indian Ocean region, and south/southeast Asia. The newsletter also intends to cover related aspects such as coastal zone management, fisheries and marine biology.

The newsletter is distributed free of cost to a network of government and non-government organisations and individuals in the region. All articles are also freely available in PDF and HTML formats on the website. Readers can submit names and addresses of individuals, NGOs, research institutions, schools and colleges, etc. for inclusion in the mailing list.

**This issue was produced with support from:**



**Cover photograph:** Olive ridley in seine net operations in Tamil Nadu.

Photo Courtesy: Thirumalaiselvan.

**IOTN is available online at [www.iotn.org](http://www.iotn.org)**



## EDITORIAL

ANDREA D. PHILLOTT

Editor, Indian Ocean Turtle Newsletter

[iotn.editors@gmail.com](mailto:iotn.editors@gmail.com)

In Issue 26 of IOTN, we share the news of a leatherback turtle nesting in Myanmar, possibly for the first time since the last record in 1911. Other features of the issue include summaries about citizen science contributions to sea turtle research and conservation in the Maldives and Malaysia, reports of entangled (and freed) turtles in Tamil Nadu and the Andamans, the ISTS symposium report from Las Vegas, and an online nesting beach indicator tool which allows the rapid collection of data to identify potential nesting areas.

The next International Sea Turtle Symposium is scheduled for February 2018, a short 10 months after Las Vegas, and we suggest readers beginning planning now if they wish to join the sea turtle community in Kobe, Japan. The location is much closer to home for sea turtle biologists and conservationists in South and Southeast Asia, and we encourage those interested to apply for ISTS travel grants to support their attendance.

---

### CALL FOR SUBMISSIONS

The Indian Ocean Turtle Newsletter was initiated to provide a forum for the exchange of information on sea turtle biology and conservation, management and education and awareness activities in the Indian subcontinent, Indian Ocean region, and south/southeast Asia. If you would like to submit a research article, project profile, note or announcement for Issue 27 of IOTN, please email material to [iotn.editors@gmail.com](mailto:iotn.editors@gmail.com) before 1<sup>st</sup> November 2017. Guidelines for submission can be found on the last page of this newsletter or at <http://www.iotn.org/submission.php>.

## ARTICLES



## RECENT NESTING RECORD OF THE LEATHERBACK IN COASTAL MYANMAR

STEVEN G. PLATT<sup>1#</sup>, CHRISTOPHER KINGSLEY<sup>2</sup>, AUNG ZINN LATT<sup>3</sup>, KALYAR PLATT<sup>4</sup>, & DAVID W. OWENS<sup>5</sup>

<sup>1</sup>Wildlife Conservation Society-Myanmar Program, Yangon, Myanmar

<sup>2</sup>Lampi Foundation, San Francisco, California, USA

<sup>3</sup>Wa Ale Island, Myanmar

<sup>4</sup>Turtle Survival Alliance, Yangon, Myanmar

<sup>5</sup>Grice Marine Lab, University of Charleston, South Carolina at the College of Charleston, Charleston, South Carolina, USA

#sgplatt@gmail.com

The leatherback (*Dermochelys coriacea*) ranges widely throughout the Indian Ocean, although nesting appears restricted to a few scattered areas (Nel *et al.*, 2015). In the northeast Indian Ocean and Southeast Asia, leatherbacks nest on the Indian mainland (small numbers), Andaman and Nicobar Islands, Sri Lanka, western coast of Thailand (small numbers), Sumatra, and Java (Nel *et al.*, 2015). The current situation in Myanmar with regards to leatherback reproduction is unclear. Historically, Maxwell (1911) reported leatherbacks nesting along the coast of Arakan (now “Rakhine”) State and Tenasserim Division (now “Tanintharyi Region”). However, the current status of these nesting populations is unknown and leatherbacks together with hawksbills (*Eretmochelys imbricata*) are considered the rarest of the five species of marine turtles occurring in the coastal waters of Myanmar (Holmes *et al.*, 2014; Thorbjarnarson *et al.*, 2000). We here report a recent confirmed record of *D. coriacea* nesting in Lampi Marine National Park (LMNP), Myanmar.

LMNP (10°50'N; 98°12'E; Figure 1) encompasses parts of the Myeik (formerly “Mergui”) Archipelago in Tanintharyi Region of southernmost Myanmar (Beffasti & Galanti, 2011). LMNP is administered by the Nature and Wildlife Conservation Division (NWCD) of the Myanmar Forest Department, and consists of Lampi Island and several smaller satellite islands, surrounded by an unmarked and ill-defined marine protected zone (Platt *et al.*, 2015). Although permanent settlements are prohibited on Lampi Island, four large villages (Ma Kyone Galet, Warr Kyun, Ko Phawt, and Salet Galet) containing in total > 3,000 residents are established on satellite islands within the

boundaries of LMNP (Beffasti & Galanti, 2011: 51; Platt *et al.*, 2015). Harvesting marine resources (primarily fish, squid, and sea cucumbers) provides the principal source of income for island communities (Beffasti & Galanti, 2011; Platt *et al.*, 2015). A biodiversity survey conducted in 2014 documented the occurrence of three species of marine turtles, including *D. coriacea*, *E. imbricata*, and *Chelonia mydas* in LMNP (Platt *et al.*, 2015). Known locally as *Leik Zaung Lyar* (= star fruit turtle), *D. coriacea* is regarded by fishers as extremely rare in LMNP and adjacent waters. A small turtle (carapace length ca. 400 mm) found dead on a baited hook in 2012 was the only recently verified occurrence of *D. coriacea* documented by Platt *et al.* (2015) in LMNP. Six beaches in LMNP (Bi Thauang, Kyauk Phyu Aw, Wah Ale Kyun, Honey Moon Beach, Hline Gyi Aw, and La Pyat Aw) are used for nesting by marine turtles (primarily *C. mydas*) (Figure 1). Although all sea turtles and their eggs are nominally protected, enforcement of existing laws was weak to non-existent at the time of the survey and most turtle eggs were being illegally harvested for domestic consumption or sale in local markets. Monitor lizards, semi-feral dogs, and macaques destroyed other turtle nests that escaped anthropogenic predation (Platt *et al.*, 2015).

Given the ubiquity of these threats and the absence of effective law enforcement, Platt *et al.* (2015) recommended that community-based marine turtle conservation efforts be implemented in collaboration with eco-tour operators granted concessions within LMNP. In accordance with this recommendation, a turtle nest protection and monitoring program was initiated

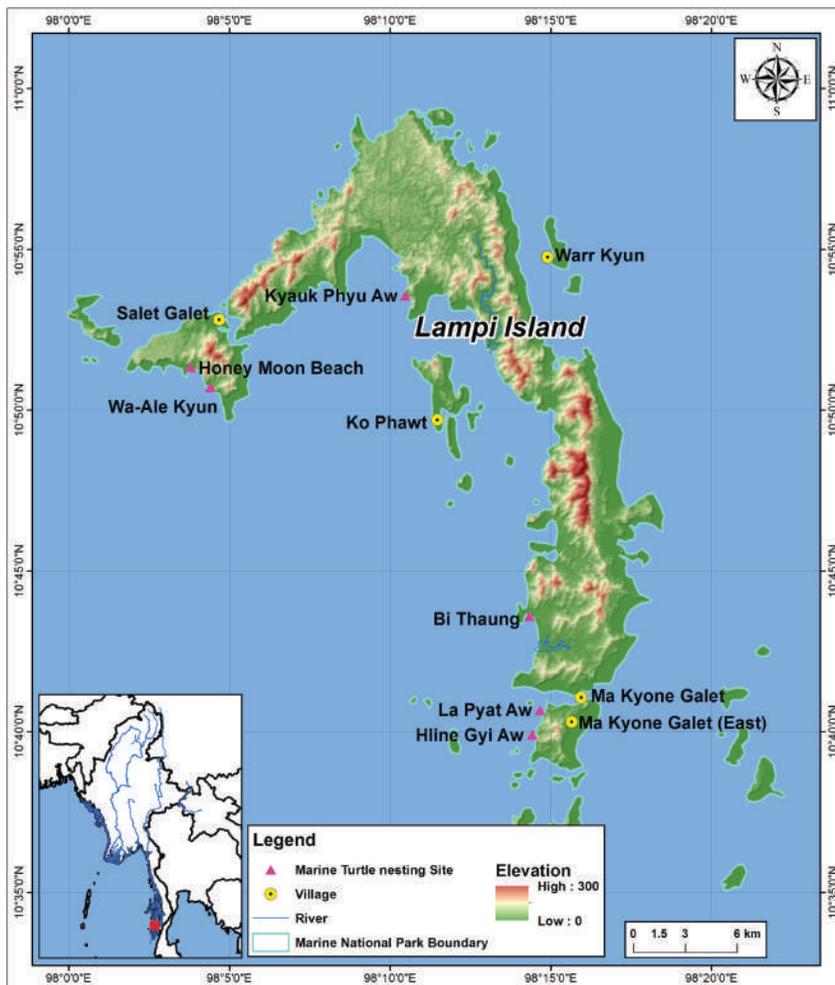


Figure 1: Lampi Marine National Park, Myanmar, showing locations of villages and marine turtle nesting areas. Map modified from Platt *et al.* (2015).

by Wa Ale Resort (Lampi Foundation) working together with NWCD during late 2015. As part of this effort, locally hired “Beach Wardens” conduct daily patrols of Wah Ale Kyun and Honey Moon beaches to search for signs of turtle nesting activity. During the 2016-17 nesting season, when freshly laid nests were encountered during patrols, they were marked and allowed to incubate in situ. Warning signs were posted at each nest and Beach Wardens provided 24-hour security to deter potential egg collectors. At the end of incubation, hatchlings exited the nests unassisted and made their way into the surf. On the morning after primary hatchling emergence, each nest was excavated to search for dead hatchlings or those that had been unable to successfully exit the nest chamber; the latter were collected, held until nightfall, and then released. Basic data were recorded for each nest, including dates of egg-laying and hatchling emergence, number of hatchlings (dead and alive) and unhatched eggs found when the nest was excavated, and species identification.

During the 2016-17 nesting season, 22 *C. mydas* nests and one *D. coriacea* nest were found on Wah Ale and Honey Moon beaches. Nesting occurred from 16<sup>th</sup> November 2016 through 7<sup>th</sup> May 2017, a period coinciding with the annual dry season in southern Myanmar. The single leatherback nest was found on Honey Moon Beach on 27<sup>th</sup> December 2016 the morning after the clutch was laid. Hatchlings emerged from the nest on the night of 22<sup>nd</sup>-23<sup>rd</sup> February 2017 following an incubation period of 59 days, within the range of eight to nine weeks given by Hirth (1980). Egg-laying occurred two nights before the New Moon (29<sup>th</sup> December 2016) and hatchlings emerged three nights before the New Moon (26<sup>th</sup> February 2017). Maxwell (1911) reported nesting by a single leatherback on 1<sup>st</sup> February; otherwise data on the reproductive phenology of this species are unavailable for Myanmar. Elsewhere in the region, leatherbacks nest from October through March with a peak in December (Limpus *et al.*, 1984; Eckert *et al.*, 2012; Swaminathan

*et al.*, 2017). Five live hatchlings and 11 unhatched eggs were found when the nest was excavated on the morning of 23<sup>rd</sup> February 2017. Yolkless eggs (Eckert *et al.*, 2012) may have been among those that failed to hatch, although this was not determined when the nest was excavated. The hatchlings were held during the day and released shortly after nightfall. Although the number of eggs in the nest was not determined, clutch size reported for other leatherback populations in the eastern Indian Ocean ranges from 29 to 140 eggs (Eckert *et al.*, 2012).

To our knowledge this is the first confirmed nesting of *D. coriacea* in Myanmar in recent years, one of the few nesting records ever reported for the country (Maxwell, 1911), and further highlights the importance of LMNP to marine turtle conservation in the region (see also Platt *et al.*, 2015). According to the IUCN (2017), recovery of the biologically relevant subpopulations of *D. coriacea* is dependent on successful conservation actions that mitigate current and future threats, especially those in breeding and foraging habitats. To this end, we recommend that nest protection and monitoring be continued at Wah Ale Kyun and Honey Moon beaches and extended to include Bi Thaung, La Pyat Aw, and Hline Gyi Aw beaches in the southern part of LMNP. These beaches host a number of turtle nests each year, yet remain unprotected and subject to illegal egg harvesting, especially the latter two sites which are easily accessible from Ma Kyone Galet Village (Platt *et al.*, 2015). Additionally, we strongly reiterate our earlier recommendation (Platt *et al.*, 2015) that existing fishing regulations within the protected area must be rigorously enforced, particularly the prohibition of commercial trawlers from within the legal exclusion zone. Outside of the protected area, marine turtle conservation hinges on the rigorous enforcement of regulations requiring the use of Turtle Excluder Devices on commercial fishing trawls (Aung Hlaing Win & Maung Maung Win, 2012; Holmes *et al.*, 2014). Without dramatic improvements in the effectiveness of conservation measures, all species of marine turtles will likely be approaching extinction in Myanmar by 2030 (Limpus, 2012).

#### ACKNOWLEDGEMENTS

We are grateful to Director General Dr. Nyi Nyi Kyaw and NWCD Director U Win Naing Thaw for granting us permission to conduct this project and for their long-term commitment to conservation in Myanmar. We thank Colin Poole, U Than Myint, U Saw Htun, and Daw Annie Chit for assisting with various aspects of this project. We also thank U Ba Tin for able assistance in the field, Deb Levinson and Thomas Rainwater for providing relevant literature, and Lewis Medlock for reviewing an early draft of this manuscript. A special

debt of gratitude is owed by CK to Bald Head Island Conservancy (North Carolina, USA) for spurring a long-standing interest in marine turtles, which ultimately led to the conservation program at LMNP.

#### Literature cited:

Win, A.H. & M.M. Win. 2012. Interaction between fishing activities and marine turtles in Myanmar. In: *Proceedings 11<sup>th</sup> SEASTAR2000 Workshop*, pp. 5-7. SEASTAR2000, Bangkok.

Beffasti, L. & V. Galanti. 2011. *Myanmar Protected Areas: Context, Current Status, and Challenges*. Milan: Instituto Oikos, BANCA, and Ancora Libri, Milan.

Eckert, K.L., B.P. Wallace, G.J. Frazier, S.A. Eckert, & P.C.H. Pritchard. 2012. Synopsis of biological data on the leatherback sea turtle (*Dermochelys coriacea*). U.S. Fish and Wildlife Service, Biological Technical Publication BTP-R4015-2012, Washington, D.C.

Hirth, H.F. 1980. Some aspects of the nesting behaviour and reproductive biology of sea turtles. *American Zoologist* 20: 507-523.

Holmes, K.E., T. Tun, K.T. Latt, M. Subedee, S.V. Khadke & A.E. Hostetler. 2014. *Marine Conservation in Myanmar-The Current Knowledge of Marine Systems and Recommendations for Research and Conservation*. Wildlife Conservation Society and Myanmar Marine Science Association, Yangon.

IUCN. 2017. The IUCN Red List of Threatened Species. <http://www.iucn.redlist.org>. Accessed on 27<sup>th</sup> July 2017.

Limpus, C.J. 2012. *Assessment of Turtle Conservation Actions at Thameehla Island, Myanmar*. Report to Department of Fisheries, Yangon, Myanmar.

Limpus, C.J., N.C. McLachlan & J.D. Miller. 1984. Further observations on the breeding of *Dermochelys coriacea* in Queensland. *Australian Wildlife Research* 11: 567-571.

Maxwell, F.D. 1911. Report on the turtle-banks of the Irrawaddy Division. In: *Reports on Inland and Sea Fisheries in the Thongwa, Myaungmya, and Bassein Districts, and Turtle-banks of the Irrawaddy Division*. Government Printing Office, Rangoon. Pp. 1-57.

Nel, R., K. Shanker & G. Hughes. 2015. Leatherback populations in the Indian Ocean. In: *The Leatherback Turtle: Biology and Conservation* (eds. J.R. Spotila & P.S. Tomillo), pp. 121-131. Johns Hopkins University Press, Baltimore, USA.

Platt, S.G., K. Platt, M.M. Soe, K.M. Myo, K.E. Holmes & T.R. Rainwater. 2015. Marine turtles and estuarine crocodiles in Lampi Marine National Park, Myanmar: A conservation and threat assessment with recommendations. *Herpetological Review* 46: 319-327.

Swaminathan, S., S. Thesorrow, S. Watha, M. Manoharakrishnan, N. Namboothri & M. Chandi. 2017. Current status and distribution of threatened leatherback turtles and their nesting beaches in the Nicobar Group of islands. *Indian Ocean Turtle Newsletter* 25: 12-18.

Thorbjarnarson, J.B., S.G. Platt & S.T. Khaing. 2000. Sea turtles in Myanmar: Past and present. *Marine Turtle Newsletter* 88: 10-11.

## ENTANGLEMENT OF A JUVENILE OLIVE RIDLEY TURTLE IN A GHOST NET IN THE ANDAMAN ISLANDS

ZOYA TYABJI<sup>1#</sup> & VARDHAN PATANKAR<sup>2,3</sup>

<sup>1</sup>Andaman and Nicobar Islands' Environmental Team (ANET) - Centre for Island Ecology, Port Blair, Andaman Islands, India

<sup>2</sup>Centre for Wildlife Studies, Bengaluru, Karnataka, India

<sup>3</sup>National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bengaluru, Karnataka, India

#zoya.tyabji@gmail.com

Accidental entanglement of turtles in abandoned fishing nets has been, and will likely continue to be, a major threat to sea turtles (Wilcox *et al.*, 2015). The impact of abandoned or lost nets, also known as ghost nets, can occur far from their point of origin as nets may drift far distances with ocean currents (Stelfox *et al.*, 2015). Turtles that swim through ghost nets may get their body or flippers snagged in the net, potentially leading to lost circulation and injury to flippers, drowning, or prevention from feeding to the point of starvation (Arthur *et al.*, 2014). Entangled turtles may also end up towing large amounts of fishing gear, resulting in exhaustion and, eventually, death. The animals that escape with severe injuries are highly prone to bacterial infections (NOAA, 2014).

During a coral reef survey on 9<sup>th</sup> May 2016, between 11°54'47.35" N and 93°00'58.94" E at Havelock Island, South Andaman (Figure 1), we encountered what appeared to be a discarded net floating in the water, 1 km from the coastline. On approaching it closer, we identified a juvenile olive ridley turtle (~45cm curved carapace length) and a dead snapper (*Lutjanus boahr*) entangled in the net. Schools of juvenile golden trevally (*Gnathanodon speciosus*), scissortail sergeant (*Abudefduf sexfasciatus*), fusiliers (*Caesio varilineata*) and rudder fish (*Kyphosus* sp.) were swimming close to the dead snapper, some feeding off it. The turtle was thrashing in the water, struggling to surface. The net was made of nylon fibre and was drifting with the current. We released the turtle from the net by cutting the latter with a knife, and lifted the turtle onto the boat to examine it for injuries. The turtle was observed to be harshly gulping in air but had no obvious external injuries

and was released back into the sea within 5 minutes.

The olive ridley turtle is an abundant circumglobal species, known to nest sparsely on several beaches on the east coast of the Andaman Islands, and east and west coasts of the Nicobar Islands (Frazier, 1987; Andrews *et al.*, 2006), with an important mass nesting site in Cuthbert Bay Wildlife Sanctuary, Middle Andamans (Namboothri *et al.*, 2015). Information on the natural history of juvenile olive ridley turtles is limited, but the life stage is believed to spend their years drifting with oceanic currents (Shenoy *et al.*, 2011; Stelfox *et al.*, 2015). Our observation of a juvenile olive ridley turtle in the open sea is in concurrence with what is known.

The observed incident highlights the threat of ghost nets to sea turtles and other marine wildlife. Awareness programs for local youth, beach clean-up activities, regional workshop for artisanal fishermen on how to ethically dispose of fishing gear, and cooperation between government organization, NGO's and community members could help in reducing the at-sea disposal of abandoned and discarded fishing gear and thus avoid accidental entanglement of turtles (Stelfox *et al.*, 2014).

### ACKNOWLEDGEMENTS

We would like to thank the Andaman and Nicobar Administration and the Department of Environment and Forests, Port Blair, for granting us permits to conduct coral reef surveys in the area and Department of Science and Technology, Government of India, under the DST-INSPIRE Faculty Programme for funding support. We especially thank the Divisional Forest Officer, Mr Shazi

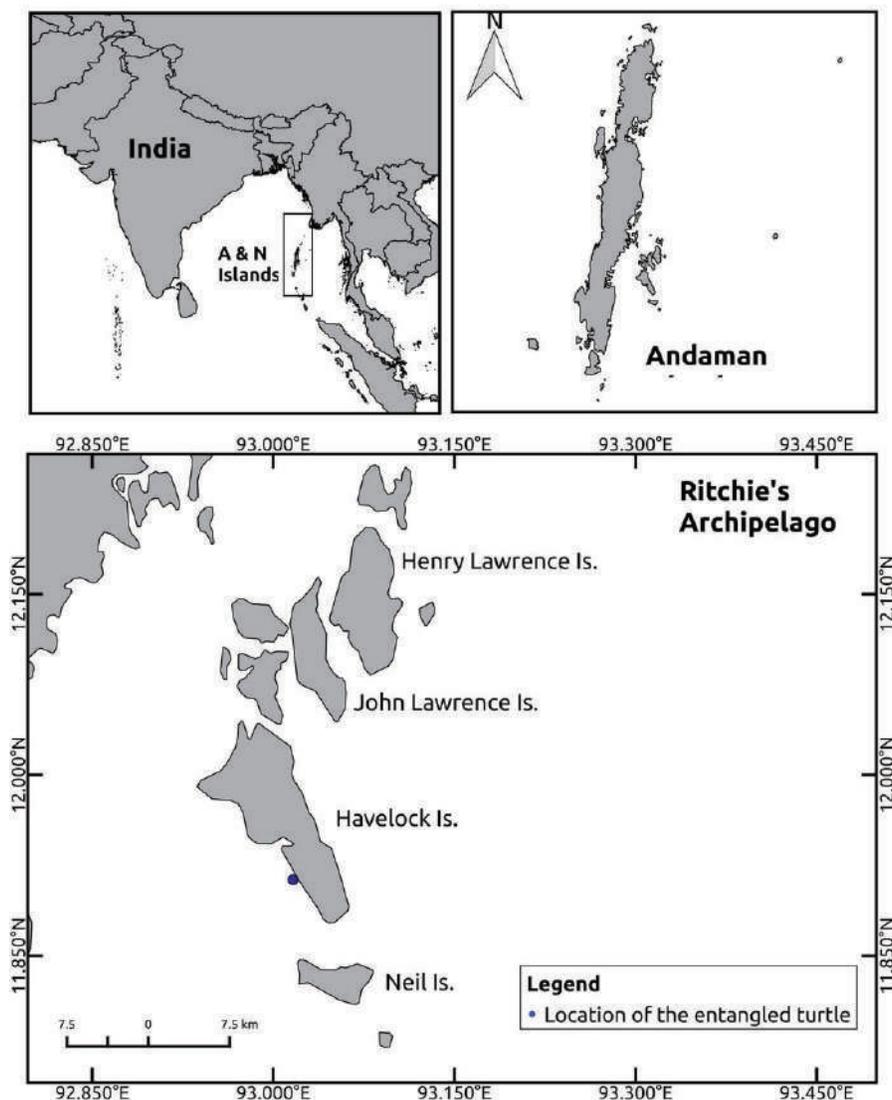


Figure 1. Location of the entangled turtle.

Abraham, and the Range Officer, Mr. A K Singh, for field assistance and Muralidharan M. for comments on the article.

**Literature cited:**

Andrews, H.V., S. Krishnan & P. Biswas. 2006. Distribution and status of marine turtles in the Andaman and Nicobar Islands. In: *Marine Turtles of the Indian Subcontinent* (eds. Shanker, K. & B.C. Choudhury). Pp 33-57. Universities Press, Hyderabad, India.

Arthur, C., A.E. Sutton-Grier, P. Murphy, & H. Bamford. 2014. Out of sight but not out of mind: Harmful effects of derelict traps in selected U.S. coastal waters. *Marine Pollution Bulletin*

86: 19-28.

Frazier, J.G. 1987. In search of Kurma. *Span* 28: 6-10.

Kar, C.S. & S. Bhaskar. 1982. The status of sea turtles in the Eastern Indian Ocean. In: *Biology and Conservation of Sea Turtles* (ed. Bjorndal, K.A.). Pp. 365-372. Smithsonian Institution Press, Washington, D.C., USA.

Namboothri, N., A. Swaminathan & K. Shanker. 2015. Olive ridley mass-nesting at Cuthbert Bay wildlife sanctuary, Middle Andaman Island. *Indian Ocean Turtle Newsletter* 21: 7-9.

National Oceanic and Atmospheric Administration Marine Debris Program. 2014. Report on the Entanglement of Marine

Species in Marine Debris with an Emphasis on Species in the United States. Silver Spring, MD. 28 pp.

Pitman, R.L. 1990. Pelagic distribution and biology of sea turtles in the eastern tropical Pacific. In: *Proceedings of the Tenth Annual Workshop on Sea Turtle Biology and Conservation* (eds. Richardson, T.H., J.I. Richardson & M. Donnelly). NOAA Technical Memo. NMFS-SEFC-278. 286 pp.

Shenoy, S., T. Berlie & K. Shanker K. 2011. *Sea turtles of India*. A comprehensive field guide to research, monitoring and conservation. Dakshin Foundation, Bangalore and Madras

Crocodile Bank Trust, Mamallapuram, India. 14 pp.

Stelfox, M.R., J.A. Hudgins, K. Ali, & R.C. Anderson. 2014. High mortality of olive ridley turtles (*Lepidochelys olivacea*) in ghost nets in the central Indian Ocean. S.I.: Indian Ocean Tuna Commission WPEB10-28.

Wilcox, C., G. Heathcote, J. Goldberg, R. Gunn, D. Peel & B.D. Hardesty. 2015. Understanding the sources, drivers and impacts of abandoned, lost and discarded fishing gear in northern Australia. *Conservation Biology* 29: 198-206.

## A NOTE ON THE RESCUED OLIVE RIDLEY TURTLES FROM SHORE SEINES OPERATED IN DHANUSKODI, TAMIL NADU INDIA

SHANMUGAM THIRUMALAISELVAN<sup>#</sup>, MUTHUSAMY RAJKUMAR, RAMAR VINOTHKUMAR & ARUMUGAM VAIRAMANI

Central Marine Fisheries Research Institute, Mandapam Regional Centre, Tamil Nadu India

<sup>#</sup>aquathirumalai@yahoo.com

The Gulf of Mannar Biosphere Reserve was started in 1989 jointly by the Government of India and the state of Tamilnadu. It has an area of about 10,500 km<sup>2</sup> between 8°45'N and 9°25'N and 78°05'E and 79°30'E about 170 nautical miles including the 21 islands in the gulf. Of the seven species of sea turtles in the world, four have been reported nesting on the Gulf of Mannar coast of Tamil Nadu (Kar & Bhaskar, 1982): the green (*Chelonia mydas*, local name: *Paer aamai*), olive ridley (*Lepidochelys olivacea*, local name: *Yeth aamai*), leatherback (*Dermochelys coriacea*, local name: *Ezhuvvari aamai*) and hawksbill (*Eretmochelys imbricata*, local name: *Kilimooku aamai*) sea turtles.

The nesting season for olive ridley turtles along the Gulf of Mannar coast of Tamil Nadu occurs from December to April (Bhupathy & Saravanan, 2006). The operation of shore seines may result in the accidental catch of turtles, and capture occurs more frequently from October to February (Thirumalaiselvan, pers.ob.). The accidental catch of sea turtles in the Gulf of Mannar is mostly unreported or unnoticed. Some reported cases include olive ridley turtles at Pamban (Kasinathan, 1988) and Dhanuskodi (Krishna & Kasinathan, 1989), and leatherback turtles at Dhanuskodi (Krishna & Kasinathan, 1989), Rameswaram (Krishna

*et al.*, 1995) and Mandapam (Rao *et al.*, 1989).

During our routine field observations on 28<sup>th</sup> January 2017, we observed a shore seine operation by the traditional fishers of Dhanuskodi. The shore seine was operated by 35 to 40 local fishers. When the shore seine drag ended, we found two sea turtles had been accidentally caught in the net with the fish catch. The turtles were identified as one male and one female (sex based on plastron shape and proximity of the cloaca to the plastron) olive ridley turtle; morphometric measurements are given in Table 1. The turtles were thoroughly examined and showed no sign of injury. The local fishers initially declined to release the turtles into the sea due to their lack of awareness about the turtles. However, we explained about the importance of turtles to the marine ecosystem and, with their assistance, we released them back into the sea. We speculate that

Table 1: Carapace dimensions and weight of olive ridley turtles rescued from a shore seine net in Dhanuskodi, Tamil Nadu.

Sex	CCL (cm)	CCW (cm)	Weight (kg)
Male	61	58	38
Female	65	61	45

the turtles may have been in the area for breeding, but the female showed no signs of mating damage (bite marks on neck or claw marks on shoulders or carapace).

#### ACKNOWLEDGEMENTS

The authors acknowledge the support and encouragement of A Gopalakrishnan, Director, CMFRI, Kochi and A. K Abdul Nazar, Scientist in-Charge of Mandapam Regional Centre of CMFRI.

#### Literature cited:

Bhupathy, S. & S. Saravanan. 2006. Marine turtles of Tamil Nadu. In: *Marine Turtles of the Indian Subcontinent* (Eds. Shanker, K. & B.C. Choudhury). Universities Press (India), Mumbai. Pp. 58-67.

Chandrasekar, K. & M. Srinivasan. 2013. Sea turtle exploitation from Tamil Nadu, Southeast coast of India, *Journal of Entomology and Zoology Studies* 1: 11-14.

Kar, C.S. & S. BHASKAR. 1982. Status of sea turtles in the Indian Ocean. In: *The Biology and Conservation of Sea Turtles* (Ed. Bjorndal K). Smithsonian Institution Press, Washington DC, USA. Pp. 356-372.

Kasinathan, C. 1988. Olive ridleys landed at Pamban reported. *Marine Fisheries Information Service T&E Series* 84: 10.

Krishna, P.S., M. Bardudeen & M. BOSE. 1995. On the leatherback turtle *Dermochelys coriacea* landed at Rameswaram. *Marine Fisheries Information Service T & E Series* 140: 11.

Krishna, P.S., & C. Kasinathan. 1989. On two species of marine turtles caught Dhanushkodi, Gulf of Mannar. *Marine Fisheries Information Service T & E Series* 102: 17-18.

Kumaraguru, A.K., V.E. Joseph, N. Marimuthu & J.J. Wilson. 2006. Scientific information on Gulf of Mannar- A Bibliography. Gulf of Mannar Marine Biosphere Reserve Trust, Ramanathapuram & Centre for Marine and Coastal Studies, Madurai Kamaraj University, Madurai, Tamilnadu, India.

Rao, P.V.R, A.A. Jayaprakash & M. Ramamoorthy. 1989. On the leatherback turtle caught from Palk Bay off Mandapam. *Marine Fisheries Information Service T & E Series* 95: 9.

Shanker, K. & B.C. Choudhury. 2001. Proceedings of the National Workshop for the Development of a National Sea Turtle Conservation Action Plan, Bhubaneswar, Orissa. Wildlife Institute of India, Dehradun, India. Pp. 1-103 pp.



# PRESIDENT'S REPORT FOR 37<sup>TH</sup> ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION, LAS VEGAS, NEVADA, USA, 15-20 APRIL 2017

FRANK V. PALADINO<sup>1#</sup> & INGRID YANEZ<sup>2</sup>

<sup>1</sup> President, International Sea Turtle Society

<sup>2</sup>Eastern Pacific Hawksbill Initiative, San Diego CA, USA

#paladino@ipfw.edu

The 37<sup>th</sup> Annual Symposium on Sea Turtle Biology and Conservation was held in Las Vegas, Nevada from April 15<sup>th</sup> to 20<sup>th</sup>, 2017. Las Vegas is renowned for its resorts, shopping, dining, nightlife and serving as a leading cultural center for Southern Nevada, but it is also a city where over 1,000,000 people are supplied with 100% renewable energy every day from solar, wind and hydroelectric sources. Thus, Las Vegas provided a good venue for the international sea turtle symposium, particularly taking into account that this year's symposium theme was *Climate Change*. Our sea turtle community hopes that soon many cities will be able to boast of the use of entirely clean energy sources.

A total of 790 people registered for the Symposium, all of who came together to learn a lot about turtles, climate change, and conservation of our ocean resources. A total of 136 oral papers and 244 posters were presented at the symposium. The symposium program also included several workshops, regional meetings and the annual marine turtle specialist group meeting.

Several fun and productive social building events were scheduled: Speed Chatting with Sea Turtle Experts, the Student Social Mixer, Video Night, the new Dance your Research Competition, and the Silent and Live Auctions. Overall the meeting was exciting and a success from every perspective; details are offered below.

**Logo:** Frank Paladino's daughter Rebecca created this year's symposium logo (Figure 1). The patterns and colors reflect the beaches and sand that are critical to turtles around the world, but which are often impacted quickly with climate change. Rebecca designed this stunning graphic that aptly represents the emergence of new life, new knowledge and the iconic welcome logo of Las Vegas inviting all to share

in making the 2017 symposium an event that can be celebrated and remembered for decades to come.

### **Pre-symposium Workshops & Regional Meetings:**

The structure of the symposium was similar to past symposia, several pre-symposium workshops and regional meetings were scheduled during the three days prior to the symposium main three days of presentations, providing the opportunity to exchange ideas regarding environmental and sea turtle conservation issues, as well as provide cutting-edge information about sea turtle health and rehabilitation. These meetings were successful, and also helped attract attendees early to the symposium.

A total of 12 workshops were held, including: the 3<sup>rd</sup> Eastern Pacific Leatherback Network (LaudOPO); State of the World's Turtles (SWOT) Team Global Summit; 8<sup>th</sup> Turtle Medicine; Strengthening Environmental Education in Conservation Projects; Application for Photo-Identification and Emerging Tracking Technologies; Light Management on Nesting Beaches: Identify, Evaluate, Plan, and Execute; Temperature-dependent Sex Determination in Marine Turtles: from Biochemistry to Ecology and Climate Change; Beyond Satellite Tracking Systems: Archival, Acoustic and Radio Telemetry - Exploring the possibilities; Use of Unmanned Aerial Vehicles or Drones (UAVs) in Sea Turtle Conservation and Research; Sea Turtles and Marine Debris; Hawksbill products in Latin America and the Caribbean; and, Future Trends in Sea Turtle Epibiont Research.

A total of seven Regional Meetings were held, allowing participants from over 65 countries around the world to discuss specific problems that impact their regions. These were: Africa; East Asia; Eastern Pacific Hawksbill

Initiative (ICAPO); Indian Ocean and Southeast Asia (IOSEA); Latin America (RETOMALA); Mediterranean; and Pacific Islands/Oceania.

Also, two side meetings were held: the International Tortoise and Freshwater Turtle Mini-Symposium; and the IUCN Marine Turtle Specialist Group (MTSG).

**Opening and Keynote Speakers:** After the Opening Remarks, the symposium opened with a special Native American ceremony performed by Nakotah LaRance from OhKay Owingeh Pueblo (New Mexico). He performed the spectacular, traditional Hopi Hoop dance celebrating nature and all living things. Two keynote speakers addressed attendees with speeches focused on the symposium theme; Dr. Vincent Saba, of NOAA, gave updated information about Climate Change when he presented “The Current State of Climate Change Science”, and Dr. James Spotila, of Drexel University, followed immediately making his talk a personal testimony: “Global Warming and Sea Turtles: A Personal History”.

Drs. Manjula Tiwari, Karen Bjorndal, and Jeanne Mortimer presented a special tribute “Do it like Peter” to Dr. Peter Pritchard, who has attended all 37 symposia since the first meeting was held in 1981 and who has made unparalleled, lasting contributions to the sea turtle conservation community.

**Symposium Sessions:** The Oral and Poster presentations consisted of traditional session categories, including Anatomy, Physiology and Health; In-Water Biology; Nesting Biology; Population Biology and Monitoring; Fisheries and Threats; Conservation, Management and Policy; Education, Outreach and Advocacy; and Social, Economic and Cultural Studies. A total of 136 oral papers and 244 posters were presented within these categories. Poster presenters had also the opportunity to answer questions and give more details on their presentations during “Meet the Authors”.

There were two special sessions. The session “Climate Change” consisted of oral presentations that highlighted the consequences that sea turtles currently face and will face in the future with respect to ongoing climate change. The other special session was “Citizen Science”, during which the presentations showcased how the general public can get involved with and assist sea turtle conservation.

**Social Events:** The social component of the symposium was underscored by the Welcome Social,

Student Committee activities, Video Night, Speed Chatting with Sea Turtle Experts, Silent and Live Auctions, Awards Ceremony and the Farewell Banquet.

The Student Committee conducted its 6<sup>th</sup> year of activities dedicated to welcome and encourage student attendees. This year there was three core activities: Student Presentation Feedback during which 49 evaluators volunteered to give feedback to 156 students (72 oral presentations and 84 posters). The committee hopes to continue doing this activity for the upcoming symposia as they have received many positive comments from students. The second planned activity was a half day workshop “Grant Writing: How to Get Funds”, which provided the participants a set of tools to help them write successful grant proposal. Lastly, with the aim to promote networking and communication among students and other symposium participants, and also enhance their participation in the society, a Student Social Mixer was held the afternoon before the primary symposium sessions. The mixer included the participation of the Society’s Board Members, nominees for the current Society’s election, as well as renowned sea turtle researchers.

For the Video Night, seven videos were projected to symposium attendees highlighting research, conservation and educational issues from around the world. The Video Night also shared the video entries from the new Dance your Research Competition.

The lineup for Speed Chatting with Sea Turtle Experts was: Mark Hamann (Sea Turtles and Plastic Pollution); Barbara Schroeder (Conservation Policy and Management); Selina Heppell (Sea Turtle Assessment Modeling); Andrew DiMatteo (Spatial Analysis and Cartography); David Owens (Reproductive Biology of Sea Turtles, Hall of Fame); John Wang (Sea turtle Behavior and Fisheries Bycatch); Justin Perrault (Toxicology and Sea Turtle Health); Sandra Hochscheid (Satellite Telemetry and Tagging); Maria Chadam (Sea Turtle Health and Rehabilitation); and Vincent Saba (Sea turtles and Climate Change).

As is typical, the Silent and Live Auctions were among the most popular events. The events jointly raised over \$22,000 to help students to attend future symposia via travel grants.

**ISTS Awards:** Janet Hochella and Jim Stevenson, also known as the J & J Turtle Team, received the Ed Drane Award for Volunteerism for their very long history of volunteerism with many projects throughout the United States and Costa Rica. The SWOT Network and

Cristina Ordoñez were awarded the ISTS Champions Award. ISTS Lifetime Achievement Awards were presented to Jean Beasley of Sea Turtle Rescue and Rehabilitation Center, Jack Musick of Virginia Institute of Marine Science, Marydele Donnelly of Sea Turtle Conservancy, and to Fehmida Firdous, nicknamed the “turtle lady” in Pakistan. President’s Awards were given to Nakotah LaRance, Brad Nahill and Alike Panagopoulou for their great service. The Grassroots Conservation Award was given to Paso Pacifico for their ranger community program.

**Archie Carr Student Awards:** There were 40 student oral presentations and 73 student poster presentations nominated for the Archie Carr Student Awards. Eight students won the Archie Carr award for outstanding presentations. Miriam Mueller (Biology-winner), Bethany Holtz (Biology-runner up), Brianna Elliott (Conservation-winner) and Emily Asp (Conservation-runner up) won in the Poster Category. Robert Johnson (Biology-winner), Matthew Ramirez (Biology-runner up), Andrews Agyekumhene (Conservation-winner) and Bianca Santos (Conservation-runner up) won in the Oral Category.

**Travel Grants:** The ISTS was able to support a total of 120 travel grant applicants with lodging during the symposium. The distribution of bed grant accommodations per region was as follows: 14 bed grants to Africa representatives, 8 to Asia Pacific, 4 to Caribbean, 10 to Europe, 20 to Mexico/Central America, 16 to South America, 12 to South Asia, and 36 to US/Canada. This level of travel grant awards represented about 15.2% of the total registered participants.

**Board of Directors Meeting:** The Society’s Board of Directors got together and discussed reports from the Nominations Committee, Student Committee, Travel Committee, Students Awards Committee, ISTS Awards Committee, as well as reports from the Program Officer and Treasurer.

**Plenary Business Meeting and Society Elections:** On the last day of the symposium, a Board of Director member presented a proposal for a “Code of Conduct” to be followed by all society’s member. Also, the Travel Grant Committee Chair and the Treasurer presented their reports to society members. The attendees approved both reports.

As a result of the 2017 society’s annual election, Ken Lohmann from North Carolina (USA) was elected President for symposium 2019, George Balazs as the new ISTS Treasurer, and Manjula Tiwari was

re-elected ISTS Secretary. Also, the elections added two new members to the Board of Directors, Felix Moncada (2022) and Marc Girondot (2022). They join Yakup Kaska (2018), Emma Harrison (2018), Pamela Plotkin (2018), Mariana Fuentes (2019), Alan Rees (2019), Andrea Phillott (2020), Laura Prosdocimi (2020), Andrews Agyekumhene (2021) and Jeanette Wyneken (2021) (year indicates board member’s end of term). Jesus Tomas and Natalie Wilderman were elected to join the Nominations Committee, and Joana Hancock joined the Awards Committee.

Yoshimasa Matsuzawa, ISTS President 2018, provided details regarding the upcoming symposium to be held in Kobe, Japan. Dates have been designated as 18<sup>th</sup>-23<sup>rd</sup> February 2018, during which time society members will once again convene, in this case celebrating the theme “Beyond Protection of Sea Turtles”.

**Exhibitors and Vendors:** There were a variety of exhibitors and vendors that participated in the Las Vegas symposium. They included: Ayotzintli AC; Bioko Biodiversity Protection Program; Bioko Marine Turtle Program; CLS America, Inc.; Desert Star Systems LLC; East Coast Observers, Inc.; Ecology Project International; FlyWire Cameras, Inc.; Elcas Lightning; Herding Turtles (Coins, Currency, and Exonomia); Karumbe; Latin American Sea Turtles (LAST); Loggerhead Marinelifelife Center; Lotek Wireless Inc./Sirtrack Ltd.; Marinelifelife Alliance; Paso Pacifico; Pro Delphinus; Sea Turtle Conservancy; Southeast Regional Sea Turtle Network; Telonics, Inc.; The Leatherback Trust; The State of the World’s Sea Turtles (SWOT); and Wildlife Computers.

**Fundraising:** Generous funding by many entities made possible the success of the ISTS37. The entire society deeply thanks the following donors for their generosity: At the Gold level (\$10,000-\$24,999): The Shared Earth Foundation and The Leatherback Trust. At the Silver level (\$1,000-\$9,999): Disney’s Animals, Science & Environment, Sea Turtle Conservancy, International Seafood Sustainability Foundation, Sirtrack & Lotek, George Balazs and Frank Paladino. At the Bronze level (\$500-\$999): J. Ross Publishing, Team Sympraxis, CLS America, National Save the Sea Turtle Foundation, Bioko Marine Turtle Program, Cefas Technology Limited and Nevada State College.

**Acknowledgments:** Organizing the Las Vegas symposium took a large number of volunteers allocated in various committees: registrars, fundraising, program, poster, workshop, student, travel grant, awards, exhibitor, volunteer, auction, and proceedings

committees. All of these individuals gave significant number of hours, effort and dedication towards their entrusted tasks. By alphabetical order of their first name, the Society thanks Adriana Cortés, Alan Rees, Alberto Abreu Grobois, Alejandro Fallabrino, Alexander Gaos, Alike Panagopoulou, Amanda Southwood Williard, Amber Rhodes, Ana Barragan, Andrea Phillott, Andrew DiMatteo, Andrews Aguekumhene, Andy Estrades, Angela Formia, Barbara Schroeder, Blair Witherington, Boniventure Mchomvu, Brad Nahill, Brian Hutchinson, Brian Shamblin, Bryan Wallace, Catherine Bell, Chelsea Clyde-Brockway, Connie Ka-Yan Ng, Daniela Freggi, Dave Owens, David Pike, David Rostal, Donna Broadbent, Dustin Baumbach, Elena Finkbeiner, Emma Harrison, Erin Seney, Gabi Blanco, Gabriela Velez-Rubio, George Balazs, George Shillinger, Hal Avery, Hector Barrios-Garrido, Ingrid Yañez, Irene Kelly, Isao Kawazu, Itzel Sifuentes, Jacques Laloë, Jeanette Wyneken, Jeff Seminoff, Jeffrey Mangel, Jennell Black, Jennifer Homcy, Jesus Tomas, Joanna Alfaro-Shigueto, Joe Pfaller, John Wang, Jordan Thomson, Justin Perrault,

Karen Eckert, Kartik Shanker, Kate Mansfield, Kelly Stewart, Kristina Drake, Lalith Ekanayake, Laura Gibbons, Laura Prodocimi, Lisa Belskis, Maggie Muurmans, Maira Proietti, Manjula Tiwari, Marc Girondot, Maria Chadam, Mariana Fuentes, Marina Zucchini, Mario Mota, Mark Hamann, Matthew Godfrey, Michael Jensen, Mike James, Milagros Lopez, Nathan Robinson, Neca Marcovaldi, Paolo Casale, Pamela Plotkin, Patricia Villegas, Pilar Santidrián Tomillo, Randall Arauz, Ray Carthy, Rebecca Lewison, Rhema Bjorkland, Robert George, Rod Mast, Roldan Valverde, Rupika Rajakaruna, Samir Patel, Sandra Hochscheid, Selina Heppell, Shaleyla Kelez, Shaya Honarvar, Simona Ceriani, Stephen Dunbar, Takashi Ishihara, Terry Meyer, Thushan Kapurusinghe, Tom Backof, Tomo Eguchi, Tomotomi Saito, Vanessa Bezy, Vincent Saba, Wendy Dow Piniak, Yakup Kaska, Yoshi Matsuzawa, Zahirul Islam, Zoë Meletis, and the various volunteers that were assigned on-site. Also, the symposium would not have been possible without the support from the donors mentioned above.



# CITIZEN SCIENCE CONTRIBUTIONS TO SEA TURTLE RESEARCH AND CONSERVATION

ANDREA D. PHILLOTT

FLAME University, Pune, Maharashtra, India

andrea.phillott@flame.edu.in

Public participation in scientific research, an emerging research tool commonly referred to as citizen science, enables research programs to collect large amounts of data over wide geographical areas and long periods of time. Such programs are very cost-effective and have a complementary effect of increasing community awareness about the research species, area and/or discipline (reviewed by Hudgins *et al.*, 2017; Long & Azmi, 2017; Williams *et al.*, 2017). Three recent sea turtle research and conservation projects that involved citizen scientists in the region demonstrate the potential of this approach to increasing our knowledge about nesting and foraging sea turtle populations.

**Hudgins, J.A., E.J. Hudgins, K. Ali & A. Mancini. 2017. Citizen science surveys elucidate key foraging and nesting habitat for two endangered marine turtle species within the Republic of Maldives. *Herpetology Notes* 10: 463-471.**

A recent project in the Maldives involved citizen scientists in the collection of data about sea turtles in their nesting and feeding grounds. In 2016, a 10-year ban on catching and/or killing marine turtles expired (Zahir, 2010) and the new legislation under consideration required quantitative data that measured the effectiveness of the previous policy. The Maldives comprise ~1,192 islands spread over 90,000km<sup>2</sup>, including coral reefs that exceed 4,500 km<sup>2</sup>; the urgent need to collect information from such a large area inspired development of the citizen-science based monitoring programme Turtle Watch Maldives (TWM). The Maldives Marine Research Centre (MRC) developed two protocols for TWM. The in-water protocol allowed snorkellers, divers or in-boat observers to collect information about turtles in their feeding grounds using either a simple or in-depth version. The nesting protocol collected information about successful and unsuccessful ('false crawls') nesting attempts by asking participants to count tracks on local beaches. Both protocols first underwent trial

assessment with 12 marine biologists, who later trained citizen scientists (including tourists and dive and snorkel guides) in the data collection methods. Participants kept records or all their surveys- whether turtles were observed or not- and sent them to TWM monthly.

A total of 16 participants completed 2,216 in-water surveys between January - September 2015, with at least one survey completed at 12.5% of the islands in the Maldivian archipelago. A total of 1,293 hawksbill turtle, 704 green turtle, and 6 unknown turtle species observations were recorded, predominantly of female turtles. Four participants completed 48 nesting surveys to record 28 successful and 18 unsuccessful nesting attempts. The records increased sea turtle data for the Maldives by ~2,000%, and identified a green turtle foraging hotspot the authors suggest is an area of importance for sea turtles that requires conservation action and an atoll, already a UNESCO Biosphere Reserve, demonstrating a high rate of juvenile hawksbill recruitment that potentially indicates recovery from exploitation of the species. The surveys also provided evidence to support the common perception that more green turtles than hawksbill turtles nest in the Maldives, and provided initial data on green turtle nests incubation duration and hatching success.

Despite the limited or inaccurate data on turtle size or maturity stage collected by citizen scientists participating in TWM, the project was deemed a success and Hudgins *et al.* (2017) conclude that the approach was effective in collecting a large volume of data quickly from a wide area, in addition to engaging the public with sea turtle conservation. They suggest that further training and data quality checks could overcome limitations in the type of observations recorded by citizen scientists, and recommend the approach when collecting similar data in other countries. Results of the study were used by the Maldivian government to create legislation that bans the capture and killing of sea turtles and harvest of turtle eggs throughout the entire archipelago.

**Long, S.L. & N.A. Azmi. 2017. Using photographic identification to monitor sea turtle populations at Perhentian Islands Marine Park in Malaysia. *Herpetological Conservation and Biology* 12: 350-366.**

Citizen scientists were also engaged in recent surveys on foraging and nesting sea turtles in Malaysia, but a different approach to data capture was implemented. Long & Azmi (2017) used photographic-identification (photo-ID) to estimate the number of feeding and nesting turtles in Perhentian Island Marine Park, comparing photographs submitted by trained interns and volunteers with Perhentian Turtle Project (PTP) to those submitted through email and social media by members of the public.

Records required photographs of the left and/or right sides of the turtle head (taken from a minimum of 1.5m in distance) that showed facial scutes and a dorsal image of in-water turtles. PTP trained its members in appropriate photography of sea turtles observed during snorkel surveys and beach monitoring, while public citizen scientists were informed by posters and other information displayed in public spaces such as the mainland jetty. Of the 1,826 turtle sightings submitted during the study period of 2009-2015, 1,182 originated from members of PTP and 644 from members of the public. Images were analysed using the software NaturePatternMatch to estimate the number of unique individuals observed in the study area as between 120-131 green turtles and 20-23 hawksbill turtles. The range of potential individuals results from incomplete image sets for some observations. Of the total sightings, <5% of the photographic records were of insufficient quality to identify the individual. Image geodata and date/time stamp and flipper tags applied to nesting turtles were used to distinguish between in-water and nesting sea turtle populations.

The study was able to describe preferred habitat and strong site fidelity among feeding green turtles in the study site, and the first short-distance breeding migration (~30km) of a green turtle in the region. The number of injured (n=8) and dead (n=2) turtles with injuries resulting from interactions with boat traffic during the

study period was also recorded. Photographs submitted by public citizen scientists were as useful in identifying individual turtles as those collected by PTP members, so long as the image was not blurred and turtle facial scutes were visible. However, location names submitted by the former group, especially from tourists to the area, were sometimes inaccurate and date/time stamps on images could indicate that of the citizen scientists home country and not the actual date and time at the study site. Data on survey effort was also unavailable. Long & Azim (2017) concluded that citizen scientist contributions to photo-ID studies of in-water sea turtles was likely to be effective, but that specific training in how and when to photograph nesting sea turtles might be required.

The potential limitations in the use of citizen scientists to collect data about in-water and nesting sea turtles does not detract from the volume of information gathered in the two studies described above, or the contribution of the studies to greater understanding of sea turtle biology, informing policy development, and raising public awareness of threats to sea turtle populations. The research approach may be of use to other projects throughout the Indian Ocean and Southeast Asia, and its varied application can be understood further by reading other recent examples involving citizen scientists in sea turtle research, including those below.

Hof, C.A.M., E. Smallwood, J. Meager & I.P. Bell. 2017. First citizen-science population abundance and growth rate estimates for green sea turtles *Chelonia mydas* foraging in the northern Great Barrier Reef, Australia. *Marine Ecology Progress Series* 574: 181-191.

Williams, J.L., S.J. Pierce, M.P.B. Fuentes & M. Hamann. 2015. Effectiveness of recreational divers for monitoring sea turtle populations. *Endangered Species Research* 26: 209-219.

Williams, J.L., S.J. Pierce, C.A. Rohner, M.M.P.B. Fuentes & M. Hamann. 2017. Spatial distribution and residency of green and loggerhead sea turtles using coastal reef habitats in southern Mozambique. *Frontiers of Marine Science* 3: 288. doi: 10.3389/fmars.2016.00288.



## SEA TURTLE NESTING BEACH INDICATOR TOOL

ANDREA D. PHILLOTT

FLAME University, Pune, Maharashtra, India

andrea.phillott@flame.edu.in

The *Sea Turtle Nesting Beach Indicator Tool* was developed by Bluedot Associates in partnership with the Centre for Ecology & Conservation, University of Exeter. Its simplicity means that data can be collected by non-scientists, which may allow rapid data collection to be achieved through the use of local networks. Free at [www.bluedotassociates.com](http://www.bluedotassociates.com), an online form requiring your name, email address and organisation must be completed before download of the tool, which is an excel spreadsheet; a pdf describing the tool and its use is available to download adjacent to the form. The tool comprises two sheets, the first is the main tool that requires user completion and provides output, the second is a datasheet that can be printed and then completed in the field for later use within the tool or printed complete to create a permanent record of the data record. The developers are in discussions to make the tool available in other formats and to develop a platform to manage data.

The developers drew upon current knowledge about the preferred nesting habitat of different sea turtle species worldwide to develop a *Beach Suitability* score in the tool's first section. Users choose from among drop down boxes to enter information about beach sediment composition (fine sand to gravel), elevation (<0.5m to >2m above high

tide), width (0 to >15m above high tide), slope (low to steep), and length (<200m to >1km). This information may be available from geological surveys or other reports from the area. The resulting score indicates the potential of the beach to support regular sea turtle nesting. The second section of the tool predicts the potential *Human Impacts* on nesting activity using a rating scale (0-5) to assess the degree of fixed or semi-fixed development behind the beach, obstructions on the beach, disturbance on the beach, and evidence of light pollution.

The *Sea Turtle Nesting Beach Indicator Tool* may be used as a rapid assessment to identify possible sea turtle nesting habitat without any biological data (usually un-surveyed areas). The tool results are only meant to be indicative, i.e. indications of poor suitability for nesting should not be used as conclusive evidence of no nesting; and where nesting potential is identified it is expected that these beaches would then have to be surveyed during the appropriate season to confirm nesting events. The outcomes may be used to identify priority areas for study and inform decision-making during the early stage of conservation planning and academic research.

## INSTRUCTIONS FOR AUTHORS

Please refer to the style requirements listed below. Manuscripts should be submitted in MS Word or saved as text or rich text format. Appropriate files should be submitted by email to: [iotn.editors@gmail.com](mailto:iotn.editors@gmail.com). For further details please see [www.iotn.org](http://www.iotn.org) or consult a recent issue of IOTN.

**Language and spelling:** Please follow British spelling and grammar conventions.

**Author names:** Please provide full names of authors, e.g. Stanely T. Asah

**Author affiliations:** Please provide Department/ Centre/ Laboratory. Institution/ University/ Organisation, City, State or Province, Country, E-mail address of corresponding author. The symbol “#” in superscript may be used to denote corresponding author.

**Tables and figures:** Figures should not be embedded in the text file, they may be sent separately as JPEG, TIFF, BMP or PNG files. All figures and tables should carry a caption. Figures and illustrations must be accompanied by the appropriate credit/source. High resolution figures may be requested after acceptance of the article.

**References in text:** References should appear first in chronological then alphabetical order.

Two authors to be separated by ‘&’ symbol, e.g., as Rai & Sahu, 2001

More than 2 authors: first author *et al.* (*et al.* in italics) e.g., Roy *et al.*, 2004

Two publications of the same year for the same author(s), the reference in the text should be Sharma 1960a, b not 1960a, 1960b and the two publications should be dated accordingly in the references.

Multiple references to be separated by a semi colon and in chronological order (Zade, 1995; Mathew, 1996a, b, 1998; Sharma, *et al.*, 2004; Forman & Gordon, 2005, 2007)

Page numbers are essential when quoting or referring to some aspect or information from a report (Sharma 1960: 22 or Sharma *et al.*, 1960: 22).

References that are long and/or have acronyms: Only acronym in text,

e.g., INRA 2008

List personal communication references in text only. e.g. (Hariya pers. comm., 2011)

Unpublished/Undated references: In press, Forthcoming, In review, etc.

**References in list:** References should appear first in alphabetical then chronological order.

For references with more than 7 authors: first 7 names, *et al.*

Use complete page ranges. e.g., 371-379 (not 371-9); 227-235 (not 227-35).

Reference that are long and/or have acronyms: Full name followed by acronyms in parenthesis in reference list, e.g.,

Instituto Nacional de Reforma Agraria (INRA). 2008.

Unpublished/Undated references: In press, Forthcoming, In review, etc.

### Examples:

Vijaya, J. 1982. Turtle slaughter in India. *Marine Turtle Newsletter* 23: 2.

Silas, E.G., M. Rajagopalan, A.B. Fernando & S.S. Dan. 1985. Marine turtle conservation and management: A survey of the situation in Orissa 1981/82 & 1982/83. *Marine Fisheries Information Service Technical & Extension Service* 50: 13-23.

Pandav, B. 2000. Conservation and management of olive ridley sea turtles on the Orissa coast. Ph.D. thesis. Utkal University, Bhubaneswar, India.

Kar, C.S. & S. Bhaskar. 1982. The status of sea turtles in the Eastern Indian Ocean. In: *The Biology and Conservation of Sea Turtles* (ed. Bjorndal, K.). Pp. 365-372. Washington, DC: Smithsonian Institution Press.

Forman, R.T.T. & M. Gordon (eds.). 1986. *Landscape Ecology*. New York: John Wiley.

Ozinga, S. 2003. Parks with people. World Rainforest Movement/FERN. <http://www.fern.org/pubs/ngostats/parks.htm>. Accessed on February 25, 2006. ■

**Editor**

**Andrea D. Phillott**  
*FLAME University,*  
*India*

**Founding Editor**

**Kartik Shanker**  
*Indian Institute of Science & Dakshin Foundation,*  
*India*

**Editor Emeritus**

**Chloe Schäuble**  
*Great Barrier Reef Marine Park Authority,*  
*Australia*

**Assistant Editor**

**ALan F. Rees**  
*University of Exeter,*  
*UK*

**Editorial Board**

**Matthew H. Godfrey** *North Carolina Wildlife Resources Commission, USA*

**Mark Hamann** *James Cook University, Australia*

**George Hughes** *South Africa*

**Zoe Meletis** *Canada*

**Jeanne A. Mortimer** *Island Conservation Society, Seychelles*

**Dave Owens** *USA*

**Nicolas J. Pilcher** *Marine Research Foundation, Malaysia*

**Rupika Rajakaruna** *Sri Lanka*

**Jeffrey A. Seminoff** *National Marine Fisheries Service, USA*

**Manjula Tiwari** *USA*

**Lindsey West** *Sea Sense, Tanzania*

**Advisory Board**

**Khawla Al Muhannadi** *Bahrain*

**Zahirul Islam** *Bangladesh*

**Yohannes Teclmariam** *Eritrea*

**Stephane Ciccione** *La Réunion - France*

**B.C. Choudhury** *India*

**Maggie Muurmans** *Indonesia*

**Asghar Mobaraki** *Iran*

**Chan Eng Heng** *Malaysia*

**Maung Maung Lwin** *Myanmar*

**Robert M. Baldwin** *Oman*

**Ahmad Khan** *Pakistan*

**Ronel Nel** *South Africa*

**M.M. Saman** *Sri Lanka*

**Rita Bento** *United Arab Emirates*

**Bui Thi Thu Hien** *Vietnam*

**Managing Editor**

**Muralidharan Manoharakrishnan**  
*Dakshin Foundation, Bangalore, India*

**Editorial Assistant**

**Adhith Swaminathan**  
*Dakshin Foundation, Bangalore, India*

**Cover Design: Arjun Shankar**

**Printed by: Medknow Publications and Media Pvt. Ltd., Mumbai, India**

# CONTENTS

## EDITORIALS

---

- 1 Editorial  
*Andrea D. Phillott*

## ARTICLES

---

- 2-5 Recent nesting record of the leatherback in coastal Myanmar  
*Steven G. Platt, Christopher Kingsley, Aung Zinn Latt, Kalyar Platt, & David W. Owens*
- 5-7 Entanglement of a juvenile olive ridley turtle in a ghost net in the Andaman Islands  
*Zoya Tyabji & Vardhan Patankar*

## REPORT

---

- 9-12 President's report for 37th Annual Symposium on Sea Turtle Biology and Conservation, Las Vegas, Nevada, USA, 15-20 April 2017  
*Frank V. Paladino & Ingrid Yanez*

## RESEARCH SUMMARY

---

- 13-14 Citizen science contributions to sea turtle research and conservation  
*Andrea D. Phillott*

