



# INDIAN OCEAN TURTLE NEWSLETTER

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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.

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**Cover photograph:** Foraging hawksbill turtle at Chagos Islands

Photo Courtesy: Nicole Esteban

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## EDITOR'S NOTE

ANDREA D. PHILLOTT & SEH LING LONG

Co-Editors, Indian Ocean Turtle Newsletter

iotn.editors@gmail.com

Welcome to IOTN42, and a diverse range of articles and news about sea turtle biology, conservation, and rehabilitation. The content in this issue ranges from a study on post-war tourism and coastal development in Sri Lanka to a review on the practice of “splitting” clutches. The SSTCN Turtle Diary for 2025 gives us a taste of what it was like for volunteers working in this very busy year (see also the news below), and we have a case study that complements the special issue of IOTN41 (with MedTurtle Bulletin) which focused on the rescue and rehabilitation of sea turtles. IOTN42 also includes the President's Report for the 43<sup>rd</sup> Annual Symposium on Sea Turtle Biology and Conservation, held in Accra, Ghana, in March 2025, and an announcement for the 44<sup>th</sup> symposium to be held in Kailua-Kona, Hawai'i in March 2026.

Not reported in IOTN42, but equally as exciting, are stories about the *arribada* in India this year where ~7 lakh (700,000) olive ridley turtles are estimated to have nested at Rushikulya in Odisha. Another amazing turtle feat is

an olive ridley tagged after nesting in Odisha (on the east coast of India) in 2021 recorded nesting in Maharashtra (west coast of India) in 2025. See the references by Perinchery (2025) and ET Online (2025) below for popular media stories about these turtle phenomena.

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ET Online. 2025. From Odisha to Maharashtra: Olive Ridley turtle 03233 travels 3,500 km from east to west, surprising scientists. [https://economictimes.indiatimes.com/news/new-updates/from-odisha-to-maharashtra-olive-ridley-turtle-03233-travels-3500-km-from-east-to-west-surprising-scientists/articleshow/120309879.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/news/new-updates/from-odisha-to-maharashtra-olive-ridley-turtle-03233-travels-3500-km-from-east-to-west-surprising-scientists/articleshow/120309879.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst). Accessed on June 15, 2025.

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### 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 43 of IOTN, please email material to [iotn.editors@gmail.com](mailto:iotn.editors@gmail.com) before 31<sup>st</sup> November 2026. Guidelines for submission can be found on the last page of this newsletter or at <http://www.iotn.org/submission/>.

## ARTICLES



# POST-WAR TOURISM, COASTAL DEVELOPMENT AND SEA TURTLE NESTING BEACHES IN SRI LANKA

R.M. PABASARA ABEYWICKRAMA & RUPIKA S. RAJAKARUNA<sup>#</sup>

Department of Zoology, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka

<sup>#</sup>rupika.rajakaruna@sci.pdn.ac.lk

## INTRODUCTION

The end of Sri Lanka's civil war in 2009 marked a dramatic turning point for the nation's tourism industry, which had suffered significant setbacks due to three decades of prolonged conflict. International tourist arrivals declined sharply during the peak of the war, dropping to just 438,475 in 2008 (SLTDA Annual Reports, 2008). However, the conclusion of hostilities triggered a remarkable rebound, with arrivals rising to 654,476 in 2010 (SLTDA Annual Reports, 2010) and surpassing 1.5 million by 2014 (SLTDA Annual Reports, 2014). The government capitalised on the momentum with initiatives like the Tourism Development Strategy 2011–2016 (Ministry of Economic Development, 2011), which, along with improved international perception and the removal of travel advisories, positioned Sri Lanka as a top global destination, ranked first on *The New York Times*' list of places to visit in 2010 (New York Times, 2010). Numbers declined during the COVID-19 pandemic but quickly grew again to reach a record 2.05 million in 2024 (SLTDA Annual Reports, 2024).

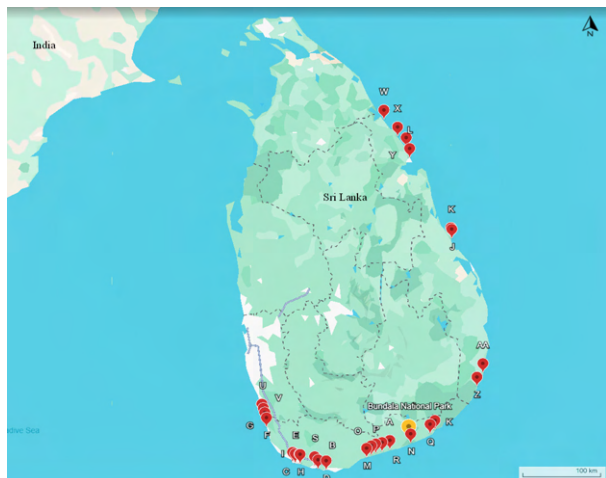
This rapid postwar tourism boom came with substantial ecological and social costs, particularly in coastal areas (Buultjens *et al.*, 2016; Fernando, 2016). Aggressive development strategies, often aligned with state-led visions like *Mahinda Chinthana*—a national development framework for 2006–2016 aimed at raising GDP growth beyond 8% by integrating market-oriented policies with domestic aspirations, supporting local enterprises, and encouraging foreign investment-promoted infrastructure expansion in sensitive zones, especially in the war-affected northern and eastern provinces (Ministry of Finance and Planning, 2010). Military involvement in tourism operations led to contested land acquisitions and the transformation of conflict-scarred coastal zones into elite tourism destinations, frequently overlooking environmental regulations and local community rights (Ratnayake & Hapugoda, 2017). Drawing on a disaster capitalism framework (Klein, 2007), these projects often mirrored earlier development plans, such as the 2005

Tourism Master Plan (Robinson & Jarvie, 2008), where tourism was treated as a tool for economic revival rather than sustainable development.

With beach tourism emerging as one of the country's leading attractions, hotel construction has surged along the southern, southwestern, and eastern coastlines. This rapid coastal development took a toll on sea turtles, with nesting habitats being severely altered or lost. Tourism infrastructure encroached upon critical nesting beaches, compromising the integrity of these ecosystems and threatening the success of long-term conservation efforts (Pieris, 2014; Ratnayake & Hapugoda, 2017).

Sri Lanka hosts sea turtle nesting beaches for five species—the green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*), and olive ridley (*Lepidochelys olivacea*) turtles—and supports foraging populations of these same species in its coral reefs and seagrass beds (Bennett, 1843; Deraniyagala, 1939; Wickramasinghe, 1981; Amarasooriya, 2000). The important sea turtle nesting sites are distributed along the southern, southwestern, and eastern coasts of Sri Lanka (Rajakaruna *et al.*, 2020) (Figure 1).

Coastal development significantly disrupts sea turtle nesting habitats by modifying dunes, altering beach profiles, compacting sand, installing shoreline armouring, accumulating debris, and increasing human activity, all of which contribute to reduced nesting success (Salmon, 2006). Artificial lighting from hotels along the beach can pose a major threat, as it interferes with both nesting and hatchling orientation. Female turtles often avoid brightly lit beaches, favouring darker zones shaded by tall structures. This behaviour leads to nest clustering, which heightens the risk of hatchling mortality (Gyuris, 1994; Salmon *et al.*, 1995). Hatchlings are especially vulnerable to artificial lights, which can misguide them inland instead of toward the ocean. This misorientation results in exhaustion, dehydration, predation, and death from vehicle strikes or exposure to



**Figure 1. Major Sea Turtle Nesting Beaches of Sri Lanka and Bundala National Park. A) Godawaya, B) Mirissa, C) Habaraduwa, D) Polhena, E) Mihiripenna, F) Ahungalla, G) Induruwa, H) Koggala, I) Unawatuna, J) Kalkudah, K) Passikudah, L) Uppuveli, M) Rekawa, N) Bundala, O) Kahandamodara, P) Kalametiya, Q) Palatupana, R) Ussangoda, S) Weligama, T) Yala, U) Bentota, V) Kosgoda, W) Arisimalai, X) Kuchchaveli, Y) Nilaveli, Z) Okanda, AA) Panama.**

extreme temperatures (Witherington, 1997).

We examined post-war coastal development patterns and their implications for sea turtle nesting beaches in Sri Lanka in the context of multiple socio-environmental disturbances. The study aimed to (i) assess land-use and coastal infrastructure changes along key nesting beaches between 2008 and 2024 using Google Maps imagery, (ii) classify and compare the intensity of coastal development across nesting sites, and (iii) evaluate how major disturbance events, including the 2004 tsunami, post-war tourism expansion, the 2019 Easter Sunday attacks, and the COVID-19 pandemic, have collectively influenced coastal development dynamics and nesting habitat conditions.

#### **LAND USE CHANGES THROUGH GOOGLE MAP IMAGERY FROM 2008 TO 2024**

We compared Google Maps images of sea turtle nesting beaches along the western, southwestern, southern, and eastern coasts of Sri Lanka in 2008 and 2024 (Figure 1). Coastal development intensity was classified into three categories (low, medium, and high) based on visible anthropogenic modifications observed in Google Maps imagery for 2008 and 2024. “Low development” was applied to beaches with minimal or no visible built infrastructure, where natural coastal vegetation and dune systems remained largely intact. “Medium

development” represented areas with moderate human modification, including scattered buildings, small-scale tourism infrastructure, and limited shoreline alteration. “High development” was assigned to heavily modified coastal stretches characterised by dense hotel or resort construction, extensive built infrastructure along the beachfront, and noticeable alteration or replacement of natural dune and beach vegetation systems.

The images revealed rapid coastal development, particularly along the eastern coast, where growth was previously limited by war, and along the southern and southwestern coasts due to the post-war tourism boom (Figure 2).

Beaches along the southern coast of Sri Lanka have experienced varying levels of disturbance due to hotel construction, especially following the end of the civil war in 2009. Among these, Godawaya, Mirissa, Habaraduwa, and Polhena (Figures 2A–2D) have been significantly affected, with a large-scale rise in hotel development leading to increased human activity and disturbance, disrupting sea turtle nesting behaviours. In contrast, Rekawa Beach (Figure 3), also on the southern coast, has remained relatively unaffected by tourism development pressures. It was declared a wildlife sanctuary by the Department of Wildlife Conservation (DWC) in 2006 due to its importance as the largest sea turtle rookery in Sri Lanka (Ekanayake *et al.*, 2011). Similarly, Bundala Beach (Figure 3), located along the coastal boundary of Bundala National Park on the southern coast, has remained largely unaffected by hotel development. It was declared a sanctuary in 1969 and later designated as a National Park in 1993 (Ramakrishnan, 1991). Kalametiya Beach, another protected area, has also remained relatively undisturbed due to its conservation status (Kotagama & Bambaradeniya, 2006).

Mihiripenna, Ahungalla, Induruwa, Koggala, and Unawatuna on the southwestern coast (Figures 2E–2J) of the country also experienced some hotel development after 2011, with disturbance levels ranging from moderate to high. Among these, Ahungalla (Figure 2F) saw hotel construction beginning in 2015, Bentota experienced new developments in 2019, and Unawatuna faced increasing tourism pressure with hotel construction expanding after 2009. Induruwa Beach underwent hotel development in 2021, and both Koggala and Mihiripenna experienced substantial growth in hotel infrastructure starting in 2011 and 2018, respectively. Although Kosgoda Beach (Figure 2J) experienced the development of a few hotels after 2011, the extent of disturbance here is lesser compared to other beaches in the region. Overall, the southwestern coast has been



**Figure 2. Coastal Development Along Sea Turtle Nesting Beaches of Sri Lanka: A) Godawaya, B) Mirissa, C) Habaraduwa, D) Polhena, E) Mihiripenna, F) Ahungalla, G) Induruwa, H) Koggala, I) Unawatuna, J) Kosgoda, K) Kalkudah, L) Passikudah, M) Uppuveli, N) Nilaweli, O) Arisimalai, P) Komari, Q) Kuchchaveli, R) Panama.**

highly affected due to intensified tourism infrastructure following the post-war tourism boom.

Kalkudah, Passikudah, and Uppuveli on the eastern coast (Figures 2K–2M) also experienced some hotel

development after 2011, with disturbance levels ranging from moderate to high. Passikudah (Figure 2L) experienced significant hotel construction beginning in 2011, and Uppuveli (Figure 2M) saw a substantial increase in developments after 2017, negatively affecting sea



**Figure 3. Undeveloped Nesting Beaches on the Southern Coast of Sri Lanka: A) Rekawa beach, B) Bundala beach.**

turtle nesting habitats. Nilaveli (Figure 2N) experienced moderate disturbance with a few hotels constructed after 2011, while Kalkudah (Figure 2K) underwent some hotel development after 2012, but to a lesser extent. In contrast, Arisimalai, Komari, Kuchchaveli, and Panama Beach (Figures 2O–2R) have remained largely unaffected, continuing to serve as relatively undisturbed nesting grounds for sea turtles.

#### **IMPACT OF THE 2004 TSUNAMI ON NESTING BEACHES AND COASTAL TOURISM INFRASTRUCTURE**

The Indian Ocean tsunami of December 2004 severely impacted Sri Lanka, demonstrating the vulnerability of sea turtle nesting beaches to natural disasters and also severely damaging tourism infrastructure, with many beachfront properties swept away or rendered unusable. Hotels and resorts along the southern and eastern coasts—especially in areas like Galle, Hikkaduwa, Arugam Bay, and Trincomalee—were completely destroyed by the waves. The high-energy waves eroded sandy beaches, swept away eggs, and scattered debris along the coastline, making it challenging for adult turtles to nest and for hatchlings to safely reach the ocean (Christiaanse *et al.*, 2024; Staines *et al.*, 2025).

The post-tsunami period saw a sharp decline in tourism, and the government swiftly introduced new coastal construction regulations, implementing 100-meter buffer zone on the south and west coasts. Construction of new buildings was prohibited within 100m of the shoreline in these areas and 200-meter buffer zone on the north and east coasts (Samaranayake, 2007). These zones were meant to prevent rebuilding in high-risk areas and allow for natural coastal defences like dunes

and vegetation to recover. Buffer zones had benefits for marine turtle nesting (Kaplan *et al.*, 2009). Unfortunately, as development crept back toward the shoreline, some of these gains were lost. Over time, enforcement of the buffer zone weakened. With the increase of tourists after the war was over, the government gradually reduced the buffer distance, first to 50m, then 40m, and eventually 30m, as economic pressures and tourism demands grew. Many residents and hotel owners displaced by the tsunami returned to rebuild near the shore, often in defiance of the original regulations, linking natural disaster recovery directly to patterns of coastal development and tourism-driven conservation efforts (Khazai *et al.*, 2006).

#### **EASTER SUNDAY BOMBING AND COVID-19 PANDEMIC**

The Easter Sunday attacks on April 21, 2019, dealt a severe blow to Sri Lanka's tourism sector, which had flourished in the post-war years. Unlike the civil war period (2003–2009), which did not directly target tourists, the coordinated bombings struck popular tourist areas, causing fear and resulting in a sharp decline in international arrivals. In May 2019, only 37,802 tourists visited the country, a staggering 70.8% drop compared to May 2018, followed by a 57.0% decrease in June (SLTDA, 2019). Just as the sector began a slow recovery, the COVID-19 pandemic triggered a global shutdown in early 2020, bringing international travel to a standstill. Travel restrictions and lockdowns further halted tourism activities throughout 2020 and into 2021, exacerbating economic losses in coastal regions that relied heavily on tourism revenues (Ranasinghe *et al.*, 2021).

However, this prolonged decline in coastal tourism brought unintended ecological benefits, especially

for prime sea turtle nesting beaches such as Rekawa, Kosgoda, and Bentota. With fewer visitors, reduced beachfront lighting, and minimal human presence, these beaches experienced less disturbance, lower incidences of illegal take of eggs, and reduced hatchling disorientation (Thilakarathne *et al.*, 2024). Although these changes were not linked to physical alterations in coastal development, they highlight how fluctuations in human activity alone can significantly impact coastal ecosystems. The tourism shutdowns temporarily relieved pressure on fragile nesting habitats, underscoring the need for sustainable tourism practices that align with coastal conservation goals.

### **PRACTICAL SOLUTIONS AND NEW DIRECTIONS FOR SUSTAINABLE TOURISM AND DEVELOPMENT**

Identifying practical solutions and charting new directions for sustainable tourism is essential to balance ecological conservation with economic growth in Sri Lanka's coastal regions. The northern coast of Bahia in Brazil serves as an example, where the Brazilian National Sea Turtle Conservation Program (TAMAR) has employed a geospatial tool to identify key nesting areas using a Sensitivity Map that grades coastal areas based on their importance for sea turtle nesting (Lopez *et al.*, 2015). This map informs coastal management policies by visually identifying priority nesting habitats, enabling targeted mitigation measures such as restricting development, reducing artificial lighting, or regulating tourist access in highly sensitive areas. By integrating scientific data into coastal planning frameworks, such tools support balanced development that considers ecological sensitivity in areas facing tourism-driven pressures. These efforts should be integrated into a broader coastal development strategy that promotes sustainable tourism, incorporating community participation, ecotourism education, and strong regulatory enforcement. Such an approach supports environmentally responsible development while ensuring the protection of vulnerable coastal ecosystems and wildlife, particularly in the context of post-war environmental recovery. Without careful environmental planning and legislation, poorly managed coastal development, especially in sea turtle nesting areas, can irreversibly harm the natural environment.

### **MITIGATING DEVELOPMENT PRESSURES**

Implementing regulations for buffer zone violations and restricting coastal construction near nesting beaches can reduce habitat alteration and artificial light pollution. Studies show that “turtle-friendly” lighting strategies,

such as fully shielded fixtures, low-intensity lighting, and long-wavelength (amber/red) lights, significantly reduce hatchling disorientation and improve nesting beach suitability for marine turtles (Witherington & Martin, 2000; Lorne & Salmon, 2007). Both developers and local communities engaged in coastal construction, especially projects related to tourism infrastructure, must be made aware of the ecological importance of sea turtle nesting habitats. Educational efforts should emphasise how poorly planned development and unregulated beach activities can severely disrupt nesting behaviours and reduce hatchling survival. To mitigate these impacts, it is crucial to implement restrictions on both physical construction near nesting sites and associated beach activities such as nighttime tourism events, vehicle movement, and artificial lighting. By aligning development practices with ecological safeguards, coastal development can proceed in a manner that minimises harm to sensitive wildlife and promotes long-term sustainability. Finally, ongoing monitoring and research are crucial for understanding the impacts of coastal development on sea turtle populations and assessing the effectiveness of mitigation strategies.

### **CONCLUSION**

Despite a 25-year war and numerous disasters, including tsunamis, the Easter bombings, the global pandemic, and severe economic downturns, the Sri Lanka coast still supports sea turtles and their nesting beaches. The reduction in human activity during some of these periods allowed ecosystems and species like sea turtles to persist. However, this may be short-lived, as the resumption of human activity- whether through reconstruction or increased beach activities- can swiftly affect habitats and species. This paradox highlights the delicate balance between human impact and environmental resilience.

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## THE DEBATE ABOUT SPLITTING CLUTCHES

ANDREA D. PHILLOTT

FLAME University, Pune, Maharashtra, India

[andrea.phillott@gmail.com](mailto:andrea.phillott@gmail.com)

### BACKGROUND

One of the topics discussed at a meeting of the Turtle Action Group (TAG) of India in June 2023 was the practice of “splitting clutches”, i.e., dividing a clutch of eggs to create two groups of eggs, before reburial in a hatchery.

The practice of splitting clutches was first described by Balasingam (1967). He noted a higher hatching success (% of eggs that produce a hatchling which leaves the eggshell; Miller, 1999) from naturally smaller clutches of leatherback (*Dermochelys coriacea*) turtle eggs compared to clutches comprising the average number of eggs (85-90) in a hatchery. When the clutch size of eggs moved to a hatchery was manipulated, split

clutches comprising a smaller number of eggs also had a higher hatching success than unmodified clutches (Table 1). Balasingam (1967) hypothesised that smaller clutches generated less metabolic heat, reducing embryo mortality and increasing hatching success, though this was not experimentally tested. After the publication by Balasingam (1967), the practice of splitting clutches was adopted by most hatcheries in Malaysia (Mortimer *et al.*, 1994) as a conservation practice to improve hatching success. Subsequent investigations across species and hatcheries into the outcomes of this practice produced mixed outcomes, which may be due to variables such as nest density and depth which are often not reported.

For example, splitting large natural clutches of olive ridley (*Lepidochelys olivacea*) turtle eggs at hatcheries in India resulted in increased hatching success and may have mitigated the impact of high temperatures and metabolic heating (Abraham *et al.*, 1990 in Shanker, 1994; Mathew *et al.*, 1991) (Table 1). However, statistically significant variation in hatching success with clutch size was not reported in these studies, and no information about nest depth and nest density was provided for the different clutches. Mathew *et al.* (1991) also observed lower mortality of embryos in pipped eggs from split clutches incubated in a hatchery (Table 1) and speculated this was due to greater oxygen availability and/or lower metabolic heat in clutches with fewer eggs. The mortality rate among pipped embryos was later reduced in natural-sized clutches by reducing nest density in the hatchery from 2 nests/m<sup>2</sup> to 1 nest/m<sup>2</sup> (Shanker, 1998).

Mortimer *et al.* (1994) compared the emergence success of natural clutches of leatherback and hawksbill (*Eretmochelys imbricata*) eggs with clutches split to contain 40-60 eggs at two hatcheries in Malaysia; nest depth and density in the hatchery were not reported. They found no significant difference ( $P > 0.05$ ) in emergence success (the proportion of eggs that hatch to produce hatchlings that successfully emerge from the nest; Miller, 1999) (Table 1). However, mortality of pipped embryos of both species, and mortality of late-stage embryos and hatchlings, was significantly less ( $P < 0.05$ ) in split clutches. Hence, Mortimer *et al.* (1994) also suggested that splitting clutches could be a conservation strategy to slightly improve hatchling production.

Ibrahim *et al.* (2002) found no significant difference in emergence success between natural clutch sizes and split clutches (Table 1) of green (*Chelonia mydas*) turtle eggs at a hatchery in Malaysia; nest depth and density in the hatchery were not reported. They concluded that there was no advantage for hatchling production to split clutches and also pointed out that splitting clutches would

result in increased space requirements and construction costs for hatcheries (Ibrahim *et al.*, 2002).

Sarahaizad *et al.* (2022) also conducted a study with green turtle eggs in Malaysia. They found a significant difference ( $P < 0.05$ ) between the hatching success of *in situ* whole clutches incubated at Kerachut and clutches collected from Kerachut and Teluk Kampi (Table 1) and split before incubation in a hatchery at different nest depths (Sarahaizad *et al.*, 2022). However, the different incubation locations of eggs in this study and variation in hatching success among study years suggests that environmental factors may have contributed to their findings.

Clarke *et al.* (2021) investigated the potential for splitting clutches to reduce nest incubation temperatures as mitigation for the effects of climate change. They incubated loggerhead (*Caretta caretta*) turtle eggs at a hatchery in Cabo Verde and monitored incubation temperature. Split clutches incubated at natural nest depth for the species had nest temperatures ~1°C lower than control nests and the hatching success was significantly higher, although the difference was not significant in all study years (Table 1). Splitting clutches had no impact on hatchling size or vigour (Clarke *et al.*, 2021).

The variation in findings among these studies indicates that more evidence is required to conclusively demonstrate the advantages of splitting clutches under different conditions. The mixed results suggest that clutch size alone does not explain the variation in success rates, since variables such as nest depth, nest density, nest temperature, substrate moisture, and other incubation conditions can also influence hatching and emergence success. Current guidelines for hatcheries (e.g., Mortimer, 1999; Phillott & Shanker, 2018) recommend that incubation conditions, including nest depth and shape, clutch size etc, should reflect those of the natural nest. The rationale for duplicating natural incubation conditions and clutch size is based on the reasons outlined below, all of which are demonstrated to improve hatchling survival in several ways.

1. Hatchlings in a larger group benefit from the synchronous digging activity, spending less time digging and using less energy to emerge from the nest as (Rusli *et al.*, 2016). Such hatchlings will have larger energy reserves for the crawling and swimming frenzy needed to move hatchlings from the predator-rich beach and in-shore waters (Gyuris, 1994; Pilcher *et al.*, 2000; Wyneken & Salmon, 1992; Wyneken *et al.*, 2008) and the following periods of active swimming and use of currents to reach

**Table 1. Comparative studies assessing hatching or emergence success between natural and split clutches of sea turtles in various countries.**  
 HS: hatching success; ES: emergence success

Species	Country	Incubation Location	Year(s) of Study	# Clutches	Split (# Splits)	Incubation Clutch Size Mean±SD (Range)	Nest Depth (cm)	HS/ES (%) Mean±SD (Range)	Source
Leatherback	Malaysia	Hatchery	1961-1964	32	No	(46-60)	~76.2	63.5 HS	Balasingam, 1967
				137	No	(76-90)	~76.2	52.0 HS	Balasingam, 1967
				216	No	(91-135)	~76.2	33.2 HS	Balasingam, 1967
				8	Yes	(46-60)	~76.2	72.9 HS	Balasingam, 1967
				53	Yes	(76-90)	~76.2	76.0 HS	Balasingam, 1967
				44	Yes	(91-135)	~76.2	70.4 HS	Balasingam, 1967
				28	No	-	-	44.9 ES	Mortimer <i>et al.</i> , 1994
Olive ridley	India	Hatchery	1990	24	Yes (≥2)	(46-60)	-	55.2 ES	Mortimer <i>et al.</i> , 1994
				37	No	144.4 (133-157)	-	48.4 HS	Mathew <i>et al.</i> , 1991
				6	Yes (-)	-	-	73.7 HS	Mathew <i>et al.</i> , 1991
Hawksbill	Malaysia	Hatchery	1991	111	No	-	-	47.0 ES	Mortimer <i>et al.</i> , 1994
				83	Yes (≥2)	(46-60)	-	52.7 ES	Mortimer <i>et al.</i> , 1994
				750	No	-	-	84.8 (79.9-89.0) ES	Ibrahim <i>et al.</i> , 2002
Green	Malaysia	Hatchery	1997-1998	154	No	-	-	47.3 ES	Ibrahim <i>et al.</i> , 2002
				256	Yes (-)	-	-	48.9 ES	Ibrahim <i>et al.</i> , 2002
				10	No	-	-	38.2 HS	Sarahaizad <i>et al.</i> , 2022

Table 1 cont.

Species	Country	Incubation Location	Year(s) of Study	# Clutches	Split (# Splits)	Incubation Clutch Size Mean $\pm$ SD (Range)	Nest Depth (cm)	HS/ES (%) Mean $\pm$ SD (Range)	Source
		Beach	2009/10	10	No	-	-	38.2 HS	Sarahaizad <i>et al.</i> , 2022
		Hatchery	2009/10	10	Yes (3)	38.0 $\pm$ 5.9 (29-49)	45-65	67.6 HS	Sarahaizad <i>et al.</i> , 2022
Loggerhead	Cabo Verde	Hatchery	2012	20	No	92.0 $\pm$ 0.8 (77-117)	45	77.6 $\pm$ 4.9 HS	Clarke <i>et al.</i> , 2021
		Hatchery	2014	23	No	87.6 $\pm$ 4.5 (36-126)	45	61.0 $\pm$ 3.7 HS	Clarke <i>et al.</i> , 2021
		Hatchery, shaded	2012	20	No	88.4 $\pm$ 0.8 (66-111)	45	73.7 $\pm$ 4.91 HS	Clarke <i>et al.</i> , 2021
		Hatchery	2012	20	Yes (2)	45.4 $\pm$ 0.8 (38-57)	45	73.3 $\pm$ 5.4 HS	Clarke <i>et al.</i> , 2021
		Hatchery	2014	23	Yes (2)	48.8 $\pm$ 1.1 (33-63)	45	82.5 $\pm$ 2.3 HS	Clarke <i>et al.</i> , 2021

offshore waters (Briscoe *et al.*, 2016; Gaspar & Lalire, 2017; Gatto & Reina, 2020; Mansfield *et al.*, 2014; Putman & Mansfield, 2015; Salmon *et al.*, 1992) where feeding may commence about a week after emergence from the nest (Kraemer & Bennett, 1981).

2. Emerging as a member of a larger group of hatchlings could also reduce the risk of predation by terrestrial (Erb & Wyneken, 2019; Martins *et al.*, 2021; Santos *et al.*, 2016) and presumably aquatic predators. [Note that the advantages of emerging synchronously in a larger group of hatchlings from an individual nest should not be confused with the higher risk of predation to hatchlings from multiple nests released *en masse* from hatcheries, as described by Pilcher *et al.* (2000)].
3. We do not yet fully understand the biological function (if any) of vocalisation (sound production) during embryo incubation and hatchling emergence from the nest (e.g., Ferrara *et al.*, 2014, 2019; Field *et al.*, 2021; McKenna *et al.*, 2019) for all species of sea turtle. If acoustic communication among embryos and/or hatchlings occurs, then clutch size may be important. Until this information is known, managers should be cautious about changing any incubation parameters that could negatively impact embryo and/or hatchling biology.

## RECOMMENDATIONS

Hatchery managers wanting to achieve high hatchling production should ensure they are following best practices for hatcheries (Mortimer, 1999; Phillott & Shanker, 2018) by:

- collecting and moving eggs to the hatchery within 3 (optimal) to 6 (acceptable) hours after oviposition to minimise movement-induced mortality (Limpus *et al.*, 1979; Parmenter, 1980; Williamson *et al.*, 2017), and
- ensuring nest density is no more than 1 nest/m<sup>2</sup> to minimise the potential for hypoxic (low O<sub>2</sub>) and hypercapnic (high CO<sub>2</sub>) conditions to develop in the nest (Clusella Trullas & Paladino, 2007; Honarvar *et al.*, 2008) and reduce the likelihood of metabolic heat produced by one clutch of eggs (Deeming, 2004) affecting an adjacent clutch of eggs, and
- digging hatchery nests to the depth of the original nest or the known average for the species so that eggs incubate in thermal conditions for which the species are adapted (Santidrián Tomillo *et al.*, 2017).

If hatchery managers are concerned that conditions in the nest could be reducing hatching and emergence success rates or skewing hatchling sex ratios to female, they can do the following to make an informed decision about managing hatchery nests based on valid data:

- monitor the nest temperature throughout the duration of incubation to calculate the embryos cumulative exposure to high temperatures (Bladow & Milton, 2019) and use the data to determine if temperature mitigation using shading and/or watering) is required (e.g., Esteban *et al.*, 2018; Gatto *et al.*, 2023; Lolavar & Wyneken, 2021; Reboul *et al.*, 2021; Staines *et al.*, 2020; Wood *et al.*, 2014), and/or
- monitor the nest temperature during the thermosensitive period (the time interval of incubation when temperature affects sexual differentiation of the gonads; Mrosovsky & Pieau, 1991) and use the data to predict hatchling sex ratios (Girondot *et al.*, 2018), and/or
- determine the stage of development (Miller, 2017) at embryo mortality to determine if it coincided with specific environmental events (such as high temperatures) during incubation (Mortimer *et al.*, In Press), and/or
- monitor respiratory gases in the nest conditions to assess if hypocapnia and/or hypoxia is being experienced by developing embryos (late-stage embryos are most vulnerable; see Lyons *et al.*, 2022).

In conclusion, there is not yet a substantial body of work that demonstrates splitting clutches increases hatching success without impacting hatchlings. Indeed, splitting clutches might increase the energy for hatchlings to escape the nest and increase the risk of depredation on the beach and while swimming through inshore waters. Until stronger evidence emerges, clutch splitting should be considered experimental, implemented with careful monitoring, and evaluated against natural-sized controls. If the decision is made to split clutches for incubation in a hatchery, then hatchery managers should:

- record data about original and split clutch size, nest depth, incubation period (in days), hatching and emergence success, and indicators of hatchling fitness (e.g., crawl speed, righting ability, swim speed) to compare with the same data for clutches of natural size to assess if splitting clutches is having an impact on hatchlings produced from the hatchery, and
- report such information to help other hatchery

managers understand if the splitting clutches has any benefits or should be avoided.

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# SSTCN TURTLE DIARY OF 2025 - THE SEASON OF LOWS AND HIGHS IN CHENNAI

V. ARUN

Students' Sea Turtle Conservation Network (SSTCN)

sstcnchennai@gmail.com

## A Flourishing Start

The 2025 nesting season started with a flourish with a workshop on turtle conservation awareness on the theme *Sea Turtle Conservation in India, Past, Present and Future*, organised by the Tamil Nadu Forest Department (FD). All the stakeholders involved, including turtle scientists from across the country, conservationists from within the state, along with all the officers and staff of the FD involved in turtle conservation were invited. There was a sense of preparedness to meet the start of the season like never before. There was a strong sense of optimism and excitement in the air.

## Depressing January

As such, no one was prepared for the extremely distressing month of January 2025. Every night scores of fresh dead turtles washed ashore, many of them gravid females who would have laid their eggs in the coming months. After the last decade and more we have come to expect the sight of dead turtles at the start of the season. The number of dead turtles fluctuate each year, as do the number of nests. During the early 2000s we would count around 25 dead turtles on the beach area monitored by SSTCN. More recently, the numbers had gone up quite dramatically to anywhere between 100 and 300 dead turtles per season. In one bad year (2015) numbers went well beyond 300 dead turtles. But this season, we crossed 300 strandings within the first 10 days of January. By the end of January, we had reached 1,300 strandings.

## FD's Quick Response and the Nodal Task Force

In response to a *Suo moto* case filed by a judge of the Madras High court in the year 2015, a Nodal Task Force was established in 2017 to set up frameworks and protocols to reduce sea turtle mortality. The PCCF was quick to reconvene the task force to look into the matter this year. While the matter was being discussed with all stakeholders, including fishers from different associations (mechanized fishing boats and motorized country boats), the number of strandings kept going up. The FD along with the Fisheries Department and Coast Guard took a

number of steps to make sure that the law that prohibits trawl boats fishing within the five nautical mile zone was implemented.

As a part of the task force, I learned about devices called transponders, which were fitted onto all boats to trace their movements from the shore itself. A surveillance wing of the FD traced the movement of the boats and reported violations of fishing within 5nm of the coastline to the Principal Chief Conservator of Forests (PCCF). They informed the Fisheries Commissioner who then initiated action against the erring trawlers. The Coast Guard was also on patrol to make sure that boats didn't fish within the banned areas. Four fishers from different vessels were put under arrest for violating the law. Many cases were booked against trawlers.

## The Press

The press was picking up on the strandings, with some newspapers publishing regular stories and various social media handles from the general public reporting an alarming number from various beaches. The arrest of the fishers caused an uproar within the fishing community and the local Tamizh media highlighted the issue, being sympathetic towards the fishermen. The English media was more accusative of them. A polarised situation was quickly building, with of Chennai on the side of the turtles and the poorer communities aligning with the fishers. Senior scientists and conservationists like Dr Kartik Shanker were quick to point out that blaming fishers ultimately doesn't help the turtles, as demonstrated in Odisha. Dr Shanker pointed out that it is important to get all stakeholders to a common forum, and solutions should emerge from and through the direct participants.

It was still a puzzle as to why turtles were dying in such numbers. While the cause of death of turtles was obvious to us turtle people, the fishermen were citing climate change as a major cause and ocean pollution from industry and many other factors. While these factors were responsible in the long term for harming ocean life in general and turtle populations in particular, the immediate cause of death was due to drowning in fishing nets. A number

of necropsies were performed by the Vepey Veterinary Hospital and found the cause of death to be drowning. But many of the turtles that washed ashore were already in a decomposed state and as such necropsy was often not possible.

### **Alternative Perspectives**

One senior fisher, Mr Palayam, who has been studying and documenting various signs of the sea for the past several years, said that there was an unusual current this year, which brought in a higher number of dead turtles to the shore. The number of dead turtles that wash ashore can depend on oceanographic process, climatic factors, season and distance from shore (e.g., Cook *et al.*, 2021; Nardi *et al.*, 2025). If Mr Palayam's observations about the ocean currents running in the opposite direction were correct, that would account for the higher number of dead turtles washed ashore. But there were no other studies to corroborate his observation.

### **Increasing Use of Squid Nets**

We also heard from local fishers from different villages that local small-scale artisanal fishers were using a much higher number of squid nets and ray nets within the village limits, and that these were entangling the turtles. We alerted the FD and Fisheries Department about this situation, and they addressed it through awareness programs in the fishing villages. However, we had no clear evidence to account for the much higher number of dead turtles in 2025. Also, puzzling was that a disproportionately large number of stranded dead turtles were found in the Chennai and Kanchipuram districts but no other coastal districts of Tamil Nadu.

### **Positive Actions**

We were happy that the passionate Forest Secretary, Ms Supriya Sahu, was posted back into the department after a brief hiatus elsewhere. She promptly called for a meeting which was presided over by the Forest Minister Mr K. Ponmudy, during which the senior members of the FD and other branches of the Government, scientists, experts from across the country, the animal welfare board, and turtle conservationists discussed the issue. The turtle issue was gaining momentum in all spheres.

A budget was sanctioned to buy two boats for the FD and Fisheries Department to monitor fishing in near-shore waters. Awareness camps and workshops were being held in every fishing village. This opportunity was used to create awareness of other endangered species as well. SSTCN members, Nishanth and Krithi participated

in these activities along with the FD. Each fishing village has a women's group called the *Sagar Mitra* who responded positively to these workshops and promised to work towards safeguarding the ocean in general and endangered species in particular. This work is to continue along the coast even during the off season.

### **Hope Awakens in February**

As the number of dead turtles kept rising, so did our despair. In the meantime, our public walks were due to start and the number of emails requesting a slot to join a walk was skyrocketing. We wondered if people hadn't been following the news and had not heard about the turtle strandings. We were unsure about conducting the public walks, with many at SSTCN feeling that there may be no turtle season at all with all the turtles that came to nest having been killed. But some in our group felt that we should go ahead and conduct the public walks and people should witness the problem.

And then on the night of the first of February, a lone olive ridley female came ashore and laid eggs. Many of us wept. We were not sure if she was one of a few who survived or if the tides were going to change. Nesting increased steadily. There was no drop in the occurrence of dead turtles but finding nests helped lift the feeling of gloom and doom.

### **Magical February**

As days went by, we began to find more and more nests. It was slowly dawning on us that this could be a big season. Excitement started to build among the team. Everyone had numbed themselves till now in the face of so much death, but here was a totally new feeling blossoming. Did we dare hope? The answer seemed to be emphatic, YES.

As we settled into the exciting work, the usual share of problems began to creep up. These problems in the long run or after a season is over don't seem so big, but while the season is going on, they can cause a lot of stress.

One such problem this year was the app that was developed by the FD ostensibly to help with being more organized with moving nests to the hatchery. The SSTCN volunteers were not given access to the app. For a while, every time we found a nest we had to inform the FD staff and wait for them to come to remove the nest. We then had to again wait to relocate the nest into the hatchery. This made our turtle walks redundant except for interactions with the public. SSTCN and the FD walking at separate times for better monitoring coverage

of the beach wasn't working out at all. The situation took quite a bit of sorting out, even though the warden Mr Manish Meena was very supportive of us. Later in the season, we were given access to the app.

### **Public Turtle Walks**

This year's public turtle walks were very good. The walks were well organised thanks to Dr Lakshmi who has been attending to the public registration process by email for many years now. As is our policy, we focused on schools, colleges and families. Keeping the numbers on each walk to a manageable level was the challenge. There were good discussions in both Tamil and English. Sometimes, there were discussions in three groups on a single walk to cater to different age groups and language groups. Most of the people who attended the walks got to witness some activity, like eggs being collected and moved to a hatchery, hatchlings being released, and of course the best experience of all, a live nesting turtle. To be able to facilitate these special moments for people, who are invariably moved by these experiences, is something we are grateful for.

### **Social Media Woes**

SSTCN has usually been shy of publicity, as we like to keep our heads down and focus on the work. While the public walks and hatchling releases are hugely popular and are overbooked, we have felt that any more media attention would work adversely for us and the turtles we want to protect. Additionally, the media tends to glorify the walkers while paying scant attention to the plight of turtles.

The FD was also quite particular about unwanted attention from the media. So, while we had a social media page, we barely posted on it. Our absence in this space created a void, which was filled by others who claimed to be doing the work that we were doing. This has previously caused a lot of unhappiness among our team. This year we reversed our policy and decided to post on the SSTCN Instagram page regularly. This change surprised many, but people were also relieved that we were claiming our space in some ways.

We stayed away from the mainstream media as it was mostly focusing on turtle deaths. But with the collaboration of Better India, a series of articles covering various aspects of turtle conservation in Chennai were published. This balanced perspective helped to gain a wider understanding.

### **Crowd Management at the Hatchery**

In 2024, a post by one visitor to the hatchery went viral and was one of the reasons for huge turnouts at the hatchery. Managing the crowds became the main task of the volunteers at the hatchery and we didn't have the bandwidth to manage this number of people. There were many days when nearly a thousand people waited to see a few hatchlings being released into the sea. We tried briefing in separate groups and splitting the crowds for them to at least witness the hatchlings. All this caused a lot of stress among the team. This year, we were very clear that we couldn't go through the same.

Hence, in 2025, we negotiated with Save a Turtle, another organisation, whose participation in the turtle season was restricted only to creating awareness and bringing groups of people to the hatchery. We decided that we would try and restrict the public to 100 people a day between the two groups. While this didn't quite work within that number, we didn't have the huge numbers like last year.

As SSTCN is a loose network of people, we have not felt a need to establish ourselves with any branding. But with new organisations working in the same space, we felt a need for an identity for ourselves. So, for only the second time in nearly three decades, we made a t-shirt for ourselves.

### **Hatchery Management**

The FD had built a huge hatchery to start 2025 but given the number of nests we collected this year, it had to be extended twice. Since 2006, we have been adding a jute cover on the hatchery around the end of March to prevent overheating. The original jute covering didn't cover the two extensions in 2025; new layers had to be added, and there was a delay of a few days in the process where the eggs in the extension faced extreme heat. We also had unseasonal heavy rain in April. In the climate change era, summer rain has become the norm. The combination of heavy rain and extreme heat had a negative impact on survival of eggs in the extensions. As always, we had high success with hatchlings emerging from the nests laid in February. As usual, as the season progressed, the hatching success rate kept dropping.

In the last three years, we have had a very good team headed by Abhishaek to manage the hatchery. This year, Aakash, who was part of the team in the last few years, took complete charge as Abhishaek had moved. Aakash, Nambirajan, Gopal, Nishfa, Kadambari, and many others monitored the hatchery round the clock. This is the most beautiful aspect of a volunteer organization like SSTCN.

Everyone brings total commitment out of an inner zeal to do their bit for the more than human world.

Thanks to the large number of nests, we had hatchlings emerging almost every day in March and April and we had public releases every evening followed by continuous releases through the evening as hatchlings kept emerging. Then monitoring would be done by night volunteers like Prem, Gopal and others.

### **Conclusion**

Overall, this was a phenomenal season with so many different dimensions playing out on all fronts. We are happy that the turtles and their conservation got some attention from the Government, media and public. We ended the season after collecting 382 nests with 42,728 eggs to incubate in the hatchery and released 28,293 hatchlings.

We are deeply grateful for this opportunity to work towards the conservation of a gentle and beautiful

being, the olive ridley turtle. We are happy for the close and trusted collaboration with the Forest Department without whose support and help the program wouldn't be the same.

A special mention needs to be made of the Warden of Chennai, Mr Manish Meena who was most cooperative and supportive, Mr Rakesh Dogra the PCCF, and Mr Reddy the HOD for their expert handling of a very difficult year.

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## REHABILITATION AND RELEASE OF A STRANDED OLIVE RIDLEY TURTLE IN KARNATAKA, INDIA

SURANJANA GANGULY<sup>#</sup>, SHANTANU KALAMBI & NEELAGIRI SHREYA RAO

ReefWatch Marine Conservation, Kundapura, Karnataka, India

<sup>#</sup>suranjana@reefwatchindia.org

### CASE PRESENTATION

On 29<sup>th</sup> June 2023, a live olive ridley sea turtle (*Lepidochelys olivacea*) (Figure 1) named 'Froggy' was reported stranded on Uppunda Beach (13.8405° N, 74.6139° E) in Udupi District of Karnataka, India. The turtle's morphometrics were measured using a 1m flexible tape measure and weighing scale. The curved carapace length (CCL) was ~60cm, curved carapace width (CCW) ~64cm, tail length from plastron (TLP) ~6cm, and weight was 19.5kg. Given the CCL and short tail, the turtle was presumed to be a sub-adult female (Tripathy, 2016; Das *et al.*, 2025).



**Figure 1. Live Stranded Olive Ridley Turtle Undergoing Treatment at Reefwatch in Karnataka, India. Image: Reefwatch.**

The turtle was transported to the Reefwatch centre in Kundapur, Karnataka. On examination, the turtle presented with severe emaciation. There were small circular skin lesions on the ventral surface, bilaterally extending from the neck to the fore flippers. There were granulating strangulation marks on both fore flippers. The carapace was damaged, with small lesions and abrasions along the surface and chipped and damaged marginal scutes. The caudal carapace had semicircular injuries that created an appearance of depressions between the 6<sup>th</sup> and 7<sup>th</sup> costal and marginal scutes on both the left and right sides.

On day one, the turtle's treatment included fluids RL (Ringer's lactate solution, 200mL given subcutaneously), antibiotics injection (ceftazidime 400mg given subcutaneously), and vitamin B12 (12: 0.5mg/kg subcutaneously) and vitamin K (2mg/kg subcutaneously). After treatment, the turtle was placed in a tank ~75cm tall, ~130cm wide, and containing 500L of fresh water and 10L of seawater. The turtle was active and attempted to dive but experienced buoyancy issues in the cranial two quadrants. During feeding, the turtle ate two medium-sized sardine fishes.

On day five, a single dose of oral dewormer (250mg of pyrantel suspension) was administered. Additional treatments included daily subcutaneous fluid therapy, injections of ceftazidime (400mg given subcutaneously every 7 days), and supportive care in terms of wound dressing and vitamin B12, vitamin K and iron dextran. This treatment protocol of daily fluids and weekly antibiotics and vitamins was followed for 9 days. During this time the animal was eating independently and active but continued to show buoyancy issues and was unable to dive even after three doses of the antibiotic. Bloods were collected using a 21-gauge, 1.5-inch needle via the dorsal cervical vessel in a heparin tube and sent to a diagnostic laboratory for haematology and biochemistry analysis. Results of the blood analyses are presented in Table 1.

On day nine, a dry swab of pus was collected from a nasal passage and submitted for culture and sensitivity test, and the turtle was sent to the veterinary hospital for radiography. The radiographs indicated no foreign objects, but congestion was observed in the dorsoventral, lateral, and cranio-caudal views of the lungs.

On day 10, nebulisation was initiated with the addition of one crushed 100mg itraconazole capsule, 4mL of hypertonic saline solution (Sodium Chloride Inhalation solution USP 3% w/v), and 2mL of budesort (Budesonide Nebulizer Suspension BP 0.5 MG). Nebulisation continued for a total of 14 days. We also started applying thuja ointment (a homeopathic treatment) to skin lesions daily. The anthelmintic drug fenbendazole was given orally on the 12th, 13th and 14th days at 25mg/kg (SID x 3 days) and was repeated for three days again after 14 days.

The results of the culture and sensitivity tests were received on the thirteenth day; the culture report revealed no growth. We continued with our routine management for turtles, which included administering fluids, treating wounds, changing water in the tank,

and feeding. The turtle was provided with fresh shrimp and fish every morning and evening, eating 10 to 35 medium-sized shrimp per day until it was defecating regularly and released.

After 32 days, when the turtle's buoyancy was resolved and the weather improved, the turtle was successfully released into the sea, past the breaker line, from a boat in the early afternoon. The turtle was microchipped (Happy Pet Solution' microchip ID 982091075147591) in the left front flipper on day seven so it could be identified if recaptured again after release.

Despite buoyancy issues and persistent injuries, the turtle showed gradual improvement during the rehabilitation period. Diagnostic tests revealed no significant abnormalities, and wound healing progressed satisfactorily. Multidisciplinary care, including veterinary treatment, supportive husbandry, and monitoring of clinical parameters, contributed to the successful rehabilitation and release of the stranded olive ridley turtle.

**ACKNOWLEDGEMENTS**

We acknowledge the Karnataka Forest Department for their assistance and for permitting us to handle this protected species (permit number IN-KA13466873654166R). We thank GMM Pfaudler Foundation and Siddhartha Lal Trust for funding this programme, and Nayantara Jain for facilitating permits, managing field logistics, and organizing funding. We are grateful to the ReefWatch Karnataka team for their work on the ground.

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**Table 1. Comparison of case profile (“Froggy”) with other turtles housed at the Reefwatch centre during this period. The mean and range represent data from 12 adult olive ridleys housed at the centre in 2023.**

Blood Parameter	Adult Olive Ridley Turtles				
	Froggy	Mean	SD	Range	n
TLC (10 <sup>3</sup> /μL)	5.60	11.33	1.22	10.00-12.40	3
Creatinine (mg/dL)	0.17	0.35	0.15	0.08-0.53	12
BUN (mg/dL)	20.60	29.88	14.72	12.20-57.50	11
ALT/SGPT* (U/L)	8.00	12.69	6.95	5.00-29.90	11
Total Protein (mg/dL)	2.20	1.70	0.80	0.10-3.10	12
Albumin (mg/dL)	NA	1.00	0.40	0.71-1.85	7

\*ALT (Alanine Aminotransferase)/SGPT (Serum Glutamic-Pyruvic Transaminase)



# PRESIDENT'S REPORT: 43<sup>RD</sup> ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION, 22-27 MARCH 2025, ACCRA, GHANA

ANDREWS AGYEKUMHENE

President, International Sea Turtle Society (ISTS Symposium 43)

Department of Marine and Fisheries Sciences, University of Ghana, Accra, Ghana

aagyekumhene@gmail.com; aagyekumhene@ug.edu.gh



The 43<sup>rd</sup> International Sea Turtle Symposium marked a historic milestone as the first ISTS Symposium ever hosted in Africa. Held in Accra, Ghana from 22<sup>nd</sup> to 27<sup>th</sup> March 2025, this groundbreaking event brought together over 350 registered participants from 65 countries, including experts, conservationists, students, government officials, and grassroots practitioners. The central theme, “Unity and Collaboration,” underscored the power of cross-sector partnerships, regional cooperation, and inclusive scientific exchange to address the pressing challenges in sea turtle conservation.

The event featured an impressive suite of activities, including seven capacity-building workshops, four regional meetings, 138 oral presentations and 112 posters in key thematic areas such as innovations in nesting biology, in-water monitoring, fisheries interaction, and socio-economic engagement. Students played a prominent role, benefiting from a “Speed Chatting” session, networking opportunities, and mentoring.

In addition to its rich scientific content, the symposium embraced Ghanaian cultural expressions and traditions, fostering a unique atmosphere of warmth and connection. Social events, a vibrant exhibition space, and a dynamic awards ceremony further contributed to the symposium’s success. The 43<sup>rd</sup> ISTS Symposium not only marked a milestone for the International Sea Turtle Society but also deepened its commitment to inclusion, regional equity,

and forward- thinking conservation action. The event concluded with a heartfelt celebration at the Farewell Banquet, where awards were presented and the ceremonial trowel and jacket were passed to the incoming President for 44<sup>th</sup> ISTS Symposium.

## Logo

The symposium logo was designed by Fiifi Simons. The logo shows the Ghanaian flag on both sides of the ocean (blue semicircle) indicating the host country for the symposium and also serving as a reminder of the hospitality and cultural diversity of Ghanaians. Swimming in the ocean are the three species of sea turtles (olive ridley, leatherback, and green) which are commonly found in Ghanaian waters and nest on the country’s beaches in considerable numbers. These species are also common in most African countries. Above the symposium name are two Ghanaian symbols that signify Unity. On the left is the “*Funtumfunefu Denkyemfunefu*” or “Siamese crocodiles” which feature two conjoined crocodiles symbolizing unity in diversity and the importance of working together for a common purpose even in the face of conflict or competition. On the right is the “*Nkonsonkonson*” which means “chain link”, a symbol of unity and community (human relations). The combined elements of the logo convey the message that in unity lies strength, echoing this symposium’s theme of Unity and Collaboration, as captured in the logo under the ocean.

## Reducing Our Plastic Footprint

Every effort was made to make the symposium more environmentally friendly. No plastic was used during coffee breaks or other events. All registrants received a souvenir coffee mug emblazoned with the symposium logo to use during breaks. Bottled water was not served during breaks; water dispensers were provided instead. Additionally, paper cups were provided during coffee

breaks and alongside the water dispensers for participants who did not carry their mugs with them. All name tags were made of hard cardboard instead of plastic. Instead of printed mailings, announcements were distributed through email lists, the ISTS website and various social networks.

### **Sea Turtle Necropsy Session**

A sea turtle necropsy session was held on 21<sup>st</sup> March 2025, before the start of the symposium. This session was specially dedicated to African students who were interested in the topic but opened to all participants. The session included lectures on sea turtle anatomy and physiology, threats (diseases and injuries that affect sea turtles), and basic techniques for addressing bycatch issues such as removing hooks. The lectures also touched on the conservation significance of necropsy. The laboratory session involved performing necropsy on an olive ridley turtle as well as handling and safety procedures for working with deceased sea turtles. The necropsy session lasted for six hours and was instructed by Daniela Freggi (team lead), Mariluz Parga, and José Luis Crespo.

### **Workshops and Regional Meetings**

Workshops and regional meetings were scheduled for the two days prior to the main four-day Symposium. These early events provided participants with opportunities to share research techniques and exchange information on environmental and sea turtle conservation issues. Six workshops were held on 22<sup>nd</sup> March 2025, offering capacity building and promoting peer-to-peer learning. The workshop were: (1) Harnessing the Power of Social Media for Non-Profits & Individual Researchers; (2) Sea Turtle Rehabilitation, Care and Medicine; (3) Creating Behavior Change Campaigns for Sea Turtle Conservation; (4) Toward Holistic Strategies for Fisheries Sustainability and Bycatch Reduction; (5) 5<sup>th</sup> Environmental Education Workshop: Interdisciplinary and Collaborative Environmental Education Projects; (6) Male Sea Turtles: Global Research Update and Methodology Development for Guiding Conservation Efforts. An additional workshop was scheduled on 23<sup>rd</sup> March 2025, as part of the Student Committee activities: Career Paths and Techniques in Sea Turtle Conservation.

Four regional meetings on 23<sup>rd</sup> March 2025 brought together stakeholders from Africa, the Mediterranean, Indian Ocean & Southeast Asia, and Latin America (RETOMALA). These meetings allowed regions to reflect on their specific challenges and strengthen collaborations across borders. The African Regional meeting was held

all day to allow updates from projects from across Africa since it was the first opportunity for many of such projects to share their work at an ISTS Symposium. The meeting emphasized the need for projects across the continent to work together under the Symposium's theme: "Unity and Collaboration." A total of 93 participants from 24 countries attended the meeting representing the largest participation of African projects ever recorded at this type of meeting.

### **Main Symposium Program**

The main Symposium began with prayers, and to make it even more unique, a traditional Ghanaian prayer was offered by pouring of libation to the gods by Nuumo Akwaa Mensah III (Nai Wulomo), as the tradition of the land demands. The Dean of the School of Biological Sciences at the University of Ghana, Professor Langbong Bimi (with the address delivered on his behalf by Dr. Francis Gbogbo), officially welcomed participants to the 43<sup>rd</sup> International Sea Turtle Society Symposium, highlighting the significance of hosting the event in Africa for the first time. He emphasised the University's ongoing commitment to marine conservation and called for unity and collaboration to address the global challenges facing sea turtles. His speech was followed by opening remarks from Dr. Benjamin Botwe, Head of the Department of Marine and Fisheries Sciences at the University of Ghana. This was followed by a poetry performance by Mr. Osei Kwame Korankye of the University of Ghana's School of Performing Arts. His performance, titled "Message from the Unsung Hero," set the stage for the President's address.

Dr. Andrews Agyekumhene, President of the International Sea Turtle Society, welcomed participants to the 43<sup>rd</sup> International Sea Turtle Society Symposium in Accra, Ghana, marking the first time the event has been held on the African continent. His speech emphasized the theme of "Unity and Collaboration," urging attendees to work together, overcoming differences, to protect sea turtles. He highlighted the major threats facing sea turtles and called for inclusive, community-driven, and decolonised approaches to conservation, emphasizing that meaningful impact is only possible through collective action. The President's speech was followed by three keynote speakers.

Mr. Ayaa Kojo Armah delivered the first keynote address on the topic, "Consolidating Sea Turtle Conservation in Ghana and Developing Countries." Mr. Armah, a former Head of the Department of Marine and Fisheries Sciences at the University of Ghana and current CEO of ESL Consulting Limited, reflected on Ghana's history of sea turtle research and highlighted the role of international support in initiating early studies and conservation

efforts. He emphasised the need to strengthen local initiatives in the face of declining external funding and advocated for practical national strategies and stronger regional collaboration through platforms like the UNEP Regional Seas Programme.

Dr. Noble Asare delivered a keynote address on behalf of Prof. Denis W. Aheto, Vice Chancellor of the University of Cape Coast and Director of the Africa Centre of Excellence in Coastal Resilience (ACECoR). He addressed attendees on the theme of “Unity and Collaboration” in sea turtle conservation. His speech highlighted the urgent need for global collective action to tackle threats such as climate change, habitat loss, pollution, and bycatch. He emphasised that conservation success is possible through community-based efforts, scientific innovation, and strong partnerships, urging participants to conclude the symposium inspired and committed to united and tangible action.

Conservation partners, such as the Forestry Commission’s Wildlife Division and A Rocha Ghana, also delivered solidarity messages. Both outlined the current threats to sea turtle in Ghana and their ongoing efforts and commitments to support the fight against these threats. The Wildlife Division pledged to intensify its efforts to enforce laws that comprehensively protect sea turtles in the country, while A Rocha Ghana pledged its unwavering support for raising awareness about the species. Both partners called for a more united front among stakeholders to advance sea turtle conservation efforts nationwide.

### **Special Session: Decolonising Conservation**

The main symposium program then started with this session, which examined how colonial legacies shaped conservation by displacing Indigenous communities and marginalising traditional local knowledge. The session called for community-centred sea turtle conservation, reconciliation ecology, and co-production of knowledge between science and traditional beliefs. It also highlighted how the International Sea Turtle Society has promoted equity by expanding symposia in the Global South over the years, funding grassroots and student grants, and diversifying leadership. Recommended future actions include remote participation, multilingual inclusion, and increased representation to ensure equitable and sustainable conservation.

### **Oral and Poster Presentations**

Immediately following the special session, oral and poster presentations took place from 24<sup>th</sup> March through

27<sup>th</sup> March. Program Chairs Phil Allman, Kate Levasseur, Katrina Phillips, and Liliana Colman, along with Poster Chairs Phil Allman, Gustavo Stahelin, and Kelly Sloan and 41 Session Chairs, developed the symposium program consisting of 138 oral and 112 posters presentations within nine session categories: (1) Anatomy and Physiology; (2) Conservation, Management and Policy; (3) Education, Outreach and Advocacy; (4) Fisheries and Threats; (5) In-Water Biology; (6) Nesting Biology; (7) Population Biology; and (8) Rehabilitation and Health. In addition to the traditional regular sessions, two side meetings were also held: “Marine Turtle Specialist Group (MTSG) Meeting”, and “Lunch and Learn: Freshwater TSA”.

### **Video Night**

Patrick Abbeyquaye, John Selasi Yao Agudogo, Sampson Kofi Mawuko Kudior gathered 26 short films from 21 countries across Africa, the Pacific, the Americas, Europe, and the Middle East. The stories came from Ghana, Cabo Verde, Mauritania, Guinea-Bissau, São Tomé and Príncipe, Egypt, Jordan, Tunisia, Madagascar, South Africa, the Seychelles, Fiji, Panama, Grenada, Brazil, Mexico, USA, France (French Guiana, French Polynesia, and Reunion Island), Spain, and Maldives. These striking visual stories highlighted the diverse ways communities, researchers, and organizations are working to protect sea turtles and their habitats. The videos were publicly screened on the evening of 24<sup>th</sup> March. The Video Night was attended by just over 100 people and featured free popcorn for the audience.

### **Origin Stories**

This year, we used a blended approach allowing participants to share indigenous stories and experiences working with sea turtles in the field. A total of 52 participants participated in the event and shared 20 stories and experiences. The event was led by Patrick Abbeyquaye and John Selasi Yao Agudogo.

### **Student Committee Activities**

The Student Committee, chaired by Janie Reavis with support from Chandana Pusapati, Abhishek Thawait, Aiyana Reissman, Mildred Alpizar, Sarahi Ramos, Emily Turla, Lucas Capitão, Fitra Nugraha, Heather Seaman, Rachel Southards, Lindsay Curl, and Derek Aoki, coordinated activities designed to welcome and assist student attendees. Three activities were held:

*The Student Workshop “Career Paths & Techniques in Sea Turtle Conservation”* was held on 23<sup>rd</sup> March. Twenty- three students participated. This workshop offered valuable insights into diverse career

paths in sea turtle conservation, including consulting, academia, government, and nonprofit sectors. Presenters Hamed Mallat, Ana Rita Patricio, Christine Figgner, Rowan Calder, and Kevin Lay shared professional experiences and practical advice. The session also included live demonstrations of key field techniques, such as PIT tagging, flipper tagging, and satellite tagging, providing hands-on learning opportunities for future conservationists.

*Student Social Mixer* This aimed to promote networking and communication among students, took place on the same day, 23<sup>rd</sup> March, just prior to the Welcome Social. The gathering offered a relaxed and exclusive space for the 23 participating students to connect and interact. For an hour, students engaged in informal introductions and conversations, which helped to break the ice and create a sense of community. This session was designed to foster early connections between participants at similar stages of their academic and professional journeys, setting the tone for a collaborative and welcoming symposium experience.

*Speed Chatting with the Experts* The event took place on Monday 24<sup>th</sup> March, and offered a dynamic and informal setting for 30 participating students to interact directly with leading experts in sea turtle research and conservation. Inspired by the concept of “speed dating,” this session allowed participants to chat one-on-one for 10 minutes with each expert, asking questions about their research, career paths, or even their own projects. It served as an accessible platform for dialogue, mentorship, and networking, especially for students eager to connect with professionals whose work they have studied or admired. For most of the students, this was a unique opportunity to meet in person with authors whose work they have used and cited in their research or whose work they have heard about. Eight distinguished experts generously volunteered their time and expertise: Matt Ware, Manjula Tiwari, Hiltrud Cordes, Brad Nahill, George Shillinger, Tony Nalovic, Kate Mansfield, and Kartik Shanker.

### **Sea Turtle Trading Post**

As some groups working in sea turtle biology and conservation have surplus equipment and supplies that are rarely used or no longer needed, this event was introduced to find another purpose and use for such equipment. The sea turtle community is invited to donate new or gently used field and lab equipment, and those interested in acquiring each item of equipment could enter their names into a drawing. A total of 111 participants from 36 countries (predominantly Africa) signed up for the turtle trading post. Thirty-eight items were donated to the post for an approximate value of \$5,500. The donated items included a drone, GPS units, backpacks, two-way

radios, inflatable solar lanterns, PIT tag readers, PIT tags, biopsy punches, field lamps, and measuring tapes. The beneficiaries were primarily students, as well as projects from low-income countries. The turtle trading post was chaired by Kate Mansfield, assisted by Abigail Baidoo and Ryan Welsh.

### **Silent and Live Auctions**

The silent auction was organized by Marina Zucchini, while the live auction was hosted by Rod Mast, assisted by Marina Zucchini. Nearly 300 items were donated to both live and silent auctions, of which 216 were sold in the silent auction and the rest in the live auction. A total of US\$13,578 was raised across both auctions, of which \$3,668 was raised in the silent auction. We thank everyone who donated items, bid, and fought for their favourite items. All proceeds will fund travel grants for next year’s symposium.

### **Social Events**

The social component of the symposium included the Welcome Social, Student Committee activities, the Awards Ceremony, and the Farewell Banquet. The Welcome Social and Cultural Night was held at the Mensvic Grande Hotel Poolside on 24<sup>th</sup> March. Participants danced to authentic Ghanaian music while enjoying networking and having fun conversations.

The Farewell Banquet was held on the evening of the final day of the symposium. During the Awards Ceremony, numerous awards were presented, including the Archie Carr Student Awards, the ISTS Career Awards, and the Grassroots Conservation Awards. The formal evening session concluded with the President’s remarks of gratitude and the ceremonial passing of the ISTS Presidential trowel and jacket to the incoming President of the 44<sup>th</sup> ISTS Symposium, Alexander Gaos. Music and dancing followed to celebrate the closing of the Symposium.

### **ISTS Career Awards**

Jesús Tomás, ISTS Career Awards Committee chair, and his committee (Earl Possardt, Jacques Fretey, Rod Mast, Ryan Welsh) presented awards to an exceptional group of honourees. The 2025 ISTS Lifetime Achievement Awards were presented posthumously to Wallace J. Nichols and Anton D. (Tony) Tucker. The 2025 ISTS Champions Awards were presented to the Association Kratten Du Développement Durable de la Culture et du Loisir (AKDDCL, Tunisia), Adilson Monteiro Ramos (Fundação Tartaruga Cabo Verde), Bryan Wallace, and

Manjula Tiwari. Additionally, ISTS President Andrews Agyekumhene presented the 2025 President's Awards to the Wildlife Division (Forestry Commission, Ghana), Department of Marine and Fisheries Sciences (University of Ghana), Mr Ayaa Kojo Armah (ESL Consulting Limited, Ghana), Phil Allman (Goshen College, USA), Manjula Tiwari (Ocean Ecology Network).

### **Archie Carr Student Awards**

Co-Chairs Andrea Phillott and Natalie Wildermann received requests to consider 70 student presentations (44 orals and 26 posters) for the Student Awards. Student presentations were judged by Agnese Mancini, ALan Rees, Brendan Hurley, Hannah Vander Zanden, Joana Hancock, Kate Mansfield, Marco Garcia, Marta Pascual, Matthew Ware, Mohd Uzair Rusli, Nicki Mitchell, Rita Patricio, Samantha Kuschke, Samuel Asumah, and Suzana Guimaraes. Eight students were recognized for their outstanding presentations. In the Biology category: Anna Ortega (oral winner), Lindsey Curl (oral runner-up), Derek Aoki (poster winner), Lucas Capitar (poster runner-up). Conservation category: Liyana Izwin Khalid (oral winner), Lindsey West (oral runner-up), Mildred Alpizar (poster winner) and Madhurika Nandi (poster runner-up).

### **Grassroots Conservation Award**

Chair Wafae Benhardouze assisted by judges Tomás Diagne, Débora de Carvalho, Josea S. Dossou-Bodjrenou, and Leah Mainye, evaluated the self-nominated presentations. The award was given to African Marine Conservation Organisation of Cameroon for its presentation "Siren Citizen Science: The Story of A Fisherman From Poacher To Sea Turtle Hero."

### **Exhibitors and Vendors**

Chairs Betty Delali Dordzi and Richmond Korang coordinated six exhibitor and vendor displays that attendees visited throughout the week. Exhibitors included: Oceanic Society (The State of the World's Sea Turtles, SWOT Program); The Leatherback Trust; African Marine Conservation Organisation; Lotek; Nature Seekers; and Wildlife Computers.

### **Society Business Plenary**

The 2025 ISTS Business Meeting was held on 24<sup>th</sup> March. ISTS President Andrews Agyekumhene called the meeting to order, and reports were presented by the Treasurer, Travel Grants Committee, Nominating Committee, and Student Committee. The results of the ISTS elections were

postponed for later announcement to the membership through the various online platforms. Alexander Gaos, 44<sup>th</sup> ISTS Symposium President, provided information on next year's Symposium, which will be held in Kailua-Kona, Hawai'i, USA. The theme of next year's meeting is "Kaiāulu" which means "Community".

### **Travel Grants**

Facilitating access to the Symposium for international students and participants is a priority of the Society, and travel grants are provided to offset attendance costs. Andrew Maurer chaired the Travel Grant Committee. Regional Travel Chairs were Angela Formia (Africa), Karen Eckert (Caribbean), Jose Urteaga (Mexico, Central America & Caribbean), ALan Rees (North Africa & Middle East), Daniela Freggi (Europe), Alejandro Fallabrino (South America), Andrea Phillott (South Asia), Mark Hamann (Southeast Asia/Pacific), and Kelly Stewart (USA & Canada).

The Society, with the help of its sponsors and last year's ISTS auctions, provided full accommodation during the symposium to 106 travel grant recipients. The distribution of grants by region was as follows: 30 to Africa representatives; 18 to Europe representatives; 17 to Mexico, Central America and Spanish-speaking Caribbean representatives; 13 to North America; 12 to Asia; eight to South America; six to Middle East and North Africa; two to Oceania/ Polynesia representatives. No travel grant applications were received from the Caribbean region.

### **Acknowledgments**

Organising and conducting the 43<sup>rd</sup> ISTS Symposium required an immense team effort. This would not have been possible without a small group of dedicated members willing to take on leadership roles, serve on committees, and collaborate on various tasks such as registration, organising workshop, fundraising, managing travel grants, and organising auctions. In alphabetical order by the first name, the Society thanks Abhishek Thawait, Abigail Baidoo, Aiyana Reissman, Agnese Mancini, ALan Rees, Alejandro Fallabrino, Alike Panagopoulou, Ana María Moncada, Andie Fisher, Andrea Phillott, Andrew Maurer, Angela Formia, Angela Manekuor Lamptey, Anna Ortega, Anna Stamatiou, Antonio Trujillo, Armando Barsante Santos, Ashleigh Bandimere, Betania Ferreira, Betty Delali Dordzi, Brad Nahill, Brendan Hurley, Bryan Wallace, Caroline Clavien, Catherine Hart, Chandana Pusapati, Christina Fahy, Christine Figgner, Connie Ka Yan, Damaris Marin-Smith, Daniela Freggi, Daniela Rojas, Débora de Carvalho, Derek Aoki, Earl Possardt, Ed McGinley, Edward Aruna,

Emily Duncan, Emily Turla, Eneida Fajardo, Eugenia Naro-Maciél, Eunice Konadu Asamoah, Fitra Nugraha, Gabriela Velez, George Shillinger, Gustavo Stahelin, Hamed Mallet, Hannah Vander Zanden, Heather Seaman, Hiltrud Cordes, Imed Jribi, Ingrid Yañez, Irene Kelly, Jacques Fretey, Jane Hardwick, Janie Reavis, Jannatul-Firdaus Alhussein, Jeanette Wyneken, Jeff Schwenter, Jenniffer Dede Ankrah, Jesús Tomás, Jimena Gutiérrez, Joana Hancock, John Selasi Yao Agudogo, Josea Sagbo Dossou Bodjrenou, Joseph Pfaller, José Urteaga, José Luis Crespo, Justin Perrault, Karen Eckert, Kartik Shankar, Kate Levasseur, Kate Mansfield, Kathy Zagzebski, Katrina Phillips, Kellie Pendoley, Kelly Sloan, Kelly Stewart, Kevin Lay, Lalith Ekanayake, Laura Exley, Leah Mainye, Liliana Colman, Lindsay Curl, Lucas Capitão, Manjula Tiwari, Marco Garcia, Mariela Pajuelo, Mariluz Parga, Marina Zucchini, Mario Mota, Mark Hamann, Marta Pascual, Matthew Ware, Mawuko Kudior, Maximilliano Polyak, Michael Liles, Michel Nalovic, Mildred Alpizar, Mohd Uzair Rusli, Mustapha Aksissou, Natalie Wildermann, Nathan Robinson, Naty Teryda, Nicholas Blume, Nicholas Pilcher, Nicki Mitchell, Oyeronke Adegbile, Paolo Casale, Patrick Abbeyquaye, Paul Whittock, Phil Allman, Rachel Southards, Ray Carthy, Richmond Korang, Rita Patricio, Roderic Mast, Roldan Valverde, Rowan Calder, Ruth Doñate, Ryan Welsh, Sabrina Mashburn, Samantha Kuschke, Sampson

Kofi Mawuko Kudior, Samuel Asumah, Sarahi Ramos, Sean Williamson, Sophie Mills, Suzana Guimaraes, Terry Meyer, Tomás Diagne, Wafae Benhardouze, and all the volunteers who were inadvertently omitted from this list. My heartfelt gratitude to the Local Organising Committee: Betty Delali Dordzi, Jannatul-Firdaus Alhussein, Patrick Abbeyquaye, John Selasi Yao Agudogo, Jennifer Dede Ankrah, Sampson Kofi Mawuko Kudior, Abigail Baidoo, and Richmond Korang, for making the event possible and beautiful. Special thanks to Ingrid Yañez, Manjula Tiwari, and Phil Allman for their immense support in planning the symposium.

Finally, the Organising Committee is grateful for the generous contributions of organizations and individuals who helped make the 43<sup>rd</sup> ISTS Symposium a success. At the Loggerhead level (\$15,000 to \$19,999): Anonymous donor. At the Kemp's Ridley level (\$1000 to \$4,999): Tullow Ghana Limited, Disney Conservation, Lotek, SEE Turtles, Turtle Foundation, Association of Zoos and Aquarium's Sea turtle SAFE program, and Coastal Wildlife Club Inc. At the Olive ridley level (\$500 to \$999): Wildlife Computers. At the Flatback level (\$25 to \$499): ESL Consulting Limited, and A Rocha Ghana. Supporting organizations were the Department of Marine and Fisheries Sciences, University of Ghana and Wildlife and Human Resources Organization (WHRO Ghana).





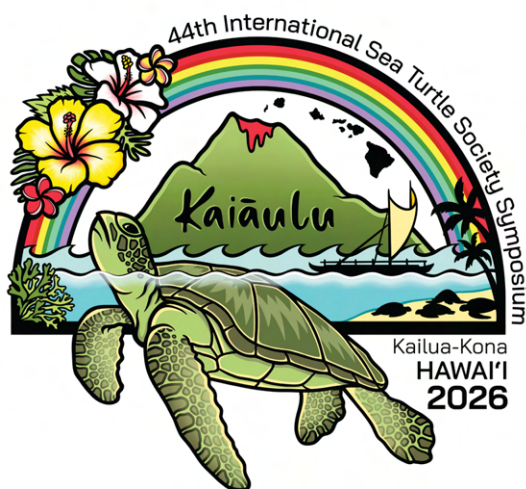
## ANNOUNCEMENTS

# 44<sup>TH</sup> INTERNATIONAL SEA TURTLE SOCIETY SYMPOSIUM, 28<sup>TH</sup> FEBRUARY TO 6<sup>TH</sup> MARCH, 2026, KAILUA-KONA, HAWAI'I, USA

ALEXANDER R. GAOS

President, International Sea Turtle Society

agaos808@gmail.com



## Aloha kākou!

On behalf of the International Sea Turtle Society (ISTS), we extend a warm and heartfelt invitation to the 44th International Sea Turtle Society Symposium (44th ISTS Symposium)- a global gathering of sea turtle biologists, conservationists, researchers, practitioners, and advocates from over 80 countries. For the first time ever, this premier event will take place in Hawai'i, from 28<sup>th</sup> February to 6<sup>th</sup> March, 2026, just south of the stunning coastal town of Kailua-Kona (Hawai'i Island).

## Why Hawai'i?

Hawai'i holds a deep and unique connection to sea turtles- known locally as *honu*- which are not only an iconic part of the islands' marine ecosystems but are also deeply revered in Hawaiian culture. Despite this strong connection, the ISTS Symposium has never been hosted in Hawai'i- until now! This event presents an exciting opportunity to highlight *honu* and their cultural significance across the Pacific and Oceania. With the Pacific Islands at the epicenter of global conservation challenges, this symposium arrives at a crucial time to foster meaningful discussions and inspire action for sea turtle research and conservation

worldwide.

## Symposium Theme: "Kaiāulu" - Community

The theme of the 44th ISTS Symposium is "Kaiāulu," a Hawaiian word meaning community, neighbourhood, and village. This theme reflects the close-knit, collaborative nature of the sea turtle research and conservation community, honouring our shared commitment to understanding and protecting these incredible animals and their habitats through knowledge exchange, capacity building, and global cooperation.

## A Breathtaking Venue

The symposium will take place at the stunning Outrigger Kona Resort and Spa, perched atop the cliffs of Keauhou Bay on Hawai'i Island's west coast. This breathtaking venue provides an ideal setting for insightful and engaging symposium sessions, fostering collaboration and knowledge exchange. It also offers the perfect backdrop for reconnecting with 'turtler' friends and colleagues from around the world.

Kailua-Kona, often simply called Kona, is a charming seaside town located approximately 20km from the airport that is known for its stunning sunsets, world-famous Kona coffee, historic sites, and incredible snorkeling spots. The relaxed island atmosphere, combined with the wealth of cultural and natural experiences, makes it an ideal destination for both professional engagement and personal adventure.

## Extend Your Journey

If time allows, we highly encourage you to explore beyond Hawai'i Island. Each of the main Hawaiian Islands boasts its own unique personality, landscapes, and cultural heritage, offering an unforgettable experience that will deepen your appreciation of this extraordinary region.

### **Start Planning for the Meeting**

Registration and abstract submission for the 44<sup>th</sup> ISTS Symposium is currently slated to open on October 1<sup>st</sup>, 2025, so start thinking about the impactful research and conservation efforts you want to share during the conferences oral and poster presentation sessions. Prior to those presentations we will hold two days of workshops, so if you're considering organising one, keep an eye out for the request for workshop proposals scheduled to be released in late 2025. We will also host a full day of regional meetings, so start planning your meetings now. You can also prepare your videos to share during video-night, hone your stories for our Origin-stories session, and collect unique items to donate to the symposium *silent and live auctions* to support travel grants.

### **Save the Dates and Begin Arranging Your Trip**

The 44th ISTS Symposium in Kailua-Kona, Hawai'i, will occur between 28<sup>th</sup> February and 6<sup>th</sup> March, 2026, and promises to be an unforgettable experience, where science, culture, and conservation come together in one of the most breathtaking settings on Earth. Mark your calendars, book your flights, and don't forget your swimsuit, reef-safe sunscreen, and "slippahs" (local name for flip-flops or sandals)! We can't wait to welcome you to Hawai'i in 2026!

Stay tuned for updates and learn more details by visiting the 44<sup>th</sup> ISTS Symposium website: <https://www.ists-symposium44.org>



## ONE FLIPPERED TURTLE

Photo credit: Pratyush Ranjan Nahak.



Nesting olive ridley turtle with missing left front flipper at Rushikulya Rookery, Odisha, India on 24<sup>th</sup> February 2025.

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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.

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**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)

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

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### Examples:

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

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# CONTENTS

## EDITORIAL

---

- 1 Editor's note  
*Andrea D. Phillott & Seh Ling Long*

## ARTICLES

---

- 2- 8 Post-war tourism, coastal development and sea turtle nesting beaches in Sri Lanka  
*R.M. Pabasara Abeywickrama & Rupika S. Rajakaruna*
- 8 - 14 The debate about splitting clutches  
*Andrea D. Phillott*
- 15- 18 SSTCN turtle diary of 2025 - The season of lows and highs in Chennai  
*V. Arun*

## NOTES

---

- 19 – 20 Rehabilitation and release of a stranded olive ridley turtle in Karnataka, India  
*Suranjana Ganguly, Shantanu Kalambi & Neelagiri Shreya Rao*

## REPORTS

---

- 21 - 26 President's report: 43<sup>rd</sup> Annual Symposium on Sea Turtle Biology and Conservation, 22-27 March 2025, Accra, Ghana  
*Andrews Agyekumhene*

## ANNOUNCEMENTS

---

- 27 – 28 44<sup>th</sup> International Sea Turtle Society Symposium, 28th February To 6<sup>th</sup> March, 2026, Kailua-Kona, Hawai'i, USA  
*Alexander R. Gaos*

## PHOTO OF INTEREST

---

- 29 One flippered turtle  
*Pratyush Ranjan Nahak*

