

Diurnal Nesting of the Hawksbill turtle *Eretmochelys imbricata* in North East Trinidad, W.I.

Hawksbill turtles *Eretmochelys imbricata* can be found globally in tropical oceans. Their wide distribution includes the Caribbean Sea and Atlantic Ocean, yet they have low nesting densities of fewer than 100 nesting females per year for most countries in the Caribbean (Murphy *et al.* 2018). In 1975, the Atlantic population of hawksbill turtle was added to Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Mortimer and Donnelly 2008), due to international trade issues which contributed to its decline in proceeding decades. In the 1990s it was listed as critically endangered on the IUCN Red List of Threatened Species due to further global decline (Mortimer and Donnelly 2008), with an estimated maximum of 5000 females nesting per annum in the Caribbean (Beggs 2007, Meylan 1999). This is one of five marine turtles found in Trinidad and Tobago, all of which have been designated as Environmentally Sensitive Species (ESS) by the Environmental Management Authority (ESS Rules, 2001 through Legal Notice Nos. 88-92 of 2014).

Hawksbills are primarily spongivorous, but their diets also include a variety of other invertebrates like tunicates (sea squirts) and zoanthid corals (León and Bjorndal 2002). Juvenile and adult life stages forage in sponge and coral populated reefs, in addition to reef walls, and hard-bottom habitats within the tropics (León and Bjorndal 2002). They can also be found in clear water estuaries and mangroves (Murphy *et al.* 2018; Phillips 2013 and Beggs *et al.* 2007).

They are solitary nesters, often nesting at the back of beaches near vegetative berms (Murphy *et al.* 2018). There is a dearth of information regarding nesting of hawksbills due to challenges to data collection such as few tagged females, non-annual nesting, males remaining at sea and remigration periods of females ranging between 1 and 6 years (Murphy *et al.* 2018; Phillips *et al.* 2014 and Beggs *et al.* 2007). Moreover, nesting sites for the hawksbill in Trinidad and Tobago are usually located on small inaccessible beaches and at times in close association with shallow offshore reefs (Save Our Sea Turtles 2015).

In the western Indian Ocean nesting occurs year-round but peaks December to January and is a diurnal event with some idiosyncratic nocturnal nesting (Phillips *et al.* 2014). This is similar to nesting behaviour in northern Brazil (Vieita and Godfrey, 1999). On the Pacific coast of Costa Rica nesting occurs July to December but peaks July to August (Bjorndal *et al.* 1993). Within the Caribbean, nesting is primarily nocturnal (2100h to 0300h) and peak nesting months vary (Walker and Gibson 2015). In Barbados peak nesting occurs from June to August with only 32 occurrences of diurnal nesting were documented over an eight-year period

(Beggs *et al.* 2007). In Antigua, nesting is common from June to November (Richardson *et al.* 1999) and in Turks and Cacaos fresh nests can be found in the months of January and September to October (Richardson *et al.* 2006). The National Sea Turtle Recovery Action Plan for T&T purports hawksbill nesting occurs mainly from July to November in Trinidad and April to November in Tobago, although it should be noted that local studies of nesting hawksbills are limited (Forestry Division *et al.* 2010). In Tobago, the NGO Save Our Sea Turtles' annual reports have regularly documented nesting by hawksbills in the months of May through November, with occasional off-season nesting in the months of January through April (Save Our Sea Turtles 2015).

In Trinidad hawksbills have been found to nest along the north and east coasts as well as on the Bocas Islands (Dow *et al.* 2007, Eckert and Eckert 2019). In Tobago, hawksbill nesting is widely distributed around both coasts (Walker *et al.* 2015). Hawksbill nesting is typically diffuse and with limited patrols around the islands data on the distribution and abundance of nests is limited. This widespread distribution of nesting combined with the strong natal nest site fidelity exhibited by hawksbills can also mean that Trinidad and Tobago has the potential to host multiple distinct genetic stocks that experience limited gene flow, such as has been recorded for Barbados between hawksbill rookeries separated by as little as 30km (Browne *et al.* 2010).

This Nature Note seeks to highlight an unusual diurnal nesting event by a hawksbill sea turtle. The nesting occurred between 1200h and 1400h on 18 January 2020, at Penzance Beach, Guayamara Bay (10°46'12.4"N 60°56'54.6"W). The nest site was less than two metres from the edge of the Toco Main Road. Several children and an adult (Mr. Rameshwarsingh) from a nearby village stood guard at the nest. They alerted us of the turtle's presence. Prior to our arrival, a poacher (adult male) took some of the eggs while the turtle was still laying. Mr. Rameshwarsingh said he frequently volunteers his services during nesting seasons for patrols and was happy to see the children showing so much concern for the turtle's well-being. Figure 1. shows the female hawksbill turtle laying with one of the local children 'standing guard' to dissuade others from harming the turtle.

The proximity of the nesting turtle to the road raises concerns related to anthropogenic impacts on marine turtles due to road infrastructure. The close proximity of the road and any future development to the nesting site can impact this nesting beach due to coastal erosion, pollution (noise, litter and light) as well as direct habitat loss by vegetation clearing and drainage manipulation.



Fig.1. Hawksbill turtle *Eretmochelys imbricata* nesting at noon along the Toco Main Road, Penzance Beach, Guayamara Bay on 18 January 2020. Note the utility posts in the background. Several children stood guard to dissuade potential poachers.

REFERENCES

- Audioing, K. and Bachan, A.** 2019. Status of Sea Turtles, Summary of Findings of the National Sea Turtle Conservation Programme. *Turtle Village Trust Trinidad and Tobago, WI*.
- Beggs, J.A., Horrocks, J.A. and Krueger, B.H.** 2007. Increase in Hawksbill Sea Turtle *Eretmochelys Imbricata* Nesting in Barbados, West Indies. *Endangered Species Research* 3: 159–68.
- Bjorndal, K.A., Bolten, A.B. and Lagueux, C.J.** 1993. Decline of the nesting population of hawksbill turtles at Tortuguero, Costa Rica. *Conservation Biology* 7(4): 925-927.
- Forestry Division (Government of the Republic of Trinidad and Tobago), Save our Seaturtles-Tobago, and Nature Seekers.** 2010. WIDECAST Sea Turtle Recovery Action Plan for Trinidad & Tobago (Karen L. Eckert, Editor). CEP Technical Report No. 49. UNEP Caribbean Environment Programme. Kingston, Jamaica. xx + 132 pages.
- León, Y. M., and Bjorndal, K. A.** 2002. Selective Feeding in the Hawksbill Turtle, an Important Predator in Coral Reef Ecosystems. *Marine Ecology Progress Series* 245: 249–58.
- Meylan, A.B.** 1999. Status of the hawksbill turtle (*Eretmochelys imbricata*) in the Caribbean region. *Chelonian Conservation and Biology*, 3:177-184.
- Mortimer, J.A and Donnelly, M.** (IUCN SSC Marine Turtle Specialist Group). 2008. *Eretmochelys imbricata*. The IUCN Red List of Threatened Species 2008: e.T8005A12881238. [Online]. Available at <https://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T8005A12881238.en>. Accessed 20 November 2021.
- Murphy, J.C., Downie, J.R., Smith, J.M., Livingstone, S.M., Mohammed, R.S., Lehtinen, R.M., Eyre, M., Sewlal, J.A.N., Noriega, N., Casper, G.S. and Anton, T.** 2018. A Field Guide to the Amphibians & Reptiles of Trinidad and Tobago. Guidelines for Contributing Authors, p.34.
- Phillips, K.P., Jorgensen, T.H., Jolliffe, K.G. and Richardson, D.S.** 2014. Potential inter-season sperm storage by a female hawksbill turtle. *Marine Turtle Newsletter* (140): 13.
- Richardson, J. I., Bell, R. and Richardson, T. H.** 1999. Population Ecology and Demographic Implications Drawn From an 11-Year Study of Nesting Hawksbill Turtles, *Eretmochelys imbricata*, at Jumby Bay, Long Island, Antigua, West Indies. *Chelonian Conservation and Biology* 3(2): 244–250
- Richardson, P. B., Bruford, M. W., Calosso, M. C., Campbell, L. M., Clerveaux, W., Formia, A., Godley, B. J. et al.** 2009. Marine Turtles in the Turks and Caicos Islands: Remnant Rookeries, Regionally Significant Foraging Stocks, and a Major Turtle Fishery. *Chelonian Conservation and Biology* 8 (2): 192–207.
- Save Our Sea Turtles** 2015. Summary of Sea Turtle Nesting Activity 2017. M. Cazabon Mannette. T. Clovis-Howie and G. Lalsingh (Editors). 49pp.
- Vieita, F. and Godfrey, H.** 1999. Nesting and conservation management of hawksbill turtles (*Eretmochelys imbricata*) in northern Bahia, Brazil. *Chelonian Conservation and Biology* 3: 2-1999.
- Walker, G. and Gibson, K.W.** 2015. First documented evidence of a rookery of the Critically Endangered Hawksbill sea turtle (*Eretmochelys imbricata*) in north east Tobago. *Chelonian Conservation and Biology*, 14: 95-99.
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