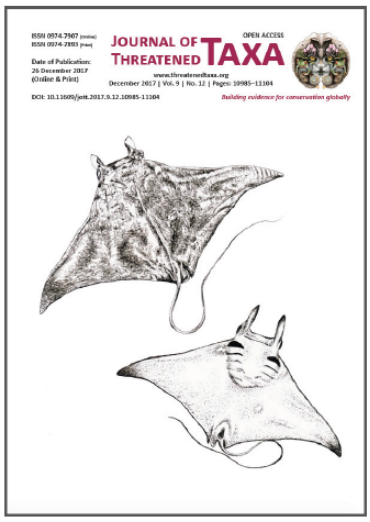

Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

NOTE

THE PERSISTENCE OF THE STRIPED HYENA *HYAENA HYAENA* LINNAEUS, 1758 (MAMMALIA: CARNIVORA: HYAENIDAE) AS A PREDATOR OF OLIVE RIDLEY SEA TURTLE *LEPIDOCHELYS OLIVACEA* ESCHSCHOLTZ, 1829 (REPTILIA: TESTUDINES: CHELONIIDAE) EGGS

Divya Karnad

26 December 2017 | Vol. 9| No. 12 | Pp. 11100–11102
10.11609/jott.3660.9.12.11100-11102

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 December 2017 | 9(12): 11100–11102

ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)

The persistence of the Striped Hyena *Hyaena hyaena* Linnaeus, 1758 (Mammalia: Carnivora: Hyaenidae) as a predator of Olive Ridley Sea Turtle *Lepidochelys olivacea* Eschscholtz, 1829 (Reptilia: Testudines: Cheloniidae) eggs

Divya Karnad

Foundation for Ecological Research, Advocacy and Learning, 170/3 Morattandi, Auroville Post, Tamil Nadu 605101, India
divya.karnad@rutgers.edu

The Rushikulya River mouth, in the state of Odisha, India, is well known as an Olive Ridley Sea Turtle *Lepidochelys olivacea* mass-nesting site (Panigrahy et al. 1990; Pandav et al. 1994). In addition to sea turtles, 149 species of phytoplankton (Baliarsingh et al. 2015), 93 species of zooplankton (Sahu et al. 2010), and 27 species of fish (Patnaik & Misra 1988; John 2010) have been reported from the waters of the Rushikulya estuary. With respect to land based biodiversity, there have been reports of the bird diversity (e.g., Mohanta & Behera 2014) and land based predators of Olive Ridley nests, such as feral dogs, Golden Jackals *Canis aureus* and the Striped Hyena (Tripathy & Rajasekhar 2009).

The occurrence of Striped Hyenas along the coast, though rarely mentioned, is known along the Red Sea (Foster-Vesey-Fitzgerald 1952) and the Kenyan coast (Carlton & Hodder 2003). The presence of the Striped Hyena *Hyaena hyaena*, a Near Threatened species (AbiSaid & Dloniak 2015), along Odisha coast, is particularly significant since the Odisha coast is vulnerable to several measures of climate change, particularly sea level rise (Kumar et al. 2010) and severe weather (Kumar et al. 2014). The Striped Hyena is a solitary, nocturnal scavenger occurring in a wide variety of habitats, although thought to prefer arid to semi-arid environments (Reiger 1979), avoiding open desert and dense thickets (Prater 1971). They are known to occur across most of India, including the wet forests of southwestern India, except northeastern India (Reiger 1979). Several studies have discussed their occurrence and abundance within and near protected areas, such as Kumbalgarh and Esrana (Singh et al. 2010), Rajaji National Park (Harihar et al. 2010), Sariska Tiger Reserve (Gupta et al. 2009) and Gir National Park (Alam et al. 2015). Yet Striped Hyenas are known to be tolerant of human habitation, occurring in human-dominated landscapes in western India (Singh et al. 2010). This feature is of significance because the coastal areas adjoining the Rushikulya estuary are dotted with fishing villages and coastal development.

As scavengers, hyenas are known to consume a huge variety of food, including leaves, fruits, insects, fishes, reptiles, birds and mammals (Leakey et al. 1999; Alam & Khan 2015). Carlton & Hodder (2003) report the occurrence of Striped Hyena as a predator of intertidal fauna, such as crabs, along the Kenyan coast. While Tripathy & Rajasekhar (2009) suggest that hyenas may have excavated sea turtle nests, they do not clearly report a direct sighting of the animal or its feeding habits. This paper provides evidence of the continued

DOI: http://doi.org/10.11609/jott.3660.9.12.11100-11102

Editor: H.N. Kumara, SACON, Coimbatore, India. **Date of publication:** 26 December 2017 (online & print)

Manuscript details: Ms # 3660 | Received 18 July 2017 | Final received 29 November 2017 | Finally accepted 03 December 2017

Citation: Karnad, D. (2017). The persistence of the Striped Hyena *Hyaena hyaena* Linnaeus, 1758 (Mammalia: Carnivora: Hyaenidae) as a predator of Olive Ridley Sea Turtle *Lepidochelys olivacea* Eschscholtz, 1829 (Reptilia: Testudines: Cheloniidae) eggs. *Journal of Threatened Taxa* 9(12): 11100–11102; http://doi.org/10.11609/jott.2660.9.12.11100-11102

Funding: None.

Competing interests: The author declares no competing interests.

Acknowledgements: The Centre for Ecological Sciences, Indian Institute of Science, facilitated my presence on the beach at the time of this sighting. Dr Ajith Kumar, Dr Chaitanya Krishna and Priya Singh encouraged the submission of this manuscript. I am grateful to the editors and the reviewer for their comments, which improved the paper.

Image 1. Habitat in which the Striped Hyena was spotted at the edge of the Casuarina plantation on the beach at Rushikulya River mouth, Odisha, India.

occurrence of the Striped Hyena in the vicinity of the Rushikulya mass nesting beach. It adds to previous research on sea turtle predation by providing the first record of a direct sighting of the Striped Hyena feeding on Olive Ridley Sea Turtle eggs on the Rushikulya mass nesting beach in Odisha.

During the February 2008 arribada of Olive Ridley Sea Turtles at the Rushikulya mass nesting site, about 80,000 nesting turtles were recorded in just two of the five days of mass nesting (Shanker & Kale 2014). During the second night of the arribada, a Striped Hyena was sighted near the *Casuarina equisetifolia* (henceforth Casuarina) grove between the villages of Gokharkuda and Kantiagada in the Ganjam District of Odisha. An Olive Ridley Sea Turtle had ascended the beach between 50m and 70m from the high tide line at the edge of the Casuarina grove. The hyena was spotted observing the nesting turtle from close quarters (<1m distance), and once the turtle had completed nesting, the hyena searched for and dug up its nest. The Striped Hyena then consumed the sea turtle eggs, spending about 35 minutes at that nest, consuming most of the eggs. A hyena was repeatedly sighted near the Casuarina grove on the other three days of mass nesting, but was not encountered thereafter, during the turtle incubation and hatching.

This record has two implications. First, Casuarina plantations along the sea turtle nesting beach in Rushikulya have been criticized for altering beach dynamics and ruining the nesting habitat of sea turtles (Pandav et al. 1998; Mohanty 2002). While their impact on beach characteristics may be negative (Feagin et al. 2015), the actual evidence of the Casuarina's interference with the biological parameters of sea turtle nests is difficult to find (Schmid et al. 2008). The plantations in Rushikulya have also been shown to benefit sea turtles by forming an artificial light barrier, preventing the misorientation (disorientation) of Olive Ridley hatchlings (Karnad et al. 2009). These plantations are, however, rarely used by people in this populated landscape, therefore they provide habitat for other species including the Striped Hyena. Hyenas may also be able to survive in other habitats that provide sufficient cover near the beach.

Second, Rushikulya, which has so far been thought about only as a sea turtle rookery, must now be reconceived as an area of conservation priority for both land-based and marine threatened species. This requires revisiting conservation policies for the area to include both marine and terrestrial conservation. Given that these threatened species co-exist with people in this landscape, Rushikulya can serve as a model for inclusive and community based conservation, both on land and at sea. In light of the proposed development of ports and other private commercial infrastructure on

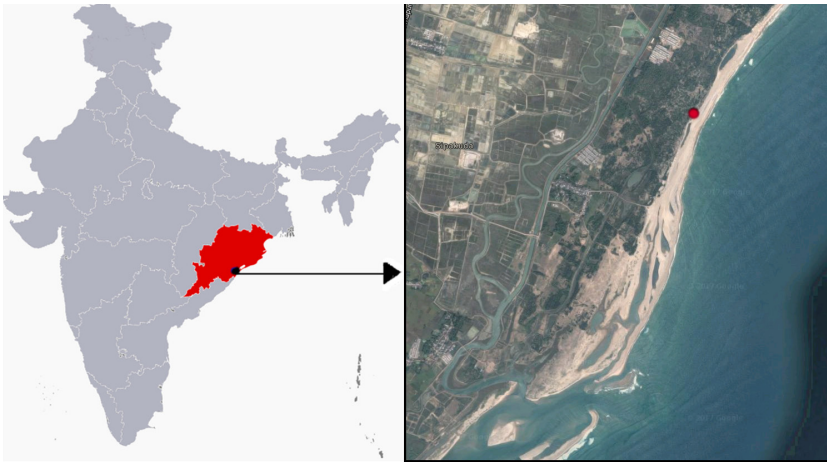

Image 2. The location of the sighting of the Striped Hyena on the beach at the Rushikulya Sea Turtle Rookery

the coast (Sridhar 2005), inclusive conservation could have significant implications for Olive Ridley Turtles in the Rushikulya area.

References

AbiSaid, M. & S.M.D. Dloniak (2015). *Hyaena hyaena*. The IUCN Red List of Threatened Species 2015: e.T10274A45195080. Electronic version accessed on 08 July 2017; http://doi.org/10.2305/IUCN.UK.2015-2.RLTS.T10274A45195080.en

Alam, M.S. & J.A. Khan (2015). Food habits of Striped Hyena (*Hyaena hyaena*) in a semi-arid conservation area of India. *Journal of Arid Land* 7(6): 860–866; http://doi.org/10.1007/s40333-015-0007-2

Alam, M.S., J.A. Khan & B.J. Pathak (2015). Striped hyena (*Hyaena hyaena*) status and factors affecting its distribution in the Gir National Park and Sanctuary, India. *Folia Zoologica* 64(1): 32–39.

Baliarsingh, S.K., S. Srichandan, S. Naik, K.C. Sahu, A.A. Lotliker & T.S. Kumar (2015). Seasonal variation of phytoplankton community composition in coastal waters off Rushikulya Estuary, east coast of India. *Indian Journal of Geo-Marine Sciences* 44(4): 508–526.

Carlton, J.T. & J. Hodder (2003). Maritime mammals: terrestrial mammals as consumers in marine intertidal communities. *Marine Ecology Progress Series* 256: 271–286.

Feagin, R.A., J. Figlus, J.C. Zinnert, J. Sigren, M.L. Martínez, R. Silva, W.K. Smith, D. Cox, D.R. Young & G. Carter (2015). "Going with the flow or against the grain? The promise of vegetation for protecting beaches, dunes, and barrier islands from erosion." *Frontiers in Ecology and the Environment* 13(4): 203–210; http://doi.org/10.1890/140218

Foster-Vesey-Fitzgerald, D. (1952). Wild life in Arabia. *Oryx* 1(5): 232–235.

Gupta, S., K. Mondal, K. Sankar & Q. Qureshi (2009). Estimation of Striped Hyena *Hyaena hyaena* population using camera traps in Sariska Tiger Reserve, Rajasthan, India. *Journal of the Bombay Natural History Society* 106(3): 284–288.

Harihar, A., M. Ghosh, M. Fernandes, B. Pandav & S.P. Goyal (2010). Use of photographic capture-recapture sampling to estimate density of Striped Hyena (*Hyaena hyaena*): implications for conservation. *Mammalia* 74(1): 83–87; https://doi.org/10.1515/mamm.2009.072

John, S. (2010). Observation of a Whale Shark *Rhincodon typus* (Orectolobiformes: Rhincodontidae) in the offshore waters of Rushikulya, Orissa, India. *Journal of Threatened Taxa* 2(5): 896–897; http://doi.org/10.11609/JoTT.o2245.896-7

Karnad, D., K. Isvaran, C.S. Kar & K. Shanker (2009). Lighting the way: Towards reducing misorientation of Olive Ridley hatchlings due to artificial lighting at Rushikulya, India. *Biological Conservation* 142(10): 2083–2088; https://doi.org/10.1016/j.biocon.2009.04.004

Kumar, H.S., S. Panditrao, S.K. Baliarsingh, P. Mohanty, R.S. Mahendra, A.A. Lotliker & T.S. Kumar (2014). Consequence of cyclonic storm *Phailin* on coastal morphology of Rushikulya estuary: an arribada site of vulnerable Olive Ridley sea turtles along the east coast of India. *Current Science* 107(1): 28–30.

Kumar, T.S., R.S. Mahendra, S. Nayak, K. Radhakrishnan & K.C. Sahu (2010). Coastal vulnerability assessment for Orissa State, east coast of India. *Journal of Coastal Research* 26(3): 523–534; https://doi.org/10.2112/09-1186.1

Leakey, L.N., S.A.H. Milledge, S.M. Leakey, J. Edung, P. Haynes, D.K. Kiptoo & A. McGeorge (1999). Diet of striped hyaena in northern Kenya. *African Journal of Ecology 37*(3): 314–326.

Mohanta, R. & S.K. Behera (2014). An Annotated Preliminary Checklist of Birds Diversity in Coastal Ecotourism Area of Ganjam, Southern Odisha, India. *Open Journal of Ocean and Coastal Sciences* 1(1): 83–89.

Mohanty, B. (2002). Casuarina forests ruin turtle nesting beaches in Orissa. *Kachhapa* 7: 20–21.

Pandav, B., B.C. Choudhury & C.S. Kar (1994). Discovery of a new sea turtle rookery in Orissa, India. *Marine Turtle Newsletter* 67: 15–16.

Pandav, B., B.C. Choudhury & K. Shanker (1998). The Olive Ridley Sea Turtle (*Lepidochelys olivacea*) in Orissa: an urgent call for an intensive and integrated conservation programme. *Current Science* 75(12): 1323–1328.

Panigrahy, R.C., R. Gouda, S. Misra & L. Nayak (1990). Availability of Marine-turtle eggs near Rushikulya River Mouth, East Coast of India. *Indian Forester* 116(6): 515–516.

Patnaik, K.C. & P.M. Misra (1988). Distribution of Milkfish, *Chanos chanos* (Pisces: Chanidae) fry in Rushikulya Estuary. *Mahasagar* 21(4): 239–243.

Prater, S.H. (1971). *The Book of Indian Animals*. Third Edition. Bombay Natural History Society, Bombay, India, 324pp.

Reiger, I. (1979). A review of the biology of Striped Hyaenas, Hyaena hyaena (Linn. 1758). *Saugetierkunde Mittelungen* 27*:* 81–95.

Sahu, G., A.K. Mohanty, B. Singhasamanta, D. Mahapatra, R.C. Panigrahy, K.K. Satpathy & B.K. Sahu (2010). Zooplankton diversity in the nearshore waters of Bay of Bengal, off the Rushikulya estuary. *IUP Journal of Environmental Sciences* 4: 61–85.

Schmid, J.L., D.S. Addison, M.A. Donnelly, M.A. Shirley & T. Wibbels (2008). The effect of Australian Pine (*Casuarina equisetifolia*) removal on Loggerhead Sea Turtle (*Caretta caretta*) incubation temperatures on Keewaydin Island, Florida. *Journal of Coastal Research* 55: 214–220; https://doi.org/10.2112/SI55-001.1

Shanker, K. & N. Kale (2014). Monitoring and Conservation of Sea Turtles in India through a network of partners and index sites. Report of the Madras Crocodile Bank Trust and Dakshin Foundation, Bangalore, 53pp

Singh, P., A.M. Gopalaswamy & K.U. Karanth (2010). Factors influencing densities of Striped Hyenas (*Hyaena hyaena*) in arid regions of India. *Journal of Mammalogy* 91(5): 1152–1159; https://doi.org/10.1644/09-MAMM-A-159.1

Sridhar, A. (2005). Sea turtle conservation and fisheries in Orissa, India. *Samudra Monograph* 17–18. International Collective in Support of Fishworkers, Chennai, 40pp.

Tripathy, B. & P.S. Rajasekhar (2009). Natural and anthropogenic threats to Olive Ridley Sea Turtles (*Lepidochelys olivacea*) at the Rushikulya rookery of Orissa coast, India*. Indian Journal of Marine Science* 38(4): 439–443.

Journal of Threatened Taxa

OPEN ACCESS

ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

December 2017 | Vol. 9 | No. 12 | Pages: 10985–11104

Date of Publication: 26 December 2017 (Online & Print)

DOI: 10.11609/jott.2017.9.12.10985-11104

www.threatenedtaxa.org

Communications

Short Communications

Notes

Book Review

zooh! ZÜRICH

WILD ZOO Threatened Taxa