

BIODIVERSITY CONSERVATION IN INDIA: THE SECURITY DIMENSION

Captain Himadri Das

07 March 2022

Biodiversity Conservation and Maritime Security

Biological diversity, or biodiversity, is defined as the “variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”¹ In accordance with the Convention of Biodiversity (CBD), 1992, State responsibilities for conservation include amongst others *in situ* measures within natural habitats, such as selection, establishment and management of protected areas, *ex situ* measures outside natural habitats, and cross-sectoral integration.² Biodiversity conservation is increasingly regarded as one of the challenges in the maritime domain.³

Maritime security has no universally accepted definition and is largely contextual. However, maritime security is inextricably linked to the protection of the maritime environment, including marine biodiversity. Maritime security is also considered integral to the wider international ocean governance framework encompassing biodiversity protection.⁴ In India, from a maritime security standpoint, the Coast Guard Act, 1978, includes, within the broader framework of protection of the maritime interests in the Indian maritime zones, the responsibility to protect and preserve the maritime environment.⁵ While in practice Indian maritime security agencies have been part of conservation efforts for the protection of the Olive Ridley sea turtle (*Lepidochelys olivacea*) for several years, biodiversity protection has been a late addition to the discourse on *holistic maritime security*.⁶ Clearly, this is a case of theory following practice.

¹ Convention on Biological Diversity, 05 June 1992, Article 2.

https://treaties.un.org/doc/Treaties/1992/06/19920605%2008-44%20PM/Ch_XXVII_08p.pdf.

² Convention on Biological Diversity, 05 June 1992, Articles 6, 8, and 9.

³ Ministry of Defence, “Aero India 2021: IOR Seminar Building Collective Maritime Competence Towards Security and Growth for All in The Region (SAGAR),” Press Information Bureau, 04 February 2021.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1695245>.

⁴ European Commission, *Joint Report to the European Parliament and the Council: Improving International Ocean Governance – Two years of progress* (2019), 3. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019JC0004&from=EN>.

⁵ Coast Guard Act, 1978, Sections 14 (1) and 14 (2) (c).

⁶ Pushp Bajaj and Akshay Honmane, “Climate Risks to India’s Holistic Maritime Security. Part 3: Collapsing Ocean Biodiversity,” National Maritime Foundation, accessed 03 February 2021, <https://maritimeindia.org/climate-risks-to-indias-holistic-maritime-security-part-3-collapsing-ocean-biodiversity/>.

Coastal security is recognised as a subset of maritime security focussed on coastal waters and adjoining land areas. While the initial efforts of the coastal security paradigm were directed at preventing infiltration from the sea, and to strengthen border management, the coastal security paradigm now aims to achieve security against a range of threats and encompasses a wide remit, including maritime law-enforcement.⁷ In recent years evidence, albeit limited, has emerged of the positive correlation between strengthening security and biodiversity conservation, and the scientific community has also recognised the importance of the coastal security framework in “securing and governing marine resources.”⁸

This article endeavours to explore the history and the convergences—conceptual and practical—between biodiversity conservation and the maritime/ coastal security construct in India, based on the protection efforts of the Olive Ridley sea turtles.

Evolving Role of Security Agencies in Biodiversity Conservation: The ‘Gahirmatha Model’

India has 131 Marine Protected Areas (MPAs) which includes sanctuaries, national parks, and community reserves, with a total area of 1864.84 square kilometres.⁹ The Olive Ridley sea turtle has been listed by the International Union for Conservation of Nature, (IUCN) as a vulnerable species under the IUCN Red List of threatened species and is also listed as protected species under Schedule I of the Wildlife Protection Act, 1972.¹⁰ The turtles are particularly well known for their unique mass nesting (Arribada), wherein thousands of female turtles congregate on their natal beach to lay their eggs.¹¹ Gahirmatha, located on the Odisha coast, is the largest mass nesting site for the Olive Ridley sea turtles in the world, and has been designated as a sanctuary.¹² Consequently, India has an important responsibility in protecting this vulnerable species.

The ‘Gahirmatha Model’ for biodiversity conservation of the Olive Ridley turtles in Odisha has evolved over the past four decades. Joint patrolling by the Odisha forest department, police,

⁷ Himadri Das, “Marine Policing and Maritime Security in India: Evolving Dimensions,” accessed 09 February 2022, <https://maritimeindia.org/marine-policing-and-maritime-security-in-india-evolving-dimensions/>

⁸ Prabhakaran Paleri, *Role of the Coast Guard in the Maritime Security of India* (New Delhi: United Services Institute, 2007), 245; Integrated Headquarters of Ministry of Defence (Navy), *Indian Maritime Doctrine* (New Delhi: Integrated Headquarters of Ministry of Defence (Navy), 2015), 130; R Kiruba-Sankar *et al*, “Poaching in Andaman and Nicobar coasts: insights,” *Journal of Coastal Conservation* 23, No. 1: 96-7 (2019), <https://krishi.icar.gov.in/jspui/bitstream/123456789/32111/1/Poaching%20-%20RKS.pdf>. The final publication is available at link.springer.com <https://doi.org/10.1007/s11852-018-0640-y>

⁹ “Marine Protected Areas,” Environmental Information System (ENVIS) Centre on Wildlife & Protected Areas, http://www.wiienvis.nic.in/Database/MPA_8098.aspx, accessed 14 April 2021; A Marine Protected Area (MPA) is essentially a space in the ocean where human activities are more strictly regulated than the surrounding waters. These places are given special protections for natural or historic marine resources by local, state, territorial, native, regional, or national authorities [Source: http://www.wiienvis.nic.in/Database/MPA_8098.aspx]

¹⁰ “Olive Ridley,” IUCN Red List, <https://www.iucnredlist.org/species/11534/3292503>, accessed 11 December 2021.

¹¹ “Olive Ridley Turtle,” World Wide Fund for Nature (WWF)-India, <https://www.wwf.org/about-wwf/priority-species/lesser-known-species/olive-ridley-turtle/>, accessed 20 October 2021.

¹² Olive Ridley Turtle,” WWF-India; “Marine Protected Areas,” Environmental Information System (ENVIS) Centre on Wildlife & Protected Areas.

Indian Navy and Coast Guard for protection of Olive Ridley sea turtles has been recorded as far back as 1981, soon after the raising of the Coast Guard in 1977.¹³ Presently, the Coast Guard conducts Operation OLIVIA, an annual operation for protection of the Olive Ridley sea turtle.¹⁴ The operation, executed in coordination with the fisheries and forest departments, includes enforcement of protection measures by Coast Guard ships and aircraft in the seaward approaches to the rookeries.¹⁵

In the late 1990s and early 2000s, a number of judicial decisions, and directives of the Supreme Court appointed Central Empowered Committee (CEC), focused on developing an integrated response for conservation of the Olive Ridley sea turtle.¹⁶ *Inter alia* this included restrictions on fishing activities; capacity-building and capability-enhancement of agencies responsible for conservation; improving coordination between law enforcement agencies and other stakeholders; strengthening community engagement; and, intensification of patrolling at sea. Broadly, many of the directives focused on fisheries enforcement and Monitoring, Control and Surveillance (MCS) activities. Notably, the need for tracking devices for monitoring fishing vessels, which gained traction particularly after the Mumbai terrorist attacks of 2008 (26/11), was highlighted even at that time, albeit from a conservation perspective.

In 2001, following the 1999 Kargil War, a report of a Group of Ministers on national security made several far-reaching recommendations on national security, including the security of maritime borders and island territories. Amongst the recommendations was the setting-up of a specialised Marine Police for coastal policing in all coastal states with the assistance of the Ministry of Home Affairs (MHA). Accordingly, between 2005 and 2011, a marine wing of the State Police, the State Marine Police (SMP), was raised in all coastal states and Union Territories. This included establishment of Coastal Police Stations (CPS) and provisioning of boats for patrolling. Consequent to the raising of the SMP, the Odisha SMP was integrated into the overall biodiversity conservation efforts, including enforcement at sea and beach patrols ashore.¹⁷

'26/11' marked a paradigm shift in the management of coastal security in India. In addition to designation of specific responsibilities for coastal security, several initiatives were taken to strengthen coastal security across the Indian coastline. These included strengthening interagency coordination and information sharing; enhancing electronic surveillance and development of Maritime Domain Awareness (MDA), such as by establishment of coastal radars; enhanced regulation in maritime sectors, including fisheries; closer engagements with the coastal/ fishing communities; conduct of multifaceted coastal exercises involving all stakeholders, etc.

¹³ CK Das and MC Dash, "Conservation and Status of Sea Turtles in Orissa," Sea Turtles of India, accessed 03 February 2021, <https://www.seaturtlesofindia.org/wp-content/uploads/2017/04/Kar-C.S.-M.C.-Dash.-1984.-Conservation-and-status-of-sea-turtles-in-Orissa.-Proceedings-of-the-Workshop-on-Sea-Turtle-Conservation-CMFRI-Special-Publication.-18-120-p..pdf>

¹⁴ "Operation Olivia 2014," Indian Coast Guard, <https://www.indiancoastguard.gov.in/WriteReadData/userfiles/file/Operation%20Olivia%202014.pdf>, accessed 03 February 2020.

¹⁵ "Operation Olivia 2014," Indian Coast Guard.

¹⁶ Prabhakaran Paleri, *Role of the Coast Guard in the Maritime Security of India*, 214-17; "Visit of Central Empowered Committee to Orissa from February 10-14, 2004," Orissa Marine Resources Conservation Consortium, accessed 03 February 2021, <http://www.omrcc.org/wp-content/uploads/2011/10/CEC-Report-2004.pdf>.

¹⁷ "Coastal Security," Odisha Police, <https://odishapolice.gov.in/?q=node/163>, accessed 03 February 2021.

Operationally, a tiered approach for coastal security was implemented with the Indian Navy, the Coast Guard, and the SMP as the outer, the intermediate layer, and inner tiers. Other security agencies, such as the Central Industrial Security Force (CISF) in ports, and the Forest Department in Andaman and Nicobar, were also integrated into the coastal security construct.¹⁸ The initiatives taken to support coastal security also support other activities, such as maritime law enforcement, search and rescue, biodiversity conservation, disaster response, etc. Specifically, a study on poaching in Andaman and Nicobar, from 2011-2018, revealed a dramatic drop in poaching incidents.¹⁹ This could possibly be correlated with the development of the coastal security architecture post ‘26/11.’

In addition to coordinated patrolling, several other measures have been taken to protect the Olive Ridley turtles. Every year, a seven-month fishing ban is implemented in an area which extends to 20 kilometres off the coast of Gahirmatha by the Odisha Government from November to May.²⁰ The forest department has also made efforts to physically demarcate the no-fishing zone by placement of buoys.²¹ Onshore, the forest department works with local conservation bodies for preparing the beach for the nesting season and sets-up turtle protection camps in some islands.²² Towards validating the migration pattern of the turtles, conservation agencies have also tagged turtles.²³ Conservation efforts are also coordinated with neighbouring Dhamra and Paradip ports and the Integrated Test Range (ITR) at the Abdul Kalam Island which adjoins the sanctuary.²⁴ Furthermore, under the CBD, an Area Beyond National Jurisdiction (ABNJ) in the Bay of Bengal, encompassing the migratory corridor of the Olive Ridley sea turtle, has been designated as an Ecologically or Biologically Significant Area (EBSA) termed as the “Olive Ridley Sea Turtle Migratory Corridor in the Bay of Bengal.”²⁵

Notwithstanding the progress in conservation efforts, in February 2021, the Orissa High Court *suo motu* registered a Public Interest Litigation (PIL) based on the reported death of 800 turtles in the months of January 2021 and February 2021.²⁶ A committee set up by the High Court estimated that between 2010-11 and 2019-20 the annual mortality of Olive Ridley sea turtles was

¹⁸ R Kiruba-Sankar *et al*, “Poaching in Andaman and Nicobar coasts: insights,” 96-7.

¹⁹ R Kiruba-Sankar *et al*, “Poaching in Andaman and Nicobar coasts: insights.”

²⁰ Ashish Senapati, “Seven-month fishing ban in Gahirmatha from today to protect.”

²¹ Express News Service, “Demarcation of Gahirmatha sanctuary begins, buoys installed,” *The New Indian Express*, 17 January 2021.

<https://www.newindianexpress.com/states/odisha/2021/jan/17/demarcation-of-gahirmatha-sanctuary-begins-buoys-installed-2251270.html>;

²² Express News Service, “Beach clean-up ahead of Olive Ridley turtle nesting at Gahirmatha,” *The New Indian Express*, 31 January 2021. <https://www.newindianexpress.com/states/odisha/2021/jan/31/beach-clean-up-ahead-of-olive-ridley-turtle-nesting-at-gahirmatha-2257502.html>.

Ashish Senapati, “Seven-month fishing ban in Gahirmatha from today to protect;”

²³ Satyasundar Barik, “ZSI starts tagging olive ridleys to track migration path,” *The Hindu*, 13 January 2021.

<https://www.thehindu.com/news/national/zsi-starts-tagging-olive-ridleys-to-track-migration-path/article33562364.ece>.

²⁴ Express News Service, “DRDO to switch off lights at Odisha's missile testing centre for arrival of Olive Ridleys,” *The New Indian Express*, 02 December 2019. <https://www.newindianexpress.com/states/odisha/2019/dec/02/drdo-to-switch-off-lights-at-odishas-missile-testing-centre-for-arrival-of-olive-ridleys-2070176.html>.

²⁵ “Olive Ridley Sea Turtle Migratory Corridor in the Bay of Bengal,” Convention on Biological Diversity, <https://chm.cbd.int/database/record?documentID=237770>, accessed 21 October 2021.

²⁶ Express News Service. “Orissa High Court registers suo motu PIL on Olive Ridley turtle deaths,” *The New Indian Express*, 24 February 2021. <https://www.newindianexpress.com/states/odisha/2021/feb/24/orissa-high-court-registers-suo-motu-pil-on-olive-ridley-turtle-deaths-2268283.html>.

around 4000 to 7000 “mainly due to trawling operations.”²⁷ In March 2021, the high court directed *inter alia* prohibition of fishing in the notified areas by the SMP; enforcement of the fishing ban by the Coast Guard in coordination with state departments and Centre; capacity-building of the three CPS with boats and “an additional force for protection of the sanctuary through joint patrolling with the Forest Department;” demarcation of the no-fishing zone; fencing of the nesting areas; technological monitoring of fishing boat movements (GPS devices / transponders); and, from a community perspective, provision of financial assistance to affected fishers.²⁸ The enduring focus of the conservation efforts in Gahirmatha over the past twenty-five years—much like the more recent efforts for coastal security—continues to be on capacity-building, improving coordination, regulation of fishing activities, and on community engagement.

Beyond Gahirmatha, a comprehensive approach to biodiversity conservation, in association with maritime security agencies, is also taking shape. In Lakshadweep, towards enhancing protection of sea cucumbers, in February 2020, the world’s first sea cucumber conservation reserve— Dr KK Mohammed Koya Sea Cucumber Conservation Reserve—was established in an area of about 239 square km in Cheryapani, a coral atoll.²⁹ The same year, the Lakshadweep Marine Wildlife Protection Force (LMWPF) was also raised.³⁰ The LMWPF Watchers are a dedicated body for the protection of the fragile marine ecosystem in the islands, and are being trained by the Indian Navy, Coast Guard, Lakshadweep Police, and Indian Reserve Battalion (IRBn).³¹ Notably, a study on poaching and smuggling of sea cucumbers in the period 2015-20 by OceansAsia, attributed increasing arrests and seizures in 2019 and 2020 to increased monitoring and enforcement by Indian and Sri Lankan authorities.³² In addition, in the east coast, as per media reports in September 2021, the Tamil Nadu Government will be setting up a 500 square kilometres conservation reserve for dugongs (also known as sea cows) in the Palk Bay.³³ The proposed approach, like elsewhere, would focus on engagement with the fishing communities and in banning of fishing practices that could endanger the dugongs.³⁴

²⁷ “Orissa High Court WP(C)/7118/2021 on 23 February 2021,” Indian Kanoon, <https://indiankanoon.org/doc/138879647/>, accessed 21 October 2021.

²⁸ “Orissa High Court WP(C)/7118/2021 on 15 March 2021,” Indian Kanoon, <https://indiankanoon.org/doc/195599559/>, accessed 21 October 2021.

²⁹ Badri Chatterjee, “13 times rise in quantity of sea cucumber seizures from India over five years: Study,” 26 September 2020.” <https://www.hindustantimes.com/mumbai-news/13-times-rise-in-quantity-of-sea-cucumber-seizures-from-india-over-five-years-study/story-M6zDWcGtzmlZzxGLk0ZwKJ.html>.

³⁰ As per media reports, the LMWPF is a force of 350 personnel. Three anti-poaching camps have been set up in the uninhabited islands (Veliyapani, Thinnakkara, and Suheli Islands) [Source: <https://www.hindustantimes.com/mumbai-news/13-times-rise-in-quantity-of-sea-cucumber-seizures-from-india-over-five-years-study/story-M6zDWcGtzmlZzxGLk0ZwKJ.html>]

³¹ “Training program inaugurated for newly recruited 200 LMWPF Watchers,” *The Lakshadweep Times*, 10 November 2020. <https://cdn.s3waas.gov.in/s358238e9ae2dd305d79c2ebc8c1883422/uploads/2020/11/2020111116.pdf>.

³² OceansAsia is a non-governmental organisation working on ‘intelligence-based conservation;’ “Study: India and Sri Lanka - A Global Sea Cucumber Crime Hotspot,” OceansAsia, accessed 14 April 2021, <https://oceansasia.org/sea-cucumber-crime-in-sri-lanka-india/>.

³³ Aswathi Pacha, “What are dugongs, where is India’s first dugong conservation reserve?,” *The Indian Express*, 07 September 2021. <https://indianexpress.com/article/technology/science/indias-first-dugong-conservation-reserve-7494506/>.

³⁴ Aswathi Pacha, “What are dugongs, where is India’s first dugong conservation reserve?.”

Maritime Security and Biodiversity Conservation

Indian maritime security agencies have been part of the conservation efforts for the Olive Ridley sea turtle for over four decades. This notwithstanding, these efforts have largely not been part of the maritime security discourse in India, and marine conservationists, too, have largely not focused on the important role of maritime security/ policing agencies in coastal biodiversity conservation. However, as brought out earlier, more recent literature is reflective of increasing convergences between biodiversity conservation efforts and maritime/ coastal security.³⁵ In addition to the developing conceptual conflation—in and outside India—some of the areas of convergence and focus for both biodiversity conservation and coastal security include fisheries enforcement, capacity-building and capability enhancement; technology adaptation; and wider community engagement. These are discussed in the following paragraphs.

Fisheries Enforcement

Reports of violation of protection measures for the Olive Ridley sea turtles by fishers off the Gahirmatha coast continue to be reported, including violent interactions with enforcement agencies.³⁶ Notably, the committee set up by the High Court of Orissa concluded that trawling has been a major contributor to sea turtle mortality. Coastal biodiversity protection initiatives, like the Gahirmatha model, are therefore significantly dependent upon and inextricably linked to fisheries enforcement. Similarly, several coastal security initiatives have also been focused on strengthening the regulatory framework for the fisheries sector, such as through centralised registration and licensing, issuance of biometric identity cards, monitoring of fish landing centres, etc. Strengthening Fisheries MCS is therefore a key imperative, not only for sustainable fisheries, but also for biodiversity conservation and for coastal security. In addition, raising dedicated policing mechanisms for fisheries enforcement, such as the Marine Enforcement Wing (MEW) of the Kerala and Tamil Nadu Police could also be duplicated in other states.

Capacity-Building and Capability-Enhancement

Broadly, coastal security encompasses a tiered approach for ‘area security’ complemented by ‘point security’ measures aimed at localised protection such as in ports, and for critical maritime infrastructure. An added layer of localised patrolling, such as in a MPA, can, in addition to protection of the MPA, also contribute towards overall coastal security efforts. For example, security efforts at Gahirmatha sanctuary for biodiversity conservation, and port security measures at Paradip and Dhamra ports complement and support the overall tiered approach to coastal security. In other words, wider area security can only be achieved if each element in the wider construct is independently secure, and independent efforts are coordinated between adjoining elements.

³⁵ Kiruba-Sankar *et al*, “Poaching in Andaman and Nicobar coasts: insights.”

³⁶ Sourced from monthly reports of the Information Fusion Centre-Indian Ocean Region (IOR); Ashish Senapati, “Gahirm853232atha sanctuary forest guards allege assault by fishermen,” 17 March 2021, DowntoEarth, <https://www.downtoearth.org.in/news/environment/gahiramatha-sanctuary-forest-guards-allege-assault-by-fishermen-75999>, accessed 11 February 2022.

The procurement of high-speed boats for the Odisha Forest Department in 2016 is good example of maritime capability-development for biodiversity conservation.³⁷ The Border Security Force, Central Industrial Police Force, and the SMP, and are other examples of traditionally land-based armed police forces which have progressively developed maritime capabilities. However, developing the capabilities to operate, maintain, and train those responsible for operating boats requires significant investments by the operating agencies. Raising of dedicated specialised marine wings of the forest guards for protection of MPAs as has been alluded to by the High Court of Orissa for Gahirmatha—on the lines of the LMWPF in the Lakshadweep—could lead to greater focus and operational effectiveness in MPAs. Capabilities of these specialised wings could be further developed by their participation in periodic drills, like SAJAG, and exercises, like SAGAR KAVACH and SEA VIGIL, and regular training with security agencies.³⁸

Technology: Maritime Domain Awareness (MDA) and Marine Spatial Planning (MSP)

Maritime Domain Awareness (MDA) is widely considered as a facilitator for maritime security, and increasing efforts are being made to enhance domain awareness, especially along the coastline, through initiatives such as a transponder system for fishing vessels. To better understand the migration pattern, movement of turtles at sea are also being tracked. While MDA is a key enabler for operational response, the integration of tracking data from sea turtle migration, shipping, and fishing, has the potential to improve conservation efforts at greater distances from the coast, such as in the EEZ and in designated EBSAs in ABNJ. This integration could also provide evidence for the prosecution of poachers. Other coastal security initiatives, such as coastal geospatial databases, could also contribute to management of MPAs. In October 2021, GATI SHAKTI—the national master plan for infrastructure development—a digital platform for integrated planning was launched.³⁹ The portal will leverage technology, including satellite imagery, for spatial planning. From a maritime perspective, the draft policy framework for India’s blue economy advocates the need for a national Coastal Marine Spatial Planning (NCMSP) framework in line with international guidance/ practice.⁴⁰ Although focused on the development, the portal could facilitate identification of conservation requirements in maritime infrastructure development projects. Therefore, maritime sectors, such as shipping and fishing, as well as development, conservation and security agencies, need to collaborate, using technical tools such as MDA and MSP, towards not only a better understanding of the overall environment, but also complementing efforts to achieving common national objectives.

³⁷ Rajendra Prasad Mohapatra, “Odisha: Question Marks Raised Over Protection Measures for Olive Ridleys During Nesting Season,” Odishatv.in, 15 November 2020.

<https://odishatv.in/odisha-news/odisha-question-marks-raised-over-protection-measures-for-olive-ridleys-during-nesting-season-493521>.

³⁸ SAJAG is a monthly security drill focused on the fisheries sector; SAGAR KAVACH is a biannual coastal security exercise conducted at the state-level; SEA VIGIL is a national coastal defence exercise.

³⁹ Ministry of Ports, Shipping and Waterways, “PM launches Gati Shakti- National Master Plan for infrastructure development,” Press Information Bureau, 13 October 2021.

<https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1763638>.

⁴⁰ Niti Aayog, *India’s Blue Economy: A Draft Policy Framework* (2020), 29.

https://incois.gov.in/documents/Blue_Economy_policy.pdf.

Community Engagement

One of the major initiatives taken by the Indian Navy in the late 1990s was to focus on community engagement. After '26/11,' such efforts have been consolidated on a pan-India basis and fishers have been integrated with maritime security agencies as their 'eyes and ears'. Engagement of security agencies with the community is undertaken primarily through regular Community Interaction Programmes (CIPs), and a dedicated toll-free number for the community to contact the SMP. The National Cadet Corps (NCC) is also being progressively expanded in coastal areas. In a similar vein, community-engagement can also be made a pillar of coastal biodiversity conservation efforts, especially in ecologically sensitive areas, and community engagement programmes could be leveraged for multipurpose sensitisation of the community.

Conclusion

The concept of maritime security is inextricably linked to the protection and preservation of the maritime environment and ecology. Indian maritime security agencies have been engaged in conservation efforts to protect the Olive Ridley sea turtle for several decades. This engagement predates the more contemporary notions of maritime and coastal security. While the '26/11' incident led to a paradigm shift in the management of coastal security in India, the national- and state-level capabilities developed under the new paradigm are now being leveraged across a spectrum of missions and tasks, including biodiversity conservation. There is some evidence, from the island territories, indicating the positive impact of strengthening security measures on biodiversity conservation efforts. There is also growing evidence of the need for developing dedicated mechanisms of protection of biodiversity, such as in Lakshadweep (sea cucumber) and Tamil Nadu (sea cow). The 'Gahirmatha' model, despite its infirmities, exemplifies a whole-of-government approach to maritime biodiversity conservation, that needs to be strengthened and could progressively be suitably adapted in other MPAs.

In short, the coastal security construct facilitates conservation, and likewise robust measures for conservation, such as by strengthening surveillance and patrol efforts in and off MPAs, can also support maritime and coastal security. Leveraging limited resources for maximising mutually beneficial outcomes may well be the mantra for the future.

About the Author:

Captain Himadri Das is a serving Indian Naval Officer and is presently a Senior Fellow at the National Maritime Foundation (NMF). The views expressed are those of the author and do not reflect the official position of the Government of India or the Indian Navy. He can be reached at csmnda.nmf@gmail.com

Acknowledgement

The author expresses his deepest gratitude to Ms Sarita Fernandes, former Research Associate with the NMF, for her partnership and contributions in the writing of this article.