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Turtle Trails Initiative – Budget 2026, Olive Ridley Arribada, and the Conservation Controversy at Gahirmatha

4 February 2026

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WHY IN NEWS

Union Budget 2026-27 proposed “Turtle Trails” — an ecotourism initiative to generate revenue from Olive Ridley sea turtle nesting beaches — drawing immediate criticism from conservation groups and marine biologists who warned that increased human activity near nesting sites could devastate the world’s largest mass-nesting events.

OLIVE RIDLEY SEA TURTLES — THE SPECIES AND ITS SIGNIFICANCE

The **Olive Ridley sea turtle** (*Lepidochelys olivacea*) is one of the smallest and most abundant of the seven marine turtle species globally. Despite being listed as **Vulnerable** on the IUCN Red List, it is the most numerous sea turtle species, with an estimated global population of approximately **800,000 nesting females**. India hosts some of the most critical nesting habitats in the world.

Taxonomic and biological profile:

Family: **Cheloniidae** (hard-shell sea turtles)

Name origin: Olive-coloured, heart-shaped carapace (shell)

Size: Adults typically 60–70 cm in length; weight 45–50 kg

Lifespan: Estimated 50+ years; females reach sexual maturity at approximately **15 years**

Diet: Carnivorous — crabs, shrimp, rock lobsters, jellyfish, fish

Nesting frequency: Females nest every 1–3 years, laying 100–120 eggs per clutch; 1–3 clutches per season

Incubation: 45–60 days; temperature determines sex (warmer = more females — particularly significant in the context of climate change)

THE ARRIBADA PHENOMENON

The most remarkable behaviour of Olive Ridley turtles is the **Arribada** (from Spanish: “arrival”) — a mass synchronised nesting event where hundreds of thousands of female turtles emerge from the ocean simultaneously to nest on the same beach within a few days.

Why Arribada occurs: The exact triggering mechanism remains debated scientifically. Likely triggers include: lunar cycles (typically occurs just after full or new moon), sea surface temperature changes, chemical signalling between females in offshore aggregations, and storm-driven wave patterns. The synchronisation likely evolved as a predator-swamping strategy — so many eggs are laid simultaneously that predators (monitor lizards, jackals, dogs, humans) cannot consume them all.

Scale of India’s Arribadas:

Gahirmatha Marine Sanctuary (Odisha): The world’s largest Olive Ridley rookery — an estimated **3–4 lakh turtles** (300,000–400,000) nest annually. In peak years, Gahirmatha has recorded **6+ lakh nesting turtles in a single Arribada season** (November–April, peak February–March).

Rushikulya River mouth (Odisha): Second major Odisha site; 1–2 lakh turtles annually.

Devi River mouth (Odisha): Third Odisha site; smaller numbers.

Together, Odisha’s three sites account for nearly **half the global Olive Ridley nesting** in any given year — making India a critical global conservation responsibility.

GAHIRMATHA MARINE SANCTUARY — LOCATION AND LEGAL STATUS

Gahirmatha Marine Sanctuary was declared India’s first and only marine sanctuary specifically for sea turtle protection in **1997** by the Government of Odisha.

Parameter	Details
Location	Kendrapara district, Odisha; Bhitarkanika hinterland
Area	1,435 sq km (marine area)
Core nesting beach	Nasi-1 and Nasi-2 islands (barrier islands)
Legal status	Wildlife Sanctuary under Wildlife Protection Act, 1972
Nearest town	Paradeep (20 km south)
Adjacent protected area	Bhitarkanika National Park (mangroves)

Seasonal protection:

No-fishing zone: November 1 – May 31 every year within 20 km of Gahirmatha beach

Mechanised boat ban: During nesting season, only non-motorised boats permitted within designated zones

Beach access: Complete restriction during Arribada (enforced by Forest Department + Navy + Coast Guard joint patrols)

CRZ (COASTAL REGULATION ZONE) AND CONSERVATION LAW

Sea turtle nesting beaches receive overlapping legal protections in India:

Wildlife Protection Act, 1972:

Olive Ridley turtle: **Schedule I** (highest protection category; hunting, trade, injury = non-bailable offence)

Schedule I protection means zero tolerance — even accidental killing of a turtle in a fishing net constitutes an offence

India is a signatory to **CITES Appendix I** (commercial trade banned) and **Convention on Biological Diversity**

Coastal Regulation Zone (CRZ) Notification, 2019:

CRZ-IA (Ecologically Sensitive Areas): Includes mangroves, coral reefs, sand dunes, sea turtle nesting grounds, and mudflats. Zero development permitted in CRZ-IA.

Turtle nesting beaches are designated CRZ-IA — meaning **no construction, no tourism infrastructure, no permanent fixtures** are permissible.

The Turtle Trails proposal potentially conflicts with CRZ-IA restrictions if any infrastructure is built within 500 metres of the high tide line at nesting beaches.

Project Sea Turtle (1999–present):

A Government of India programme under the Ministry of Environment, Forest & Climate Change (MoEFCC)

Funds beach patrolling, satellite tagging, hatchery management, and awareness campaigns

Coordinates with Wildlife Institute of India (WII), Odisha Forest Department, and NGOs (Wildlife Society of Odisha, Dakshin Foundation)

THE TURTLE TRAILS PROPOSAL — WHAT BUDGET 2026 SAID

Finance Minister Nirmala Sitharaman’s Budget 2026-27 speech mentioned “Turtle Trails” as part of a broader **ecotourism development initiative** under the Ministry of Tourism, aimed at diversifying India’s coastal tourism offerings and generating livelihood opportunities for coastal fishing communities.

The proposal as described:

Develop designated **viewing points** near nesting beaches (not on the beach itself)

Create **structured night-time guided tours** during Arribada season

Infrastructure investment: **Rs 50 crore** allocated for pilot sites (Gahirmatha, Rushikulya, Velas Beach in Maharashtra, Agatti in Lakshadweep)

Revenue model: Ticketed entry, community-run homestays, trained local guides

Linked to India's **eco-tourism policy (2023)** and coastal livelihood programmes

The government's stated rationale:

Gahirmatha already receives informal (illegal) tourist visits during Arribada — formalising and regulating this is argued to be better than uncontrolled access

Revenue from ecotourism could fund beach patrolling and anti-poaching operations

Employment for Gahirmatha-area fishing communities who lose income during the 6-month seasonal fishing ban

THE CONSERVATION COMMUNITY'S OBJECTIONS

Objection 1: Light pollution disrupts nesting behaviour Female Olive Ridley turtles use natural light gradients to locate and return to beaches. **Artificial lighting disorients hatchlings** — they move toward light sources rather than toward the sea, dying of dehydration or predation. Even low-level light (phone screens, flashlights, torches used by tourists) has been documented to cause disorientation. Night-time tourism is categorically incompatible with nesting and hatching phases.

Objection 2: Noise and human presence triggers nest abandonment Female turtles approaching a beach that is crowded, loud, or strongly lit will abort nesting attempts and return to sea ("false crawls"). Research at Gahirmatha and Rushikulya shows that years with higher boat traffic in approach zones correlate with higher false-crawl rates. Mass false-crawls during Arribada — when hundreds of thousands of turtles attempt simultaneous nesting — could result in catastrophic reproductive failure.

Objection 3: CRZ legal conflict Any permanent or semi-permanent tourism infrastructure within the CRZ-IA zone would require CRZ clearance — which the notification theoretically does not allow for non-conservation purposes. Conservation organisations have already filed PILs challenging infrastructure developments near Odisha coast CRZ areas (unrelated to Turtle Trails, but establishing legal precedent).

Objection 4: Boat traffic and turtle strandings The approach to Gahirmatha's nesting islands by tourist boats increases the risk of **propeller strikes** — a major cause of sea turtle injury and death globally. India already records 500–800 turtle strandings annually along Odisha's coast, many attributable to mechanised fishing boats.

Objection 5: Precedent for commercialisation of protected areas Conservation NGOs argue that "ecotourism" framing risks establishing a commercial precedent in what is currently a strictly protected sanctuary, potentially enabling escalating tourism pressure and eventually compromising the sanctuary's Wildlife Sanctuary status.

FISHING COMMUNITY AND BYCATCH — THE LARGER CONTEXT

The Turtle Trails controversy occurs against a deeper tension between **conservation restrictions and fishing community livelihoods**:

Gahirmatha's seasonal fishing ban (Nov–May) affects approximately **3,500 registered fishing households** in the Kendrapara district

Trawler bycatch (accidental entanglement in fishing nets) kills an estimated **10,000–30,000 Olive Ridley turtles annually** along India's coasts — vastly exceeding poaching numbers

Turtle Excluder Devices (TEDs): Net modifications that allow turtles to escape; mandatory under Indian law for trawlers operating in turtle-rich zones since 2003 — but enforcement is weak; compliance estimated at 30–40% by Wildlife Institute of India surveys

The fishing community often views conservation restrictions as economically punitive without adequate compensation — making community engagement essential for any conservation strategy

CONSERVATION VS. ECOTOURISM — THE GLOBAL DEBATE

Internationally, controlled ecotourism has been used successfully at turtle nesting sites in Costa Rica (Tortuguero), Greece (Zakynthos), and Australia (Mon Repos), where:

Strict **carrying capacity limits** (max 20–30 tourists per nesting event)

Certified guides with mandatory training

Zero light and zero noise protocols during nesting

Revenue goes directly to local conservation bodies

The key distinction: These successful models involve **low-intensity, highly regulated, red-listed site-specific management** — not mass tourism development. India's Budget allocation of Rs 50 crore across multiple sites suggests scale and pace that conservation experts consider premature without an Environmental Impact Assessment (EIA).

UPSC RELEVANCE

Olive Ridley turtle (Lepidochelys olivacea); IUCN status: Vulnerable; WPA Schedule I; Arribada; Gahirmatha Marine Sanctuary (1997, Kendrapara, Odisha; 1,435 sq km); Rushikulya and Devi River mouth (Odisha); Velas Beach (Maharashtra); CRZ-IA (Ecologically Sensitive Areas — no development); Turtle Excluder Devices (TEDs); Project Sea Turtle (1999, MoEFCC); CITES Appendix I; Wildlife Institute of India (WII); 7 sea turtle species globally; Turtle Trails (Budget 2026-27, Rs 50 crore pilot); nesting season: Nov–April; 3–4 lakh turtles annually at Gahirmatha.

Conservation vs. ecotourism — trade-offs in biodiversity hotspots; CRZ regulation and coastal ecosystem protection; bycatch and its impact on marine biodiversity; TEDs and enforcement failure; fishing community rights vs. conservation restrictions; India's marine protected area governance; Budget 2026 Turtle Trails — critically evaluate; international models of sustainable turtle tourism (Tortuguero, Zakynthos).

★ FACTS CORNER — KNOWLEDGEPEDIA

OLIVE RIDLEY TURTLE — CORE DATA:

Scientific name: *Lepidochelys olivacea*

IUCN status: **Vulnerable**

Indian legal status: **Wildlife Protection Act, Schedule I** (highest protection)

Global nesting females estimate: ~800,000

India's share: ~50% of global nesting in peak years

Nesting season in India: **November – April** (peak: February–March)

GAHIRMATHA MARINE SANCTUARY:

Location: **Kendrapara district, Odisha**

Declared: **1997** (India's first marine sanctuary for sea turtles)

Area: **1,435 sq km** (marine area)

Annual nesting: **3–4 lakh turtles** (up to 6 lakh in peak years)

Adjacent: **Bhitarkanika National Park** (mangroves, crocodiles)

Seasonal fishing ban: **November 1 – May 31** annually

ODISHA'S THREE KEY SITES:

Gahirmatha Marine Sanctuary (largest; 3–4 lakh/year)

Rushikulya River mouth (1–2 lakh/year)

Devi River mouth (smaller numbers)

ARRIBADA:

Spanish: “arrival” — mass synchronised nesting event

Trigger: Lunar cycles + SST + chemical signalling (mechanism debated)

Evolutionary rationale: Predator-swamping strategy

Scale at Gahirmatha: World's largest — up to 6 lakh in one season

LEGAL FRAMEWORK:

CRZ-IA (Coastal Regulation Zone Notification, 2019): Ecologically Sensitive Areas; turtle nesting beaches = zero development permitted

CITES Appendix I: Commercial trade banned globally

Project Sea Turtle: Launched 1999; MoEFCC; WII coordinates

TURTLE EXCLUDER DEVICES (TEDS):

Net modification allowing turtles to escape trawler nets

Mandatory in India since 2003 for turtle-rich zones

Compliance: ~30–40% (WII estimate) — major enforcement failure

Annual estimated bycatch deaths: **10,000–30,000** (vastly exceeds poaching)

BUDGET 2026-27 — TURTLE TRAILS:

Pilot sites: Gahirmatha, Rushikulya (Odisha), Velas (Maharashtra), Agatti (Lakshadweep)

Allocation: **Rs 50 crore**

Concerns: Light pollution, noise, false crawls, CRZ-IA conflict, propeller strikes

OTHER RELEVANT FACTS:

Seven sea turtle species globally: Olive Ridley, Leatherback, Green, Hawksbill, Loggerhead, Kemp's Ridley, Flatback

Leatherback is the largest (up to 700 kg); Kemp's Ridley and Olive Ridley are the smallest

India has nesting populations of: Olive Ridley (Odisha, Andhra, Tamil Nadu), Leatherback (Andaman), Green (Lakshadweep, Andaman)

Bhitarkanika National Park: Famous also for **saltwater crocodiles** and **mangroves**; Odisha; Ramsar Site

Tortuguero (Costa Rica) and Zakynthos (Greece): International examples of successful low-intensity regulated turtle ecotourism

Wildlife Institute of India (WII): Autonomous institution under MoEFCC; Dehradun; conducts marine turtle research

Sources: MoEFCC, Wildlife Institute of India, Down to Earth, The Hindu, Insights on India

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