

2. Gharials - Environment

This comprehensive overview examines the ecological crisis in the National Chambal Sanctuary (NCS), the biology of the Gharial, and the legal interventions aimed at preserving one of India's most unique aquatic predators.

1. Background and Legal Context

The Suo Motu Cognisance

In 2026, the Supreme Court of India, led by Justice Vikram Nath and Justice Sandeep Mehta, took suo motu cognisance (action taken by the court on its own motion) based on media reports. These reports detailed how illegal sand mining is destabilizing the ecology of the National Chambal Sanctuary.

Key Judicial and Reporting Timeline

The Problem- Extensive sand mining has destroyed natural habitats, forcing Gharial populations to relocate. Alarming, even the new "safe" habitats in Madhya Pradesh were subsequently invaded by mining activities.

NGT Intervention- Earlier, the National Green Tribunal (NGT) acted on a 2022 report titled "Digging up the Chambal," directing authorities to curb the menace.

The "Sand Mafia"- Organized groups use unregistered vehicles and tractor-trolleys for illegal extraction.

Institutional Failure- The court highlighted a lack of coordination between law enforcement and forest officials, combined with weak enforcement, which emboldened the mining mafias.

Climate Factor- Low rainfall and naturally exposed sandbanks allow mining to persist year-round, leaving no "recovery period" for the riverbed.

2. Profile of the Gharial (*Gavialis gangeticus*)

Definition and Physical Characteristics

The Gharial is a unique member of the crocodilian family, distinguished by its extremely long, thin snout, which is an adaptation for catching fish.

Sexual Dimorphism- Males and females look different.

Males- Possess a bulbous, pot-like growth at the end of the snout called a "Ghara" (Hindi for pot), which is used to modify vocalizations and blow bubbles during courtship.

Dentition- They have long, slender snouts with sharp, interlocking teeth perfect for a fish-based diet.

Ecosystem Role- As top aquatic predators, they maintain the balance of fish populations and keep rivers clean by consuming carrion (dead animal matter).

Cultural Status- Revered in Indian mythology as the "Vahana" (divine mount) of Goddess Ganga.

Habitat and Distribution

Historical Range- Once thrived across the Indus, Ganga, Brahmaputra, and Mahanadi river systems in India, Pakistan, Nepal, Bhutan, and Bangladesh.

Current Range- Severely restricted to three main tributaries of the Ganga-

1. **Chambal River** (India)
2. **Girwa River** (India)
3. **Rapti-Narayani River** (Nepal)

3. Threats to Population

The Gharial has faced a tumultuous journey toward survival, moving from historical exploitation to modern industrial threats.

Historical- Overhunting for skins, trophies, and use in traditional medicine.

Modern Habitat Destruction- Construction of dams and irrigation canals alters river flow, while sand mining destroys nesting grounds.

Pollution- Influx of industrial chemicals and agricultural runoff into river systems.

Fishing Hazards- Entanglement in gill nets remains a primary cause of accidental death, even within protected zones.

4. Conservation Status and Trends

While the National Chambal Sanctuary recorded a positive count of 2,456 gharials in 2024, the long-term trend shows extreme volatility-

1950s–1960s- Population crashed by 80%.

1997–2006- A second major crash occurred, with adult populations dropping from 436 to just 182.

Regional Extinction- They are now considered extinct in Myanmar and Bhutan, with only small, unconfirmed populations remaining in Pakistan and Bangladesh.

5. National Chambal Sanctuary (NCS)

Geographical and Biological Significance

Location- Situated at the tripoint of Rajasthan, Madhya Pradesh, and Uttar Pradesh.

Administration- A unique eco-reserve co-administered by all three states.

Scope- Protects a 435-km stretch of the Chambal River, renowned as one of the cleanest rivers in India.

Biodiversity- Home to over 290 bird species, notably providing a habitat for 80% of India’s Indian Skimmer population.

6. Comparative Analysis of Indian Crocodile Species

India is home to three distinct species of crocodilians, each with different habitat needs and conservation priorities.

Feature	Gharial (<i>Gavialis gangeticus</i>)	Mugger Crocodile (<i>Crocodylus palustris</i>)	Saltwater Crocodile (<i>Crocodylus porosus</i>)
Primary Habitat	Freshwater rivers (high current)	Freshwater lakes, marshes, and stagnant rivers	Estuaries, mangroves, and brackish water
Physical Feature	Very long, thin snout	Broad, blunt snout	Largest of all living reptiles
IUCN Status	Critically Endangered	Vulnerable	Least Concern
WPA 1972	Schedule I (Highest Protection)	Schedule I	Schedule I

7. Strategic Conservation Efforts

Captive Breeding (Project Crocodile)- Established between 1975 and 1982, involving 16 centres to rear hatchlings in a protected environment before releasing them into the wild.

Reintroduction Programs- Successful reintroduction of the species into the Sutlej and Beas rivers in Punjab (2017–2020).

Protected Areas- Focus on key sanctuaries like National Chambal (MP), Katarniaghat (UP), Son River (MP), and Satkosia Gorge (Odisha).

Integrated Management- Banning sand mining, monitoring water quality, and regulating fishing.

Community Engagement- Involving local villagers in protection and awareness to reduce human-wildlife conflict.

Source- <https://www.thehindu.com/news/national/supreme-court-takes-suo-motu-cognisance-of-illegal-sand-mining-in-national-chambal-sanctuary/article70738307.ece>