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Gharial Survey 2026 — 3,037 in the Ganga Basin and What It Tells Us About River Health

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ENVIRONMENT

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WHY IN NEWS

A comprehensive gharial (*Gavialis gangeticus*) survey across the Ganga River basin counted 3,037 individuals inhabiting 13 rivers — a data point for both conservation progress under Project Crocodile and a diagnostic indicator of India's river ecosystem health, as gharials serve as a flagship species for riverine biodiversity.

THE GHARIAL: INDIA'S MOST DISTINCTIVE CROCODILIAN

The **gharial** (*Gavialis gangeticus*) is instantly recognisable: a long, narrow snout (the narrowest-snouted of all living crocodylians) designed for catching fish, and — in adult males — a distinctive **bulbous growth at the snout tip** called a **ghara** (Sanskrit: earthen pot), which gives the species its name and is used for sound production during mating.

Taxonomy and classification:

Order: Crocodylia

Family: Gavialidae (sole living species in this family — though *Tomistoma schlegelii* of Southeast Asia is sometimes placed here)

Status: **IUCN Critically Endangered; CITES Appendix I; Schedule I, Wildlife Protection Act 1972** (India's highest protection)

Once found across the entire Indian subcontinent river system from Myanmar to Afghanistan; now restricted to five river systems in India and Nepal

Diet: Strictly fish (obligate piscivore) — cannot walk on land like Mugger crocodiles; can only slide into water. This dietary specificity makes it both an ecological specialist and a river health indicator: no fish = no gharials.

DISTRIBUTION: WHERE ARE INDIA'S GHARIALS?

The 2026 survey counted **3,037 individuals** across **13 rivers** of the Ganga basin. Principal populations:

River/Location	Status
National Chambal Sanctuary (MP/UP/Rajasthan)	Largest population; ~70-75% of all gharials in India
Katarniaghat Wildlife Sanctuary , Ghaghara River (UP)	Second-largest breeding population
Ken River (MP/UP)	Small but stable breeding population
Son River (MP/UP)	Present but smaller numbers
Girwa River , Katarniaghat	Breeding site
Gandak River (UP/Bihar)	Small numbers
Nepal: Rapti, Narayani, Karnali	Trans-boundary population

The Chambal dominance: The National Chambal Sanctuary — spanning Madhya Pradesh, Uttar Pradesh, and Rajasthan — hosts the majority of India’s gharial population. The Chambal is also one of India’s least-polluted major rivers (its ravines are inhospitable to human settlement, providing natural protection from encroachment and pollution), which explains why gharials survive there when they have been driven out of other rivers.

PROJECT CROCODILE AND INDIA’S CONSERVATION SUCCESS STORY

Project Crocodile (1975): Launched in 1975 under UNDP/FAO assistance as one of India’s first wildlife recovery programmes — predating even Project Tiger (1973 was the launch; Tiger Reserves came under Wildlife Protection Act 1972).

Project Crocodile focused on all three Indian crocodylian species — Mugger, Saltwater Crocodile, and Gharial — but the gharial received particular attention because it was the most endangered: population estimated at fewer than 200 in the wild in 1975.

Gharial Breeding Centres under Project Crocodile:

Kukrail Gharial Rehabilitation Centre, Lucknow (UP) — oldest; still operational

National Chambal Sanctuary hatcheries — in-situ management; artificial incubation of eggs

Katarniaghat Wildlife Sanctuary hatchery (UP)

Sunderban Tiger Reserve (West Bengal) — for saltwater crocodile, not gharial

Odisha: Tikarpada Wildlife Sanctuary — Mugger crocodile conservation

The recovery: From <200 in 1975 to 3,037 in 2026 represents a remarkable 15-fold increase — one of conservation biology’s success stories. However, the IUCN still classifies the gharial as Critically Endangered because:

The population is highly fragmented

Most individuals are from captive breeding releases; the truly wild-bred population is much smaller
 Habitat threats (sand mining, irrigation barrages, water diversion) continue to degrade key habitats

WHY GHARIALS ARE RIVER HEALTH INDICATORS

The gharial serves as a **flagship and umbrella species** for the riverine ecosystem — its presence or absence tells scientists about the health of the entire river system:

What a healthy gharial population requires:

Clean, flowing water with high dissolved oxygen and minimal pollutants (gharials are sensitive to pollution)

Abundant fish biomass — specifically shoaling species like Rohu, Catla, and Mahseer

Sandy riverbanks for nesting — gharials dig nests in sand; bank erosion, concrete embankments, and sand mining destroy nesting sites

Long stretches of uninterrupted river — gharials can travel 100+ km seasonally; dams and barrages fragment these movements

If a river supports gharials, it almost certainly also supports healthy populations of otters, dolphins (Gangetic dolphin), Mahseer (a large freshwater game fish), and migratory waterfowl.

Conversely: The absence of gharials from rivers where they historically existed (Yamuna, Ganga in UP, Indus in Pakistan) is a direct indicator of severe pollution, over-extraction, or habitat loss.

THE THREATS THAT REMAIN

Despite the population recovery, gharials face a complex threat matrix:

Sand mining: Gharials nest in sandy riverbanks. Illegal and semi-legal sand mining — which has exploded as construction demand grows — directly destroys nesting sites during the critical April-June breeding season.

Irrigation barrages and dams: The Chambal and its tributaries have multiple dams and barrages. Each creates a barrier to gharial movement, fragments populations genetically, and changes the river's sediment dynamics (reducing sand deposition downstream).

Pollution: Despite being less densely populated than the main Ganga, even the Chambal receives fertiliser runoff and some industrial effluent. Bioaccumulation of heavy metals and pesticides through the food chain affects gharial reproductive success.

Fishing nets: Gharials become accidentally entangled in fishing nets — gill nets in particular — and drown. This is a leading cause of mortality in the adult population.

Flooding — more paradoxically — can destroy nests when water levels rise before eggs hatch.

The Chambal Special Protection Area: The Chambal is the only river in India with continuous multi-state sanctuary protection (National Chambal Sanctuary spans 5,400 sq km across three states). But the sanctuary’s upstream watersheds are unprotected, and pollution from Kota’s industrial area (Rajasthan) enters the Chambal above the sanctuary.

UPSC RELEVANCE

Gharial (*Gavialis gangeticus*; Gavialidae; Critically Endangered IUCN; CITES Appendix I; Schedule I WPA; ghara – male bulbous snout); National Chambal Sanctuary (MP-UP-Rajasthan; 5,400 sq km; established 1978; largest gharial habitat); Project Crocodile (1975; UNDP/FAO; three species); Three crocodylian species in India (Mugger/Saltwater/Gharial); Katarniaghat WS (UP; Ghaghara River; breeding population); Kukrail Centre (Lucknow); 2026 survey (3,037 in 13 rivers); Gangetic Dolphin (national aquatic animal; also found in Chambal); Flagship species; Umbrella species concepts

MAINS GS-3:

“India’s gharial population has recovered from under 200 in 1975 to over 3,000 in 2026 — yet it remains Critically Endangered. Explain the paradox and discuss what it reveals about the limitations of captive breeding conservation approaches.” | “Discuss the role of riverine ecosystems in India’s biodiversity and the threats they face. How can species like the gharial serve as indicators for ecosystem management?”

INTERVIEW:

“Gharial numbers have tripled since Project Crocodile began, but the species is still Critically Endangered. Does this success or failure of conservation policy? What should the next phase focus on?”

★ **FACTS CORNER — KNOWLEDGEPEDIA**

GHARIAL (GAVIALIS GANGETICUS):

Family: Gavialidae (only living species in the family; most ancient crocodylian lineage)

IUCN: Critically Endangered

CITES: Appendix I (commercial trade banned)

WPA 1972: Schedule I

2026 survey: 3,037 individuals in 13 rivers of Ganga basin

Historic range: Entire Indo-Gangetic plain + Irrawaddy (Burma) + Mahanadi; now restricted to 5 river systems

Key habitat: National Chambal Sanctuary (70-75% of Indian population)

Diet: Obligate piscivore (fish only)

Distinguishing feature: Narrow snout; ghara (bulbous nose on males)

PROJECT CROCODILE (1975):

Launch: 1975, under UNDP/FAO support

Target species: All three Indian crocodylians (Mugger, Saltwater, Gharial)

Success metric: Gharial population <200 in 1975 → 3,037 in 2026

Key centres: Kukrail (Lucknow, UP), Katarniaghat WS, Chambal hatcheries

NATIONAL CHAMBAL SANCTUARY:

Established: 1978

Area: ~5,400 sq km (MP + UP + Rajasthan)

Species: Gharial, Mugger Crocodile, Gangetic River Dolphin, Indian Skimmer, Mahseer

Rivers: Chambal, Kuari, Parbati (tributaries of Yamuna)

Status: No other multi-state riverine sanctuary in India

THREE INDIAN CROCODILIANS COMPARED:

Feature	Mugger	Saltwater	Gharial
Scientific name	Crocodylus palustris	Crocodylus porosus	Gavialis gangeticus
IUCN	Vulnerable	Least Concern	Critically Endangered
WPA	Schedule I	Schedule I	Schedule I
Habitat	Freshwater (widespread)	Coastal/estuarine	Large river systems
Key location	Pan-India freshwater	Sundarbans, Bhitarkanika, Andaman	Chambal, Katarniaghat
Diet	Omnivore	Carnivore (large prey)	Piscivore only

GHARIAL THREATS:

Sand mining (destroys nesting banks)

Dams/barrages (fragment habitat)

Fishing net entanglement (mortality)

Pollution and water extraction
Flooding of nests before hatching

FLAGSHIP VS UMBRELLA VS INDICATOR SPECIES:

Flagship: Charismatic species used for public engagement (Tigers, Gharials)

Umbrella: Species whose habitat protection covers many co-occurring species

Indicator/Sentinel: Species whose presence/absence indicates ecosystem health (Gharials indicate river quality)

A single species can be all three

Sources: Wildlife Institute of India, Ministry of Forest, Environment and Climate Change, PIB, IUCN Red List

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