

# **Human Crocodile Conflicts in India: A Review of Cause and Effect**

**By**

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# Crocodylian Species and Conservation Efforts in South Asia – Iran Region

Name of the Country	C. Palustris	C. Porosus	G. Gangeticus
**Afghanistan	√	-	
**Bangladesh	√	√	√
*Bhutan	?	-	√
*India	√	√	√
?Iran	√	-	-
*Nepal	√	-	√
*Pakistan	√	-	?
*Sri Lanka	√	√	-

\* Government and NGO sponsored conservation programmes are in operation.

\*\* Only international or national NGO sponsored crocodile conservation efforts are in progress or planned.

? Information on the status of crocodylians and their conservation efforts have not been compiled. Socio-political situation in Nepal, Sri Lanka and Afghanistan has somewhat hindered the crocodile conservation efforts in these range countries.

# Range of Threats for the Crocodilians in India

## Direct Threats

- Fisheries interface related killing
- Hunting for skin trade
- Lifting of Crocodile eggs for medicinal use
- Antagonistic killing/removal of nuisance crocodiles involved in HCC

## Indirect Threat to Habitats

- Alteration of aquatic habitats through drainage/dam construction/agriculture and other uses
- Pollution

# Conservation Management History

- Ban on export of skins
- Placement of the three species in Schedule I of the Wildlife (Protection) Act
- Detailed survey for population assessment
- Assessment of breeding stock and locations for providing protection
- Initiation of head-start programme and setting up of crocodile rearing centres to adopt a grow and release programme
- Setting up of Crocodile Sanctuaries
- Restocking through reared stock release and monitoring.
- **Removal of crocodiles from HCC situations**

# Human Crocodile Conflict: Historical Perspective

- Records of human crocodile conflict involving the salt water crocodile in Sunderban (West Bengal), Mahanadi Delta (Orissa), Cauvery – Coleroon delta (Tamil Nadu) and Godavari Krishna Delta (Andhra Pradesh) exists prior to 1950s.
- Crocodile livestock conflicts and occasional human victimization by Mugger Crocodile in Gangetic plains, Terai and dry season peninsular India fresh water habitats reported until late 1960s.
- Post independence increase in creation of large scale man made reservoirs and culture fishery operation projected the crocodilians as injurious to fishery and humans and officially contracted to be removed from water bodies till 1968.

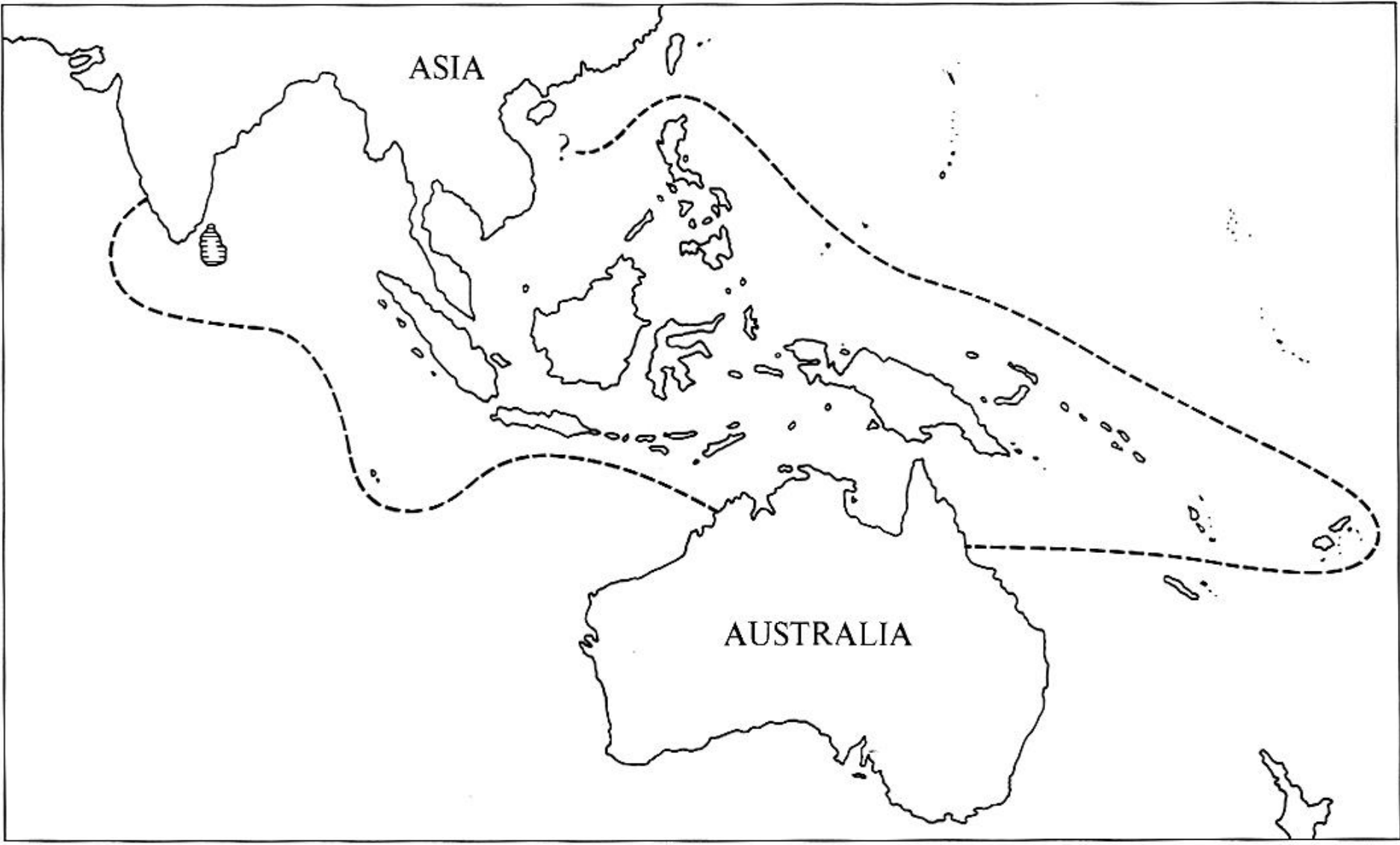








The most problematic species in human crocodile conflict situation in India



And also in the distributional range of Salt Water Crocodile. Limits of the Range are indicated by broken line *after W.T. Neill*



# Current situation of Salt Water Crocodiles conflict in the Wild

- Bangladesh Sunderban – Present
- Indian Sunderban – Worrying
- Andaman & Nicobar Islands – Worrying
- Sri Lanka – Worrying

**THE SPECIES SEEMS TO BE IN VERY LOW PUBLIC ESTEEM  
BECAUSE OF HUMAN CROCODILE CONFLICTS**

# Perception of Conflict

- **Are humans and their activities invading the territory of crocodiles? or**
- **Crocodiles intruding into human territory and their livelihood options**
- **Is it conflict or forced interaction.**
- **Whether the debate is in defence of crocodiles or in defence of human activities.**
- **Whether the conflict is region/area/species specific?**
- **Whether the conflict is round the year or overlaps with crocodile's behavioural life cycle parameters and/or anthropogenic activities.**
- **Are there possible solution approaches if the conflict exists and are on the increase?**

# History and Causes of Conflict

- LIVELIHOOD BASED SUBSISTENCE FISHERIES OPERATIONS IN CROCODILE HABITATS
  - A & N, Sundarban, Bhitarkanika (Saltwater Crocodile: *C. porosus*)
  - Scattered & widespread across India involving Mugger Crocodile (*C. palustris*)
- RESTOCKING IN SUB-OPTIMAL CROCODILE HABITATS ENHANCING CONFLICTS
  - Neyyar dam-Kerala, Pakhal-AP , Godavari delta in AP, Bhitarkanika and Hadhgarh-Odisha, Tadoba and Melghat in Maharashtra, Amaravati , Sathanur and Krishnagiri in Tamilnadu



➤ LARGE SCALE RELEASE OF 'HEAD START' STOCK ENHANCING DENSITY & INCREASING TERRITORIAL DISPERSAL OF CROCODILES INTO SUB-OPTIMAL HABITATS

**-Bhitarkanika and Andaman**

➤ ILLEGAL FISHING IN CROCODILE HABITATS IN PROTECTED AREAS, ENHANCING CONFLICT SITUATIONS

**- Sundarban, NSS Sanctuary in AP, Tadoba**

➤ LACK OF UNDERSTANDING OF TERRITORIALITY IN CROCODILIANS. – Sunderban and Bhitarkanika

- **RECREATIONAL USE OF WATER BODIES.** – Water sports, diving, boating and other water based recreation activities increasing human crocodile interaction.
- **Livestock & Stray dog in Crocodile Habitats**
  - Andaman & Nicobar and almost everywhere
- **SHIFT IN HUMAN DIETRY HABITS-** Increased intake of culture fish, Chicken, Meat, beef and disposal of Commercial food waste from such products into water bodies
  - Andhra Pradesh, Karnataka, Rajasthan (Kota), Odisha (Bhitarkanika: Rajnagar, Gupti) and other fish landing centers along the coast
- **Warm Industrial Sewage release into rivers changing water temperature congenial for crocodiles.** Eg. Kota, Rajasthan

# Management Strategy Adopted

- Capture and removal of problem animal either to captivity or to a protected area.
- Creation of barricades in water use areas to prevent human crocodile interaction.
- Display of warning signages in crocodile conflict areas.
- Compensation to the victims and bearing of hospitalization cost.



# Human Crocodile Conflict (HCC) Management Concerns

- Valuation and Judgment on HCC Problems are often based on economic loss, human life loss but not on the causative loss from an ecological perspective and the life history parameter requirements of wild crocodilians.
- No crocodile population management is good management is an erroneous perception since intervention in landuse and wilderness area changes will also require interventions in habitat and species restoration and/or reduce the carrying capacity of the wilderness in terms of wild populations.
- HCC concerns are often highlighted by concerned activism rather than well informed activism.

# Human Crocodile Conflict (HCC)

## Management Concerns: Policy Issues

- Promotion of mechanisms that addresses solving local level case specific issues rather than top down national, regional and state level approaches.
- Identification of most affected HCC locations on the lines of drought prone, disaster prone and fragile habitat district approach.
- Review of existing HCC management approaches practiced by Crocodile population supporting states.
- Education and awareness concerns and promotions on the HCC subject at all level including research and monitoring.
- Developing mechanism for harnessing or channelizing religious taboos and sentiments for crocodilians for a problem solving approach (Crocodile as carrier of Goddess Ganga, Consort of Deity Khodiyar in Gujarat).

# Way Forward & Future Directions for Human Crocodile Conflict Management in India

- Revival of a Conservation programme activities particularly monitoring of rebuilt crocodile population status
- Development of species recovery plan in range States after proper survey and determination of optimal habitat status
- Initiation of research studies on dispersal and movement patterns of the rebuilt crocodile populations in the context of human crocodile conflict – radio telemetry and/or satellite telemetry study
- Consideration of non-consumptive use of crocodilians as a resource in ecotourism and other livelihood options involving community
- **Initiation of a nuisance crocodile management programme**
- Explore feasibility of consumptive use of the high fecund saltwater crocodile which is already in Appendix II of CITES in some range states
- Involvement of local communities in crocodile habitat protection and management with proper orientation training about life history parameters and critical ecological requirements of crocodilians.



## HUMAN-CROCODILE CONFLICT AND CONSERVATION IMPLICATIONS OF SALTWATER CROCODILES *CROCODYLUS POROSUS* (REPTILIA: CROCODYLIA: CROCODYLIDAE) IN SRI LANKA

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