

1. Tiger Conservation in India

1.1. Tigers

- Tigers (*Panthera tigris*) are mammals of the Felidae family and one of four "big cats" in the *Panthera Genus*.
- The largest of all the Asian big cats, tigers rely primarily on sight and sound rather than smell for hunting.
- Among the big cats, only the Tiger and Jaguar are strong swimmers.
- Tigers hunt alone and eat primarily medium to large sized herbivores such as deer, wild pigs, gaur and water buffalo.
- Across the world, the tigers are considered to be **endangered** animals.
- The Royal Bengal Tiger is the most common subspecies of tiger and is the National Animal of India.

1.1.1. Habitat

- Tigers live in a diverse array of habitats such as tropical rainforests, mangrove swamps, evergreen forests, grasslands, savannahs, and rocky areas.
- In the wild, Royal Bengal Tigers **live in tropical jungles, marshland and tall grasslands** in fragmented areas of Bangladesh, Nepal, India, Bhutan and Burma and some parts of China.

1.1.2. Conservation Issues

- Across their range, tigers face unrelenting pressures from poaching, retaliatory killings, and habitat loss.
- They are forced to compete for space with dense and often growing human populations.

1.2. Project Tiger

1.2.1. Initiation of Project Tiger

- Project Tiger is a wildlife conservation project initiated in India **on April 1, 1973**.
- The project was **launched at Jim Corbett National Park** in Uttarakhand.

1.2.2. Objective of Project Tiger

- The objective of the Project Tiger was **saving Royal Bengal Tigers (*Panthera tigris*) from getting extinct.**
- The project aimed at tiger conservation in specially constituted tiger reserves and **maintaining a viable tiger population** in their natural environment.

1.2.3. Background of Project Tiger

- Prior to the Project Tiger, the then Prime Minister Mrs. Indira Gandhi appointed The **Tiger Task Force** under the **chairmanship of Dr Karan Singh in 1970.**
- This task force submitted its report in 1972. The report revealed the existence of only 1827 tigers in India.
- Given the biotic pressure, the report predicted the tiger would be extinct by the turn of the 20th century if immediate conservation measures were not taken.
- In the 1970s, **nine tiger reserves were set up** in different ecological systems.
- The 9 tiger reserves established in the beginning of Project Tiger were:
 - Manas (Assam), Palamau (Bihar), Similipal (Orissa), Corbett (Uttar Pradesh), Kanha (Madhya Pradesh), Melghat (Maharashtra), Bandipur (Karnataka), Ranthambhore (Rajasthan) and Sunderbans (West Bengal).

1.2.4. Strategy of Project Tiger

- The first Task Force, in an attempt to restrict human activity within the reserves, **devised the Core – Buffer Strategy.**
- The **core areas** were designated as a national park and all **human activity were banned**; and the **buffer areas** were subjected to '**conservation oriented land use**'.
- The idea was to relocate people from the core areas, but they could coexist with the tigers in the buffer areas.
- Management plans were drawn up for each tiger reserve, based on conservation principles.

1.2.5. Funding pattern

- 60% Central Assistance is being made available to States for expenditure on all non-recurring items.
- For recurring items, Central Assistance is restricted to 50% of the expenditure, while a matching grant is provided by the Project States.
- North Eastern and Himalayan States are provided 90% central assistance in both cases.

1.2.6. Administration of Project Tiger

- Project Tiger is **administered by the National Tiger Conservation Authority.**

- The overall administration of the project is monitored by a steering committee, which is headed by a director.

1.2.7. Achievements of Project Tiger

- Project Tiger has saved the endangered tiger from extinction, and has put the species on an assured path to recovery by improving the protection and status of its habitat.
- The Indian government officially marked 2023 as the 50th year of 'Project Tiger'.
- From nine tiger reserves in 1973, it **expanded to 55 tiger reserves in 2024**.
- While conserving the flagship species, the Project has **saved several other species** of plants and animals from extinction.
- States have been provided funding support for enhancing protection through deployment of local workforce, ex-army personnel.
- The local communities are benefiting from ecotourism apart from eco developmental inputs in fringe areas.
- The Project has served as a role model for wildlife management planning, habitat restoration, protection and eco development.

List of Tiger Reserves in India (as of April, 2024)

Sr.No.	Tiger Reserve (TR)	State	TR Notification Year	Total Area (sq km)
1	Bandipur	Karnataka	2007	1456.3
2	Corbett	Uttarakhand	2010	1288.31
	Amanagarh buffer*	Uttar Pradesh	2012	80.60
3	Kanha	Madhya Pradesh	2007	2,051.79
4	Manas	Assam	2008	2,837.10
5	Melghat	Maharashtra	2007	2,768.52

6	Palamau	Jharkhand	2012	1,129.93
7	Ranthambore	Rajasthan	2007	1,411.29
8	Simlipal	Orissa	2007	2,750.00
9	Sunderban	West Bengal	2007	2,584.89
10	Periyar	Kerala	2007	925.00
11	Sariska	Rajasthan	2007	1,213.34
12	Buxa	West Bengal	2009	757.90
13	Indravati	Chattisgarh	2009	2,799.07
14	Namdapha	Arunachal Pradesh	1987	2,052.82
15	Nagarjunsagar Sagar	Andhra Pradesh	2007	3,296.31
16	Dudhwa	Uttar Pradesh	2010	2,201.77
17	Kalakad Mundanthurai	Tamil Nadu	2007	1,601.54
18	Valmiki	Bihar	2012	899.38
19	Pench	Madhya Pradesh	2007	1,179.63
20	Tadobha Andhari	Maharashtra	2007	1,727.59

21	Bandhavgarh	Madhya Pradesh	2007	1,536.93
22	Panna	Madhya Pradesh	2007	1,598.10
23	Dampa	Mizoram	2007	988.00
24	Bhadra	Karnataka	2007	1,064.29
25	Pench – MH	Maharashtra	2007	741.22
26	Pakke	Arunachal Pradesh	2012	1,198.45
27	Nameri	Assam	2000	464.00
28	Satpura	Madhya Pradesh	2007	2,133.31
29	Anamalai	Tamil Nadu	2007	1,479.87
30 ★	Udanti Sitanadi	Chattisgarh	2009	1,842.54 ★
31	Satkosia	Odisha	2007	963.87
32	Kaziranga	Assam	2007	1,173.58
33	Achanakmar	Chattisgarh	2009	914.02
34	Kali	Karnataka	2007	1,097.51
35	Sanjay Dhubri	Madhya Pradesh	2011	1,674.50
36	Mudumalai	Tamil Nadu	2007	688.59

37	Nagarhole	Karnataka	2007	1,205.76
38	Parambikulam	Kerala	2009	643.66
39	Sahyadri	Maharashtra	2012	1,165.57
40	Biligiri Ranganatha Temple	Karnataka	2007	574.82
41	Kawal	Telangana	2012	2,015.44
42	Sathyamangalam	Tamil Nadu	2013	1,408.40
43	Mukundara	Rajasthan	2013	759.99
44	Navegaon Nagzira	Maharashtra	2013	1,894.94
45★	Amrabad	Telangana	2015	2,611.39★
46	Pilibhit	Uttar Pradesh	2014	730.25
47	Bor	Maharashtra	2012	816.27
48	Rajaji	Uttarakhand	2015	1075.17
49	Orang	Assam	2016	492.46
50	Kamlang	Arunachal Pradesh	2017	783.00
51	Srivilliputhur Megamalai	Tamil Nadu	2021	1016.57

52	Ramgarh Vishdhari Tiger Reserve	Rajasthan	2022	1501.8921
53	Ranipur Tiger Reserve	Uttar Pradesh	2022	529.3612
54	Veerangana Durgavati Tiger Reserve	Madhya Pradesh	2023	2339.12
55	Dholpur – Karauli Tiger Reserve	Rajasthan	2023	599.6406
			Total	78,735.5966 sq km

* Amargarh Tiger Reserve, Uttar Pradesh is a buffer zone of Jim Corbett National Park, Uttarakhand and may not be regarded as a separate tiger reserve. It has a buffer zone of 80.6 sq. km (31.1 sq m.) but no core area of critical tiger habitat.

National Tiger Conservation Authority (NTCA)

- The NTCA has been **constituted under the Wild Life (Protection) Amendment Act, 2006**, as recommended by the Tiger Task Force of 2005.
- It was set up with **headquarters in New Delhi** under the Chairmanship of the Minister of Environment & Forests.
- An objective of NTCA is to **provide statutory authority to Project Tiger** so that compliance of its directives becomes legal.
- The Authority lays down standards and guidelines for tiger conservation in the Tiger Reserves, apart from National Parks and Sanctuaries.
- It provides information on protection measures including future conservation plan, tiger estimation, disease surveillance, mortality survey, patrolling, report on untoward happenings and such other management aspects as it may deem fit.

1.3. Tiger census

- It is conducted **once every four years**.

- The Nation-wide tiger census was earlier held in 2006, 2010, 2014 and 2018.
- NTCA conducts tiger census in partnership with state forest departments, conservation NGOs, and the Wildlife Institute of India (WII).

1.3.1. Tiger Census 2022

- The **fifth cycle** of the **All India Tiger Estimation (2022)** was released on April 09, 2023.

Key highlights of Tiger Census 2022

Population growth

- The tiger population in India **grew by 200 from 2018 to 2022**.
- The population increased to **3,167 in 2022** from 2,967, recorded in 2018.
- The growth, however, slowed to **6.7 percent** in these four years from around 33 per cent during 2014-2018.
- The tiger population has **grown the most in the Shivalik hills and Gangetic flood plains**, followed by central India, the north eastern hills, the Brahmaputra flood plains, and the Sundarbans.

Decline in tiger occupancy

- There was a **decline in the Western Ghats** numbers, though “major populations” were said to be stable.
- Decline in tiger occupancy was also observed outside the protected areas of Anamalai-Parambikulam complex.
- Although the tiger populations in the Periyar landscape remained stable, the tiger occupancy has declined outside Periyar.
- Tiger occupancy in Jharkhand, Odisha, Chhattisgarh and Telangana showed a decline.

Conservation priority in landscape

- The genetically unique and small population of **tigers in Simlipal is of high conservation priority** in the landscape.
- The **northeastern hill tiger populations are genetically unique** and should be the top priority of conservation action in the country due to their low population size and genetically unique lineage.
- With tigers increasing outside Tiger Reserves in the landscape (Shivalik hills and Gangetic plains), Uttarakhand and Uttar Pradesh need to invest in mitigating conflict with tigers and mega herbivores.

Threats in wildlife habitat

- The wildlife habitats (Protected Areas and corridors) within Central Indian highlands and Eastern Ghats face a range of threats, including habitat encroachment, illegal hunting of both tigers and their prey.
- Conflicts between humans and wildlife, unregulated and illicit cattle grazing, excessive harvesting of non-timber forest produce, human induced forest fires, mining, and ever-expanding linear infrastructure are also common.
- This region also has several mines of important minerals, hence mitigation measures like lower mining impact techniques and rehabilitation of mining sites should be done on priority.

1.4. Other Conservation Efforts

1.4.1. International Big Cat Alliance (IBCA)

- India launched the International Big Cat Alliance (IBCA) on April 9, 2023.
- It will focus on the **protection and conservation of seven major big cat species** in the world.
- These species are the tiger, lion, leopard, snow leopard, puma, jaguar, and cheetah.
- The alliance seeks to bring together countries, conservationists, and experts from around the world to collaborate on conservation efforts for these seven big cat species.
- ★ Through IBCA, India hopes to share knowledge, expertise, and best practices in conserving these species with other countries that have significant big cat populations, such as Indonesia, Brazil, and South Africa.
- The alliance also aims to facilitate collaborations between governments, NGOs, and the private sector to create sustainable solutions for conservation.

1.4.2. Critical Tiger Habitats (CTHs)

- Critical 'Tiger' Habitats (CTHs), also known as **core areas of tiger reserves**—are **identified under the Wildlife Protection Act, 1972**.
- It is based on scientific evidence that "such areas are required to be kept as inviolate for the purpose of tiger conservation, without affecting the rights of the Scheduled Tribes or such other forest dwellers".
- The notification of CTH is **done by the state government** in consultation with the expert committee constituted for the purpose.
- **Nagarjunsagar-Srisailem Tiger Reserve** in Andhra Pradesh is the largest tiger reserve in India, having the **largest area under CTH**.

1.4.3. Integrated Tiger Habitat Conservation Programme (ITHCP)

- It was launched in 2014.
- It is a strategic funding mechanism supported by the German Federal Ministry for Economic Cooperation and Development (BMZ).
- It is contributing to the Global Tiger Recovery Programme, a global effort to double tiger numbers in the wild by 2022.

1.5. International Initiatives

1.5.1. International Tiger Day

- The International Tiger Day (also known as Global Tiger Day) is **celebrated every year on 29 July** to raise awareness for tiger conservation.
- The goal of observance of the day is to promote the protection and expansion of the wild tiger habitats and to gain support through awareness for tiger conservation.
- It was **founded in 2010 at the St. Petersburg Tiger Summit**.
- The summit had issued the St. Petersburg Declaration on Tiger Conservation with an aim to **double the big cat population by 2022**.

1.5.2. St. Petersburg Declaration

- In an effort to save tigers from extinction, 13 Government representatives met at the **International Tiger Conservation Forum** which took place from 21-24 November 2010 in St. Petersburg, Russia.
- They endorsed the St. Petersburg Declaration and agreed to double tiger numbers by 2022.
- Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Russia, Thailand and Vietnam are the tiger range countries that committed towards implementing the **Global Tiger Recovery Program**, the strategic plan envisaged by the St. Petersburg Declaration.
- The **13 countries** have agreed to strengthen international collaboration, improve scientific monitoring to help restore the species' habitats and transboundary corridors, and halt poaching and illegal trade of tigers and tiger products.
- The Recovery Program underscores the importance of creating incentives for local people to protect tigers and strengthening wildlife law enforcement and legislation in order to achieve the St. Petersburg targets.

Disappearing tigers

Since the turn of the last century, the wild tiger population has fallen from some 100,000 to about 7,500. In the past 50 years, three subspecies have been lost to extinction — the Bali, Javan and Caspian tigers.

Experts estimate that the 10,000 captive-bred tigers in private hands in the United States outnumber all tigers living in the wild.

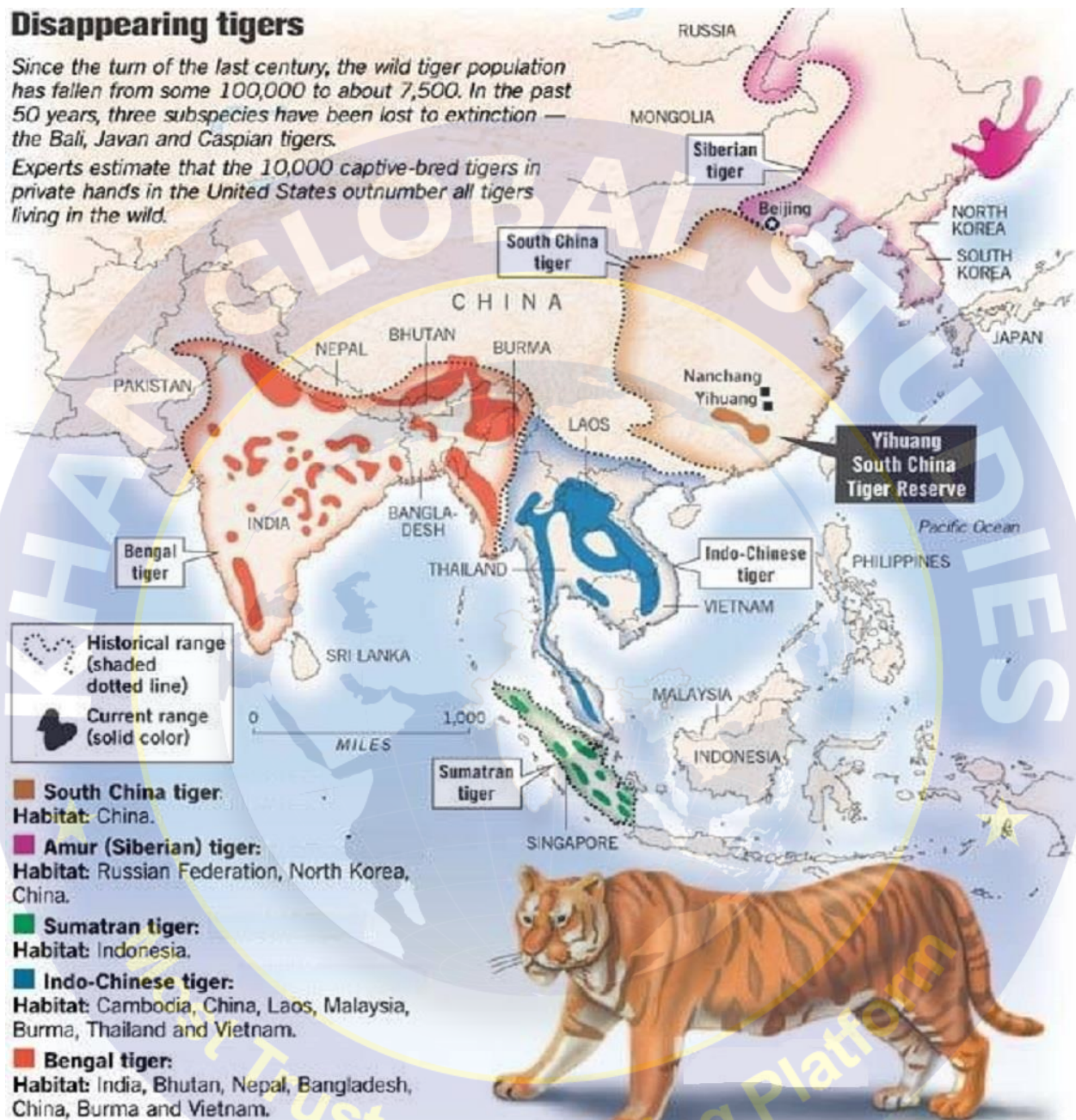


Figure: Tiger range countries

1.5.3. Global Tiger Forum (GTF)

- The Global Tiger Forum (GTF) is the only inter- governmental international body established with members from willing countries to embark on a global campaign to protect the Tiger.
- The GTF was **formed in 1993** on recommendations from an international symposium on Tiger Conservation at New Delhi, India.

- It focuses on **saving the remaining 5 subspecies of Tigers** distributed over 13 Tiger Range countries of the world.
- It utilises co-operative policies, common approaches, technical expertise, scientific modules and other appropriate programmes.
- The first meeting of the Tiger Range countries to set up the forum was held in 1994, in which India was elected to the Chair and was asked to form an interim secretariat.
- In 1997, the GTF became an independent organisation.

2. Lion Conservation in India - Already covered in an earlier handout

3. Rhinoceros Conservation in India - Already covered in an earlier handout

4. Elephant Conservation in India - Already covered in an earlier handout

5. Gharial Conservation in India

5.1. Gharial

- Gharial (*Gavialis gangeticus*) is evolutionarily the most unique crocodilian in the world being a specialized river dwelling fish-eater, but harmless to humans.
- It lives in deep fast-flowing rivers.
- The bulbous 'ghara' on the tip of the snout of mature males just above the nostrils, helps in creating a snorting hiss to advertise the animal's presence, and dominance.
- Gharials nest between March and May. Female gharials excavate egg chambers in sand banks, depositing up to an average of 60 eggs, which hatch in 90 days.

5.1.1. Habitat

- Gharials are **endemic** to the Indian sub-continent.

- Once found abundantly in all the major river systems of South Asia, the Gharial is now extinct in Pakistan, Bangladesh, Burma and Bhutan.
- Nepal has only a remnant breeding population.
- In India too, the major breeding populations are confined to two rivers only, **Girwa and the Chambal**.
- Gharial is listed as '**Critically Endangered**' in the IUCN Red List of Threatened Species.
- The Government of India accorded the highest level of protection to Gharial by bringing it under Schedule I of the Wild Life Protection Act, 1972.
- **Note:** Odisha's Kendrapara became the only district in India on August 29, 2021 to be home to all three species of crocodilians found in the country.

5.1.2. Conservation Issues

- **Habitat alteration and destruction:** A combination of land-use changes and exploitation such as sand-mining, riverside agriculture, livestock grazing, and hydrological modifications such as building of dams for water diversion.
- **Prey depletion:** Over harvesting of fish stocks. Construction of dams and barrages obstructing dispersal and migration of fish.
- **Direct mortality:** Drowning of Gharial in fishing nets. Its nest destruction and local egg-collection.
- **Pollution and siltation:** Pollution and siltation of rivers damage fish stocks, and are also believed to be the direct cause of the catastrophic die off of 2007-2008 in the Chambal.
- **Hunting:** In the past, Gharial was hunted for skin, trophies and use in indigenous medicine.

5.2. Crocodile Conservation Project

5.2.1. Initiation of Crocodile Conservation Project

- The Crocodile Conservation Project was established in various states in **1975**.
- The Gharial and Saltwater Crocodile Conservation Program was launched in Odisha in early 1975, followed by the Mugger Conservation Program.

5.2.2. Objectives of Crocodile Conservation Project

- To protect the remaining population of crocodilians in their natural habitat by creating sanctuaries.

- To rebuild the natural population quickly through 'grow and release' or 'rear and release' technique.
- To promote captive breeding.
- To take-up research to improve management.
- To build up the skills of the personnel for better continuity of the project.
- Involve the community in the project on a personal level.

5.2.3. Administration of Crocodile Conservation Project

- To accomplish these objectives, three separate research units for the Gharial, SaltWater Crocodile, and Mugger were established in Tikarpada, Dangmal, and Ramatirtha, respectively.
- Captive breeding plans for all three species were pursued at the Nandankanan Biological Park.
- In 1980, a **Crocodile Breeding and Management Training Institute** was founded in Hyderabad.

5.2.4. Achievements of Crocodile Conservation Project

- All three crocodile species (Mugger, SaltWater Crocodile and Gharial) have been saved from extinction, and many of their habitats have been added to the state's protected area network.
- ★ Apart from producing a large number of crocodiles in a short span, the Crocodile Project has made numerous contributions to the overall approach to wildlife conservation, research, and training.
- Crocodiles have been used as the flagship species in some important wetland sanctuaries.
- Other wetland species were actively managed alongside the crocodilians.

5.3. Other Conservation Efforts

5.3.1. Species Recovery Programme

- WWF-India has been involved in the Species Recovery Programme ever since the National Chambal Gharial crisis in December 2007.
- In collaboration with the Uttar Pradesh Forest Department, WWF-India started a **gharial reintroduction programme at Hastinapur Wildlife Sanctuary.**
- Since January 2009, 250 captive reared gharial from Kukrail Rehabilitation Centre (Lucknow) have been released into River Ganga.

- In collaboration with University of Tokyo, Japan, WWF-India has initiated a study on Gharial Bio-logging Science to understand the underwater behaviour and surrounding habitat of a free ranging gharial.

5.3.2. What can further be done?

- Revive and rejuvenate rivers
- Make local communities co-beneficiaries of all conservation initiatives.
- Secure the National Chambal Sanctuary and other Gharial range areas through coordinated planning and action by the three states, i.e., Uttar Pradesh, Madhya Pradesh and Rajasthan.
- Re-evaluate environmentally sensitive schemes of river-linking, and large irrigation projects.
- Base conservation plans on sound scientific study and monitoring of Gharial.

5.4. Status of Gharial

- The Chambal River is home to 886 muggers and **2176** gharials, according to the census of 2021.
- The Chambal gharials are likely the only wild population that continues to live and thrive in an intact, large riverine habitat, where conditions are still favourable.
- ★ At Chambal, some 200-300 nests are produced each year, resulting in approximately 8,000 hatchlings yearly. However their **survival rate is just 2-3%**.
- The **National Chambal Sanctuary** (also called National Chambal Gharial Wildlife Sanctuary) is located on the **tripoint of Rajasthan, Madhya Pradesh and Uttar Pradesh** and co-administered by the three states.
- Chambal River was declared a sanctuary in 1978 to provide a fully-protected habitat for conserving the gharial and other wildlife.
- The total length of the river inside the sanctuary is about 600 km.

6. Dolphin conservation in India

6.1. Ganges River Dolphin

- The Ganges River Dolphin (*Platanista gangetica gangetica*) and Indus River Dolphin (*Platanista minor minor*) are two subspecies of freshwater or river dolphins found in Bangladesh, India, Nepal and Pakistan.

- The Ganges river dolphin was officially discovered in 1801.
- The Ganges river dolphin can only live in freshwater and is essentially blind.
- They hunt by emitting ultrasonic sounds, which bounces off of fish and other prey, enabling them to “see” an image in their mind.
- They are frequently found alone or in small groups, and generally a mother and calf travel together.
- The Ganges river dolphin has been recognized by the Government of India as its **National Aquatic Animal**.
 - This decision was taken in the first meeting of the National Ganga River Basin Authority (NGRBA) chaired by the then Prime Minister on 5th October, 2009.
 - **5th October** is celebrated as **National Ganga River Dolphin Day**.

6.1.1. Habitat

- The distribution range of the Ganges river dolphins in India covers seven states namely, Assam, Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, Jharkhand and West Bengal.
- The Ganges River Dolphin is primarily found in the **Ganges and Brahmaputra Rivers and their tributaries** in India, Bangladesh and Nepal, while the Indus River Dolphin is found in the Indus river in Pakistan and its Beas and Sutlej tributaries.

6.1.2. Conservation Issues

Bycatch

- The habitat of the Ganges river dolphin is within one of the most densely populated areas of the world.
- Ganges river dolphins and people both favour areas of the river where fish are plentiful and the water current is slower.
- This has led to fewer fish for people and more dolphins dying as a result of accidentally being caught in fishing nets, also known as bycatch.

Hunting

- The Ganges river dolphin is still hunted for meat and oil, which are both used medicinally. The oil is also used to attract catfish in net fishery.

Pollution

- Industrial, agricultural, and human pollution is another serious cause of habitat degradation. Each year, 9,000 tons of pesticides and 6 million tons of fertilisers are used in the vicinity of the river.

- High levels of pollution can directly kill prey species and dolphins, and completely destroy their habitat.
- As the top predator, river dolphins have been known to have high levels of persistent toxic chemicals in their bodies, which is likely to adversely affect their health.

Infrastructure

- Ganges river dolphins are divided into isolated groups because of the construction of more than 50 dams and other irrigation-related projects.
- Dolphins trapped above a dam are exposed to poaching, especially during dry summer months.
- Dolphins below a dam are threatened by heavy pollution, increased fishing activities and vessel traffic.
- They also have less food because dams disturb the migration, breeding cycles and habitat of fish and other prey.

6.2. Conservation Efforts

- WWF India has started **The Dolphin Conservation Programme** to conserve the habitat of the Ganges River Dolphin and secure a future for the endangered species.
- The Vikramshila Biodiversity Research and Education Centre (VBREC), together with the Whale and Dolphin Conservation Society (WDCS), the Environmental Biology Laboratory of Patna University, and T.M. Bhagalpur University, has initiated a project to improve the conservation value of Vikramshila Gangetic Dolphin Sanctuary.
- Aaranyak, a registered conservation NGO working in North East India since 1989, has initiated a project entitled **"Conservation of Gangetic dolphin in Brahmaputra river system, India"** in collaboration with Dibrugarh University (Assam).
 - The project aims to evaluate the conservation status of the Ganges River dolphin throughout the entire Brahmaputra river system.
- The National Mission for Clean Ganga (NMCG), which implements the government's flagship scheme Namami Gange, has also been taking some initiatives for saving dolphins.

6.3. Project Dolphin

6.3.1. Initiation of Project Dolphin

- Project Dolphin was **launched in 2021**. The project was announced on 15 August 2020 during the 74th independence day celebrations.

6.3.2. Aim of Project Dolphin

- It aims to address the existing conservation concerns and to empower the stakeholders to participate in conservation of dolphins.
- Dolphin acts as an umbrella species, and its conservation will contribute to the wellbeing of associated habitat and biodiversity, including humans.

6.3.3. Administration of Project Dolphin

- It is a **10-year project** and will be **on the lines of Project Tiger**.
- The project is under the Wildlife Institute of India and is funded by the Ministry of Environment, Forests and Climate Change.
- It involves a systematic status monitoring of the target species and their potential threats, in order to develop and implement a conservation action plan.

6.3.4. Activities

The following activities have been initiated under the project during 2022:

- The Government of Assam, Rajasthan, Madhya Pradesh, Punjab and UT of Lakshadweep have identified dolphin hotspots.
- Species conservation and habitat improvement; monitoring and patrolling; facilities for staff and awareness generation programmes have been initiated as part of Dolphin conservation.
- A Comprehensive Action Plan for Project Dolphin (2022-2047) has been finalised and shared with the concerned line Ministries with a request to initiate actions. All the coastal states have been requested to estimate dolphin population in their respective states.

6.4. Status of Ganges River Dolphin

- The Ganges river dolphin has been categorised as '**Endangered**' by the IUCN's latest Red List Assessment (published in July 2022) of the species.
- The significance of the latest assessment is that it provides a consolidated review of all the information generated on Ganges river dolphins over the last decade during which multiple surveys and studies have been conducted on various aspects across its range.
- It estimates nearly 5,000 adult and juvenile dolphins to be extant today.
- Despite this reassuring number, the overall trend may be of a continuing and steady decline in the face of numerous persisting and impending threats.

7. Vulture conservation in India

7.1. Vultures in India

- There are **nine vulture species found in India**, of which five belong to the genus *Gyps* and the other four genera are monotypic.
- Vultures were very common in India till the 1980s. During this period, the population of the three resident *Gyps* species of vultures in the country was estimated at 40 million individuals.
- But their populations crashed in the last couple of decades and the most common vultures - Oriental white-backed, Long-billed, and Slender-billed - **declined by more than 96 percent in just a single decade (1993-2003)**.

7.2. Need for Conservation

- Vulture conservation is needed for the fact that these **extremely efficient scavengers** can finish off a carcass of adult cattle, in a matter of about 20 minutes.
- The vultures were keeping the environment clean in India in absence of any effective carcass and slaughterhouse waste disposal system and hereby have prevented outbreak of epidemics by cleaning the carcasses before they could rot and putrefy.
- ★ A population crash of vultures could cause a dramatic increase in epidemics, as the carcass and waste disposal system has remained more or less unchanged.
- The absence of such important scavengers will almost certainly influence the numbers and distribution of other scavenging species for example as vultures have declined, feral dog populations have been reported to have increased massively in some places.
- This could pose many associated disease risks to humans and wildlife, such as rabies.
- The Ministry of Environment, Forest and Climate Change released the **Action Plan for Vulture Conservation (APVC) in 2006** to save the vultures from possible extinction.

IUCN status of vultures found in India

1. **Oriental White-backed Vulture (*Gyps Bengalensis*) - Critically Endangered**
2. **Slender-billed Vulture (*Gyps Tenuirostris*) - Critically Endangered**
3. **Long-billed Vulture (*Gyps Indicus*) - Critically Endangered**
4. **Egyptian Vulture (*Neophron Percnopterus*) - Endangered**
5. **Red-Headed Vulture (*Sarcogyps Calvus*) - Critically Endangered**
6. **Indian Griffon Vulture (*Gyps Fulvus*) - Least Concerned**

7. Himalayan Griffon (*Gyps Himalayensis*) - Near Threatened
8. Cinereous Vulture (*Aegypius Monachus*) - Near Threatened
9. Bearded Vulture or Lammergeier (*Gypaetus Barbatus*) - Near Threatened

7.3. Conservation Issues

- After years of research, scientists have concluded that the cause for extermination of about 95 per cent of the estimated populations of vultures in the subcontinent is the **painkiller Diclofenac**.
- Diclofenac is a non-steroidal anti-inflammatory drug given to cattle to treat pain and inflammation.
- The finding of diclofenac as vulture killer was published in the scientific journal 'Nature' in January 2004.
- Feeding on carcasses of cattle that had been administered the drug proved fatal to the birds.
- The Ministry has already responded positively to this finding by coming up with a multi-pronged strategy.
 - Banning veterinary formulations of diclofenac,
 - Popularising the drug Meloxicam to eliminate the threat to vultures from contaminated carcasses, and
 - Opening breeding centres.
- Other threats include
 - Loss of natural habitats due to anthropogenic activities.
 - Food dearth and contaminated food.
 - Electrocution by power lines.

7.4. Conservation Efforts

7.4.1. Action Plan for Vulture Conservation 2020-2025 (APVC 2020-25)

- The Action Plan for Vulture Conservation 2006 was the basis for updating the Action Plan to its current edition (2020-25).
- It will benefit from the International plans like The Multi-Species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP) of the Convention of Migratory Species (CMS).

Salient Features of APVC 2020-25

- **Prevent the poisoning** of the principal food of vultures, the cattle carcasses, with veterinary NSAIDs (Non-steroidal anti-inflammatory drugs), by ensuring that sale of veterinary NSAIDs is regulated and is disbursed only on prescription and by ensuring that treatment of livestock is done only by qualified veterinarians.
- **Carry out safety testing** of available molecules of veterinary NSAIDs on vultures.
- The Drugs Controller General of India must institute a system that automatically removes a drug from veterinary use if it is found to be toxic to vultures.
 - Such a system would ensure that drugs other than diclofenac that are toxic to vultures like aceclofenac and ketoprofen are banned for veterinary use.
- **Four rescue centres** have been proposed for different geographical areas like Pinjore in the north, Bhopal in Central India, Guwahati in Northeast India and Hyderabad in South India.
- There is a need to establish **additional Conservation Breeding Centres** in the country. While the primary focus of these centres is breeding of vultures, they also serve as Vulture Conservation Centres.

7.4.2. Jatayu Conservation Breeding Centre (JCBC)

- The JCBC, earlier known as Vulture Care Centre (VCC), was **established in September 2001** with the United Kingdom's Darwin Initiative for the Survival of Species' fund, to investigate the dramatic declines in the resident Gyps species of vultures.
- The centre is located at **village Jodhpur (Haryana) on the edge of the Bir Shikargaha Wildlife Sanctuary**.
- It is a **joint project of the Haryana Forest Department and the Bombay Natural History Society (BNHS)**.
- It is a collaborative initiative to **save the three species** of vultures, the White-backed, Long-billed and Slender-billed, from looming extinction.

7.4.3. Ban on Drugs

- On July 31, 2023, the Ministry of Health and Family Welfare issued a notification prohibiting the production and distribution of the two drugs, Ketoprofen and Aceclofenac, because of the risk it posed to animals and because safe alternatives are available.
- These are two of three “vulture-toxic” drugs that conservationists have been seeking a ban on. The third drug is nimesulide. Conservationists point to meloxicam and tolfenamic acid as safe alternatives.
- The banning of the two drugs is a big step, but it is essentially to strike these bans on all harmful drugs at once. There should be a blanket ban.

- In the decision, nimesulide has been left out and another drug flunixin has not been included in the demand.

7.4.4. Vulture Restaurant

- Recently (January, 2024), a 'Vulture restaurant' has been set up in Jharkhand in a bid to conserve the fast dwindling population of vultures due to rampant use of drugs in livestock.
- Vulture restaurant is an **undisturbed area where non-toxic, poison-free meat and carcasses are provided** for vultures and other scavengers.
- The first 'vulture restaurant' came up in 2015 at Phansad Wildlife Sanctuary in Raigad district of Maharashtra in response to videos of white-rumped vulture chicks starving to death in the western ghats.
- There are four other such restaurants at Gadchiroli and one at Harsul in Nashik district, all in Maharashtra, and in Kangra district of Himachal Pradesh.

8. Snow Leopard conservation in India

8.1. Snow Leopards

- Snow leopards (*Panthera uncia* or *Uncia uncia*) are found in high altitude ranges of the Himalayas and also in Central Asia, usually above 3000 metres. As of 2023, the global population is estimated at 4,000-6,500.
- The snow leopard's habitat range **extends across the mountainous regions of 12 countries** across Asia: Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyz Republic, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan.
- The total range covers an area of close to 772,204 square miles, with 60% of the habitat found in China. However, more than 70% of snow leopard habitat remains unexplored.
- Home range sizes can vary from 4.6-15.4 square miles in Nepal to over 193 square miles in Mongolia.
- And population density can range from <0.1 to 10 or more individuals per 38.6 square miles, depending on prey densities and habitat quality.
- Snow leopard habitat in the Indian Himalayas is estimated at less than 90,000 km² in the states of Jammu and Kashmir, Uttarakhand, Himachal Pradesh, Sikkim, and Arunachal Pradesh, of which about 34,000 km² is considered good habitat.
- They are listed as **Vulnerable** on the IUCN Red List.

8.1.1. Why are snow leopards important?

- The snow leopard is at the apex of the mountain ecosystem.
- They have evolved to live in some of the harshest conditions on Earth.
- They play a key role as a top predator and as an **indicator of the health of their high altitude habitat**.
- If snow leopards thrive, so will countless other species. By protecting the snow leopard, the conservation of fragile mountain landscapes that are one of the largest sources of freshwater for the Indian subcontinent is ensured.

8.1.2. Conservation Issues

- They are **poached** for their pelts while their bones and other body parts are also in demand for use in traditional Asian medicines.
- Retaliatory killing of snow leopards is also a major threat faced by the species' livestock.
- They are often killed by local farmers because they prey on livestock such as sheep, goats, horses and yak calves.
- The animals which snow leopards would typically hunt—such as the Argali—sheep are also hunted by local communities.
- Snow leopards also face **habitat and prey loss** with climate change induced melting of glaciers and also due to the increase of human settlements and developmental activities in their territories.

8.2. Project Snow Leopard

8.2.1. Initiation of Project Snow Leopard

- In January 2009, the Government of India launched 'Project Snow Leopard' to safeguard and conserve India's unique natural heritage of high-altitude wildlife populations and their habitats by promoting conservation through participatory policies and actions.
- The project emphasises a landscape approach to conservation, in which smaller core zones with relatively high conservation values are identified and supported, while the larger landscape is managed in such a way that necessary development benefits are provided to local communities.

8.2.2. Objectives of Project Snow Leopard

- Facilitate a landscape-level approach to wildlife conservation.
- Rationalize the existing protected area network and improve protected area management.

- Support focused conservation and recovery programmes for endangered species such as the snow leopard and its prey species.
- Promote stronger measures for wildlife protection and law enforcement.
- Promote better understanding and management of human-wildlife conflicts.
- Restore degraded landscapes in the high altitude Himalayan and Trans-Himalayan biogeographic regions.
- Promote a knowledge-based approach to conservation and an adaptive framework for wildlife management.
- Promote local capacity, conservation education and awareness.

8.2.3. Project Areas

With active support from the Wildlife Institute of India and the Mysore-based Nature Conservation Foundation, the project is operational in five Himalayan states:

- Jammu and Kashmir
- Himachal Pradesh
- Uttarakhand
- Arunachal Pradesh
- Sikkim

8.3. Other Conservation Efforts

8.3.1. WWF – India’s “Save Our Snow Leopards Programme”

- WWF-India in partnership with Tata Housing Development Company launched **Project Save Our Snow Leopards (SOS)** by unveiling the SOS **online crowdfunding platform** on 10th January 2014.
- The SOS crowd funding campaign was the **first-ever crowd-funded campaign** for species conservation in India, giving individuals a chance to support and directly fund conservation projects.
- The funds raised has to be utilized for scaling up WWF’s snow leopard conservation projects such as:
 - Setting up camera traps to study the exact status and distribution of snow leopards in range states;
 - Support the construction of predator-proof livestock pens for local communities in snow leopard habitats that will help in managing snow leopard-human conflict.

8.3.2. India’s First Snow Leopard Conservation Centre

- Uttarakhand is going to develop India's first Snow Leopard Conservation Centre in Uttarkashi forests.
- This centre will be developed by the Uttarakhand Forest Department along with the United Nations Development Program (UNDP).
- The main objective of this is conservation, restoration of Himalayan ecosystems and creating livelihood.
- It will be responsible for the conservation of elusive snow leopards and various other endangered Himalayan species.

8.3.3. Himalaya Sanrakshak

- It is a community volunteer programme which was launched in October 2020 to protect snow leopards.

8.4. Global Initiatives

8.4.1. Global Snow Leopard and Ecosystem Protection (GSLEP) Program

- The GSLEP is a first-of-its-kind intergovernmental alliance for the conservation of the snow leopard and its unique ecosystem.
- It was **created in 2013** when officials, politicians and conservationists arrived at a common conservation strategy enshrined in the **Bishkek Declaration** (2013) to cooperate in the conservation of this species and its habitat.
- It is led by the environment ministers of 12 countries in Asia that form the home range of the snow leopard. These are Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan and Uzbekistan.
- **Its secretariat is based in Bishkek**, and is hosted by the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic.
- **India has been a party to the GSLEP Programme since 2013.**

8.4.2. Bishkek Declaration

- The Bishkek Declaration was adopted during the first Global Forum on Conservation of Snow Leopards on October 23, 2013.
- In 2014, to commemorate the one-year anniversary of the Bishkek Declaration, twelve countries on stage declared **October 23 as International Snow Leopard Day.**

8.4.3. January 2024: First-ever comprehensive survey estimates 718 snow leopards in India

Key Findings

- **Distribution:**

- Snow leopards are located primarily in the Himalayan regions
- Maximum population density is in Ladakh

State/Union Territory	Estimated Snow Leopard Population
Ladakh	477
Uttarakhand	124
Himachal Pradesh	51
Arunachal Pradesh	36
Sikkim	21
Jammu & Kashmir	9

- **Global Significance:**

- India's population represents 10-15% of the global snow leopard population

Methodology

- **Rigorous Approach:**

- Employed camera traps in 1,971 locations
- Surveyed 13,450 km of potential snow leopard habitat
- Used statistical techniques similar to established tiger surveys

9. Conservation of the Great Indian Bustard (GIB) in India - Already covered in an earlier handout

10. Kashmir Stag (Hangul) Conservation in India

10.1. Kashmir Stag

- The Hangul or Kashmir stag (*Cervus elaphus hanglu*) is one of the four easternmost subspecies of Red deer that are found in Asia and is **endemic to Kashmir mountains** in the North –Western Himalayan region of India.
- It is found in dense riverine forests in the high valleys and mountains of Jammu and Kashmir and northern Himachal Pradesh.
- In Kashmir, it is found primarily in the **Dachigam National Park** where it receives protection.

- It is designated as '**Critically Endangered**' on the IUCN Red List.

10.1.1. Conservation Issues

- The hangul was widely found in the hilly and mountainous regions of Kashmir in the early 20th century with their numbers estimated to be around 5,000.
- However, due to habitat destruction, overgrazing by domestic livestock, and poaching, the number fell to just around 150 in 1970.
- The incursion of nomadic livestock herders and predation of fawns by their guard dogs is also a significant problem that is not being effectively dealt with.
- Also, Hangul population in the Dachigam landscape now appears to have low genetic variation compared with other species and thus could be susceptible to the effects of inbreeding.

10.2. Conservation Efforts

10.2.1. Project Hangul

- In the 1970s, the **Jammu & Kashmir Government with the support of IUCN and the World Wildlife Fund (WWF)** prepared a project for the protection of the Hangul and its habitat.
- ★ The project came to be known as project Hangul and its population increased to 340 by the year 1980.
- It included **artificial breeding of the Hangul** along with other measures for its protection and conservation.

10.2.2. Hangul Conservation Project

- The **Wildlife Conservation Fund was established in 2010** with the aim of protecting wildlife and wilderness in Jammu and Kashmir, starting with the conservation of Hangul.
- It was to be achieved via community support, awareness and management of wildlife. It also aimed at changing attitudes towards nature and promoting harmony between humans and animals.
- Wildlife conservation fund launched Hangul Conservation Project. The fund aimed at resolving issues related to various species of Hangul in Kashmir, particularly in the Dachigam National Park.

10.3. Hangul Census

- In March 2021, a census conducted in Kashmir to estimate the population of the hangul, showed encouraging initial findings.
- The population has registered a marginal increase in the Kashmir Valley. It is **now 261**, compared to 237 recorded in 2019.
- The latest census also shows the number of hangul males per 100 females was 126, down from 153 in 2019.
- The number of fawns per 100 females has increased to 13.4 in 2021 from 9 in 2019.
- The ratios ideally should have been 40-50 males/100 females and above 60 fawns/100 females.

11. Conservation of Olive Ridley Turtles in India

11.1. Olive Ridley

- The Olive Ridley sea turtle (*Lepidochelys Olivacea*) is also known as the Pacific Ridley sea turtle.
- The Olive Ridley turtles are the smallest and most abundant of all sea turtles found in the world, inhabiting warm waters of the Pacific, Atlantic and Indian oceans.
- These turtles spend their entire lives in the ocean, and migrate thousands of kilometers between feeding and mating grounds in the course of a year.
- Females return to the very same beach from where they first hatched, to lay their eggs.
- During this phenomenal nesting, up to 600,000 and more females emerge from the waters, over a period of five to seven days, to lay eggs.
- They lay their eggs in conical nests about one and a half feet deep which they laboriously dig with their hind flippers.
- The Olive Ridley is classified as **Vulnerable** according to the IUCN, and is listed in Appendix I of CITES.

11.2. Habitats in India

- The coast of Orissa in India is the largest mass nesting site for the Olive-ridley, followed by the coasts of Mexico and Costa Rica.
- The **Rushikulya coast** is considered to be a major nesting site in the world and lakhs of olive ridleys come here every year to lay eggs.

- The **Gahirmatha beach and the mouth of the Debi river** are the two other major nesting sites in Odisha.
- They also breed along Tamil Nadu coast and **Krishna Wildlife Sanctuary**, a wildlife sanctuary and estuary located in Andhra Pradesh.

11.3. Conservation Issues

Olive-Ridleys face serious threats across their migratory route, habitat and nesting beaches, due to human activities such as,

- Turtle unfriendly fishing practices,
- **Development and exploitation** of nesting beaches for ports, and tourist centres.
- They are extensively **poached** for their meat, shell and leather, and their eggs.
- **Climate change:** All stages of a sea turtle's life are affected by environmental conditions such as temperature—even the sex of offspring.
 - Unusually warm temperatures caused by climate change could be **disrupting normal sex ratios**, resulting in fewer male baby turtles.
 - Warmer sea surface temperatures can also lead to the loss of important foraging grounds for marine turtles, while increasingly severe storms and sea level rise can destroy critical nesting beaches and damage nests.

11.4. Conservation Efforts

11.4.1. Operation Olivia

- It was initiated by the **Indian Coast Guard** in the **early 1980s**.
- Every year, the operation **helps protect Olive Ridley turtles** as they **congregate along the Odisha coast** for breeding and nesting from November to December.
- **Round-the-clock surveillance** is conducted from November till May **utilizing Coast Guard assets** such as fast patrol vessels, air cushion vessels, interceptor craft and Dornier aircraft to enforce laws near the rookeries.
- It also intercepts unlawful trawling activities.

11.4.2. Turtle Excluder Devices

- To reduce accidental killing in India, the Odisha government has made it mandatory for trawls to use Turtle Excluder Devices (TEDs), a net specially designed with an exit cover which allows the turtles to escape while retaining the catch.

12. Pangolin Conservation in India

12.1. Pangolin in India

- Pangolins, also known as scaly anteaters, are the **only known mammals with large keratin scales** covering their skin.
- They play a vital role in the ecosystem management, mostly in aerating and adding moisture to the soil as well as succession of plant communities through burrowing. They also keep in check the population of certain insects they prey on.
- Of the eight species found worldwide (four each in Asia and Africa), **two are found in India: Indian Pangolin (*Manis crassicaudata*) and Chinese Pangolin (*Manis pentadactyla*).**
- The Indian Pangolin is found throughout the country, south of the Himalayas, excluding the north-eastern region while the Chinese Pangolin ranges through Assam and the eastern Himalayas.
- As per the IUCN Red List the **Indian Pangolin is listed as 'Endangered'** and **Chinese Pangolin is listed as 'Critically Endangered'**.

12.1.1. Conservation Issues

- Major threats to pangolins in India are **hunting and poaching for local consumptive use** (e.g. as a protein source and traditional medicine) and international trade, for its meat and scales in East and South East Asian countries, particularly China and Vietnam.
- Pangolins are among the **most heavily trafficked mammals** in the world.
- As many as 1,203 pangolins were poached for illegal wildlife trade in India from 2018-2022, according to the analysis by TRAFFIC.
- Inadequate information on population and distribution further accentuates the threats arising from hunting and poaching.
- They are also threatened by deforestation and habitat loss.

12.2. Conservation Efforts

- In India, they are protected by the Wildlife (Protection) Act, 1972 that prohibits its hunting, trade or any other form of utilisation.
- The commercial trade of pangolins was also banned by the Convention on International Trade in Endangered Species of Wild Fauna and Flora in 2017.

- In February 2015, TRAFFIC, in partnership with WWF-India and Wildlife Crime Control Bureau (WCCB) launched a social media campaign to create awareness and divert efforts towards curbing illegal trade in pangolins.

Manis Mysteria

- Scientists have discovered a new species of Pangolin, named “Manis mysteria”.
- The newly identified pangolin species emerged from a detailed study of scales seized in China’s Yunnan province in 2015 and 2019.
- This new species is believed to have diverged from its Philippine and Malayan relatives approximately five million years ago.

13. Cheetah Reintroduction Project

13.1. Initiation of Cheetah Reintroduction Project

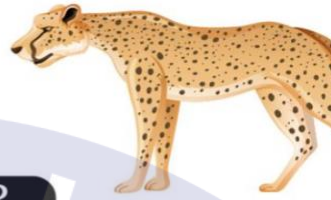
- The Cheetah Reintroduction Project, which aims to restore the population of cheetahs in India, **formally took off on September 17, 2022.**
- Cheetah was officially declared extinct in India in 1952. The last cheetah was killed in 1947.

13.2. Background of Cheetah Reintroduction Project

- The introduction of Cheetah in India is being done under Project Cheetah, which is **world’s first inter-continental large wild carnivore translocation project.**
- However, cheetahs being reintroduced are African Cheetahs.
- The cheetahs indigenous to India that went extinct are Asiatic Cheetahs that are today only found in very small numbers in Iran.
- The first choice for cheetahs' reintroduction was Iran and negotiations were on with the Shah of Iran in the 1970s.
- But the overthrow of Shah's regime in the 1979 Islamic Revolution of Iran put the initiative to an end.

KHAN SIR

THE CHEETAHS ARE COMING



HOW MANY?

20

8 from Namibia
+ 12 from SA



WHERE?

Kuno National
Park, Madhya
Pradesh

(Kuno National Park
will have a 600-hectare
fenced enclosure to
house the Cheetahs)

What is
the carrying
capacity of Kuno?

21
Cheetahs

What is the
long-term
population size
expected? **50+**

Are there similar
relocation
programmes?
South Africa to
Malawi,
Mozambique

Could it share
its space? Yes,
with Asiatic lions

Are there
threats? Yes,
with Kuno's
existing leopard
population

Figure: Cheetah Reintroduction in India

13.3. Significance of Cheetah Reintroduction Project

- ★ Cheetahs will help in the **restoration of open forest and grassland** ecosystems in India. This will help conserve biodiversity and enhance the ecosystem services like water security, carbon sequestration and soil moisture conservation, benefiting the society at large.

13.4. Concerns for the Reintroduction of Cheetahs

- Cheetahs in India perished for a reason and that reason —human pressure— has only gotten worse in the 70 years since the species disappeared.
- Also they will be in an area which is between the areas populated by leopards and tigers.
- If these bigger cats attack the cheetah or compete with it for food, the cheetah would struggle for survival as it cannot survive against stronger leopards or tigers.
- The initiative to get African cheetahs is neither science-based nor a national conservation priority. This will significantly distract from higher priority conservation issues like the much-delayed lion translocation.

13.5. Recent Development

- In January 2024, one of the translocated Namibian cheetahs named 'Aasha' gave birth to three cubs at Madhya Pradesh's Kuno National Park.
- The newly-born cubs will be closely monitored by veterinary doctors for the next few months. The decision on when to release them into the wild will be taken by a committee established by the central government.
- In March 2023, another cheetah, Siyaya, who was later renamed as Jwala, had given birth to four cubs. However, only one of them survived.

