

Tasmanian Tiger

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In news– Scientists in the US and Australia have embarked on a project to resurrect the thylacine or Tasmanian Tiger, a marsupial that went extinct in the 1930s, using gene-editing technology.

Wolly Mammoth resurrection project-

- The ambitious project aims to reintroduce the animal to its native place Tasmania to revive the region's lost ecological balance.
- Interestingly, this is not the first attempt to revive thylacines.
- In 1999, an Australian scientist, Dr Michael Archer, embarked on an unsuccessful journey to resurrect the animal using cloning technology from a perfectly preserved specimen in a museum.
- Even though the last living thylacine died over 86 years ago, many embryos and young specimens of the species have been preserved.
- For the de-extinction project, the scientists led by Dr. Andrew Pask, a professor of Epigenetics Biosciences at the University of Melbourne, will be using a genome sequenced from a DNA extracted from a 108-year-old specimen held at Australia's Victoria Museum.
- This genome will be compared with the **closest living animal of the species– the fat tailed dunnart** – to identify all the differences. Once all the differences are identified, scientists will engineer the living cell's DNA where it is different, essentially engineering the extinct species back.
- **The fat-tailed dunnart is a mouse-like species in the Dasyuridae family in Australia.** With an average body length of 2.4–3.5 inches, they are **one of the smallest carnivorous marsupials.**

About Tasmanian Tiger-

- **Tasmanian Tiger (Thylacinus cynocephalus)**, the only animal in the Thylacinidae family to survive in modern times, was a marsupial mammal that raises young ones in a pouch.
- **Even though the species earned its nickname Tasmanian Tiger because of the stripes along its back**, it was a slow-paced carnivorous that usually hunted alone or in pairs at night.
- The **sharply clawed animal had a dog-like head and ate kangaroos**, other marsupials, small rodents, and birds.
- **Once widespread in the grass and woodlands of continental Australia** extending north to New Guinea and south to Tasmania, the animal's fate changed after the European Colonisation of Australia.
- **The animals were reported to have eaten poultry of farmers**, and were killed following official authorisation.
- Apart from this, **competition with another animal, the Dingo**, is also considered a reason for its extinction.
- **The last wild thylacine was killed between 1910 and 1920**. Following this, the Australian government declared the thylacine a **protected species in July 1936**.
- But two months after the announcement, Benjamin, the last captive animal, died at the Beaumaris Zoo in Hobart. **The official declaration of the animal's extinction was in the 1980s**.
- The animal was at the top of the food chain, and hence played a significant role in balancing the ecosystem of its habitat by removing the weak animals and maintaining species diversity.
- **Also known as the apex predator for the same reason**, its disappearance from the food chain resulted in **Trophic Downgrading** – causal degradation of an ecosystem that occurs when higher trophic level animals are removed

from the food chain, resulting in loss or exponential growth of other species.

- **Trophic Downgrading also results in disruption of biogeochemical cycles, wildfires,** growth of invasive species, and carbon sequestration, among other effects.
- **As the thylacine was the only apex predator in its ecosystem, its absence impacted the Tasmanian Devil,** which was **almost wiped out by a facial tumour disease.**
- The thylacine would have prevented this by removing sick and weak animals from the ecosystem, which would have eventually controlled the spread of the transmissible diseases.

De-extinction technology; possibilities and challenges-

- De-extinction, or resurrection biology, is the **method of creating a species that went extinct or is endangered, in order to revitalise ecological diversity and balance** shattered due to reasons ranging from biodiversity loss to climate change.
- While **cloning is the most widely used method of de-extinction,** genome editing and selective breeding are also considered effective ways.
- The **Pyrenean ibex, a subspecies of Spanish ibex, was one of the first extinct animals that have been resurrected using somatic cell nuclear transfer (SCNT),** even though the baby Ibex died minutes after its birth from lung defect.
- Apart from Colossal's project to resuscitate Woolly Mammoths and thylacines, a cooperation between the Dutch Foundation partnered with multiple universities, called Tauros Programme, is currently working to breed **a cattle species similar to the extinct wild ancestor of domestic cattle, aurochs.**
- **Other candidates for de-extinction are Maclear's rat, an extinct large rat species endemic to Christmas Island in the Indian Ocean, the passenger pigeon, a type of**

migratory bird in North America, and the quagga, which is a subspecies of plains zebra.

- **One of the challenges of de-extinction is that reintroducing the species to its former habitat may make it an invasive species,** which will also impact the balance of the current ecological system.