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Rhinoceros

According to a study analysis, the horns of rhinoceroses may have become smaller over time due to the impact of hunting.

- The study analysed the artwork and photographs of the animal spanning more than five centuries.
- It found evidence for declining horn length over time across species.
- The rate of decline in horn length was highest in the Sumatran rhino and lowest in the white rhino of Africa.
- **Significance of Horn** – Horn is an important species-specific morphological trait as horn length varies substantially between rhino species.
- **Threat of Horn** – Rhinos are hunted for their horns, which are highly valued in some cultures.
- The five surviving rhino species in the world. They are

Species	Range	Conservation	
Black rhino	Many African countries specially Namibia, Kenya and South Africa.	IUCN	Critically Endangered
		CITES	Appendix - I
White rhino	Southern Rhino - South Africa, Namibia, Zimbabwe, and Kenya	IUCN	Near Threatened
		CITES	Appendix I & II
Javan rhino	Confined to Ujung Kulon National Park in island of Java.	IUCN	Critically Endangered
Sumatran rhino	The islands of Sumatra and Borneo.	IUCN	Critically Endangered
Greater One-horned rhino (Indian Rhino)	Indo - Nepal terai region and northern West Bengal and Assam.	Wildlife Protection Act, 1972	Schedule I
		IUCN	Vulnerable
		CITES	Appendix I
		Indian Rhino Vision 2020	

References

1. The Hindu - Curious collage shows rhino horns are shrinking due to the impact of hunting

2. World Wildlife – Rhino

Senna Spectabilis

The Tamil Nadu Forest Department is coming up with a comprehensive strategy to deal with the spread of Senna Spectabilis in the Mudumalai Tiger Reserve buffer zones.

Senna spectabilis is an **invasive species** with bright yellow flowers.

- Introduced as an ornamental species from **South and Central America**.
- It has become highly invasive in the Sigur plateau in both the core and buffer zones of the Mudumalai Tiger Reserve (MTR).
- The exotic tree has taken over between 800 and 1,200 hectares of the buffer zones of the Mudumalai Tiger Reserve.
- It is one among five major invasive weeds in the Nilgiri region.
- *Lantana camara*, Wattle, Eucalyptus and Pine are the other 4 invasive species in this region.

1. **Impacts** - The invasive weed has a negative effect on local biodiversity like crowding out native species and limiting food availability for wildlife.
2. **Utility** - The species is used as firewood.

- Policy-level discussions are under way on the Tamil Nadu Newsprint and Papers Limited (TNPL) plan to use wood from Senna spectabilis from the MTR for paper-making.
- They said the funds so raised would be used in eco-restoration to bring back native species.

Mudumalai Tiger Reserve

- Mudumalai Tiger Reserve (MTR) is situated at the tri-junction of Tamil Nadu, Karnataka and Kerala.
- The MTR also forms part of the Nilgiri Biosphere Reserve.
- MTR is contiguous with Wyanaad Wildlife Sanctuary on the west, Bandipur Tiger Reserve on the north.
- The **Moyar River** flows downstream into the Mudumalai Tiger Reserve and acts as a natural divide between Mudumalai and Bandipur Sanctuary.
- Flora - tall grasses (commonly Elephant Grass), Bamboos of the giant variety, valuable timber species like Teak, Rosewood.
- Fauna - Tiger, Elephant, Indian Gaur, Panther, Barking Deer, Malabar Giant Squirrel and Hyena etc.,

References

1. The Hindu – Strategies planned to halt spread of invasive species over 800 hectares of Mudumalai Tiger Reserve buffer zone
2. The Hindu – Forest Dept. checks viability of using invasive tree Senna spectabilis for paper-making
3. Mudumalai Tiger Reserve

4. Nilgiri district – Mudumalai Tiger Reserve

Project Arunank of BRO

Processed steel slag is used to build border road in Arunachal Pradesh under 'Project Arunank' of the Border Road Organisation's (BRO).

> *Tata Steel has supplied 1,200 tonnes of steel slag for project Arunank from the company's plant in Jamshedpur.*

- Project Arunank is one of the projects under Border Road Organisation (BRO).
- Under project Arunank was set up in 2008.
- Project Arunank is responsible for the construction and maintenance of roads in Arunachal Pradesh and hence the name 'Arunank'.
- The project has been entrusted with the responsibility of critical infrastructure development in the border areas.

> *First steel slag road in India was built in Surat under the 'Waste to Wealth' initiative.*

- Steel slag is a by-product of steel manufacturing and value-added steel slag is used for road construction.
- The use of steel slag in road construction will not only increase its durability but also help in reducing the cost of construction.

Border Roads Organization

- Border Roads Organization (BRO) is a road construction executive force in India since 1960.
- BRO develops and maintains road networks in India's border areas and friendly neighbouring countries.
- It has been instrumental in strategic and socio-economic elevation of the Northern and Eastern borders.
- Atal tunnel, Sela tunnel, Sisseri River Bridge and Ujh Bridge are few projects under BRO.
- BRO was responsible in building the Delaram-Zaranj Highway in Afghanistan, completed and handed over to the Afghan government during 2008

References

1. The Indian Express - Steel 'waste' sent to BRO to build border road in Arunachal
2. The Indian Express - Surat gets India's first steel slag road
3. Border Roads Organisation – About BRO

Ballistic Missile Defence

The Defence Research & Development Organisation (DRDO) conducted maiden flight-test of Phase-II of the ballistic missile defence (BMD) interceptor AD-1 missile successfully.

- India's Ballistic Missile Defence (BMD) system is concentrated on tracking and destroying incoming hostile missiles in both exo and endo atmosphere.
- Ballistic interceptor missile is a system designed to intercept and destroy any type of ballistic threat
- It is commonly used for systems specifically designed to counter intercontinental ballistic missiles.

A ballistic missile is a type of missile that fires warheads at a target by moving the projectile.

- The BMD program includes a two-tiered system consisting of two interceptor missiles.

Prithvi Air Defence (PAD)/ Pradyumna	Advanced Air Defence (AAD)/Ashwin
Destroys missiles at exo-atmospheric (high) altitudes of 50–80 km.	Destroys missiles at endo-atmosphere (low) altitudes of 15-30 km.
Two stage supersonic missile fuelled by solid fuel in 1st stage and liquid fuel in 2nd stage.	Single stage supersonic solid fuelled interceptor missile

Air Defence -1

- The AD-1 (Air Defence) is a long-range interceptor missile designed for both low exo-atmospheric and endo-atmospheric interception of long-range ballistic missiles as well as aircraft.
- The missile is propelled by a two-stage solid motor.
- It is equipped with an indigenously developed advanced control system and a navigation and guidance algorithm.

References

1. The Hindu - DRDO carries out maiden test of Phase-II of ballistic missile defence
2. The Indian Express - India successfully tests Ballistic Missile Defence Interceptor capable of neutralising long-range adversary missiles
3. Live Mint - India carries out maiden test of phase II ballistic interceptor AD-1 missile

Man-Made Dead Zones

- Oxygen minimum zones are areas in the ocean of such low oxygen concentration that animal life suffocates and dies, and as a result are sometimes called Dead Zones.
- Man-made dead zones are formed when there is a lack of oxygen in the ocean due to physical and chemical interventions arising from human activities.
- Sea organisms start perishing and the sea becomes a biological desert instead of a

natural habitat for aquatic organisms.

- **Causes** - The increasing human population, tourism, release of industrial chemicals, and pollution in the coastal areas are primary causes of creating dead zones.
- It is vital to curb these human activities to save the ocean and its ecosystem.

