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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 1 st stage and liquid fuel in 2 nd 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.

