

50 MOST IMPORTANT TOPICS PART - I

50 Important Topics - 2024	
Scheduled Date	Subject
01/04/24	Economy
02/04/24	Science & Technology
03/04/24	Environment & D.M.
04/04/24	Science & Technology
05/04/24	Environment & D.M.
06/04/24	-----
07/04/24	-----
08/04/24	Economy
09/04/24	Science & Technology
10/04/24	Economy
11/04/24	English
12/04/24	International Relations
13/04/24	-----
14/04/24	-----
15/04/24	Geography
16/04/24	Polity & Governance
17/04/24	Polity & Governance
18/04/24	Geography
19/04/24	Polity & Governance
20/04/24	Maths
21/04/24	-----
22/04/24	Reasoning
23/04/24	Environment & D.M.
24/04/24	Social Schemes



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11th April 2024 - 29th April 2024

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ECOCIDE

- It is the **human impact** on the **environment** causing **mass destruction** to that environment.
- Various nations have **codified ecocide as a crime**.
- There is currently **no international crime of ecocide** that applies in peacetime, only in wartime, covered by the Rome Statute.
- It was originally planned to be included in the **Rome Statute** and supported by many states, but was removed due to objections by the United Kingdom, France and the United States of America.
- Ecocide has been made a **national law** in several countries with many more discussing implementing a law, including the **European Union**.

ECOLOGICAL ARMAGEDDON

- A term used to describe the **devastating decline of insect populations around the world.**
- “This phenomenon, often referred to as the “**Insect Apocalypse,**” has far-reaching consequences for the entire ecosystem, as insects play crucial roles in pollination, nutrient cycling and as a food source for other animals.
- Recently, researchers have found a **new damselfly species in southwestern ghats of Kerala,** named, Armageddon Reedtail, which is a direct reference to the concept of Ecological Armageddon.

BRUMATION

- It describes a period of **dormancy or slowed activity in reptiles**, much like hibernation in mammals.
- It typically occurs during **colder months**, when temperatures drop and food becomes scarce.
- Reptiles enter a state of brumation to conserve energy and survive these adverse environmental conditions.
- During brumation, reptiles may retreat to **underground burrows, rock crevices or other sheltered areas** where temperatures are relatively more stable.
- Their metabolism slows significantly, allowing them to go weeks or even months without eating.
- This period of reduced activity allows **reptiles to conserve energy and minimise their resource requirements**.

CRYPTOBIOSIS

- Cryptobiosis is a state of **suspended animation** where organisms show no signs of life.
- It's an adaptation to survive extreme conditions like freezing, desiccation, or lack of oxygen.
- In cryptobiosis, an organism **can live almost indefinitely** while it waits for environmental conditions to become better.
- **Examples** include tardigrades, nematodes, algae, and certain seeds.
- Organisms undergo biochemical changes to protect themselves.
- Cryptobiosis is **reversible when conditions improve**.
- Some organisms can remain in this state for **extended periods**.
- Recent discoveries include **reviving frozen nematodes from permafrost**.
- Future applications may include advancements in **cryopreservation**.
- **Ethical considerations** arise regarding the manipulation and preservation of organisms.

CRYPTOBIOSIS - TYPES

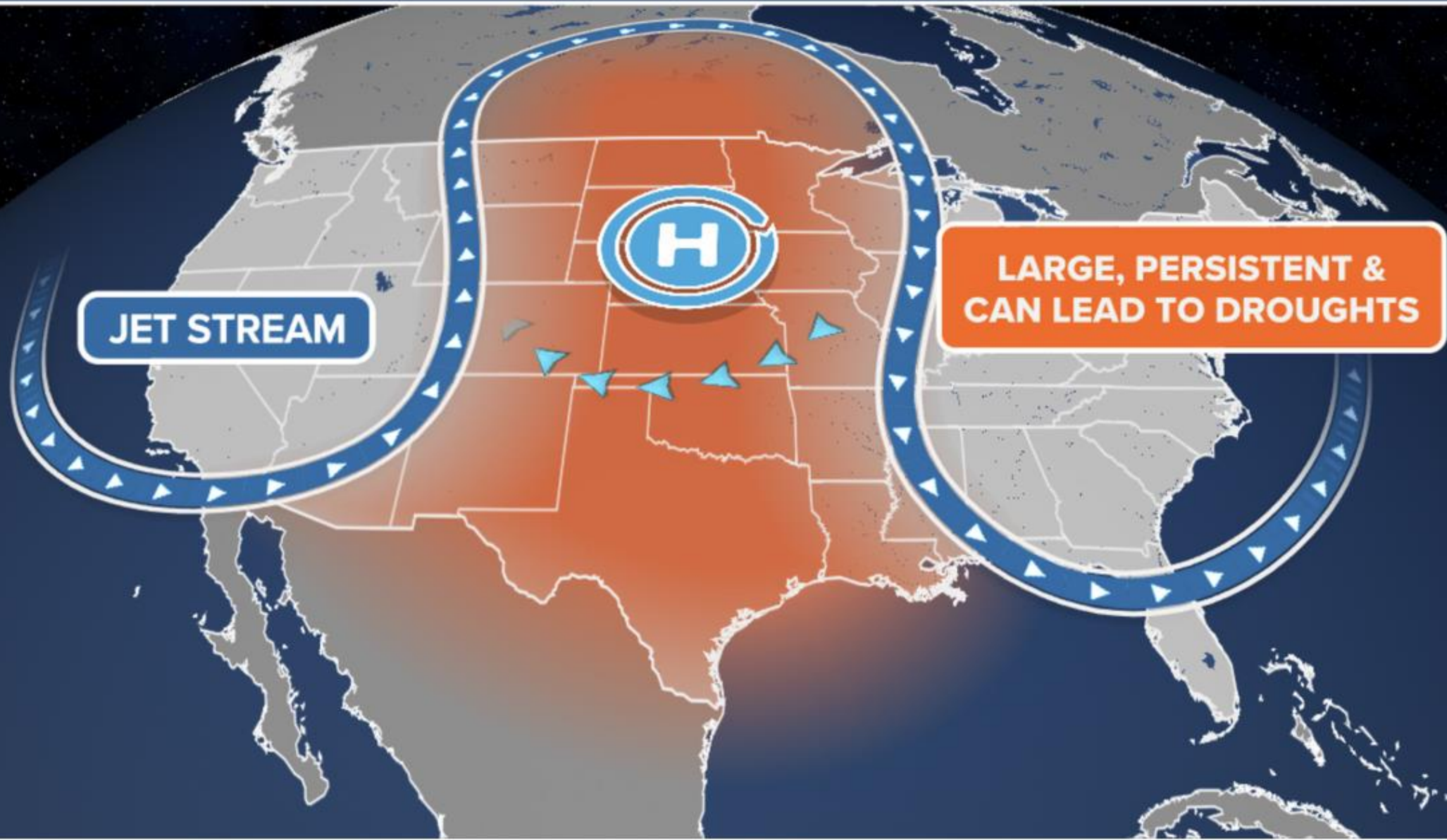
- **Anhydrobiosis** - life without water
- **Anoxybiosis** - lack of oxygen
- **Chemobiosis** - high levels of metabolic toxins.
- **Cryobiosis** - reduced temperatures.
- **Osmobiosis** - increased solute concentration of the solution

OMEGA BLOCK

- Named for its resemblance to the Greek letter Ω , an Omega block occurs when **two low-pressure systems become cut off from the main flow of the jet stream**, sandwiching a **high-pressure system between them**.
- The Omega Block **disrupts the usual flow of weather systems**, leading to prolonged periods of certain weather conditions.
- This type of pattern usually results in **cooler, wetter weather where the lows are situated and drier, warmer weather where the high is located**.
- In this case, it contributed to the formation of low-pressure systems, which caused **heavy rainfall and flooding in the Mediterranean regions**.
- The Omega Block phenomenon is **not limited** to the Mediterranean floods.
- It has also been linked to other extreme weather events such as floods in Pakistan and heatwaves in France and Germany.

OMEGA BLOCK

WHAT IT MEANS



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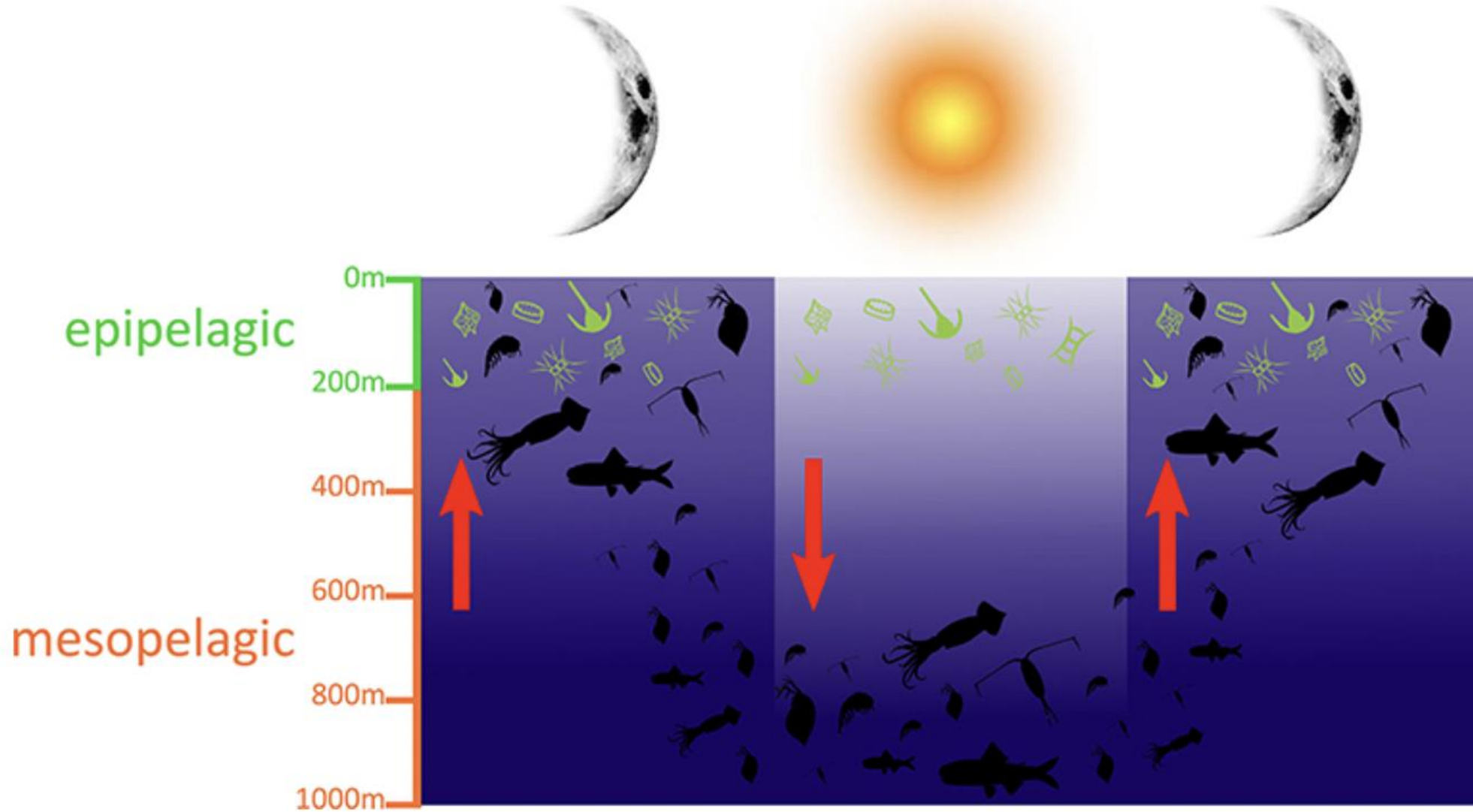
ABC RULES

- **Allen's rule** states that mammals from colder climates generally have shorter ears and limbs to minimize heat loss.
- **Bergmann's rule** states that birds and mammals in cold regions have been observed to be bulkier than individuals of the same species in warm regions.
- **Cope's rule** postulates that population lineages tend to increase in body size over evolutionary time.
- *The 19th century paleontologist, Edward Cope, was the first to notice why, for example, early horse ancestors, which were small dog-sized animals, became bigger over time. But the researchers said Cope's rule had clear exceptions. Reptiles, for instance, shrank from the size of giant dinosaurs to hand-sized geckos and sparrows.*

DIEL VERTICAL MIGRATION

- **Diurnal vertical migration/DVM**
- The migration occurs when organisms **move up to the uppermost layer of the water at night and return to the bottom of the daylight zone** of the oceans or to the dense, bottom layer of lakes during the day.

Time of Day



DIEL VERTICAL MIGRATION

- The phenomenon may be **advantageous** for several reasons, most typically **to access food and to avoid predators**.
 - This nighttime migration allows deep-sea marine organisms to feed on phytoplankton while evading diurnal predators.
- It is the **largest daily biomass migration on Earth**, occurring daily in all oceans.
- It serves as an **Important Carbon Sink**
 - As the mesopelagic creatures feed on surface plankton, they extract carbon from the upper surface and carry it with them when they migrate back to the deeper oceans.
 - Some of these creatures may get consumed by other predators, passing on the consumed carbon to them.
 - When the predator produces carbon-rich waste, it sinks to the ocean floor and remains trapped for millennia.

BLUE HOLES

- Found underwater, they are **large, deep sinkholes** formed by the erosion of limestone or other soluble rocks.
- They are **significant hotspots for microbial biodiversity**, hosting diverse ecosystems adapted to extreme conditions.
- Believed to have formed during the **Ice Age** when sea levels were significantly lower, exposing limestone formations to erosion.
- The **Dragon Hole, also known as Longdong**, located in the South China Sea, is currently recognized as the deepest blue hole on Earth.



The **Great Blue Hole**, located near **Ambergris Caye**, Belize



AMBERGRIS

- Ambergris, French for grey amber, is generally referred to as **whale vomit**.
- However, Christopher Kemp, the author of 'Floating gold: A Natural and (unnatural) history of Ambergris', says this is not right.
- A sperm whale eats several thousand **squid beaks** a day.
- He says occasionally, a beak makes its way to the whale's stomach and into its **looping convoluted intestines** where it becomes ambergris through a complex process, and may ultimately be excreted by the whale.
- It is a **solid waxy substance** that floats around the surface of the water body and at times settles on the coast.



AMBERGRIS

- Also preternaturally hardened whale dung.
- Ambergris is a rare substance, which contributes to its **high demand and high price in the international market.**
- Traditionally, it is used to **produce perfumes which have notes of musk.**
- While there are records of it being used to flavour food, alcoholic beverages and tobacco in some cultures in the past, it is rarely used for these purposes presently.
- In the Indian context, sperm whales are a protected species under **Schedule 2 of the Wildlife Protection Act** and possession or trade of any of its by-products, including Ambergris and its byproducts, is illegal under provisions of the Wildlife Protection Act, 1972.

CHENKURINJI

- The **Shendurney Wildlife Sanctuary** derives its name from *Gluta travancorica*, a species endemic to the Agasthyamala Biosphere Reserve known as '**Chenkurinji**' in local parlance (aka Shenduruni)
- Belonging to the Anacardiaceae family, the tree *was once abundant in the hills on the southern parts of Aryankavu Pass but its presence has been fast receding from the area over the years.*
- Found in **wet evergreen forests of Southern Kerala.**
- It is very susceptible to climate change.
- Though there are seemingly enough number of the trees, most are not productive, generating a negative trend in its population.
- The majority of the trees are **old with poor flowering and fruiting rates.**
- It's reported to have **medicinal properties** and is used to lower blood pressure and treat arthritis.
- The **heartwood** is quite sturdy with deep red colour, and several trees were felled for wood.
- IUCN Status - Near Threatened



CHENKURINJI

The Shendurney Wildlife Sanctuary derives its name Chenkuriñji (*Gluta travancorica*), a species endemic to the Agasthyamala Biosphere Reserve.

NEELAKURINJI

- The Ministry of Environment, Forest and Climate Change (MoEF) has listed Neelakurinji (*Strobilanthes kunthiana*) under **Schedule III of the Wildlife (Protection) Act, 1972**, including it on the list of protected plants.



NEELAKURINJI

- *Strobilanthes kunthiana* is a shrub that is found in the shola forests of the **Western Ghats in Kerala, Karnataka and Tamil Nadu.**
- The purplish-blue flower blossoms **only once in 12 years.**
- This also gave the **Nilgiri Mountains** range its name, from the Tamil language Kurinji (flower)
- This plant flowers from **September–October.**

Sea lions

- Sea lions are related to **walruses and seals**.
- The sea lion is the **most common mammal in the Galápagos**.
- They are found primarily in the **Pacific waters**.



Sea horses

- Seahorses are **tiny fishes** that are named for the shape of their head, which looks like the head of a **tiny horse**.
- There are **at least 50 species** of seahorses.
- Seahorses are found in **shallow coastal waters in latitudes from about 52° N to 45° S**.
- Their habitats include **coral reefs, mangroves, sea grass beds, and estuaries**.
- IUCN status - **Vulnerable**
- CITES - **Appendix II**

Sea horses



Sea horses in India

- The coastal ecosystems of India house **nine out of 12 species found in the Indo-Pacific.**
- It is distributed across diverse ecosystems such as **seagrass, mangroves, macroalgal beds, and coral reefs.**
- These nine species are distributed along the coasts of eight States and five Union Territories from Gujarat to Odisha, apart from Lakshadweep and the Andaman and Nicobar Islands.
- **Great Seahorse** is one of the species of seahorses found in India.
- The report states that the Great sea horses are **migrating towards the Odisha coast.**
- Fishing is less intense in the Bay of Bengal off the Odisha coastline as compared to the Coromandel coast, hence the migration.

Sea horses in India

- The Great Seahorse is declared '**Vulnerable**' as its population is declining due to overexploitation.
- It is used in **Chinese medicine** as well as for ornamental purposes.
- **Destructive fishing methods** are also causing damage to the Great Seahorses.
- The species is **abundant off the Coromandel coast** (Andhra Pradesh and Tamil Nadu)
- The seahorse it is under extensive fishing pressure, with 13 million individuals caught per year.



Sea cucumbers

- CITES COP 19 has accepted a proposal to include **sea cucumbers in Appendix II** of the Convention.

Sea cucumbers

- Sea cucumbers are **marine invertebrates** that live on the **seafloor** found generally in **tropical regions**.
- They are an integral part of the coral ecosystem as one of the **main by-products of the sea cucumbers' digestion of sand is calcium carbonate** and this is essential for the survival of the coral reefs.



Sea cucumbers

- **Sea cucumbers** were the **most frequently trafficked marine species in India** between 2015 and 2021, a new analysis by the **Wildlife Conservation Society-India (WCS-India)** has shown.
- **Tamil Nadu** recorded the highest number of marine wildlife seizures during this period, the analysis added.
- The state was followed by **Maharashtra, Lakshadweep and Karnataka.**

THANK YOU