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Black Corals

Scientists discovered new species of black corals living thousands of feet below the ocean surface near the Great Barrier Reef.

- Five new species of black corals living as deep as 760 meters below the surface in the Great Barrier Reef and Coral Sea off the coast of Australia.
- There are only 300 known species of black corals in the world and now 5 new species are added to the list.
- Many of these black corals are branched and look like feathers, fans or bushes, while others are straight like a whip.



- **Habitat** - Black corals can be found growing both in shallow waters and down to depths of over 8,000 meters.
- **Food** - Black corals are filter feeders and eat tiny zooplankton that are abundant in deep waters.
- **Lifespan** -Some individual corals can live for over 4,000 years and expected to have survived at least four mass extinction events.
- **Threat** - Illegal harvesting for jewellery.
- **Significance** - Black corals act as important habitats where fish and invertebrates feed and hide from predators.
- Due to their long lifespan, they help scientist understand evolutionary history.

The difference between colourful corals and black corals is that the former is an autotroph and the latter is a consumer.

Colourful corals live in shallow-water and rely on the sun and photosynthesis for energy.

References

1. The Hindu - Five new species of black corals discovered
2. Hindustan Times - Scientists discover 5 new species of black corals

Fujiwhara Effect

The tropical storm Gardo moved towards typhoon Hinnamnor and became super-

typhoon exhibiting Fujiwhara effect.

- Fujiwhara effect is named after Sakuhei Fujiwhara, a Japanese meteorologist who discovered interaction between two cyclonic vortices when they were close to each other.
- It is any interaction between tropical storms formed around the same time in the same ocean region with their centres or eyes at a distance of less than 1,400 km, with intensity varying between a depression and a super typhoon.
- The interaction could lead to changes in the track and intensity of either or both storms systems.
- In rare cases, the two systems could merge, especially when they are of similar size and intensity, to form a bigger storm.
- There are five different ways in which Fujiwhara Effect can take place.

	Elastic Interaction (EI) - Only the direction of motion of the storms changes. It is the most common case.
	Partial Straining Out (PSO) - A part of the smaller storm is lost to the atmosphere.
	Complete Straining Out (CSO) – The smaller storm is completely lost to the atmosphere.
	Partial Merger (PM) - The smaller storm merges into the bigger one.
	Complete Merger (CM) - Takes places between two storms of similar strength.

- If one of the storms is stronger than the other, the effect usually leads to the weaker one being devoured by the stronger one.
- If the storms are somehow similar in strength, they can sometimes merge or occasionally slingshot around each other and continue on their separate ways.

In 2020 hurricanes Marco and Laura had formed back to back in the small region of Gulf of Mexico and created a possibility of the Fujiwhara Effect.

References

1. Down To Earth - What is the Fujiwhara Effect?
2. Indian Express - Super Typhoon 'Hinnamnor'

Agnikul Launch Pad

India's first-ever launch pad designed and operated by a private player set up at Sriharikota.

- An agreement was signed between Agnikul Cosmos and ISRO in 2020 under the IN-SPACe initiative which gave access to Agnikul to build Agnibaan and its launch pads.
- Agnikul launch pad is the first exclusive launch pad for a private launch vehicle in India.

- It is set up at the Satish Dhawan Space Center (SDSC) in Sriharikota.
- The facility was designed by Agnikul and executed in support with ISRO and IN-SPACe.
- The facility has two sections which are 4 km away from each other.
    1. The Agnikul launch pad (ALP) and
    2. The Agnikul mission control centre (AMCC).
- All critical systems connecting these 2 sections are redundant to ensure 100% operationality during countdown.
- It also has the ability to share critical information with ISRO's Mission Control Centre.

Vikram-S is India's first ever privately built rocket and the maiden launch was carried under Mission Prarambh.

Agnikul Cosmos

- Agnikul became the first Indian company to sign an agreement with ISRO.
- Agnibaan is Agnikul's highly customizable, two-stage launch vehicle.
- It is capable of taking up to 100 kg payload to orbits around 700 km high (Low Earth Orbits) and enables plug-and-play configuration.
- Agnilet which was successfully test-fired in early 2021, is the world's first single-piece 3-D printed engine fully designed and manufactured in India by Agnikul.

References

1. The Hindu - India's first private space vehicle launch pad
2. Business Standard – Agnikul Cosmos built launch pad in India
3. ISRO - First private launch pad at SDSC
4. Agnikul Cosmos

Jeypore Ground Gecko

The Jeypore Ground Gecko has been included in Appendix II of CITES in 19th Conference of Parties (COP19) to CITES.

- Jeypore Ground Gecko (*Cyrtodactylus jeyporensis*) are wild reptile (lizard) species.
- They are unique among other Indian Geckos as it has enlarged, hexagonal, plate like scales across the back.
- **Range** - Endemic to the Eastern Ghats, India.
- **Distribution** - Known only from two separated locations in high elevation moist forest of Patinghe hills near Jeypore (Orissa) and Galikonda hills (Andhra Pradesh).
- **Threats** - Habitat destruction due to deforestation for bauxite mining, fuel wood, land conversion to plantations and forest fires.
- **Conservation**
    - IUCN – Endangered

    - CITES – Appendix II
- Other species of Gecko found in India in recent past –
    1. Nellore dwarf gecko (*Cnemaspis avasabinaem*),
    2. Bent-toed gecko (*Cyrtodactylus urbanus*),
    3. Mahendragiri Gecko and
    4. Kanger valley rock gecko

References

1. Down to Earth - Jeypore Ground Gecko listed in CITES Appendix 2
2. IUCN - Jeypore Ground Gecko
3. Reptiles of India - Cyrtodactylus jeyporensis

Himalayan Yak

The Himalayan yak is given the 'food animal' tag by the scientific panel of Food Safety and Standard Authority of India (FSSAI).

> *Food Animals are those that are raised and used for food production or consumption by humans.*

- *Himalayan Yak (Bos grunniens) is a multi-purpose bovine found in high-altitude areas of the Himalayas.*
- **Distribution** - The long-haired domesticated cattle is found throughout the Himalayan region of the Indian subcontinent
- India has around 58,000 yaks, found on the heights of Arunachal, Sikkim, Himachal and Ladakh.
- **Rearing** -Yaks play multi-dimensional socio-cultural-economic role for the pastoral nomads.
- Yaks are reared under transhumance system which is primitive, unorganized and full of hardship.
- Brokpa nomads in Arunachal Pradesh, Changpas and Dokpas in Ladakh, Sikkim and Himachal Pradesh are prominent nomadic communities engaged in yak rearing.

- **Yak Food products** - Yak milk is highly nutritious, rich in fat, contain essential minerals and have medicinal value.
- The products which are traditionally produced from yak milk are churkum, churpi, ghee and paneer.
- Yak meat is known to be lean and are mostly produced and consumed at local community level.
- **Food Animal Tag** -The National Research Centre on Yak (NRC-Yak) based in Arunachal Pradesh submitted a proposal to the FSSAI in 2021 for considering the yak as a food animal.
- The decision comes after the latest census (2019) showed a 25% drop from last livestock census (2012).

- Recognising Yak as a food animal will make yak a part of the conventional milk and meat industry.
- This move will help check the decline in its population and make yak rearing profitable for yak farmers.

References

1. The Hindu - Himalayan yak accepted as food animal by FSSAI
2. Deccan Herald - Himalayan yak gets FSSAI's food animal tag

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