UPSC Daily Current Affairs | Prelim Bits 24-10-2024

Right to live in a pollution-free environment

The Supreme Court recently said cases of stubble-burning and "pick-and-choose" policy adopted by the Punjab and Haryana governments violated citizens' right to live in a pollution-free environment.

- **Constitutional provision –** Under ***Article 21*** right to live in a pollution free environment is a fundamental right.
- **Right against climate change** - The right to a healthy environment includes the right to be ***safe from the effects of climate change.***
- **Article 47** – It puts a duty on the state to raise the standard of living and to improve public health.
- **Swaran Singh Committee** – The committee recommended the creation of a separate chapter on Fundamental Duties which included Art 48A and 51A (g).
- **Article 48A –** It puts a duty on the State to protect and improve the environment and further to safeguard the forests and wildlife.
- To enable this duty, wildlife and forests have been inserted in the concurrent list so that both the Central Government and State Government can fulfil their duty of protecting wildlife.
- **Article 51A (g)** – It puts a fundamental duty on the citizens to protect and preserve the environment.
- **Environment (Protection) Act, 1986** - Section 15 of the Environment (Protection) Act, 1986 outlines the penalties for violating the provisions of the Act.
    - **Penalties** - ***5 years of imprisonment and ₹1 lakh*** as fine.
- **Indian Penal Code** - Section 277 of the IPC punishes anyone who pollutes a public reservoir with water, while Section 278 punishes anyone who pollutes the atmosphere.
- **Polluter pays principle** – It states that the undertakings have to pay financial costs for preventing or remedying the damages caused to the environment by the pollution created by those undertakings.
    - In India, the polluter pays was first recognized in ***M.C. Mehta vs Union of India, 1986*** which is also known as the oleum gas leak case.
- **Recent Verdict –** The court noted that Punjab had identified 1,084 instances of stubble burning, but recovered compensation only from 473 persons.
- Similarly, Haryana had recorded 490 occasions of stubble burning, but only 32 First Information Reports (FIRs) had been registered.
- The court said the authorities had failed in not only effectively implementing existing laws, but allowed blatant violation of fundamental rights guaranteed under Article 21.
- The ***"pick-and-choose" policy*** adopted by the Punjab and Haryana governments to penalise a few while letting many violators go "scot-free" after paying a nominal fine violated citizens' right.

- SC pointed out that a proper machinery for collection of fines under Section 15 of the Environment (Protection) Act, 1986 had not been formulated.
- The court further directed the Union government to consider Punjab's request for more funds to fight stubble-burning.

Reference

The Hindu |Right to live in a pollution-free environment

Escherichia coli (E.coli)

1 person has died and 10 have been hospitalized in the US due to an E.coli infection after eating McDonald's burgers.

- E. coli, or Escherichia coli, is a rod-shaped, gram-negative bacterium typically resides in the intestines of humans and most mammals.
- While most strains are harmless and play a beneficial role in gut health, some can cause serious foodborne illnesses.
- **Types of E. coli**
  - Enterotoxigenic Escherichia coli (ETEC)
  - Enteropathogenic *Escherichia coli* (EPEC)
  - Enteroaggregative *Escherichia coli* (EAEC)
  - Enteroinvasive *Escherichia coli* (EIEC)
  - Diffusely adherent *Escherichia coli* (DAEC)
  - Enterohemorrhagic *Escherichia coli* (EHEC)
- **Causes** - It spreads through contaminated food and water.
- **Transmission -** Most diarrheagenic *E. coli* strains spread through fecal-oral transmission.
- Some forms, like Shiga toxin-producing E. coli (STEC), can also transmit through undercooked meat and unpasteurized beverages.
- E. coli can be ***contagious (spread from person to person).***
- **Symptoms**
  - Fever of more than 102 degree F, persistent diarrhoea, bloody diarrhoea, and vomiting.
  - The main problem, however, is dehydration due to the inability of the patient to retain water and fluids.
  - In very few cases, people may get acute kidney injury.
- **EHEC –** It produces a poison called Shiga toxin.
- EHEC strains cause bloody diarrhea and can sometimes damage the kidneys and progress to the potentially fatal hemolytic uremic syndrome (HUS).
- EHEC has caused many large food-borne outbreaks worldwide, O157:H7 is the best known strain.
- This group is also known as ***STEC (Shigatoxin producing E. coli)*** and is the ***only group that is passed in animal feces.***
- **Treatment -** E.coli is a bacterial infection for which antibiotics are prescribed.
- Indiscriminate use of antibiotics leads to antimicrobial resistance and further difficulty

in treating common infections.
- For example, E.coli's susceptibility to even strong antibiotics, such as carbapenem, has been on the decline, reducing from 81.4% in 2017 to 62.7% in 2023 to one type of medicine in this category.
- **Severity** - E. coli sometimes causes life-threatening complications
- **Prevalence in India** - E.coli is ***common in India.***
- According to the National Centre for Disease Control, more than 500 outbreaks of diarrhoeal diseases were reported across India in 2023.
- According to the latest report of ICMR's Antimicrobial Surveillance Network, E.coli is the most common bacteria isolated from patient samples.
- The pathogen was found in ***23.19%*** of all types of patient samples from tertiary care hospitals across India.

Reference

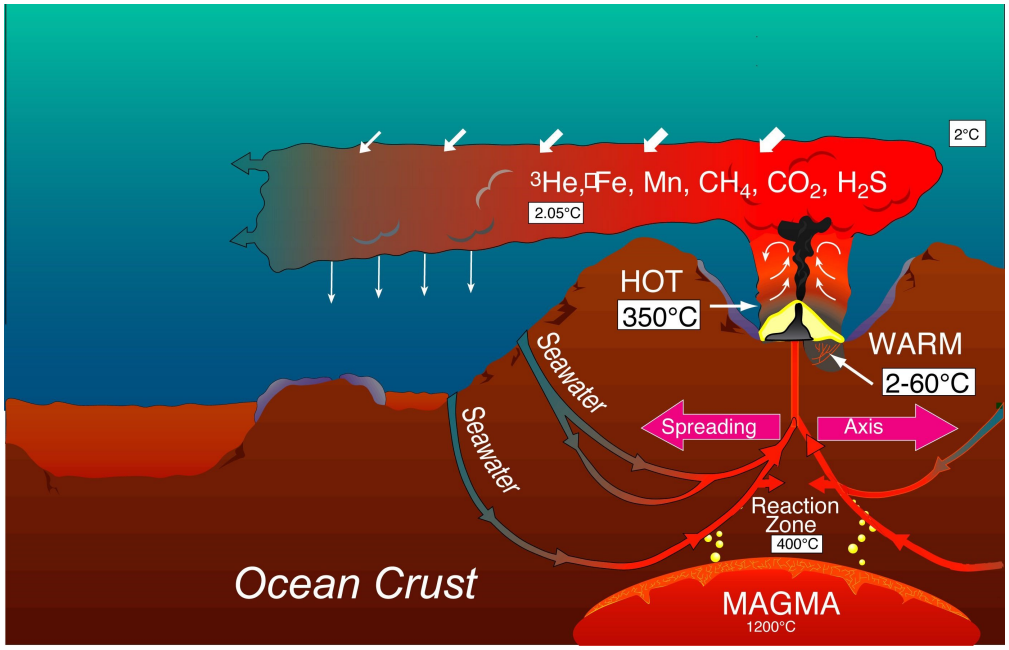
The Indian express | what is E.coli?

Animals living in underground near hydrothermal vents

Recently, animals found living underground near deep-sea hydrothermal vents using the remotely operated underwater vehicle SuBastian.

- **Hydrothermal vents –** These are fissures on the seabed from which geothermally heated water discharges.
- They are commonly found near volcanically active places, areas where tectonic plates are moving apart at mid-ocean ridges, ocean basins, and hotspots.
- Seawater circulates deep in the ocean's crust and becomes superheated by hot magma.
- As pressure builds and the seawater warms, it begins to dissolve minerals and rise toward the surface of the crust.
- The hot, mineral-rich waters then exit the oceanic crust and mix with the cool seawater above.
- As the vent minerals cool and solidify into mineral deposits, they form different types of hydrothermal vent structures.
- The ability of vent organisms to survive and thrive in such extreme pressures and temperatures and in the presence of toxic mineral plumes is fascinating.
- The conversion of mineral-rich hydrothermal fluid into energy is a key aspect of these unique ecosystems.
- Through the ***process of chemosynthesis***, bacteria provide energy and nutrients to vent species without the need for sunlight.

*The deepest vent located so far is in the **Cayman Trough**, which is the deepest point in the Caribbean Sea. The trough is located along the boundary between the North American Plate and the Caribbean Plate.*



- **Recent Exploration –** It was conducted at the ***East Pacific Rise***, a volcanically active ridge on the floor of the southeastern Pacific, running approximately parallel to South America's west coast.
- Earth's rigid outer part is divided into colossal plates that move gradually over time in a process called plate tectonics.
- The East Pacific Rise is located where two such plates are gradually spreading apart.

East Pacific Rise *(EPR) is a mid-ocean rise at a divergent tectonic plate boundary, located along the floor of the Pacific Ocean.*

- This area contains many hydrothermal vents, fissures in the seafloor situated where seawater and magma beneath the Earth's crust come together.
- Magma refers to molten rock that is underground, while lava refers to molten rock that reaches the surface, including the seafloor.
- New seafloor forms in places where magma is forced upward toward the surface at a mid-ocean ridge and cools to form volcanic rock.
- The hydrothermal vents spew into the cold sea the super-heated and chemical-rich water that nourishes microorganisms.
- The warm venting fluids are rich in energy for example, ***sulfide that can be used by microbes,*** which form the basis of the food-chain.
- **Founded species -** Life flourishes around the vents including giant tubeworms reaching lengths of 10 feet, mussels, crabs, shrimp, fish and other organisms.
- The giant tubeworms do not eat as other animals do. Instead, bacteria residing in their body in a sack-like organ turn sulfur from the water into energy for the animal.
- Larvae from these animals may invade these sub seafloor habitats.
- They were living inside cavities within the Earth's crust at an ocean-floor site where the Pacific is 1.56 miles (2,515 meters) deep.
- All the species were previously known to have lived near such vents, but never underground.
- It is the first time that animal life has been discovered in the ocean crust.

References

1. The Print | Animals found in underground near hydrothermal vents
2. National Geographic | Deep Sea Hydrothermal Vents

Asiatic Golden Cat

Presence of 'Asiatic golden cat' reconfirmed in Assam's Manas National park recently.

- Asiatic golden cat is a ***medium-sized wild*** cat native to Asia.
- **Scientific Name** - Catopuma temminckii.
- **Appearance -** The Asian golden cat is polymorphic in color. It showcases a variety of coat colors, including golden, red brown, dark brown, and grey.
- **Habitats -** It thrives in dry deciduous forests, subtropical evergreen forests, tropical rainforests, and even temperate and sub-alpine forests.
- It can be found at elevations ranging from sea level to 3,738 meters.
- **Distribution** – It is found across Northeast India, Southeast Asia, and southern China.
- It is also found in protected areas such as
    - Khangchendzonga Biosphere Reserve (Sikkim),
    - Buxa Tiger Reserve (West Bengal),
    - Nongkhyllem Wildlife Sanctuary (Meghalaya),
    - Dampha Tiger Reserve (Mizoram),
    - Namdapha Tiger Reserve, Kamlang Tiger Reserve,
    - Debang valley,
    - Pakke Tiger Reserve,
    - Eaglenest Wildlife Sanctuary,
    - Singchung-BugunVCR and
    - Talle-Valley Wildlife Sanctuary (Arunachal Pradesh), and
    - Intanki National Park (Nagaland).
- **Behavior-** Asian golden cats are solitary and territorial. Once considered nocturnal, a radio-tracking study showed them to be diurnal and crepuscular.
- **Diet** – Asian golden cats are carnivores, often eating small prey like Indochinese ground squirrels, small snakes, and other reptiles, muntjacs, rodents, birds, and young hares.
- **Mating -** Asian golden cats are polygynous (mating with multiple females) with ***no breeding season.***
- **Conservation status**
    - **IUCN** - Near Threatened.
    - **Wildlife (Protection) Act, 1972** - Scheduled-I.
    - **CITES** - Appendix I.
- **Threats -** Habitat destruction, deforestation, decreasing numbers of ungulate prey, illegal wildlife trade, hunting by tribal people for meat and skin to use in tribal rituals.



References

1. Northeast News | Asiatic golden cat
2. Animalia | Asiatic Golden Cat

Anguiculus dicaprioi

A team of scientists named a new species of snake, Anguiculus dicaprioi recently.

- It is a ***colubrid snake***, refers to any member of the family Colubridae, which is the largest family of snakes.
    - This family comprises 304 genera and approximately 1,938 species. They account for almost two-thirds of all living snakes in the world.
- The new species was discovered in ***Western Himalayas*** by the team of researchers from India, Germany and United Kingdom in 2020.
- **Nomenclature -** Anguiculus is Latin for small snake. The proposed nomen highlights the small size (SVL) of members of the new genus in relation to members of the family Colubridae.
- It has been named after Hollywood star Leonardo DiCaprio for his efforts to create awareness about biodiversity loss.
- Suggested common English name is ***'Himalayan snake'.***
- **Appearance** - The species is small, growing up to 22 inches, with distinct features such as a steeply domed snout and a faint grey collar around its neck.
- The snake resembled ***Liopeltis rappi,*** a species known to be found in the eastern Himalayas.
- **Habitat** - They live at heights of around 6,000 feet above sea level.
- **Distribution** - The snake is found in Chamba, Kullu and Shimla in Himachal Pradesh, Nainital in Uttarakhand and Chitwan National Park in Nepal.



References

1. Down to Earth | Anguiculus dicaprioi
2. Times of India | Anguiculus dicaprioi
3. Hindustan Times | Anguiculus dicaprioi

SHANKAR IAS PARLIAMENT
Information is Empowering