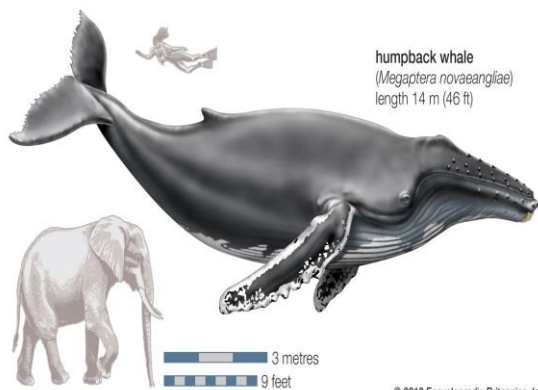


Humpback whale

- Post-whaling increases in eastern Australian humpback whale numbers may have led to males shifting their mating tactics from singing to physically competing with other males (Communications Biology), highlighting how humpback whales have adapted their social behaviors as their populations have recovered.
- Whaling is the process of hunting of whales for their usable products such as meat and blubber, which can be turned into a type of oil that became increasingly important in the Industrial Revolution.



- Male eastern Australian humpback whales may be less likely to use singing as a mating tactic when the population size is larger in order to avoid attracting males to their potential mate.

About Humpback whale

- Found in every ocean and many nearshore areas associated with coastal and marine tourism, they are the focus of whale watching operations in over many countries around the world.
- The species is known for its spectacular “surface active behaviour”, which can include breaching (leaping clear of the water) and flipper and tail slapping, it’s occasional curiosity around tour boats, and its complex ‘song’, which is heard on the breeding grounds in the tropics.
- A humpback whale’s blow or the splash of a breach can be seen from a distance of several kilometers, making the humpback one of the more conspicuous targets of whale watching around the world.

THE HINDU

Tsetse flies & Trypanosome

- A new insight into how tsetse flies mate could bolster the arsenal of tools to manage the spread of disease by these insects.

Tsetse flies transmit trypanosomes.

- The insects produce volatile pheromones that control their mating behaviour (Science).

- The study discovered several volatile compounds that promoted rapid mating behaviour in the tsetse flies.
- Infection of female flies by trypanosomes alters both the pheromone profile and mating behaviour and has the effect of reducing mating receptivity in females.

Trypanosome

- Trypanosome, is any member of a genus (Trypanosoma) of parasitic zooflagellate protozoans belonging to the order Kinetoplastida.
- Adult trypanosomes are mainly blood parasites of vertebrates, especially fishes, birds, and mammals.
- Most species require an intermediate host (often an insect or a leech) to complete their life cycle. Sleeping sickness (q.v.; also called African trypanosomiasis), for example, caused by *T. gambiense* or *T. rhodesiense*, is transmitted by tsetse flies.

THE HINDU

Frozen water

- Ball milling “ordinary” ice at low temperatures a process that involves vigorously shaking a cryogenically-cooled container full of ice and steel balls creates an amorphous form

with a density close to liquid water (Science).

- The finding suggests that water is more complex at low temperatures than previously recognized.
- Frozen water can take many forms.
- There are 20 known crystalline phases of water ice and at least two families of amorphous form.

THE HINDU

Aubrites

- Aubrites are “igneous rocks” that form in oxygen poor conditions, and thus “contain a variety of exotic minerals that are not found on Earth
- Meteors are pieces of some solid object in space that broke away, and descended onto a planet or moon.
- Once they reach the surface, they are called meteorites. Aubrites are a type of meteorite.
- Scientists are not yet sure of their origin, although some signs indicate they could be from the asteroid 3103 Eger or from the planet Mercury.
- Given the unknown parent body and fragility, “Aubrite meteorites either fall rarely on earth or they might have fragmented in finer fractions before falling or [have got] lost during atmospheric ablation,
- Around 90% of the meteorite was composed of orthopyroxene.

- Pyroxenes are silicates consisting of single chains of silica tetrahedra (SiO₄); orthopyroxenes are pyroxenes with a certain structure.
- Pyroxenes such as diopside and jadeite have been used as gems.
- Spodumene was historically used as lithium ore.
- Rocks with pyroxene have also been used to make crushed stone used in construction.
- The group also classified the meteorite as a monomict breccia since it consisted of several pyroxene-bearing pieces held together by a scaffold of rocky material.
- We need an active and passive year-round surveillance network under One Health which connects monitoring of humans and animals in a shared environment.
- Waste water-based epidemiology or pathogen surveillance has become an integral component of environmental surveillance providing near real-time information on health and community exposure to pathogens.
- While environmental surveillance is not a new concept and has been used widely for monitoring several pathogens, it offers an excellent tool.

THE HINDU

Environmental surveillance

- India is the fastest growing egg producer in the world, but unlike in Europe, poultry birds here are not vaccinated against the flu.
- Furthermore, farms with a diversity of animals or in the vicinity of nearby wetlands increase the potential for the viruses to undergo reassortment that can potentially generate more virulent strains H5N1 or H7N9 which could then infect humans.
- Despite this potential, there is no active surveillance in the poultry sector
- Birds infected with the avian influenza virus shed large quantities of the virus in their faeces, saliva, and nasal secretions for about a week.
- Avian influenza viruses have been isolated from unconcentrated water in lakes in the U.S., Canada, and China
- Avian influenza viruses can remain viable for extended periods of time in surface water and carcasses, suggesting that lakes and wetlands can act as environmental reservoirs at variable temperatures for several months
- Environmental surveillance is an important area that can enhance the

information on the prevalence diversity of avian influenza viruses in free ranging domestic flocks or under confinement conditions where faeces or other effluent are deposited into the environment.

Virus surveillance

- Currently, virus surveillance is reactive and relies on sampling dead birds.
- Environmental surveillance would be a great non-invasive tool that can be done without disturbing the birds and can be used to obtain both hosts.

THE HINDU

SAGO

- World Health Organization (WHO) has created a new advisory group named, The International Scientific Advisory Group for Origins of Novel Pathogens, or SAGO.
- The function of SAGO will be to systematically study the emergence of future emerging pathogens with pandemic potential, and advise the development in this regard to WHO.
- The SAGO will advise the Secretariat on technical and scientific considerations regarding emerging and re-emerging pathogens and will be composed of experts acting in a personal capacity.

- It will be established in accordance with the WHO Regulations for Study and Scientific Groups, Collaborating Institutions, and Other Mechanisms of Collaboration.

THE HINDU

Poliovirus

What is polio?

- Poliovirus can invade the central nervous system and as it multiplies, destroy the nerve cells that activate muscles, causing irreversible paralysis in hours.
- There are three types of polio virus serotypes: types 1, 2, and 3.
- According to the India Polio Learning Exchange (along with UNICEF), of those paralyzed, 5--10% die when their breathing muscles become immobilized.
- There is no cure for polio, but there are safe, effective vaccines that, given multiple times, protect a child for life.
- Polio held the world in a bind of fear until Jonas Salk developed the first polio vaccine.
- Later, Albert Sabin made a 'live' polio vaccine that could be administered orally which became the tool of the trade, especially for nations carrying out mass immunization campaigns, including India.

What was the recent global polio crisis?

- Dr. Jacob John, who co-authored Polio: The Eradication Imbroglio with Dhanya Dharmapalan, says in a paper published in Vaccines, in 2022: “Genetic variants of vaccine poliovirus type 2, imported from an unknown source, were detected in wastewaters in Jerusalem, London, and New York in early 2022.
- The wild poliovirus type 2 was globally eradicated in 1999, but vaccine virus type 2 continued for 16 more years; routine use of the vaccine was discontinued in 2016 and reintroduced occasionally on purpose.
- As an unintended consequence, type 2 vaccine virus variants (circulating vaccine-derived polioviruses) that mimic wild viruses’ contagiousness and neurovirulence, have been emerging and spreading.”
- He also posits the theory of respiratory transmission of polio, ‘as was the classical teaching of polio epidemiology’.

THE HINDU
