Red tide in Florida

August 5, 2021

In news- Gulf of Florida witnessed the bloom of a red tide organism, Karenia brevis recently.

Key updates

- It is pointed out that the algal bloom aggravated Florida's Gulf of Mexico coast **due to the release of 215 million gallons of contaminated water into Tampa Bay earlier this year.**
- The water was released from **a defunct phosphate wastewater plant** near the city of St Petersburg in March and April this year, to prevent its collapse.
- **Karenia brevis, a type of algae commonly known as 'Red Tide',** has swept Florida's Gulf of Mexico Coast, **killing 1,400 tonnes of fish in and around Tampa alone.**
- Besides fish, the algal bloom has also killed turtles, manatees and dolphins on the coastline.
- The **bloom might have used nutrients from the contaminated water to grow and release toxins, killing marine life in the area**.
- Its origins have been traced back to another red tide in December last year.

About florida's red tide

- It is one of the best known Harmful algal blooms, or HABs, in the nation that occurs nearly every summer along Florida's Gulf Coast.
- This bloom, like many HABs, **is caused by microscopic algae that produce toxins that kill fish and make shellfish dangerous to eat.**
- The toxins may also make the surrounding air difficult to breathe.

What is red tide?

- **Red tides** are a phenomenon of discoloration of the sea surface.
- The ride tide is **created by the phytoplankton Karenia brevis, a species that releases a neurotoxin called brevetoxin** that can disrupt the firing of nerve cells.
- It is a common name for harmful algal blooms occurring along coastal regions, which **are resulted from large concentrations of aquatic microorganisms, such as protozoans and unicellular algae (e.g. dinoflagellates and diatoms).**
- Harmful algal blooms, or **HABs, occur when colonies of algae simple plants that live in the sea and freshwater grow out of control while producing toxic or harmful effects** on people, fish, shellfish, marine mammals, and birds.
- But not all algal blooms are harmful. Most blooms, in fact, are beneficial because the tiny plants are food for animals in the ocean. In fact, they are the major source of energy that fuels the ocean food web.
- Certain species of phytoplankton and dinoflagellates like ***Gonyaulax* found in red tides contain photosynthetic pigments that vary in color from brown to red.**
- These organisms undergo such rapid multiplication that they **make the sea appear red.**

What stimulates HABs?

- **Terrestrial runoff containing fertilizer, sewage and livestock wastes** transport abundant nutrients to the seawater and stimulate bloom events.
- **Natural causes, such as river floods or upwelling of nutrients from the sea** floor, often following massive storms, provide nutrients and trigger bloom events as well.
- **Increasing coastal developments** and aquaculture also contribute to the occurrence of red tides.
- **The growth and persistence of an algal bloom depends on** wind direction and strength, temperature, nutrients, and salinity.

Impact of red tide/HABs

- The production of natural toxins such as brevetoxins and ichthyo toxins are harmful to marine life.
- A small percentage of algae, however, produce powerful toxins that can kill fish, shellfish, mammals, and birds, and may directly or indirectly cause illness in people.
- HABs also include blooms of non-toxic species that have harmful effects on marine ecosystems.
- For example, when masses of algae die and decompose, the decaying process can deplete oxygen in the water, causing the water to become so low in oxygen that animals either leave the area or die.