



Avian Botulism in Rajasthan

Why in News?

Recently, the [Centre for Avian Research Institute](#) reported the death of at least 600 migratory birds in Rajasthan.

- **High temperatures and reduced salinity in [Sambhar Lake](#)** likely created conditions that triggered [Avian Botulism](#), causing the **mass deaths of migratory birds**.

Key Points

- **About Avian botulism:**
 - It is a [neuro-muscular illness](#) caused by **Botulinum (natural toxin)** that is produced by a bacteria [Clostridium botulinum](#).
 - The bacteria is **commonly found in the soil, rivers, and seawater. It affects both humans and animals.**
 - It also needs **anaerobic (absence of oxygen)** conditions and **does not grow in acidic conditions.**
 - It **affects the nervous system** of birds, **leading to paralysis** in their legs and wings.
 - Bacterial spores are widespread in wetland sediments and are commonly found in wetland habitats.
 - They are **present in invertebrates** like insects, mollusks, crustaceans, and even healthy vertebrates, including birds.
 - The outbreaks of avian botulism **tend to occur when average temperatures are above 21 degrees celsius**, and during [droughts](#).
 - The **deaths began on 26th October 2024**, and continued for approximately two weeks.
- **Contributing Environmental Factors:**
 - **Jaipur district**, 70 km from Sambhar Lake, **recorded above-average temperatures** throughout October.
 - Sambhar Lake experienced **reduced oxygen levels due to the absence of rainfall.**
- **Vulnerability of Migratory Birds**
 - Migratory birds arrive **weakened from long journeys**, making them more susceptible to diseases.
 - Decaying bird carcasses attract maggots, which further **contaminate the water and infect other birds** or animals.
- **Management and Challenges**
 - Avian botulism **cannot be treated**, but immediate **removal and disposal of affected birds are recommended** to limit the spread.
 - Sambhar Lake **experienced a similar die-off in 2019**, resulting in the deaths of nearly 18,000 birds.
 - **Outbreaks are hard to predict** as they depend on specific environmental conditions aligning, such as a shift from high to low salinity coinciding with the arrival of migratory birds.
- **Global Perspective**
 - **Spores of Clostridium botulinum can survive for years** but produce toxins only under favorable environmental conditions.
 - Similar outbreaks have been observed in **Australia and the United States** during

- periods of reduced salinity.
- Globally, **around 57 diseases have been reported among wild birds**, highlighting the broader ecological risks.

Sambhar Lake



- **Location:**
 - Situated about 80 km southwest of [Jaipur](#), in east-central **Rajasthan**.
- **Features:**
 - It is the **largest inland salt lake in India**. It represents the depression of the [Aravalli Range](#).
 - The lake's **salt supply was worked by the Mughal dynasty** (1526–1857) and it was **later owned jointly by the Jaipur and Jodhpur princely states**.
- **Ramsar Site:**
 - It is a **wetland of 'international importance'** under the [Ramsar Convention](#), declared in 1990.
- **Rivers:**
 - It receives water from **six rivers**, namely Samaod, Khari, Mantha, Khandela, Medtha, and Roopangarh.
- **Vegetation:**
 - The vegetation present in the catchment area is **mostly xerophytic type**.
 - Xerophyte is a **plant adapted for growth under dry conditions**.

The Central Avian Research Institute of India (CARI)

- It is a **research institute located at Izzatnagar near Bareilly, Uttar Pradesh**.
- It was **established in 1979** under the administrative control of **Indian Council of Agricultural Research (ICAR)**.
- It **studies poultry science**, including avian genetics, breeding, nutrition and feed technology, and avian physiology and reproduction, for the betterment of the Indian poultry industry.

