



Avian Botulism at Sambhar Lake

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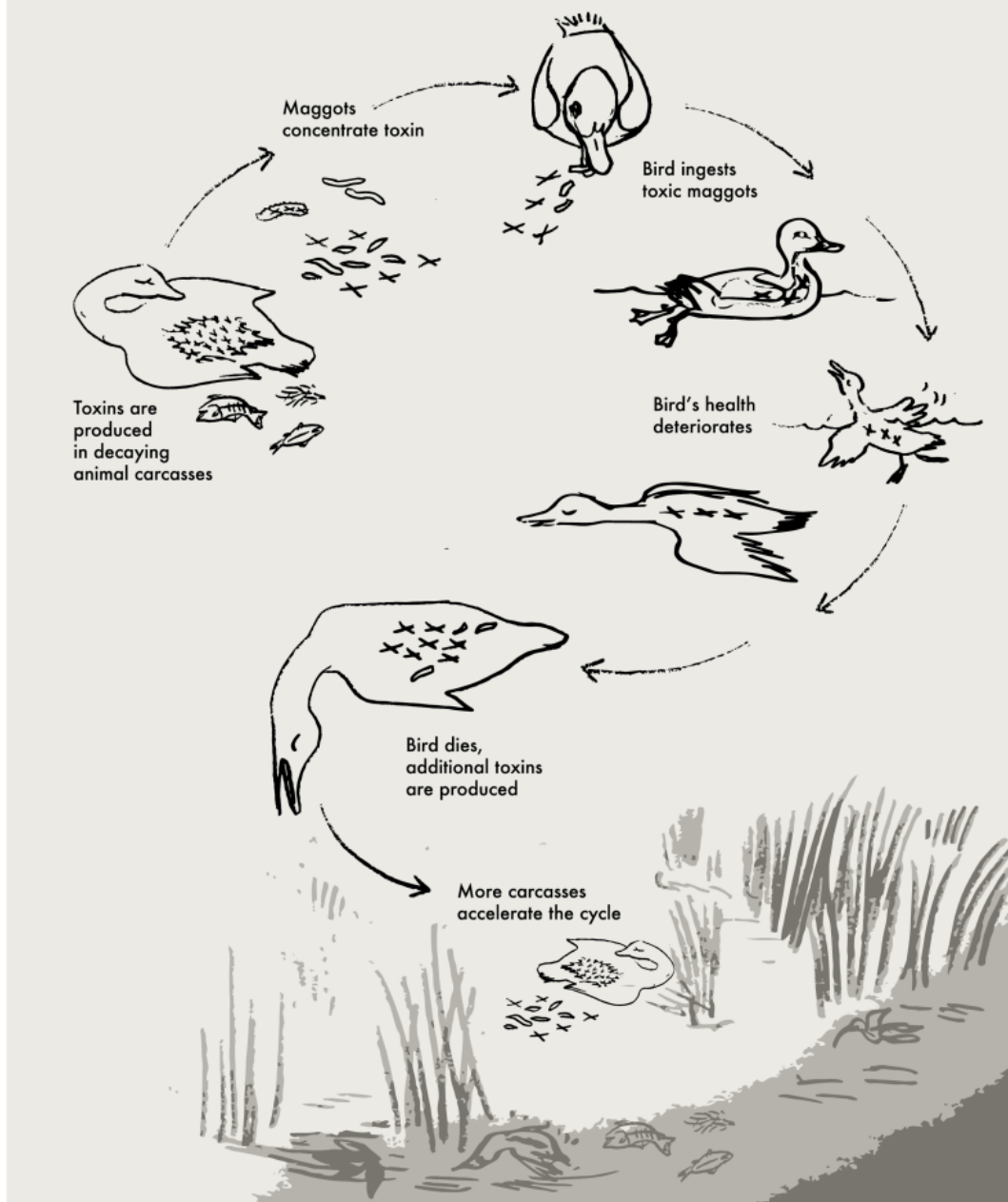
Why in News?

Recently, a mass death of migratory birds died at [Sambhar Lake in Rajasthan](#), likely due to [avian botulism](#). The outbreak is believed to be caused by **high temperatures and reduced salinity in the lake**.

What is Avian Botulism?

- **Definition:** Avian botulism is a **neuromuscular disease** caused by toxins produced by the bacterium ***Clostridium botulinum***. The disease affects **wild birds**, primarily waterfowl and fish-eating birds, causing paralysis and death.
- **Environmental Conditions:** Avian botulism outbreaks are triggered by specific environmental factors, including:
 - **High water temperatures.**
 - **Low oxygen levels** in water.
 - **Stagnant or sub-optimal water conditions.**
- **Transmission:** Botulism outbreaks occur when invertebrates or fish ingest the bacteria and die in poor water conditions. The **bacteria multiply in the carcasses, producing toxins** that affect waterfowl and fish-eating birds.
 - Scavengers, including other birds and mammals, can also ingest the toxin from the carcasses.
- **Symptoms in Birds:** **Muscle weakness, paralysis** and difficulty **flying or standing**. Affected birds may **lose the ability to hold their heads up**.
- **Disease Management:** There is no treatment for this disease. Control of avian botulism is challenging due to the **natural presence of *Clostridium botulinum*** in the environment.
 - However, removing and **properly disposing of carcasses** helps limit toxin spread. Water level management in smaller lakes can reduce outbreaks.
- **Public Health Concerns:** *Clostridium botulinum* has seven types (A-G), with types C and E affecting wild birds.
 - **Botulism in humans is usually caused by type A or B toxins** from improperly canned food.
 - Type C doesn't impact humans, but type E can be contracted from infected fish, though proper cooking can inactivate the toxin.
 - Precautions, like wearing gloves and washing hands, should be taken when handling dead birds or fish to prevent contamination.
- **Factors Triggering Botulism at Sambhar Lake:** **High temperatures** in Jaipur (1-5.1°C above normal) in October, **reduced salinity** from freshwater inflow, and a lack of rainfall contributed to **low oxygen levels** in Sambhar Lake, creating ideal conditions for *Clostridium botulinum* growth.

AVIAN BOTULISM CYCLE



Sambhar Lake

- Sambhar Lake, **India's largest saline wetland**, is located in the Nagaur and Jaipur districts of Rajasthan, bordered by the [Aravalli hills](#). It is the source of most of **Rajasthan's salt production**.
 - It was designated a [Ramsar site](#) in **1990** due to its ecological significance.
- It attracts thousands of migratory birds, including [flamingos](#), from November to February. During the monsoon, the lake comes alive with birds like coots, **black-winged stilts**, [sandpipers](#), and **redshanks**.

Ramsar Sites



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