

Why are so many birds dying in Rajasthan's Sambhar?

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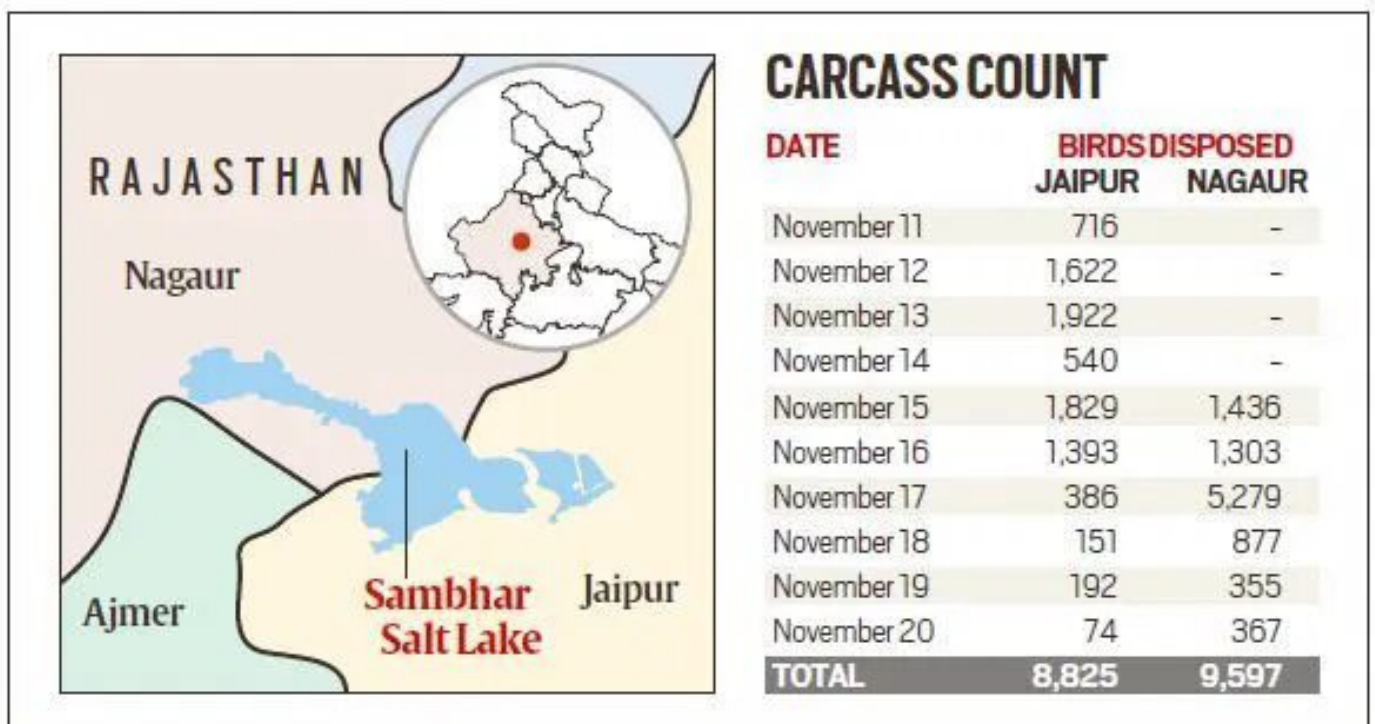
21 Nov., 2019

"Carcasses of over 18,000 migratory birds have been buried in 10 days after they were found at India's largest inland saltwater lake. What has the probe for causes found; why is changing ecology a concern?"

Over the last 10 days, thousands of migratory birds have been found dead at Sambhar Lake, about 80 km southwest of Jaipur city. Officials have buried over 18,000 carcasses so far. While there is no clarity yet on what has caused the deaths, investigations so far suggest avian botulism, a paralytic and frequently fatal disease caused by the ingestion of toxins.

What birds have been found dead?

Sambhar Lake is India's largest inland saltwater lake at 230 sq km, spread mostly across Jaipur and Nagaur districts and also a part of Ajmer. It has a catchment area of 5,700 square km, with the water depth fluctuating between 60 cm in the dry season to about 3 metres at the end of the monsoon.



Every year, the lake attracts thousands of migratory birds. A total 83 species of water birds have been recorded at the lake, the most abundant of which are little grebe, great crested grebe, great white pelican, little cormorant, black stork, and darter, apart from various species of plovers, egrets, herons, and geese.

Birds of about 25-30 species have now been found dead, including northern shoveller, Brahminy duck, pied avocet, Kentish plover and tufted duck. The trend began on November 10 when visitors found a large number of dead birds. More and more were found over the next several days. Until Wednesday, November 20, the Rajasthan government had, using various agencies, buried 18,422 bird carcasses to prevent the spread of infection. Of these, 8,825 were disposed of in Jaipur and 9,597 in Nagaur. Officials also rescued 748 birds, of which around 400 were still alive as of Wednesday.

Officials said the number of dead birds being found each day is declining now. From a peak of 3,265 and 2,696 burials respectively on November 15 and 16, the count had reduced to 441 by November 20 (74 in Jaipur and 367 in Nagaur). Combing operations are, however, still on.

How much is known so far about the cause of death?

The evidence points to avian botulism, but this has not been officially confirmed. "On the basis of history, epidemiological observations, classical clinical symptoms and postmortem findings, the most probable diagnosis is avian botulism," said a report by the Apex Centre for Animal Disease Investigation, Monitoring and Surveillance at the College of Veterinary and Animal Science under the Rajasthan University of Veterinary and Animal Sciences (RAJUVAS), Bikaner. "The clinical signs exhibited by affected birds included dullness, depression, anorexia, flaccid paralysis in legs and wings, and neck touching the ground. The birds were unable to walk, swim, or take flight. There was no rise of body temperature, no nasal discharge, no respiratory distress or any other sign."

But why is it taking so long to establish the cause of death?

The government is waiting for reports from various sources to establish the exact cause. It has so far engaged eight institutions and agencies, but has received complete reports from only two: RAJUVAS and the National Institute of High Security Animal Diseases (NIHSAD) in Bhopal. While RAJUVAS has suggested avian botulism, NIHSAD has ruled out bird flu.

Partial reports have been received from the Wildlife Institute of India, Dehradun, and the Rajasthan State Pollution Control Board. Reports are awaited from the Indian Veterinary Research Institute, Bareilly; the Salim Ali Centre for Ornithology and Natural History (SACON) in Coimbatore, the Bombay Natural History Society, and the Sambhar Salt Limited joint venture.

Is there a concern for human health?

Humans are primarily at risk from avian botulism only if they eat infected fish or birds. While NIHSAD has ruled out bird flu, this was what was feared initially. Personnel were directed to adopt appropriate prophylactic measures such as use of masks and gloves and burial of carcasses in deep pits with limestone.

How common is avian botulism?

There have been several waterfowl botulism outbreaks. Between 1995 and 1997 in Canada, an estimated 1,00,000 birds died in Alberta, 1,17,000 in Manitoba, and 1 million in Saskatchewan. In 1997, another 5,14,000 birds died due to botulism in Green Salt Lake, Utah, US. In 1952, an epizootic outbreak killed 4-5 million waterfowl across western US.

What could be other possible reasons for the bird deaths at Sambhar Lake?

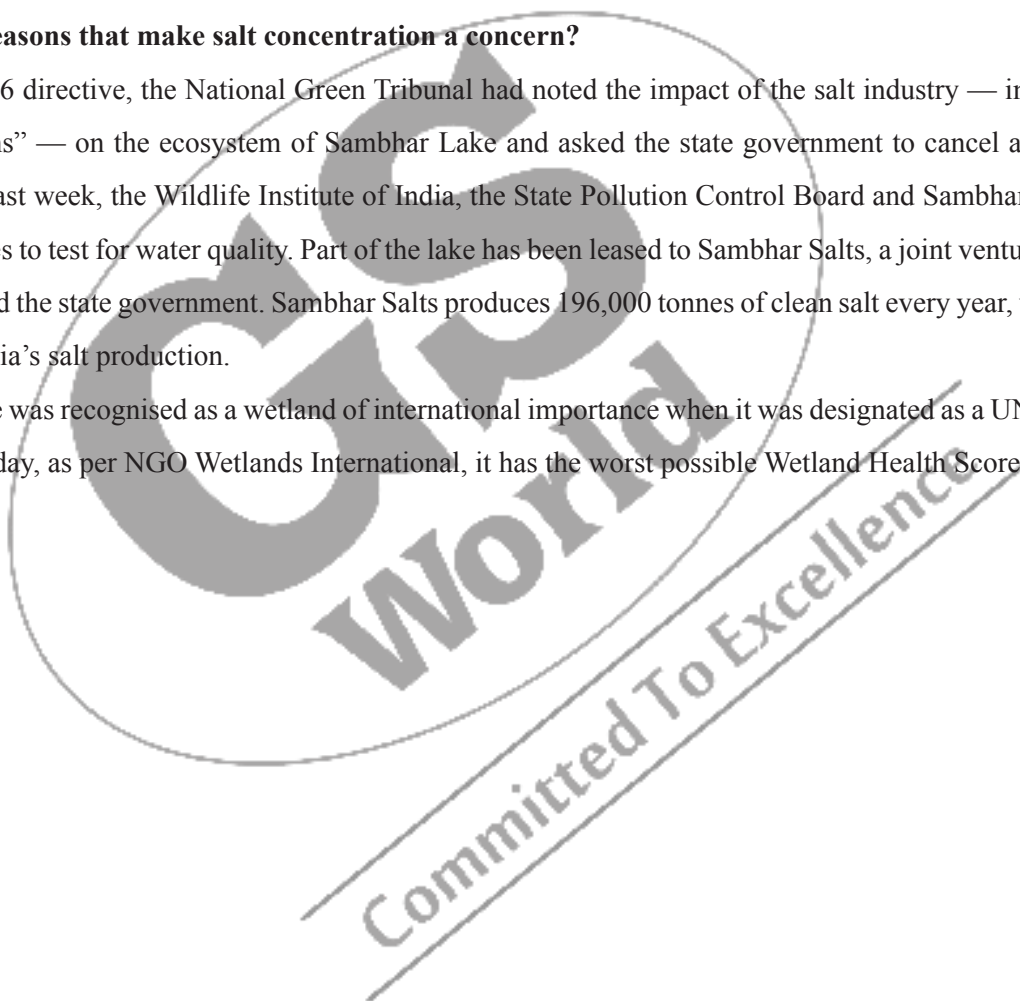
After a Division Bench of the Rajasthan High Court led by Chief Justice Indrajit Mahanty took cognisance of the deaths, the Rajasthan government listed likely reasons:

- Viral infection;
- Toxicity, as a new area has been filled up after almost 20 years, and there could be higher concentration of salts along the edges;
- Bacteriological infection; and
- Higher temperature and high water levels due to a good monsoon. This might have led to an increase in competition for resources. The weaker individuals, exhausted from the long journey, perhaps were unable to compete, and may have succumbed to stress emanating from the shortage of food, susceptibility to disease/pollutants/toxins and other habitat-related factors in the wintering grounds, the government suggested. If that is the reason, the government said it is expected that with fall of temperature and lowering of water levels, incidence of such mortality will go down.

What are the reasons that make salt concentration a concern?

In a 2016 directive, the National Green Tribunal had noted the impact of the salt industry — including “unauthorised salt pans” — on the ecosystem of Sambhar Lake and asked the state government to cancel allotment of salt pans. Over the last week, the Wildlife Institute of India, the State Pollution Control Board and Sambhar Salts Ltd have collected samples to test for water quality. Part of the lake has been leased to Sambhar Salts, a joint venture of Hindustan Salts Limited and the state government. Sambhar Salts produces 196,000 tonnes of clean salt every year, which is around 9 per cent of India’s salt production.

The lake was recognised as a wetland of international importance when it was designated as a UNESCO Ramsar Site in 1990. Today, as per NGO Wetlands International, it has the worst possible Wetland Health Score at E.



Expected Questions (Prelims Exams)

1. **Recently Sambhar lake was in news due to the death of migratory birds. Consider the following statements in context of Sambhar Lake.**

1. Sambhar Lake was named in UNESCO's Ramsar site in 1990.
2. About 9% of the total salt of India is produced by this lake
3. According to NGO Wetlands International, this lake has been given an E score in Worst Wetland Health Score.

Which of the above statements are correct?

- (a) 1 and 2 (b) 2 and 3
(c) 1 and 3 (d) 1, 2 and 3

2. **Consider the following statements in context of avian botulism**

1. It is a paralytic disease caused by the botulinum neurotoxin of Clostridium botulinum bacteria.
2. Type E strain is related to avian botulism.
3. Avian botulism particularly affects the water birds.

Which of the above statements are correct?

- (a) 1 and 2 (b) 2 and 3
(c) 1 and 3 (d) 1, 2 and 3

Expected Questions (Mains Exams)

Q. **The recent death of large number of birds in Sambhar lake in Rajasthan has raised the concerns of environmentalists. Discussing the causes of death of birds in large numbers, also examine its possible effects on human health.**

(250 words)

Note: Answer of Prelims Expected Question given on 20 Nov., is 1 (b).