

9. THE FLAMINGOS OF SAMBHAR LAKE

Sambhar lake is the largest inland alkaline, saline lake in India. It lies in a shallow depression to the east of the Aravalli hills in Central Rajasthan) ($27^{\circ}58'N$, $75^{\circ}55'E$) and is approximately 190 sq. km in area. On the eastern side of the lake a big reservoir (41.72 sq. km), salt pans and crystalisers are present which were used for the manufacturing of salt. These water bodies have experienced severe floods during the last decade (1971, 1974, 1975, 1976 and 1977). As a consequence of these floods the salinity has reduced eleven times to what has been previously reported by Baid (1968, Max. 164‰). This drastic change in salinity consequently affected the faunal and floral composition of the lake (Alam 1980).

Two species of flamingos *Phoenicopterus antiquorum* and *Phoeniconaias minor* have been reported from Sambhar lake. Previously the flamingos were casual visitors (Aggarwal 1951, Baid 1968) to the lake. They came to the lake soon after the annual rainfall and lived upon the insect life and algae which flourished in the lake while the density of the brine remained low. They emigrated as soon as the specific gravity of the lake brine increased and all insects and vegetables organisms were destroyed by the rising density of the brine (Aggarwal 1951). However, during the present study (July 1977—June 1978) it was found that flamingos (including the larger *Phoenicopterus roseus*) have become permanently resident but confined only to the reservoir where one could see thousands appearing like pink and white clouds as they rise in flight. This change in habits of the Sambhar flamingos might be due to the availability in the reservoir throughout the year of blue-green algae (*Spirulina* spp.) which is the principal food of the lesser flamingo (Jenkin 1957).

TABLE 1

| ABUNDANCE OF TOTAL PHYTOPLAKTON AND CYANOPHYCEAE IN THE SAMBHAR LAKE (L) AND ITS RESERVOIR (R). JULY 1977-JUNE 1978. | | | | | | | | | | | | |
|--|----------|--------|--------|---------|--------|--------|--------|-------|--------|--------|--------|--------|
| | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June |
| Total Phytoplankton x 10 ⁴ | L 15.47 | 295.48 | 31.08 | 923.30 | 34.50 | 24.50 | 56.80 | 15.00 | 14.00 | 28.30 | 201.00 | 242.50 |
| Units/1 | R 342.03 | 430.77 | 447.20 | 1100.32 | 106.60 | 108.70 | 155.80 | 10.30 | 123.50 | 116.70 | 162.90 | 728.00 |
| Cyanophyceae % | L 10.08 | 87.35 | 70.86 | 33.23 | 50.87 | 37.14 | 61.62 | 29.33 | 27.86 | 24.38 | 0.99 | 23.92 |
| | R 99.39 | 86.16 | 52.09 | 71.27 | 87.80 | 84.73 | 94.09 | 8.74 | 87.37 | 88.35 | 83.12 | 99.31 |
| <i>Spirulina</i> % | L 5.88 | 57.51 | 20.52 | 4.96 | 48.95 | 29.79 | 61.61 | 29.33 | 29.81 | Nil | Nil | 0.82 |
| | R 99.12 | 64.41 | 20.93 | 65.65 | 87.80 | 82.79 | 94.03 | 95.94 | 87.37 | 88.34 | 83.12 | 99.31 |

The difference in the nature of the phytoplanktonic composition between the lake and its reservoir might be responsible for the difference in the presence of these birds. The reservoir harboured the blue green-algae (Cyanophyceae) comparatively higher in percentage and dominating over other algae in the most of the observations (Table 1). The percentage of *Spirulina* spp. in the total phytoplankton was always found higher than 50% except in the month of September and the reservoir, whereas in the lake it was found mostly lower in percentage and sometimes totally absent (Table 1). The trophic relationship between *Spirulina* spp. and flamingos has also been reported by Hecky and Kilham (1973) and Melack and Kilham (1974) in the alkaline, saline lakes of East Africa (Nakura

and Elmenteita of Kenya; Reshitani and Big Momela of Tanzania).

Besides the *Spirulina* (phytoplankton), zooplankton like copepods (*Cyclops* spp.), Cladocera (*Moina* sp.), Rotifers (*Brachionus* sp.) and *Chironomus* spp. larvae were also found in abundance both in the lake and the reservoir. However, the *Chironomus* spp. on which these birds also feed (Jenkin 1957) were found many times more in the lake than in the reservoir (Alam 1980). But the absence of the flamingos in the lake might be due to the availability of *Chironomus* spp. (bottom dwellers) only in the deep water bottom.

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REFERENCES

- AGARWAL, S. C. (1951): The Sambhar lake salt resource. Government of India Publication, New Delhi.
- ALAM, M. (1980): Limnological studies of Sambhar Salt lake and its reservoir. Ph.D. Thesis, University of Jodhpur, Jodhpur.
- BAID, I. C. (1968): The arthropod fauna of Sambhar salt lake, Rajasthan, India. *Oikos* 19: 292-303.
- HECKY, R. E. AND KILHAM, P. (1973): Diatoms in alkaline, Saline Lakes. Ecology and Geochemical Implication. *Limnol. Oceanogr.*, 18: 53-71.
- JENKIN, P. M. (1957): The filter-feeding and food of Flamingos (Phoenicopteridae). *Phil. Trans. R. Soc. Lond. Ser. B.* 240: 401-493.
- MELACK, J. M. AND KILHAM, P. (1974): Photosynthetic rates of Phytoplankton in East African alkaline, saline lakes. *Limnol. Oceanogr.*, 19: 743-755.

10. BREEDING OF BUSTARDS — AN OBSERVATION IN AUSTRALIA

In our country, the bustards in general and the Great Indian bustard in particular have been very much in the news of late, especially with falconry crossing international borders threatening the very existence of these species.

At one time the Great Indian bustard *Chorioptis nigriceps* was well distributed over the country spread over the states of Rajasthan, Gujarat, Maharashtra, Madhya Pradesh and Karnataka but is now restricted in numbers,



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