

RESEARCH NOTES

(I)

A NOTE ON GREATER RANN OF KACHCHH, KACHCHH DISTRICT, GUJARAT WITH SPECIAL REFERENCE TO FLAMINGO CITY

Historical Background and Characteristics of the Rann

The Rann is the most remarkable and unique feature of the Kachchh region, occupying its northern and eastern parts, forming more than half of the total area of Kachchh. It is a unique example of Holocene sedimentation. The entire site of the Rann was located originally in the tectonic depression. The Rann in general is characterized by a flat topography, annual water inundation pattern, high salinity, barrenness and many 'bets'. The bets are slightly raised isolated patches of land with less salinity and support some ephemeral xerophytic vegetation. The Greater Rann of Kachchh (GRK) (Kachchh District, Gujarat), is predominantly a barren area with some greenery on bets. It supports one of the largest congregative of the Greater Flamingo for breeding, commonly known as Flamingo City – Hunj Bet ('Hunj' is the Kachchi name for Flamingo) or Inda Bet ('Inda' is the Kachchi name for eggs), where about 100,000-200,000 birds lay their eggs.

Salt-impregnated GRK region is a most remarkable and unique landscape, probably one of its kind in the entire world. It represents pristine wilderness and is one of the largest seasonal saline wetlands. Besides Greater Flamingo, Rosy Pelican, Lesser Flamingo and Avocet are also recorded having bred here in the past

(Singh, 2001). The mixture of saline flat land and raised bets provide an ideal habitat for many other terrestrial wild animal species including Wild Ass (*Equus hemionus khur*), Indian Wolf (*Canis lupus pallipes*), Chinkara (*Gazella gazella*), Desert Fox (*Vulpes vulpes pusilla*), Desert Cat (*Felis silvestris ornata*), Indian Porcupine (*Hystrix indica*), Saw-Scaled Viper (*Echis carinatus*), Common Indian Krait (*Bungarus caeruleus*), Black Cobra (*Naja oxiana*) and several species of lizards including the endangered Spiny Tailed Lizard (*Uromastix hardwickii*). Due to the presence of geologically diverse rocks, many bets also support rich fossilized fauna, including the dinosaur fossils, wood fossils and ammonites (Meena *et al.*, 2005).

Flamingo City : A Literature Review

'City of Flamingoes' – the only known breeding grounds of the Flamingo in India had been first reported and discovered in the 1886 by Maharao Khengarji (Patel, 1971), but it was Dr. Salim Ali's work that forms the first major account of this amazing phenomenon. Dr. H.S. Singh visited nesting site of Lesser Flamingo in the Little Rann of Kachchh (LRK) in October 1998, when nesting was almost over. Field scientists estimated that about 70,000 birds nested in about 100 ha area to the West of Kalubhar and South of Solanki Bet (Singh, 2001). The current knowledge about 'Flamingo City' is limited

to it being one of the largest breeding ground for flamingoes, where ecological information on aspects like the availability and diversity of food items, breeding success, threats facts etc is generally lacking. The present study was undertaken to fill these gaps in knowledge. Information on Greater Flamingo was gathered during visits to the 'bet' in the months of November 2006 and March 2007. The Sandal bet, right in the centre of the GRK, is popularly known as 'Flamingo City', which is around 10 km from the Nir out-post on Kala Dungar, Khavda and situated northern side border of district which about 110 km away from Bhuj town.

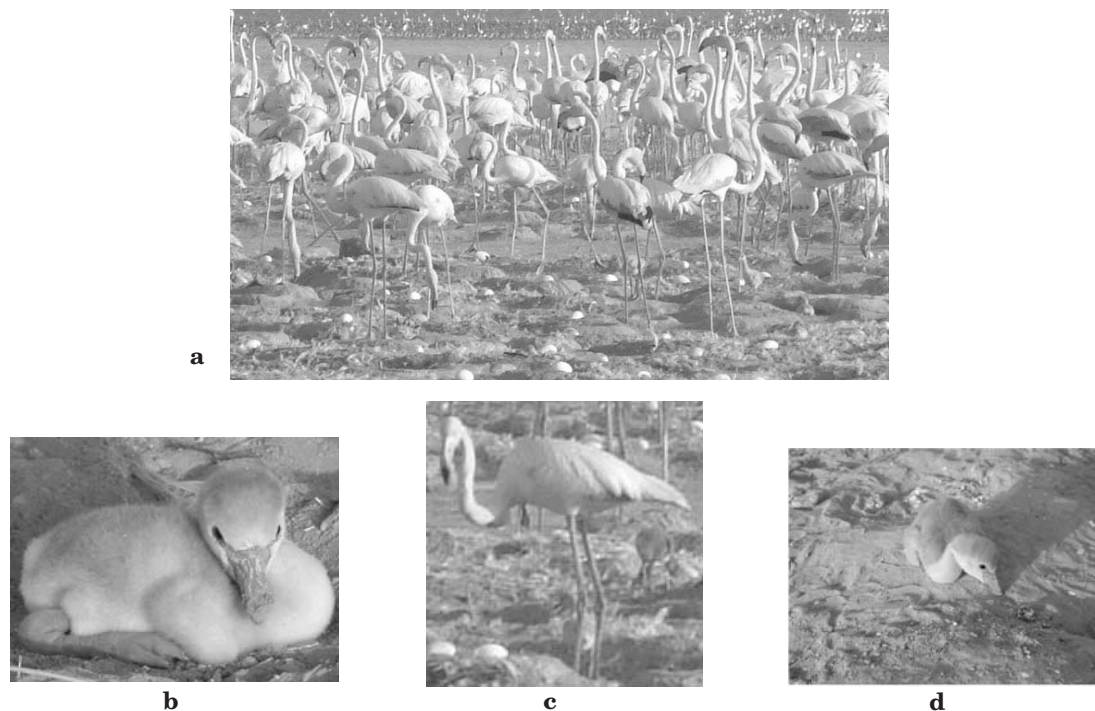
The area is famous for the largest congregation of Greater Flamingo in the entire sub-continent. The area after the rainfall is converted as a marshy island, where the Greater Flamingo visits in tens of thousands in number for breeding. In 1945, Dr. Salim Ali estimated a population of half million birds from the site. Small mounds of muds make the nests on the ground and on each mounds the birds lay their eggs. According to last estimates, there may be about 100,000 birds visited the area. The area may not be considered very rich in diversity, but it supports one of the magnificent "ecological phenomena", which need to be preserved. Ironically, there is very limited ecological data available about the area and the magnificent phenomenon of breeding. The area is currently a part of Kachchh Desert Wildlife Sanctuary (KDWLS)

Greater Flamingo

Taxonomy and Ecology : Right in the midst of the GRK, there is a slightly raised ground where large numbers of Greater Flamingoes build their mud nests.

Flamingo species, *Phoenicopterus ruber* Linn. (Greater Flamingo) (Fig. 1 b) and *P. minor* (Geoffroy) (Lesser Flamingo) congregate in large numbers in the Rann, especially in the 'Flamingo city' (Hunj bet) in GRK and areas around Surajbari near LRK. Greater Flamingo, the bill colour is pale pink with a contrasting black tip in adult. In flight, entire under wing coverts red and proportionately longer neck. Flamingo feathers are tinged a wonderful rosy pink colour, due to coloured materials called carotenoids in the tiny shrimps that they feed on. If they do not eat the shrimps, their feathers turn pale. Flamingos are filter feeders, living off algae and seeds of marshy plants (Ali, 2002) and tiny animals such as shrimps, molluscs and insect larvae which live in the mud at the bottom of shallow pools.

Breeding and Nesting : In scarcity years, the Rann is dry. As a result, flamingoes do not breed every year, but when conditions are just right. These are highly gregarious birds and will not breed unless in large numbers. The flamingos have a unique communal display, consisting of flapping, posturing, preening and quite a bit of noise. The Greater flamingo is particular about its choice of habitat. It needs shallow, very salty lagoons and lakes in which to feed and breed successfully. The flamingo dislikes disturbance, particularly at breeding times, and will often seek out larger expanses of water for solitude. In GRK, successful nesting of this species depends upon the requisite shallowness of water in the nesting ground in September/October and February to April (Ali, 2002). The nest is a truncated conical mound of hard sun-baked mud 15 to 30 cm in height with a slight pan-like depression at top. Built in hundreds close to one another in a compact, expensive 'city'. Eggs are two to one in

Fig. 1

Mass breeding, hatchlings and juveniles.

number, white with a faint bluish tinge in colour (Ali, 2002) (Fig. 1).

Observations : During November 2006 approx. 532 mm rainfall was received at and around the GRK. On visit to 'Flamingo City' in Nov., 2006, the present authors found that there was about 1.37 m average depth of rainwater filled in GRK as inland water. About 70,000 Greater Flamingoes were seen congregated. In March 2007, during the second visit, 1,25,000 Greater Flamingoes were recorded and breeding was found at all the stages from eggs, hatchlings and juveniles (Fig. 1). But, this time the average rainwater remained about 76 cm only and due to low availability of food materials, the breeding might have started in January 2007. It was observed

and recorded in and after February only by Ali (2002).

Threats

Uncontrolled and haphazard expansion of salt pans around the Suraj Bari area and in GRK, bunds erected to divert water from the creek to their pans, are causing serious damage to prawns, fishes and other micro-organisms of flamingo foods in the area. Due to such diversion of water, there is serious shortage of food items (like algae) in the potential breeding areas and thus flamingoes are abandoning the site (GUIDE, 2002). Linear developmental activities like construction and relocation of road, construction of watch tower for security purpose, electrification

of area, and regular disturbance through fishermen communities are major threats to the flamingo.

Conservation Recommendations

Conservation and management of threatened birds population and species depends on a clear understanding of the role of different environmental, ecological and social factors. Many authors revealed the causative factors in depletion of bird population and knowledge needs to be build up for the proper conservation and management. One of the necessary preconditions for conservation of a species is an understanding of various ecological parameters controlling their population status and its distribution pattern. Keeping this in mind, the following recommended strategies for the conservation of flamingos are suggested as conservation measures in Kachchh District :

- There is an urgent need to initiate conservation programmes centered on the Greater Flamingo in Kachchh as well as at State level. The whole idea of such a project would be the conservation different ecosystems, habitats and associated species by keeping these larger species at the core of the conservation programme (GUIDE, 2002).
- On similar lines, in order to develop a comprehensive conservation plan of Greater Flamingo in India, study projects, viz. migration pattern, ratio of juvenile to adult birds, food availability, physio-chemical properties of soil and water which directly have an effect on breeding succession etc. can be initiated in certain pockets of Kachchh District.

The research projects should also focus on the species and area specific existing threat factors and their magnitude to prioritize the conservation and management plan.

- Local villagers including fishermen and 'agariyas' (salt producers) should be informed by placing sign boards to avoid fishing and salt making during the breeding period of the flamingo. NGOs should participate in creation of awareness among the related communities of the conservation of the flamingo and flamingo city.
- Apart from the protection measures, concerned forest personnel should monitor these sensitive sites to assess and understand the ecological, social and cultural information about this rare and endangered species.
- Creation of environmental awareness among the defence personnel and imparting train to them with simple pictorial representation to identify the age structure, field methodology to collect the population data, threats identification and to conserve the threatened habitats of flamingo in India.
- Considering the high diversity of other birds and wildlife of these areas and adjoining sites, it has been suggested that these core areas should be declared as Ecologically Sensitive Areas (ESA).
- Environmental Impact Assessment (EIA) should be a statutory requirement even for small scale developments in GRK and adjoining sites.

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