

7. OCCURRENCE OF *GALLOPERDIX* SPP., FAMILY PHASIANIDAE IN NORTHWESTERN MADHYA PRADESH

M.K. Ranjitsinh (*JBNHS*, 96(2): 314) referred to the occurrence of the painted spurfowl (*Galloperdix lunulata* Valenciennes) in a few places in Rajasthan and asked whether it is sighted in the forests of northwestern Madhya Pradesh. I have seen it on at least six occasions between 1992 and 1997 in Madhav National Park (78° 15'-78° 30' E and 24° 50'-25° 55' N) in Shivpuri district. This park has northern Dry Deciduous Mixed Type forest and two lakes. The painted spurfowl was always sighted in the forest on the slopes along the *muram*, road near the banks of Sakhya Sagar lake in an area where there is an iron bridge between the points known as Landing Station Nos. 3 and 5.

On the eastern side of Sakhya Sagar there is a dam wall. The water seeps through the

bottom of the wall round the year, flowing in a drainlike channel through the dense undergrowth towards the second lake, Madhav. In this area, the red spurfowl (*G. spadicea*) is seen frequently.

In 1996, the painted spurfowl was sighted in Palpur-Kuno Sanctuary about half a kilometre away from Kuno river and Kuno Dak Bungalow along the Pohri-Sheopur road in Morena district. These two species have been regularly seen in northwestern Madhya Pradesh.

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8. OBSERVATIONS ON THE MATING BEHAVIOUR OF THE INDIAN SARUS CRANE *GRUS ANTIGONE ANTIGONE* IN THE WILD

(With four text-figures)

Reproductive behaviour is a typical sequence of behaviour, which includes courtship, copulation, egg laying, incubation, rearing and parental care. The breeding behaviour of various cranes has been studied widely, in captivity and in the wild (Johnsgard 1983, Van Ee 1966, Sauey 1976, Tacha 1981, Masatomi 1983, Masatomi and Kitagawa 1975, Voss 1976 and Tao and Peixun 1991). Except for general courtship display and mating of the Indian sarus crane *Grus antigone antigone* (Ali and Ripley 1983, Walkinshaw 1973, Gole 1987) sequential behaviour leading to mating is not described.

This paper is a preliminary study of reproductive behavioural patterns observed and recorded in the field. The observations are divided into three stages: 1. Duetting 2. Dancing and 3. Copulation.

This study was carried out in the agricultural landscape of Matar tehsil of Kheda district, Gujarat. Matar tehsil has more open vegetation than the other nine tehsils of Kheda district. The climate is semiarid, tropical monsoon type. Southwest monsoon arrives in the third week of June and continues till September end. The average monthly maximum temperature ranged between 41.8° C in May and 27.0° C in December. Average monthly minimum temperature ranged between 11.3° C in January and 26.4° C in July. Average annual rainfall of the district is 840 mm. Paddy and pearl millet are the major cereals grown in the monsoon (kharif crops).

The sarus cranes in flock or family were observed throughout the breeding period from Jul.-Nov. 1997 and 1998 in the wild. Five pairs

were observed in detail using a telescope (20x), photographed and sketched. Each pair was observed from a vertical distance of 300 m. Other pairs with interrupted reproductive behaviour were also studied when they entered the scanned area.

The behavioural responses of both sexes need not always leads to successful mating. As reported in case of *Grus japonensis* (Masatomi and Kitagawa 1975) the process is often interrupted by factors like age, sexual maturity, pair bond and to some extent the surrounding habitat. The cranes dispersed widely, forming a large, isolated territory. The following stages were observed:

1. **Duetting:** Duetting was exhibited by the

pair, and display by a single crane was rarely observed. The pair generally called in unison as a part of duetting. The male first gave a note followed by 2-3 shorter notes by the female. This unit 'M1 + F2-3' was repeated in succession. It was observed that duetting of a pair may provoke the same response in its neighboring pair.

The cranes were seen duetting in different postures, however, the head of both the sexes was always held high; wings semi-closed, closed, or obliquely raised, sometimes drooping (Fig. 1).

2. **Dancing:** A crane in grazing posture stoops with retracted neck, sometimes spreading its wings, and makes a bouncing movement. It leaps up to a few metres above the ground.

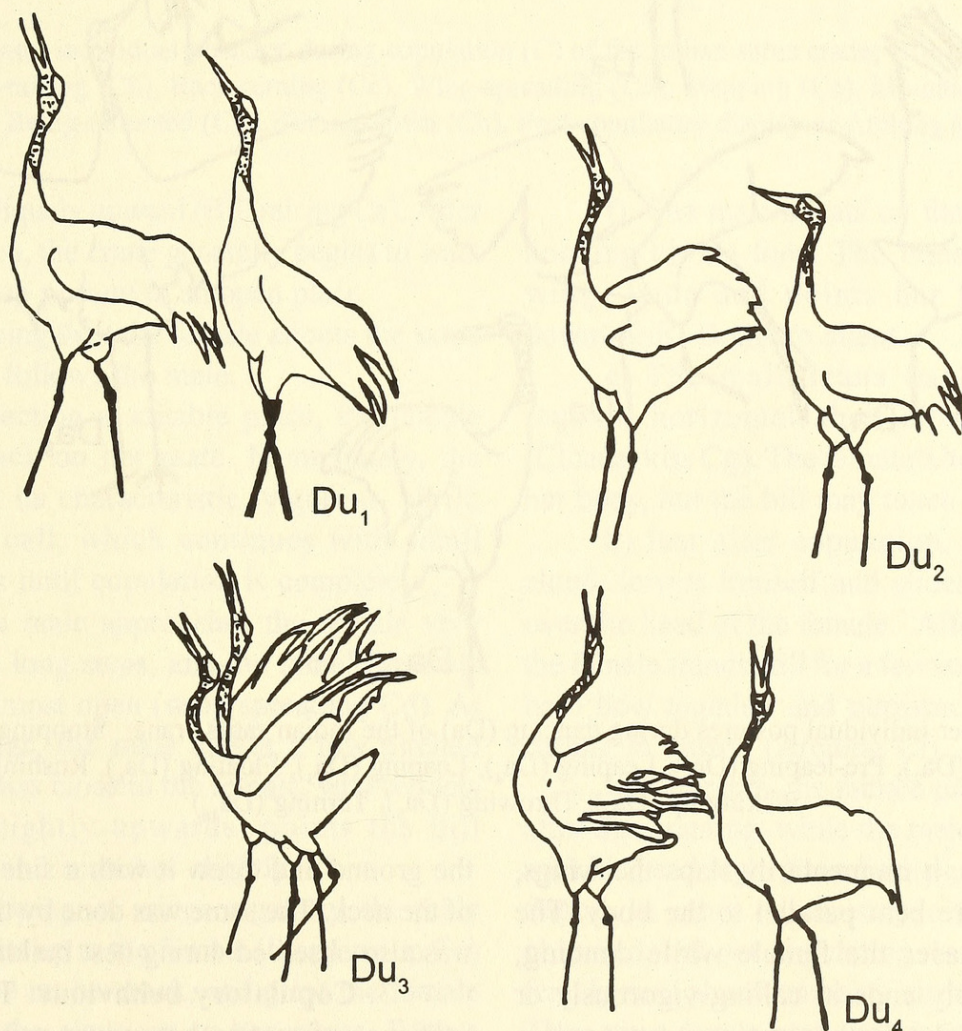


Fig. 1: Inter individual posture observed during duetting (Du) of the Indian sarus crane, Semiclosed-wing duetting (Du₁), Closed-wing duetting (Du₂), Obliquely-raised wing duetting (Du₃), Drooped wing duetting (Du₄)

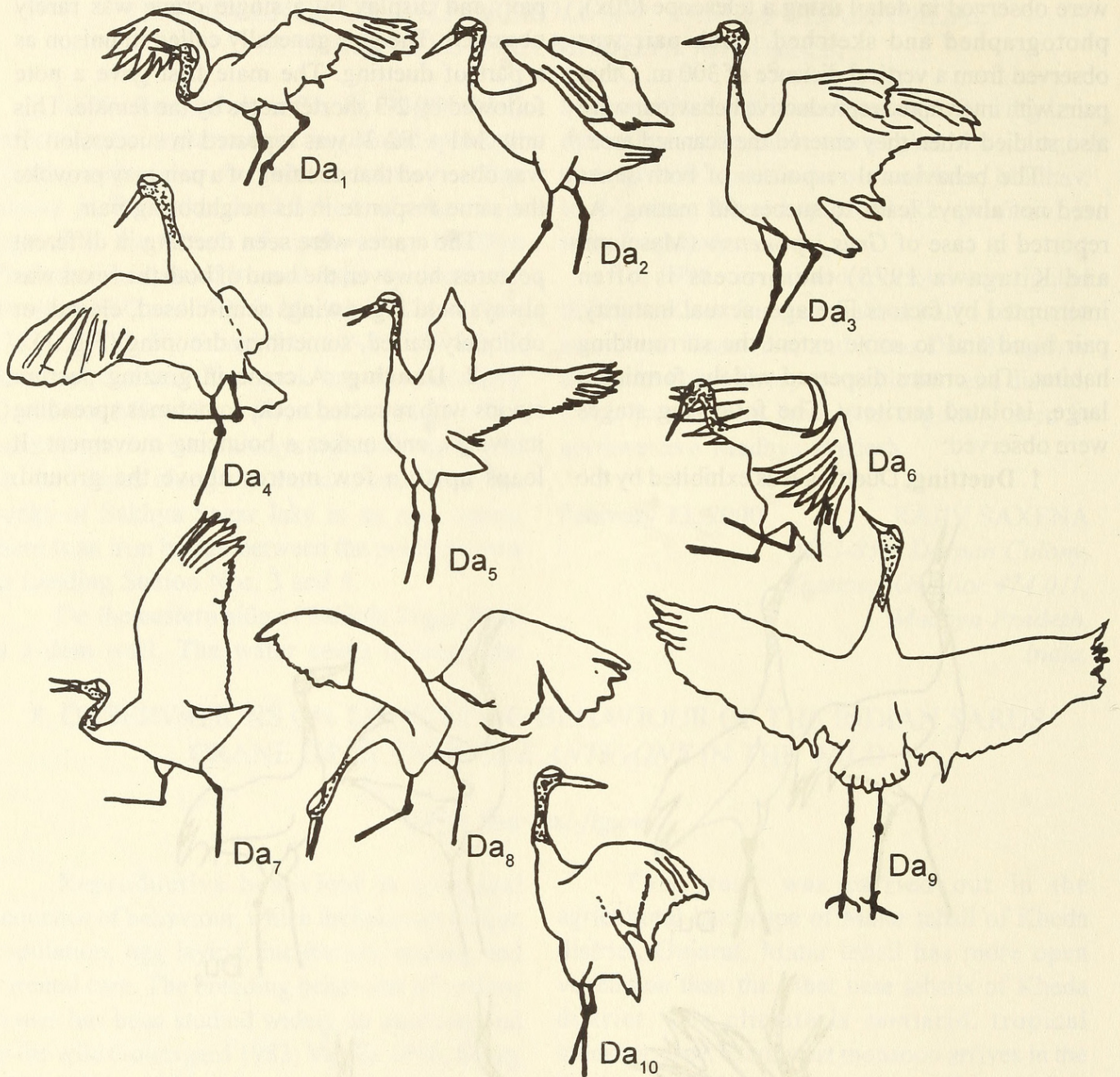


Fig. 2: Inter individual postures during dancing (Da) of the Indian sarus crane; Stooping (Da₁), Stooping (Da₂), Pre-leaping (Da₃), Leaping (Da₄), Leaping (Da₅), Floating (Da₆), Rushing (Da₇), Picking-up (Da₈), Throwing (Da₉), Turning (Da₁₀)

Floating down, it momentarily flaps the wings, and the legs are bent parallel to the body. The male often chases the female while dancing, which ultimately ends in calling vigorously or becoming ready for mounting. A peculiar throwing movement was seen when a dancing crane suddenly bowed its neck up and down several times, immediately picked up a plant from

the ground and threw it with a sideways jerking of the neck. The same was done by the mate. This was also observed during nest building (Fig. 2).

3. Copulatory behaviour: The elaborate sequence of mating between a pair is shown in Figs 3 and 4.

a) The male, often emitting a low pitched precopulatory call, raises its bill about 30°, its neck

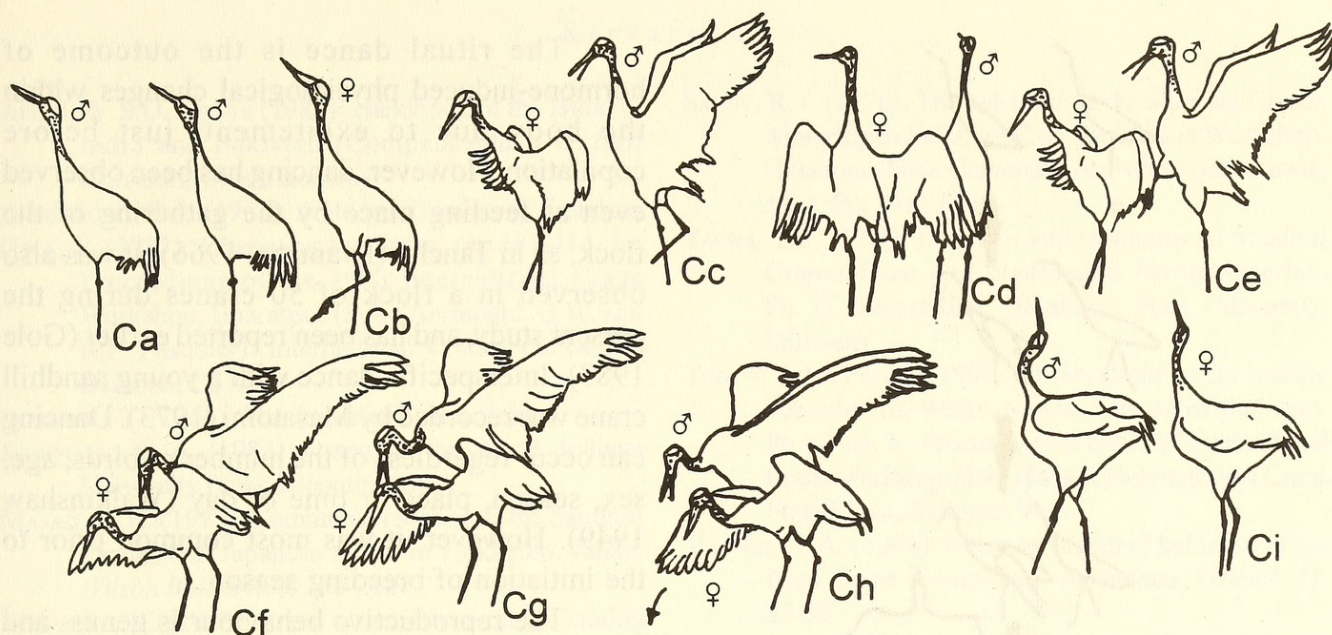


Fig. 3: Inter individual postures during copulation (C) of the Indian sarus crane; Bill raising (Ca), Bill-raising (Cb), Back-turning (Cc), Wing-spreading (Cd), Stepping (Ce), Mounting (Cf), Being-mounted (Cg), Sliding-down (Ch), Post copulatory display or Arching (Ci)

extended obliquely upward (Bill raising Ca). After a minute or so, the crane generally begins to walk with a head-up posture to an open place.

b) Seeing this, the female adopts the same posture and follows the male.

c) Selecting a suitable place, the female turns her back on her mate. Immediately, the male makes its characteristic, vigorous, shrill, copulatory call, which continues with small interruptions until copulation is complete.

d) The male approaches the female very slowly, with long steps, and the female spreads her wings almost open (wing spreading Cd). At the final stage, the male makes a low pitched call, and comes close to the female, who retracts her neck slightly upwards, points the bill downwards and crouches slightly.

e) Flapping its wings regularly, the male suddenly steps up to the female (Stepping up Ce) places his toe on her back, and grips the female by hooking the claws on to her wings. With a little pressure on her back, the male lifts his other leg. The female bends slightly forward and her body lies almost horizontal to the ground.

f) The male squats on the female's back, hooking on his toes. The female spreads her wings wide and points her bill obliquely downwards. Both are silent.

g) The male leans back, the female remains horizontal, their cloacae in contact (Cloacal kiss Cg). The female's head is level with her body, but the bill may touch the ground.

h) Just after copulation, the male calls aloud, lowers himself and slides down, always over the head of the female. After dismounting, the female stands still for a few seconds, and then both bow together and perform a ritual dance, calling in unison (Arching Ci).

In four pairs, the female preened her thigh after dismounting, while the male stood upright, with his head high. Then both performed a ritual dance. In other cases, stages (a) to (f) were observed, but not copulation. In such pairs, the female runs ahead on being chased by the male. They stop, dance, both the sexes jump and then exhibit irrelevant behaviour like preening and feeding.

Duetting was performed in various

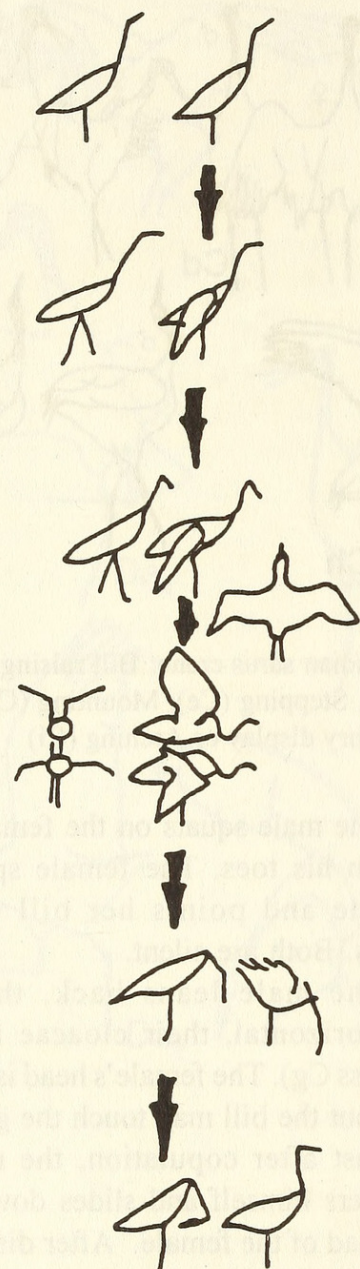


Fig. 4: Sequential line diagrams in sequence of mating behavior of the Indian sarus crane

situations, before or after copulation, at relief of incubation, against intruders in territory. Duetting maintains the synchronisation of reproductive rhythm (Masatoni and Kitagawa 1975). The call of the male, followed by the female, was well described as antiphonal song by Armstrong (1963), where the female adds her utterance so promptly that it sounds like a single stereotyped song. Therefore, unison calling need not be a synchronous duet (Walkinshaw 1949).

The ritual dance is the outcome of hormone-induced physiological changes within the body due to excitement, just before copulation. However, dancing has been observed even at feeding place by the gathering of the flock, as in Tancho (Iwamatsu 1966). It was also observed in a flock of 50 cranes during the present study, and has been reported earlier (Gole 1987). Interspecific dance with a young sandhill crane was recorded by Masatomi (1973). Dancing can occur regardless of the number of birds, age, sex, season, place or time of day (Walkinshaw 1949). However, it was most common prior to the initiation of breeding season.

The reproductive behaviour is genus- and species-specific (Masatomi 1983) and some modification of behaviour probably occurs due to the prevailing conditions (Tao and Peixun 1991). Masatomi's (1983) captive study on eastern sarus *Grus antigone sharpii* revealed similarity with the Indian sarus crane *G. a. antigone*, but the calling during and after copulation were different in captivity and this study in the wild. The difference may be in the subspecies.

Successful copulation could be judged as having been achieved by the response of the mates to each other. The male's bill raising and the female's submission by wing-spreading appear to be a prerequisite for copulation, but not mandatory

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9. A HERONRY AT TRAJ IN KHEDA DISTRICT, GUJARAT

Kheda district is reckoned to be among the important bird areas of Gujarat, notable for its expanse of inland wetlands. Besides having a high density of sarus crane *Grus antigone* (Singh and Tatu 2000) this area also holds many heronries, such as at Traj and Pandoli village ponds (A.J. Urfi & Dilhaz Jaffrey, unpubl. data). In this note, I record the Traj heronry, which was studied during June-October, 1999, in some detail.

The village pond at Traj, estimated to be over 10 acres, is approximately 20 km from National Highway No. 8, between Ahmedabad and Kheda. Since the pond is fed by a canal, there is water all year round. In this regard, it is different from many other village ponds in Gujarat, which dry up during the summer and are replenished only during the monsoon. Traj pond is bisected into two interconnected halves by a low-lying bund wall. One part is shallow and overgrown by the Indian lotus (*Nelumbo*

nucifera), while the other is deeper and has a small island with several *Acacia* and *Ficus* trees.

On our first visit to Traj on June 15, we observed that about 200 Asian openbill-stork (*Anastomus oscitans*) had collected on the trees on the island, along with the little egret (*Egretta garzetta*) and little cormorant (*Phalacrocorax niger*). On a second visit on June 21, the nesting of these species was confirmed and on July 14, new breeding species Oriental white ibis (*Threskiornis melanocephalus*) and median egret (*Mesophoyx intermedia*) were observed to have also joined the heronry. Even at this stage, the openbill-stork were seen flying about on nest building chores, such as collecting fresh leafy twigs to add to their nests. On the fourth visit on August 28, chicks of Asian openbill-stork, white ibis, median egret and cattle egret (*Bubulcus ibis*) were observed. One darter (*Anhinga melanogaster*) and 4 painted stork (*Mycteria leucocephala*) were also observed, leading us to



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