

Agonistic behaviour of two species of cranes

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(Med et dansk resumé: Kampadfærd hos to tranearter)

INTRODUCTION

As very little is known about the behaviour in the various crane species, I think it might be of interest to report about observations of part of the behaviour, viz. the agonistic behaviour, as it appeared all the year round in two cranes, a Common Crane *Grus grus* and a Siberian White Crane *Grus leucogeranus*, which for several years were in the Copenhagen Zoo. Almost nothing is known about the behaviour of the Siberian White Crane. Further, this species is very rare. According to IUCN's Red Data Book about endangered species there is estimated to be approximately 100 birds left in the wild, and according to the International Zoo Yearbook, vol. 14, the number existing in captivity are 9 birds in 6 zoos.

Unlike the other cranes in the collection the Common Crane and the Siberian White Crane were solitary. The Common Crane had been reared by humans and was imprinted on humans. The Siberian White Crane was achieved from an animal dealer, and had probably been caught as an adult. These two birds directed much of their behaviour towards humans. Judging from their very aggressive behaviour they were probably males.

COMMON CRANE

When I approached the enclosure it walked in an exaggerated rigid gate in a stiff attitude, with sleeked plumage and stretched neck, and the beak in an oblique upwards position, moving its legs high, and walking slowly with the long inner wing feathers raised, but with wings themselves closed (parade-step, Heinroth 1928). In another posture – upright posture (fig. 1 D) – the bird's neck was stretched up vertically or obliquely to the rear with the beak upwards. Further, the primaries were lowered and spread out and the elongated secondaries were lifted in high intensity of this behaviour. At the same time it

made its long, trumpet-like call. Now and then it shook its plumage and preened, touching back feathers or front of the wing or belly feathers (fig. 1 B), or the bill behind the wing (fig. 1 C), now on the left side and now on the right, while the wing was held out somewhat drooping and long secondaries ruffled up. During this behaviour it watched the opponent and turned the red top of the head towards the opponent. In this situation the red skin turned even more red. This behaviour is also reported by Heinroth (1. c.) for captive cranes in aggression towards humans or other cranes. In front of humans it also showed throwing of nest material. In this behaviour, when it was standing with lowered neck and the beak downwards it showed the red crown towards the opponent (fig. 1). During approaching the crane was giving its croaking notes and the loud trumpeting call: k r o o k several times. These behaviour patterns are often followed by direct attack with beak strokes against the opponent.

SIBERIAN WHITE CRANE

In the same situation as mentioned for the Common Crane, the Siberian White Crane showed parade-step, throwing material, preening and upright posture, but the behaviour had a somewhat different form. When one was standing by its enclosure it approached in parade-step, similar to the behaviour in the same situation in Common Crane. When approached it picked up straw and lumps of earth in the beak and let it fall to the ground again. It also pecked in the ground with the beak slightly open and wriggled the beak to the side, as when they are searching for food. Now and then it lay down with the point of the beak pointing to the ground. A little later it would get up again, the beak still pointing towards the ground (fig. 1 A). This behaviour is assumed to be displacement movements in a conflict situation between attack and escape, because it was often observed that this behaviour was followed by

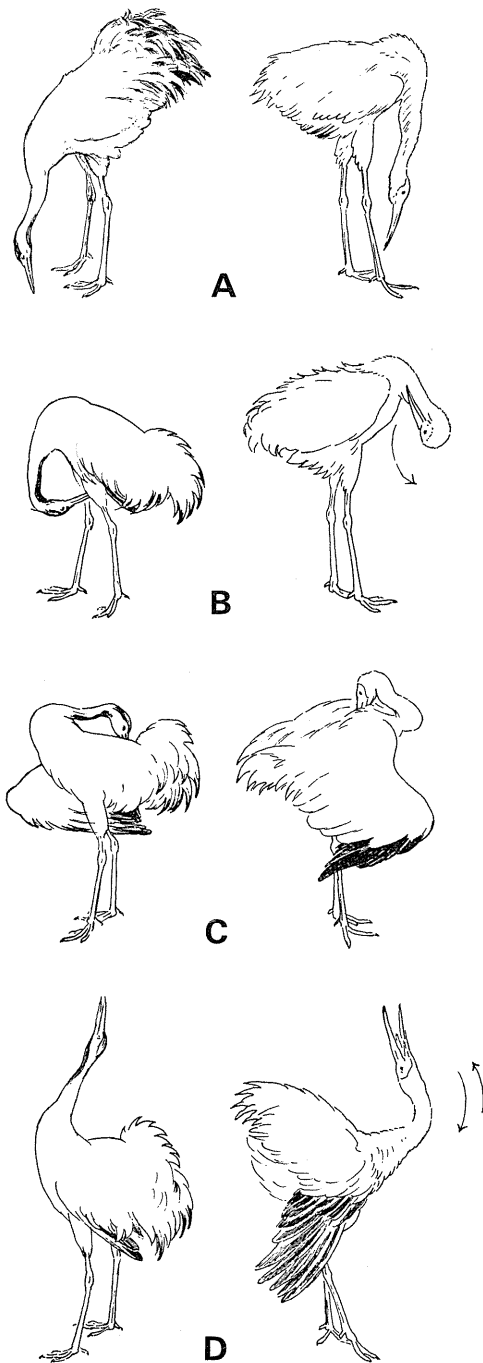


Fig. 1. Agonistic displays of Common Crane (left) and Siberian White Crane (right). A: bill to ground. B: head down, bill up. C: bill behind wing. D: upright posture.

Kampadfærd hos Alm. Trane (til venstre) og Sne-trane (til højre). A: Næb mod jord. B: Hoved ned, næb op. C: Næb bag vinge. D: Opret positur.

either the crane walking away or the crane attacking when approached. The closer connection between these three displacement movements: nestbuilding, feeding, and sitting was not solved. To do that one must know more about the behaviour of cranes. After that the crane showed ritualized preening (fig. 1 C). In ritualized preening behind the wing the head was jerked backwards in a wide curve, the neck being stretched out, and the beak was put into the shoulder feathers, so the beak could not be seen, and only the head with the red skin and the yellow eye were visible. At the same time the wing on the same side was lowered and held somewhat out from the body. Further, the tail was erected to an oblique position. The movement was made now on the left, now on the right side, independent of the position of the opponent. In both of these two postures the bird stood still for some moments (from 15 seconds to 2 minutes). Prior to the ritualized preening behind the wing came one of the following two movements: 1) The neck was stretched straight downwards so the point of the beak reached the toes. This posture was kept for some seconds. 2) It moved its folded wings in a ruffling manner, slowly lifting one elbow and then the other from its sides, moving the wings alternately with increasing speed for a few seconds, and then it suddenly moved its head, so that the beak with the head in a lowered position turned upwards and touched the front side of the lower part of the neck in a ritualized preening (fig. 1 B). The last mentioned movement with the head downwards and the beak turned upwards towards the neck also appeared without shaking wings. This posture was kept for some seconds. These movements are most likely displacement movements: 1) nestbuilding, 2) preening, which have become ritualized. The movements are made in jerks and stiffen in postures.

In this situation the Siberian White Crane showed yet another behaviour (fig. 1 D). Both wings were lowered, so the black primaries turned downwards. The white secondaries were raised. Neck feathers and back feathers were erected. The neck was stretched upwards and the open beak was moved towards the neck and then forward and upwards and beyond the vertical position, whereafter the beak was moved downwards (20 - 40 times in one sequence). When doing the downward movement it made a long trumpet-like call, and doing the upward movement it made a short low sound. This upright posture was

similar to that of the Common Crane, but while the Common Crane kept its beak upwards, sometimes vertically up, the Siberian White Crane moved it up and down in a much more elaborate behaviour.

These displays indicated the aggressiveness of the bird, because the behaviour was often followed by attack. In direct attack the neck feathers were slightly raised, body feathers sleeked, wings spread and beak open. Suddenly it jumped into the air with wings flapping and legs extended in front of me, and kicked and pecked, and landed on its feet. In between it held its beak to the ground and picked up leaves and straw. I was not able to find any certain sequence of these displays.

DISCUSSION

When these behaviour patterns of the agonistic behaviour of the two crane species are compared, it is evident that they are more elaborate and ritualized in the Siberian White Crane. According to Archibald (1974 b) the upright posture exists in 10 crane species, including the Common Crane. The Siberian White Crane is not included, as he has no information about this species. He also mentions that the upright posture in several species, i.e. the Common Crane, is different in the two sexes and varies in intensity. In the lowest intensity the bill is held obliquely up and the primaries are not lowered, and in the highest intensity the neck is held obliquely backwards, the beak vertically up, the primaries are lowered and the secondaries elevated. The upright posture in the Siberian White Crane has a typical intensity, as is the case in several other species, according to Archibald (1. c.). Further, the upright posture in the Siberian White Crane was accompanied by the open beak being up and down, which according to Archibald (1. c.) does not occur in any other crane species. The upright posture is a threat behaviour which makes the opponents retreat. Archibald (1973, 1974 a) describes similar threat behaviour in Hooded Crane *Grus monacha* and White-naped Crane *Grus vipio* in the wild, and he also mentions that the threat postures are part of the courtship display in both male and female, who walk side by side, circling each other and thus gradually become accustomed to each other, and the mutual threat decreases. Both species have the movement: bill to the ground, which is displacement nestbuilding and/or feeding. Besides the Siberian White Crane has the same movement ritualized as a posture. In the

posture: head down bill up, the Common Crane keeps its bill against thigh and belly, whereas the Siberian White Crane bends its neck and turns the beak up vertically against the underside of the neck. Sometimes there is shaking of the wings prior to this movement. Both species have bill behind wing, but the Common Crane moves its head backwards and puts the bill into the back feathers and wing feathers, whereas the Siberian White Crane moves its head backwards in a wide curve, while the neck is stretched and bent backwards, before it turns its head and puts the beak into the feathers. Further, the movement is much quicker than in the Common Crane.

SUMMARY

A Common Crane *Grus grus* and a Siberian White Crane *Grus leucogeranus* in captivity both showed the same agonistic patterns, viz. parade-step, bill to the ground, head down bill up, bill behind wing, and upright posture. These displays are more ritualized in the Siberian White Crane than in the Common Crane.

DANSK RESUME

Kampadfærd hos to tranearter

Når to traner angriber hinanden, viser de som andre fugle særlige bevægelser og positurer, der virker pacificerende eller får den ene til at flygte. Denne adfærd blev iagttaget af forfatteren hos en Alm. Trane *Grus grus* og en Snetrane *Grus leucogeranus*, der i en årrække var i Zoologisk Have. Selv om iagttagelserne kun blev gjort på disse to fugle, kan de give et bidrag til kendskabet til traners adfærd. Adfærden fremkom altid ved angreb og altid i den artstypiske form. Derimod kunne adfærdens betydning for artsfæller ikke iagttages, men formodentlig har den en truende funktion. Traners adfærd er meget lidt kendt, og tillige er Snetranen meget fåtallig. Den vilde bestand anslås til at omfatte ca. 100 individer. Yderligere findes der 9 Snetraner i zoologiske haver. Forfatterens iagttagelser bekræfter og supplerer Heinroths (1928) iagttagelser af den Alm. Trane. Snetranen har de samme bevægelser og positurer som den Alm. Trane (se fig. 1), men de enkelte dele af adfærden har en lidt anden form end hos den Alm. Trane — er mere ritualiserede. Desuden har de en typisk intensitet, medens de hos den Alm. Trane varierer i intensitet. F.eks. er den oprette positur hos Snetranen altid som vist på fig. 1, medens den Alm. Trane i den oprette positur sænker håndsvingfjerene og løfter armsvingfjerene mere eller mindre, samtidig med at halsen holdes skråt eller lodret. Archibald (1973, 1974) har fundet lignende adfærdsformer hos andre tranearter. Desuden fandt han, at disse bevægelser og positurer indgår i kurtiseringsadfærden.

REFERENCES

- Archibald, G. 1973: Cranes over Kyushu. *Anim. Kingdom*, 76, 17-21.
- Archibald, G. 1974 a: Misty Mornings in Crane Country. *Anim. Kingdom* 77, 19-24.
- Archibald, G. 1974 b: Methods of Breeding and Rearing Cranes in Captivity. *Int. Zoo. Yearbook*, 14, 147-155.
- Heinroth, O. & M. 1928: *Die Vögel Mitteleuropas* III, 90-112, Berlin.

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