

## Notes on the Mating Behaviour of the Sheld-Duck (*Tadorna tadorna* (L.)).

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(Med et dansk résumé: Gravandens (*Tadorna tadorna* (L.)) parringsadfærd).

The breeding behaviour of the Sheld-Duck (*Tadorna tadorna* (L.)) is known especially from the papers by HEINROTH (1911) and BOASE (1935) but also CULEMANN (1926), CHRISTOLEIT (1929), MAKKINK (1931) and HOLSTEIN (1932) have contributed to the knowledge of the behaviour of this bird. Recently the general behaviour of this species has been studied by LIND (1957). The present notes on the display of the Sheld-Duck may be of interest as the behaviour of this bird is not known in detail.

During several years the present writer has observed the behaviour in the breeding season of 14 Sheld-Ducks, 7 ♂♂ and 7 ♀♀, on the pond in the Zoo. Very often courtship display and aggressive behaviour were observed, in fact these behaviour elements of the Sheld-Ducks are some of the most striking features of the waterfowl life on the pond. As the collection of waterfowl is fairly big in comparison to the size of the pond and the surrounding grassy enclosure there is too much disturbance for breeding of most of these birds and there have only been a few cases of successful breeding of the Sheld-Duck.

Breeding behaviour was observed from October–July interrupted by a period in winter time. At the beginning and at the end of the breeding season this behaviour was only seen at low intensities. In early spring the courtship movements were performed most vigorously.

Both on land and on the water the male courts the female by characteristic rapid circular movements of the head accompanied by a soft whistling *tiv-tiv-tiv* in rapid succession. The head is thrust forward and moved backward, the neck being extended. This movement is often repeated, up to 10 times in succession. Sometimes a female is accompanied by several males behaving in this way. When the male shows its courtship display the female often makes inciting movements by holding its head and neck in horizontal line below level of

back and making bill tossings up to 45° and down again, uttering a harsh chattering like *arr-arr-arr* or *ak-ak-ak* in rapid succession. The female turns to its mate and then directs its display towards other males inciting its mate to attack them. A female may also show this display when no other male than its own male is present. This display is also used by an unmated female towards the male which is to become her mate. The behaviour of the female is like the threat posture of both male and female, but in the threat behaviour there is no scooping actions of the bill. When the female incites the male to attack, the male often does show aggressive behaviour towards other males.

Sometimes the female reacts to the male's courtship display by performing similar circular movements of the head, but not so intensively as in the male. While doing so it calls *ak-ak-ak*.

The male is often seen bowing its head forwards and thrusting it upward and backward with the bill held normally till the neck is fully extended and the bill points upward. This movement is accompanied by a trilling whistle like *tirrr*. This is done both when swimming and standing. This action resembles the normal shaking of the plumage when the birds are preening, but it is highly ritualized. I have often observed this movement in two males near each other, and it is apparently directed to other males rather than to females. Very often when the head and neck are extended the bill swings upward till head and neck are in line. This is repeated up to three times in succession. After that the bird sometimes makes small sideways movements of the head. Both male and female perform bill tossings up and down.

On land as well as when swimming the males attack each other (sometimes incited by the females) showing threat posture, holding head and neck in horizontal line well below of back, pursuing other males, running or swimming, while calling soft whistling notes like *tiv-tiv-tiv*. Sometimes it develops into real fighting. The female has the same threat and fighting behaviour towards other females, but it gives harsh notes.

Only on a few occasions in spring copulation was observed, whereas courtship display was to be seen in a much longer

period. Coition is preceded by pre-copulatory display of both male and female. Copulation may be initiated by either sex and the mate, if receptive, responds by showing its display. The female shows initial display by adopting a flat attitude with withdrawn neck the head stretched forward, lying low in the water. The pre-copulatory display of the male consists in head dipping and displacement-preening of wing feathers with extended wing as also described by MAKKINK (1931). After copulation the two birds swim in circles round each other, performing displacement-bathing movements.

The described displays were observed very often, the only variations being that they were carried out with varying intensity. The courtship actions are fixed behaviour patterns, and the variations as described by BOASE (l. c.) may be due to fluctuations in the sexual motivation of the particular bird and its mate.

The present writer has only observed the striking courtship movements of the Sheld-Duck and has not studied the behaviour of this bird thoroughly, therefore no attempt of analysis has been made.

In related species *e.g.* the Australian Sheld-Duck (*Tadorna tadornoides*) and the Ruddy Sheld-Duck (*Casarca ferruginea*) similar threat and inciting movements as described for the Sheld-Duck were observed by the writer. These and other mating patterns have been studied by LORENZ (1941) in his comparative study of the courtship movements of ducks (*Anatinae*).

### DANSK RESUMÉ

#### Gravandens (*Tadorna tadorna* (L.)) parringsadfærd.

De signalbevægelser, der står i forbindelse med pardannelsen, blev iagttaget igennem flere år på 14 gravænder (7 ♂♂ og 7 ♀♀). Gravænderne viste parringsadfærd i tidsrummet fra oktober til juli med kortere eller længere pauser i vintertiden. Parringsadfærden er mest intensiv i det tidlige forår.

Hannens adfærd over for hunnen består af nogle ejendommelige cirkelformede bevægelser med hovedet, hvorved hovedet bevæges bagud og derefter kastes fremad. Samtidig med at denne bevægelse gentages flere gange udstødes i hurtig rytme nogle svage, fløjtende lyde. Desuden har hannen en ritualiseret rysten af fjerdragten, hvorved den kaster hovedet bagud opad, så halsen vender lige opad, og næbbet

peger skråt opad; samtidig kommer der en fin fløjtende trille. I det øjeblik fuglen står med strakt hals, bevæges næbbet undertiden fra vandret stilling skråt opad og nedad igen. Denne næbvippen foretages kun nogle få gange. Rystebevægelsen, der er meget iøjnefaldende på grund af den overdrevne kraftudvoldelse, hvormed den udføres, vises tilsyneladende over for andre hanner.

Hunnens parringsadfærd består af nogle bevægelser, der ligner trueadfærden; samtidig udstødes nogle hæse, knurrende lyde. I nogle tilfælde høres også et flere gange gentaget *ak-ak-ak*. Denne opførsel viser hunnen over for sin mage, eller den han den har valgt, hvorefter den vender sig og truer mod fremmede hanner. Den »hidser« sin mage op mod andre hanner, og hannen går i mange tilfælde til angreb. Hunnen viser også denne »ophidsende« adfærd, når der ingen fremmede hanner er i nærheden. Den kan også vise cirkelformede bevægelser med hovedet, ligesom hannen gør. Desuden har den også næbvipning men ikke den ritualiserede rysten fjer, som hannen har.

Trueadfærden består både hos han og hun i at halsen bøjes nedad og strækkes fremad; samtidig løber eller svømmer fuglen efter den anden gravand.

Kopulation blev kun iagttaget nogle få gange. Hannens indledning til kopulationen er en oversprings-pudsebevægelse af vingefjerene. Hunnens parringsopfordring består i, at den lægger sig dybt i vandoverfladen med hovedet strakt frem. Sommetider stikker begge fuglene på gåsemaner gentagne gange hovedet ned i vandet.

Parringsadfærden og trueadfærden blev iagttaget både på land og i vandet. Selve kopulationen og forspillet blev dog kun set på vandet. Såvel han som hun kunne tage initiativet til kopulation.

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