Nest-building movements performed by male ducks

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In most Anatidae, the nest is constructed entirely by the female during her visits to the site before and during egg-laying or while she incubates. Males help in building the nest in species where both sexes incubate (*Anseranas* and *Dendrocygna*) or co-operate in active defence of the nest (*Cygnus*, *Coscoroba* and some geese Table I). The only published observations that I have found indicating that male ducks in the sub-family Anatinae are capable of performing building movements are those of Brock (1912) on Tufted Duck *Aythya fuligula* and Best (1939) on Mallard *Anas platyrhynchos*.

Table I. Species of Anatidae in which the male has been recorded nest-building.

Species	*Authority*
Anseranas semipalmata	Johnsgard 1961
Dendrocygna guttata	P. Alder (unpublished)
D. bicolor	J. Kear (unpublished)
D. arborea	P. Alder (unpublished)
D. autumnalis	J. Kear (unpublished)
C. coscoroba	Johnstone 1953
Cygnus olor	Poulsen 1949
C. atratus	Jones 1947; Guiler 1966
C. melanocoryphus	Copley 1963; Jones 1947
C. c. cygnus	Jones 1947; Jourdain, in Witherby, et al., 1939; Poulsen 1949
C. c. buccinator	Banko 1960
C. c. columbianus	J. Gebauer quoted by Delacour 1954
C. c. bewickii	Johnstone 1957
Branta canadensis	Collias and Jahn 1959
Anser albifrons leucopsis hybrid	Berry 1945
A. anser X Branta	Berry 1945
Cereopsis novae-hollandiae	Blaauw 1904

In these instances, the males were seen to make nest-building movements at the same time as females were building, but most waterfowl biologists would consider such behaviour highly aberrant in these species. The following additional observations suggest that such behaviour may be quite widespread in species where the male plays no role in constructing the nest.

My first notes on this topic were made on the European Eider *Somateria mollissima mollissima* during April and May 1953, on the Farne Islands. Pairs were observed walking around prospecting for nest-sites on the grassy top of the Inner Farne. Females slowly moved from one old scrape to another, sitting down, scraping with the feet, pecking at the ground, picking up pieces of grass and depositing it at their sides with the 'sideways building' action typical of all Anatidae. The males followed their mates, stopping when they stopped, and often sitting on the grass to wait. At these times, males were seen to peck at the ground, toy with pebbles, pull pieces of lichen off the rocks, and sometimes they also made unmistakable sideways building movements. All my records of this behaviour were made in the early mornings (on 26th and 30th April, 1st, 5th and 29th May), when site prospecting activity was most intense. Males were never seen to enter a scrape, nor did they make any foot movements suggestive of scraping.

In most cases, the Eider pairs were in groups when the females were testing scrapes, and there were many signs of mild hostility between pairs. Males frequently gave Cooing-movements, females gave Gog-gog calling and made Inciting movements, and occasionally pecks and short chases occurred. It is possible that the male nest-building movements were reactions to 'social' situations, but my notes suggest that they occurred also in pairs which had moved some distance away from other birds.

On 21st April 1954, while watching birds at the Wildfowl Trust, I saw a male Ruddy Duck *Oxyura jamaicensis* sitting in the reeds at the edge of a pond making

complete sideways building movements for several minutes. A female was building a nest several yards away, at the same time.

On 6th May 1957, Dr. Robert I. Smith and I were watching a pair of Pintail *Anas acuta* near Tilley, Alberta. The birds had alighted on a slight rise on the prairie, and were walking around slowly, at times sitting down and preening. Then the female squatted down out of sight. The male tugged at a piece of sage-brush, then sat down and made sideways building movements, pulling grass and tossing it to his side, for about five minutes. At times he made chewing movements with the mandibles. On three occasions, when a single male Pintail flew over, the male crouched with his neck stretched forward, with the sort of response that might be seen from an incubating female.

On 21st April 1961, Dr. Richard E. Phillips tells me (*in litt.*) that he watched a captive pair of Mallard at an empty nest-scrape in the flight pen at the Delta Waterfowl Research Station, Manitoba. " The male was very attentive and when the female left the scrape after a crow passed overhead, the male began to poke about in the straw around the edges of the scrape. He did this repeatedly, then squatted, breast down, in the scrape in a posture similar to that of the female. He did not scrape in the course of ten minutes while I watched. After squatting a couple of times and poking in the straw, he began to pick up mouthfuls of straw and to push them over his shoulder in the trembling shoving movement used by the female for nest-building. He continued this for two or three minutes with pauses. When I checked this scrape there were no eggs."

On 8th June 1960, while observing several breeding pairs of Blue-winged Teal *Anas discors* in a large flight pen at Delta, I saw a male walk on to a nest containing an incomplete clutch of fresh eggs. He stood on the nest and made rapid nest-building movements. The nest belonged to a female with which he had been paired until a week previously, but another male had taken over his mate leaving him unpaired. A similar event occurred on 3rd June 1961, when an unpaired yearling male Blue-winged Teal crept stealthily on to a nest, in the female's absence, settled down on the eggs and poked under them in the same way as an incubating female would do. The owner male approached, chased away the intruder, and then walked on to the nest himself, thrusting his head down deep among the eggs. Then he left the nest and joined his mate.

Finally, in 1965, when James March and I were making daily observations on eight pairs of breeding Shovelers *Anas clypeata* in two large flight pens at the University of Minnesota's Cedar Creek Natural History Area, we recorded sideways building movements in four different males. In all cases, the bird had been sleeping or sitting quietly on a grassy bank, some distance from his mate's nest. One male was seen to make building movements on 25th May, 7th, 10th and 14th June, while records for three different males were made on 16th June. Their mates were in various stages of the reproductive cycle on these dates (pre-laying, laying, incubating). In one case, the female was sitting nearby, but the other records involved males sitting alone or close to other males. This activity was undoubtedly infrequent in my captive Shovelers, since these are the only records for five years of observation, totalling about 322 hours in the months of May and June.

These scattered observations show that the motor patterns appropriate for functional nest-building (and egg-moving and settling also in the case of the Blue-winged Teal) occur in the males of species where nest construction is accomplished exclusively by the female. In none of these cases was there any indication that the male behaviour could have been functional in contributing to the nest. In the Eiders and Shovelers the sideways building movements were infrequent and they were performed away from the nest-site. It is noteworthy, however, that all the observations were made at the same time of year as females were nest-building. It is possible that the sight of the mate engaged in this activity was a factor in producing the male building in the Eider, Pintail and Ruddy Duck cases. In the Blue-winged Teal, the males appeared to be influenced by their position on the nest with eggs, but in the Shovelers often the behaviour was given while the bird was out of sight of the nest and the female. I have no evidence that the movements have been serving a signal function.

I suggest that the most plausible explanation for this unexpected behaviour is that these motor patterns have persisted in the males of these species since the time when they were functional in contributing to nest construction in some remote ancestor, and that they are truly 'vestigial'. Perhaps closer study will reveal an adaptive value for this behaviour, but it is difficult to imagine what this can be. Opportunities for further observations of this phenomenon are especially good at

the Wildfowl Trust, but records for wild birds also would be especially valuable.

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References

BANKO, W. E. 1960. *The Trumpeter Swan.* Its history, habits and population in the United States. North American Fauna, No. 63. U.S. Fish and Wildlife Service, Washington, D.C.

BERRY, J. 1945. Notes on the nesting of geese at Tayfield, Fife, in 1944. *Avic. Mag.* 5/10 : 102-7.

BEST, A. T. 1939. Nest building by Mallard. *Brit. Birds* 33 : 52-3.

BLAAUW, F. E. 1904. On the breeding of some of the waterfowl at Gooilust in the year 1903. *Ibis* 46 : 67-75.

BROCK, S. E. 1912. The Tufted Duck in the nesting season. *Scot. Nat.* : 265-71.

COLLIAS, N. E. and L. R. JAHN. 1959. Social behavior and breeding success in Canada Geese (*Branta canadensis*) confined under semi-natural conditions. *Auk* 76 : 478-509.

COPLEY, R. A. 1963. Notes on Black-necked Swans (*Cygnus melanocoryphus*). *Avic. Mag.* 69 : 48.

DELACOUR, J. 1954. *The Waterfowl of the World.* Vol. I. London : Country Life.

GUILER, E. R. 1966. The breeding of Black Swan (*Cygnus atrata* Latham) in Tasmania with special reference to some management problems. *Papers and Proceedings Roy. Soc. Tasmania,* 100 : 31-52.

JOHNSGARD, P. A. 1961. Breeding biology of the Magpie Goose. *Wildfowl Trust Ann. Rep.* 12 : 92-103.

JOHNSTONE, S. T. 1953. The Severn Wildfowl Trust — notes on the breeding season 1952. *Avic. Mag.* 59 : 35.

JOHNSTONE, S. T. 1957. The breeding season 1956. *Wildfowl Trust Ann. Rep.* 8 : 39.

JONES, T. 1947. Nesting swans. *Avic. Mag.* 53 : 206-9.

POULSEN, H. 1949. Bidrag Til Svanerne Ethologi. *Dansk Ornith. Foren. Tidsskr.* 42 : 172-201

WITHERBY, H. F., F. C. R. JOURDAIN, N. F. TICEHURST and B. W. TUCKER. 1939. *The Handbook of British Birds.* Vol. III. London : Witherby.

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