

Behaviour

HIERARCHY IN THE FAMILY GROUP AND SOCIAL BEHAVIOUR IN WINTERING *CYGNUS CYGNUS CYGNUS*

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Introduction

I have been studying the social behaviour in *Cygnus cygnus cygnus* since the winter of 1974/75.

The study area is Lake Hyoko in Niigata Prefecture in the central part of Honshu Island on the coast of the Sea of Japan. Hyoko, a well-known wintering ground for many waterfowl species, is a small lake covering about 9 ha. Every year several hundred swans, along with numerous ducks, winter here. They are fed three times daily, enabling researchers to study these birds at close range.

Methods

I used the method described by Scott (1966), identifying individual swans by the difference in black and yellow patterns on the beaks. Behaviour was recorded every two minutes by continually observing family groups (adult pairs, or parents and their cygnets) that included already identified swans.

Dominance was determined in the following manner: if a family proceeds forward while the other changes direction as two families encounter each other, the former is dominant over the latter. Also, as two families meet, one or more of the dominant family adopts a threatening posture and holds the other in check, or the male actually wins a fight.

Results

The following trends have been found in the hierarchy:

- (1) Family groups with larger numbers of members are dominant.
- (2) In family groups consisting of the same number of members, a family that has arrived earlier becomes dominant.
- (3) A family led by an aggressive male becomes dominant.
- (4) There are exceptions to the above. Hierarchies from previous year(s) could be a factor for such exceptions.

During winter, reversals in the order of dominance were often noted. This was the result of challenges made by subordinate families. In several instances, families dominant during the early part of the winter lost their dominance later. Families with cygnets that arrived earlier in winter came to be fed earlier than the later

arrivals and stayed longer. However, they later lost their attachment to the feeding station, resulting in a shorter stay there. It seems likely that this in turn causes a decline in the social hierarchy.

Summary

Cygnus cygnus cygnus were observed at close range during artificial feeding at Lake Hyoko. Individual swans were recognized by bill pattern, and family groups by already identified individuals. Trends in hierarchy among family groups could thus be recorded; reversals in dominance were, however, often noted.

References

Scott, P (1966). The Bewick's swans at Slimbridge. *Wildfowl* 17: 20–26.

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SOCIAL BEHAVIOUR OF WINTERING *CYGNUS COLUMBIANUS* *BEWICKII*

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Introduction

Among birds, continued association between parents and their fledged offspring is most typical of co-operatively breeding species, where offspring remain on their natal territory or in a group home range throughout the year (eg Zahavi 1976). However, such relationships also occur in some species that do not breed co-operatively, among waterfowl *Dendrocygnini*, *Anserinae* and some *Tadornini* (Kear 1970).

In many co-operative breeders, the advantages of extended parent–offspring relationships may lie in the assistance by older offspring in caring for younger offspring. This may increase the inclusive fitness of both parents and offspring: in several species the productivity of groups with ‘helpers’ is higher than that of a pair alone. In cases where this has not been demonstrated, it has been suggested that ‘helpers’ provide valuable assistance in defence of the group territory.