

Mating Behaviour of Blakiston's Fish Owl

Ketupa blakistoni

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ABSTRACT

Observations of mating behaviour of three pairs of Blakiston's Fish Owl for a total of 499 days were carried out annually from January 25 to April 5 between 1983 and 1990. Observation lasted from sunset to sunrise in the first two years. The frequency of mating was 18 times a season on average; 55% of the mating behaviour were observed during the 20 days prior to egg laying and most of it was concentrated around sunset on calm days. The owls, both males and females, did not display any noteworthy provocative actions. After calling to each other for 12 times (average), the female flew up first, the male immediately following. Another behaviour of the female was to turn her back to the male. These actions seemed to indicate her readiness to mate.

INTRODUCTION

Very little has been published on the mating behaviour of nocturnal owls. So far as the author knows, Mikkola's (1983) is the only report. The present paper includes the observations on the mating behaviour of three pairs of Blakiston's Fish Owl *Ketupa blakistoni* over eight years from 1983 to 1990. Fortunately, one of the pairs was not shy and their behaviour could be observed from a short distance.

STUDY AREA

Nemuro lies in the far east of Hokkaido, Japan (N43° 15', E148° 24'). The study area was located in the forests along the Bettoga River which starts in Hamanaka-cho, runs eastward through Nemuro City and flows into Lake Furen. The Bettoga is typical of the rivers of eastern Hokkaido, winding through the flat plain. It is flanked on both sides by belts of swampy land, covered mainly with birch *Betula ermani*, willow *Salix rorida* and alder *Alnus japonica*, with here and there some huge elms *Ulmus davidiana* and oaks *Quercus mongolica*. These swampy belts, 50-100m wide, connect with fir forests *Abies sachaliensis*. Up to 10km from its mouth the river is tidal and contains about 20 species of both salt and fresh water fish in abundance. From summer to autumn, 20,000 salmon, *Salmon gorbusha* and *Onchorhynchus keta*, swim up the river. At 8km from the river's mouth, these salmon are caught for a breeding project and a salmon hatchery is located 30km higher up.

METHODS

The observations were carried out for 499 days in total from January to April for eight years, 1983 to 1990. In 1983 and 1984 surveys lasted all night, from 1½ hours before sunset to sunrise, whilst after 1985 surveys were reduced to 3½ hours. At 1½ hours before sunset, the author confirmed the owl's roost and then remained at a point from which both roosts and the surrounding area were visible. The distance from the roosts was 30m minimum and 100m maximum. The behaviour of the owl pairs was observed by using binoculars (x 8) and a telescope (x 20).

RESULTS AND DISCUSSION

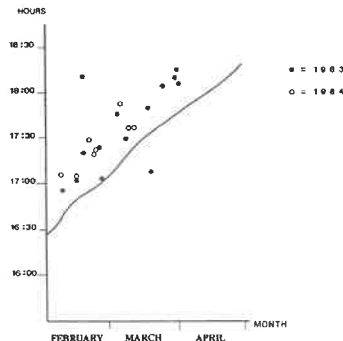
Mating period

Table 1 shows the dates of the first and last copulations, the total number of copulations, as well as the dates of egg laying and annual clutch size of a pair of Blakiston's Fish Owl. The mating period, as well as the date of egg laying, varied between the years. In the 20 days prior to egg laying, usually March 1 to March 20, 50% of the copulations took place. In the year when the pair had young from the previous year, the number of copulations decreased (1986 and 1988). Although the parents did not attend to their young at this age, the latter still begged for food and sometimes occupied the same roost. In 1989 and 1990, when the first copulation was late, another individual from outside was observed in the pair's territory (10km) and was driven away. Attacks on the intruder were actively performed by the female, chasing the intruder until he, or she, left the territory. Even on a day when no intruder came, she flew to the spot and stayed there for one or two hours, after which she went hunting. Not only the pair's young but also the presence of an intruder seemed to affect copulating behaviour.

Table 1. Copulating behaviour of Blakiston's Fish Owl.

Year date	First copulation date	Last copulation date	Total number copulations	Egg deposition date	number
1983	February 8	April 1	17	March 27	1
1984	February 6	March 12	8	March 13	2
1985	February 4	March 24	25	March 25	2
1986	February 17	March 22	20	March 22	1
1987	January 29	March 21	29	March 9	2
1988	February 4	March 28	16	March 23	1
1989	February 25	March 21	12	March 20	2
1990	February 14	March 22	19	March 18	2

Figure 1. The time of copulation. Solid line indicates sunset time.



The time of copulation

In 1983 and 1984, the pair was observed always to copulate around sunset, with only three exceptions (summarized in Figure 1). From 1985 to 1990, the same tendency was shown, with copulations concentrated around a half hour after sunset.

The sites of the copulating area, roosts and nest

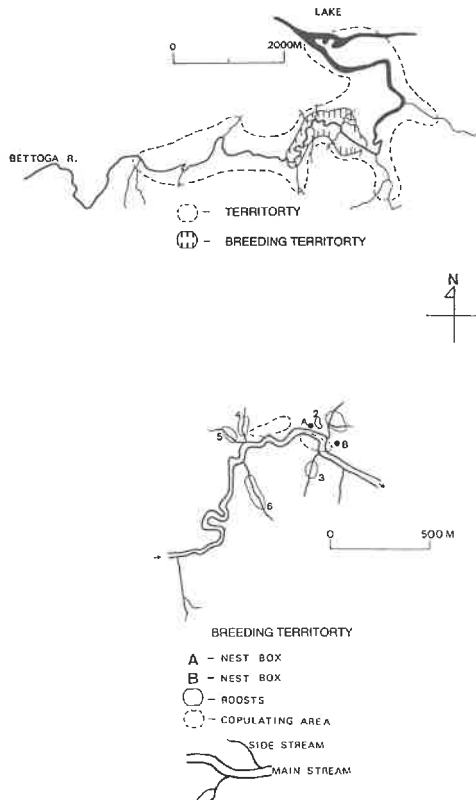
During the mating season, the couple change their roosts to a place nearer to the nest. There are thirty roosts within the territory, only five of them being used during the season (Fig. 2, roost site 1-5). The copulating area was 10-200m from the roosts, with an average of 96.5m, while the distance from the nest ranged from 5 to 300m (90m on average). When the pair used Nest A (Fig. 2) for the second time, the distance between the copulation area and the nest or roosts was reduced by one third of that in the first year. Use of the same nest for the third and fourth time made the distance progressively shorter. As to Nest B, the same phenomenon was observed.

The roosts used by the pair all through the year were so situated that each could confirm its partner's location. After sunset, both left together to hunt, but hunted separately until sunrise. Sometimes they came back to the roosts together, sometimes not. One instance of copulation before dawn took place when the pair were on their way to roost. The time around sunset seems the best occasion, when they stay closer to each other and copulate.

Figure 2. The territory of a pair of Blakiston's Fish Owl and the sites of nest, roosts and copulating place.

Upper figure — The broken line defines the pair's territory. The shaded area = Breeding territory.

Lower figure — A and B: Nest boxes. 2-6: Roost sites. Area within broken line = Copulating area.



Courtship feeding

Courtship feeding usually began four days before the first copulation, though in some years it started only after the first copulation. During the mating season, courtship feeding was observed after mating, as the owls always went hunting after they finished copulating (Yamamoto 1989). From these observations, it seems that courtship feeding is not necessarily a direct factor inducing copulation.

Weather conditions for copulation

The pair copulated either on windless days or on days when the wind strength was less than 3mph, regardless of whether it was fine, cloudy, rainy, snowy or foggy. In one exceptional case when they copulated on a windy day (7mph), they chose a lower branch than usual. The wind seems to be a main factor affecting copulatory behaviour. In Nemuro district, the weather from March 1 to March 20, when copulating behaviour was most frequently observed, is comparatively calm. The temperatures at that time ranged between +7°C maximum and -2.5°C minimum. This suggests that the temperature does not affect copulatory behaviour.

Calling

When the roosts of the pair were far apart, the male would start calling earlier than usual. The female immediately reacted to her partner, and began to move. When they were less than 100m apart the female started calling in response to her mate. Most of the calls prior to copulation were made from the roosts. They lasted for about 45 minutes, while the number of calls was at most 50 with an average of 12 times. In 10 cases only one call was noted. In two instances, the pair copulated without calling. These facts suggest that the calling is generally a necessary lead up to copulation, although the birds may have some signals other than calling.

Behaviour before copulation

The female flew to the copulating site first, and the male then followed his partner, landing just beside her to copulate. The flight seems to be necessary for the female to eliminate faeces which might prevent the sperm entering her body. The female bowed her head to keep her body level. Her behaviour of showing her back to the partner seems to be a signal of willingness to copulate. The duration of mating was measured as the time of the male's riding on the female's back. Usually this was around ten seconds, with the actual copulation over in three seconds.

REFERENCES

MIKKOLA, H. 1983. *Owls of Europe*. Poyser, Calton.

YAMAMOTO, S. 1989. Courtship feeding and fledgling feeding of Blakiston's Fish Owl. *Memoirs of Preoperative Office of Nemuro Municipal Museum B.* 59-67.

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