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NOCTURNAL BEHAVIOUR OF ADULT PEREGRINES AT THE NEST DURING NESTLING PERIOD

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Nocturnal Behaviour of Adult Peregrines at the Nest during Nestling Period. Rejt L. — In 2000 and 2002, the same pair of Peregrine Falcons occupied a nest box situated on the highest building within the city centre. The nest box was monitored with a video camera and an infrared lamp. Records collected between 20:00 and 4:00 (DST) during the nestling stage (after the first chick hatching to fledging the last one) were used for analysis. Data from 34 nights in 2000 and 21 nights in 2002 were analysed. The average share of female was about 50% but time spent by the adults within the nest changed as the breeding season progressed. Late in the season parents spent only several minutes on nest.

Key words: Peregrine Falcon, *Falco peregrinus*, nocturnal activity, urban environment.

Ночное поведение взрослых сапсанов в гнезде в период размножения. Рейт Л. — В 2000 и 2002 гг. проведены исследования, целью которых было изучение ночной гнездовой активности сапсанов в Варшаве. Благодаря камерам наблюдения возможно было отслеживать поведение взрослых особей и установить время, которое они проводят с птенцами. Материал собран между 20:00 и 4:00 часами в течение 34 ночей в 2000 г. и 24 — в 2002 г. Установлено, что в начале гнездового периода самка почти непрерывно находится рядом с птенцами. Далее это время уменьшается и достигает всего нескольких минут за ночь. Время пребывания самца в гнезде не превышало нескольких минут за ночь в течение всего сезона.

Ключевые слова: взрослый сапсан, *Falco peregrinus*, ночное поведение, городская среда.

Introduction

The Peregrine Falcon (*Falco peregrinus*) in the Western Palearctic occurs in a variety of habitats. Nonetheless, in many areas it is considered rare (The bird..., 1980; Handbook..., 1998). Due to the prohibition of the use of DDT, as well as intensive reintroduction efforts undertaken in several countries, the species has been increasing its numbers recently, especially in urban environment (e. g. Crick, Ratcliffe, 1995; Hepp et al., 1995; Hammer et al., 2000).

The regular wintering of the Peregrine Falcon in Warsaw has been recorded since the mid-19th century (Taczanowski, 1882). After the last war a pair probably nested in the devastated city centre (Luniak et al., 1964). However, the species disappeared from Warsaw in the 1950s and also from the whole of Poland as a result of DDT contamination (Mizera, Sielicki, 1995). The pair of Peregrines appeared again in the city centre in 1998 and have bred every year since then, doing so successfully for first time in 2000. Both birds had an individual ring code, which made possible to recognize them. Female was released in 1996 in her first year, the origin and exact age of male was unknown. The Warsaw pair has been one of the 3–8 recently recorded breeding pairs of Peregrines in Poland.

Thus far, only few results of falcon activity based on continuous observations have been published (e. g. Schneider, Wilden, 1994; Rejt, 2001), despite the availability of data from numerous video cameras available on the internet (e. g., <http://www.eco-watch.com/peregrinefilm/peregrine.html> and others). Unfortunately, most of these cameras are active only during the day, so night observations are unavailable. Also, most studies of breeding falcons conducted in the field were confined exclusively to daytime activity — hunting, feeding the young etc. (e. g. Parker, 1979; Bird, Aubry, 1982; Dickson, 2000 and others). Exceptional rare are works concerning the Peregrine nocturnal activity on nest. The aim of present study was not only to assess the changes in duration of adult Peregrines nocturnal presence at the nest during nestling period but also their behaviour on the nest.

Material and methods

The studies were performed in Warsaw, Poland (21°E, 5°23'N), a city of about 1 600 000 inhabitants. In 2000 and 2002, the same Peregrine pair occupied a nest box situated about 185 meters above ground on the highest building within the city. The nest box was monitored with a STEP KPC-400 video camera and an infra red lamp placed within the nest area. Records collected between 20:00 and 4:00 (DST) during the nestling stage (after the first chick hatched to fledging) were used for analysis. In total, data from 34 nights (i. e. 272 hours) in 2000 and 21 nights (168 hours) in 2002 were analysed.

Results

Nocturnal presence of adults at the nest. In 2000, the female spent on average 218.9 minutes per night at the nest (45.6% of the time, $n = 34$ nights). The male appeared at the nest only when transferring prey to the female or when feeding the nestlings — on average, he spent 6 min. at the nest (1.2%, $n = 34$). An unrecognised adult spent 14.9 min (3.1%, $n = 34$) at the nest. Two years later, the same female spent on average 283.5 minutes per night at the nest (59.1% of the time, $n = 21$ nights), the male — 2 minutes (0.4%, $n = 21$). In both years, time spent by the adults within the nest changed as the breeding season progressed. Pooled data showed that during the nights of 1st and 2nd weeks (day 1 = the day when the first chick hatched), the female spent about 7–8 hours on the nest every night. She spent there only several minutes later in the season (fig. 1). The male was present in the nest slight more frequently only during 2nd week (up to about one-half hour per night) but its participation did not exceed two minutes on the average (fig. 1).

Nocturnal behaviour on the nest. The female brooded the nestlings almost the entire time at night during the first week after hatching. Her behaviour was lethargic,

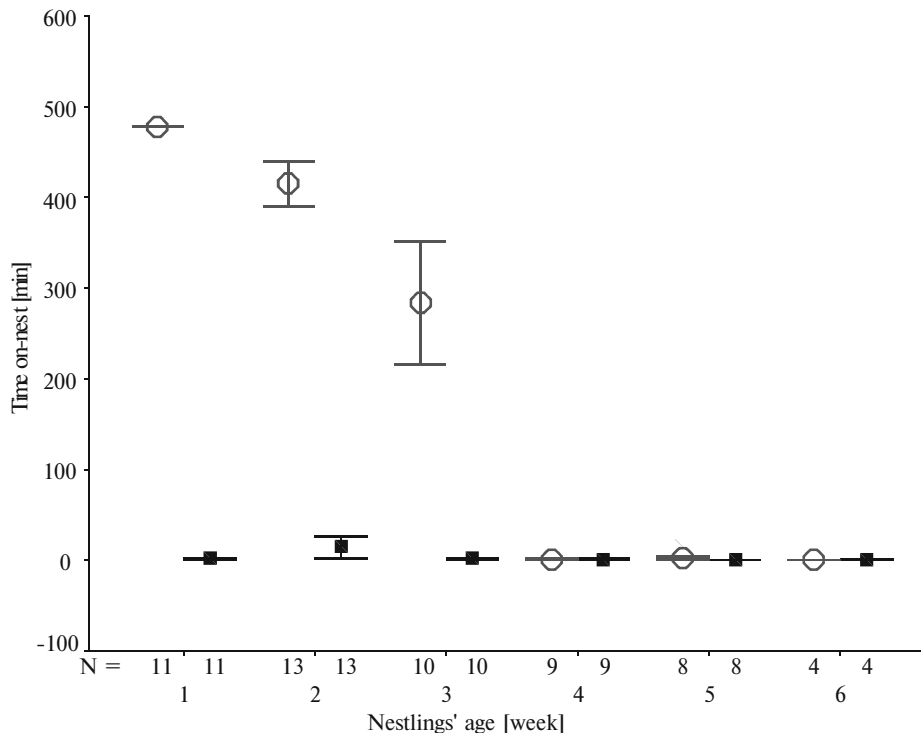


Fig. 1. Nocturnal presence of female (circles) and male (squares) at the nest during six weeks of chicks' lives. N — number of nights analysed (both years pooled).

Рис. 1. Ночное присутствие самки (кружки) и самца (квадраты) в гнезде в течение шести недель жизни птенцов. N — число проанализированных ночей (за оба года вместе).

she preened, and changed her position over the nestlings (in both seasons on average 10 times per night, with a range of 6–17 times, $n = 9$ nights). The hen interrupted her brooding only when the male arrived with prey. Then she took the prey, fed the young and eventually removed the remains. The male was present at the nest only during the food transferring. At rare moments when the female was absent, the male was seen with the young (once even brooding them for 1 minute). However, he always left chicks quickly when the female returned to the nest. The female was observed preening while standing over the nestlings or next to them with increasing frequency toward the end of the first week and during the second week. Brooding continued to be her main task, but the number of times she changed her position while on the chicks decreased (av. 1.2–3.5 times/night, 0–5 times, $n = 6$ nights). At the juncture of the 2nd and 3rd weeks, the female spent less and less time brooding (average about 20 minutes/night, 0–40 minutes, $n = 2$ nights). If she was with the nestlings, she usually stood next to them, at times mantling them with her wings. She generally stayed at the entrance to the nest box.

Discussion

The breeding performance of Peregrines has been well studied. It is common known that female's diurnal presence on nest changed during the nestling period. Ratcliffe (2000) claimed that duration of female brooding decrease up to 18th day and ceased after the 24th day. Results of present study concurs with above statement. In Warsaw at the beginning of the nestling period female spent all 8-hour night (480 minutes) on nest brooding (fig. 1). In consecutive weeks duration of her presence decreased to about 260 minutes/night. In last three weeks hen visited nest only when feeding the young and spent there only some minutes. It is due to changing thermoregulatory abilities as well as increasing feeding needs of nestlings resulting in increasing hunting activity of both adult birds. Peregrines in Warsaw were even seen feeding their young at night — about 15% of all feedings were performed at night between 20:00 and 04:00. In average 1.5 visits/night were observed (Rejt, 2001).

Male's participation in brooding was very low in studied pair — in average did not exceeded 2–6 minutes per night (max. half a hour). Ratcliffe (2000) stated that male occasionally takes short turns in brooding but in Warsaw he was seen brooding as long as 1 minute. It is known that during first two weeks of chicks' lives male solely delivers food for young and for a hen (e. g. Птицы..., 1951; Ratcliffe, 2000; own data). In Warsaw majority of time when male was present on nest referred to food deliveries. In 2000, the male was feeding the nestlings in the middle of 2nd week, in 2002 — at the end of 3rd week. From this moment female begin to hunt for nestlings. She returned to cover the nestlings only in the late evening (after 23:00) or before dawn (between 3:00 and 4:00) for a few dozen minutes.

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