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Caching Eurasian skylarks *Alauda arvensis* by the Montagu's harrier *Circus pygargus*

Vytváranie zásob zo škovránkov *Alauda arvensis* u kaní popolavých *Circus pygargus*

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Abstract: We observed caching Eurasian skylarks by a radio-tracked male Montagu's harrier in eastern Poland. This strategy, in combination with the courtship feeding of the female, was an important element of courtship. Frequent food transfers to the female could reflect a good condition of the male and its good hunting abilities.

Abstrakt: Pozorovali sme vytváranie zásob potravy zo škovránkov telemetricky označeným samcom kane popolavej na východe Poľska. Táto stratégia vytvárania zásob potravy v kombinácii s kŕmením samice počas svadobných letov bola dôležitým prvkom hniezdiaceho páru. Častý prínos potravy samici mohlo poukazovať na dobrú kondíciu samca a dobré lovecké schopnosti.

Key words: food caching, courtship feeding, Poland

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Introduction

Food caching is recorded in a number of birds of prey, primarily in falcons (*Falco* spp.), but also less frequently in eagles and hawks (Newton 1979, Cramp & Simmons 1980, Lyons & Mosher 1982, Vander Wall 1990, Śliwa & Rejt 2006, Rejt et al. 2000). Prey items accumulated by birds of prey are utilised by incubating females or later on by chicks. Food caching may also be a form of insurance against sudden weather breakdowns or unexpected drop in prey availability (Vander Wall 1990).

Montagu's harrier *Circus pygargus* is a medium sized bird of prey, which often nests in semicolonies (Arroyo et al. 2001, 2004, Krupiński et al. 2010). This mode of nesting allows Montagu's harriers to decrease their individual investment into detection of and defence against predators (Arroyo et al. 2001, Kitowski 2003), and increase their reproductive success (Kitowski 2008). The main disadvantages of this reproduction strategy are a higher probability of nests being detected by predators and antagonistic interactions between individuals nesting in a colony, such as kleptoparasitism (Kitowski 2001, Wiącek 2006).

Observation and discussion

The observation of a male Montagu's harrier equipped with a radio transmitter enabled us to record the transfer of caught Eurasian skylarks *Alauda arvensis* to the female. The observation was made in Falatycze, central-eastern Poland (N 52° 13.7', E 22° 50.4'), in a semicolony consisting of three pairs. The tracked male was in his third calendar year (Fig. 1). It formed a pair with a female that was more than 3 years of age (aging according to Lontkowski & Skakuj 1994, Clarke 1996). The bird was mistnetted on June 2, 2009. His body mass, 217 g, was markedly lower than the mean body mass of male Montagu's harriers given in the literature – 270 g (Cramp & Simmons 1980). Measurements of wingspan (109.8 cm), wing projection (36.5 cm) and tibia length (64.8 mm) did not differ from the mean values provided by Cramp & Simmons (1980). The male was radio-tracked for eleven days (June 4 and 8–18, 2009). During radio-tracking we observed the individual visually for 1,792 minutes, which comprised 35.5% of the total radiotracking time (5,055 min.). The nest of the male was situated in triticale and the other neighbouring pairs nested 50 and

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Fig. 1. Radio-tracked Montagu's harrier (*Circus pygargus*) male during hunting.
Obr. 1. Samec kane popolavej (*Circus pygargus*) sledovaný rádiovou telemetriou počas lovu.

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Fig. 2. Eurasian skylark (*Alauda arvensis*) hunted by Montagu's harrier (*Circus pygargus*) male and left on the roosting site.
Obr. 2. Škovránok (*Alauda arvensis*) ulovený samcom kane popolavej (*Circus pygargus*) a zanechaný na mieste odpočinku.

150 m away. Only one pair, with the oldest male, bred successfully. During radio-tracking we did not attempt to search for the male's nest in order to avoid the danger of predation by foxes *Vulpes vulpes*. Despite this, the nest was probably destroyed by predators, or unfertilised eggs were deserted by the female. Checks performed in the last ten days of June did not confirm successful breeding of the observed pair.

The tracked male cached two skylarks (June 15 and 18). On the second date, after the transfer of food to the female, the male flew to a narrow balk nearby and picked up a previously caught skylark. 20 minutes later the male picked the remains of the skylark that was eaten by the female and again tried to transfer the prey to the female. On that day four additional attempts of feeding the female with a previously eaten prey item were recorded. All prey items were rejected by the female, who left the food in the nest. In the afternoon, the male was observed presenting the female with a skylark cached in a cucumber field. Skylark transfer always took place after the female returned to the nest. We also observed that in the presence of the female, the male, flying with prey in his claws, plunged into cereals. In total, five cases of food caching were recorded during that day of study.

In the studied semicolony only one male cached prey items, which were exclusively skylarks. Other Montagu's harrier males (n = 170), observed during conservations measures between 2005 and 2009 in Southern Podlasie, did not display this behaviour. Observations of other authors, however, point to more frequent occurrences of caching. Clarke (1996) observed a pair accumulating food in high grass, 50 m away from their nest. Also, Khan (cf. Clarke 1996) noted that a male returned several times to the same place and brought skylark fledglings just after leaving the nest. Similarly, our male was able to return with a skylark fledgling within a few minutes of leaving his territory, and every time he flew in the same direction to pick the prey. On another occasion a male was observed depositing a prey item near balk after a successful hunt, however, no prey transfer was recorded (J. Wiącek, unpubl. data).

Thanks to a favourable body mass to wing span ratio, the tracked male could be more agile than other males and hence specialise in catching birds. Despite adverse weather conditions (a cold and rainy June), thanks to his specialisation, this bird was able to accumulate excess food and cache skylarks in balks, field road margins and in a cucumber field in his breeding territory. Another explanation of this phenomenon is simple individual behaviour.

During field observations we also noted that the partner of the tracked male showed an interest in a different male from the semi-colony. This behaviour may be attributed to the preference of lighter plumage in males by Montagu's harrier females (Arroyo 1995, Clarke 1996, Wiącek 2006). 38% (n = 26) of interactions of the tracked male with an older male were clashes. Antagonistic behaviours of Montagu's harriers towards conspecifics take place mainly within their territories and are more frequent in colonies than in the case of individually nesting pairs (Wiącek 2006). Frequent transfers of cached prey items were probably aimed at displaying hunting abilities to the

female by the young male. This is supported by research of Arroyo (1999) and Wiącek (2006), who observed more frequent instances of courtship feeding preceding copulation in the period before egg laying. The ability of the male to obtain food efficiently is very important for enhancing breeding success, especially during this period of time, as the female rarely hunts itself and her condition depends exclusively on the male (Wiącek 2006). The reason for rare records of food caching by Montagu's harriers may be cleptoparasitism, which does not promote fixing of the food caching strategy. This hypothesis may be corroborated by the fact that none of the colonially nesting falcons caches food (Vander Wall 1990).

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