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## Interspecific feeding at bird nests: *Ficedula albicollis* as a helper at the nest of *Turdus philomelos*

*Medzidruhové kŕmenie na vtáčích hniezdach: Ficedula albicollis ako pomocník na hniezde Turdus philomelos*

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Since Hamilton's influential work in 1963 much attention has been paid to seemingly altruistic helping behaviour in animals. Helpers have been detected among many animal species, especially in birds (e.g. Skutch 1961, 1999) and social mammals (McNutt 1996), less in poikilothermic (cold-blooded) vertebrates or invertebrates (Taborsky & Limberger 1981).

In birds, a helper means an individual which assists in the nesting of an individual other than its mate, or feeds or otherwise attends a bird of whatever age which is neither its mate nor its dependent offspring (Skutch 1961). Status of a helper needs to meet the requirements from at least three topic areas: i) the status or condition of the helper, age and sexual maturity, a parent or a nonbreeder; ii) its relationship to the bird or birds which it assists; and iii) the activities in which it engages.

The most common are conspecific helpers, occurring in various bird groups and species, for example woodpeckers Piciformes (Pasinelli et al. 2004), rollers (*Coracias garrulus*, Aviles & Sanchez 1999), hoopoes (*Upupa epops*, Vivaldi et al. 2002), and mostly in passerines (Shy 1982, Magrath & Yezerinac 1997). Conspecific helpers assisting in young feeding are frequently involved in the extrapair paternity of their putative young (e.g. Blomqvist et al. 2005). This holds also for our studied species *Ficedula albicollis* (Sheldon et al. 1997). In general, males are more frequent helpers than females, perhaps because they have more time and opportunities (Cockburn 1998). Furthermore, in many cooperatively breeding species, the presence of one or more helpers improves the reproductive performance of the pair receiving the help (Lloyd et al. 2009).

Heterospecific helpers are most common in heterospecific brood parasitisms in cuckoos. More records were published on interspecific feeding in different species worldwide (Skutch 1961, 1999, Shy 1982, Drozd et al. 2004). However, we have less information on its adaptive and evolutionary reasons in comparison with intraspecific helping. There are more debates on interspecific helping as on non adaptive behaviour (Shy 1982, Skutch 1999). To widen the knowledge into the function of interspecific feeding, the precise description of conditions behind the donor-recipient interactions is vital, and this is the goal of this short contribution.

Interspecific young feeding in the Song Trush *Turdus philomelos* (further as *TP*) by the male of Collared Flycatcher *Ficedula albicollis* (*FA*) was observed over a three-day period (June 12–14, 2009) in a small (2.6 ha) orchard with gardens, at the border of an oak-hornbeam forest near the town Zvolen (C Slovakia, N 48°34'23", E 19°05'57"; 320 m a.s.l.). In this locality, in 1995–2008, we regularly observed intraspecific helping in *FA* nest-box population. In this genus, such behaviour has been commonly recognised (Sheldon et al. 1997, Winkel et al. 1998). In 2006, we detected three male helpers at the nest. The males seemed to be involved in extra-pair copulations with the present female. One of the males was four years old, originating from the same locality (evident from ringing), which conforms with the well recognised high fidelity to the natal site in *FA*. The *FA* density in this ecotonal habitat was found very high (13 active nests/ 2.6 ha).

In June 2009, an adult *FA* male in the incubation phase of his replacement clutch fed not only the female in its own nest-box (4–8 times/h,  $n = 9$  hours), but also 11–14 day old young of the close located nest of *TP*. It had his nest situated on a tree about 5 m northward and by 2 m higher from the tree with the *FA* nest box.

The pair of *TP* fed their offspring 6–11 times/h ( $n = 9$  hours during June 12–14, 2009 between 9–14:00 CEST). During the same period, the *FA* male fed the young of *TP* with a frequency of 3–4 times/h. After feeding the *TP* nestlings, the *FA* male waited for young's

droppings and removed these into the adjacent forest within 50 m.

The food delivered to the *TP* young by *FA* male consisted of the same insect and spider species as the food that the male commonly delivered to his incubating female. The food mostly (> 50%) consisted of the caterpillars of butterflies and moths (Lepidoptera, Geometridae, Noctuidae) and the caterpillars of Symphyta (Hymenoptera). Less abundant were various groups of beetles (Coleoptera, Tenebrionidae), flies (Diptera, Tipulidae), and other invertebrate species common in the *FA* menu in similar types of temperate forest (Bureš 1986, Krištin 2002). The primary component of food delivered by the parents of *TP* to its own offspring comprised mainly earthworms, carabid beetles (Coleoptera), caterpillars (Lepidoptera), but also cherry fruits (*Prunus cerasus*). Therefore, there was a distinct difference in the food composition between the *TP* parents and the heterospecific helper. Earthworms and fleshy fruits are common on the food menu of the young and adults of *TP* (Török 1985, Krištin 1992). The breeding of the *TP* was successful – all four young fledged on the fourth day after our observations. The breeding of *FA* failed. After the fledging day of *TP* (June 18), the *FA* eggs gradually disappeared from the nest-box (despite of the presence of the *FA* breeding pair), and the *FA* breeding pair abandoned the nest with the single remaining egg on June 21.

The reported behaviour of the *FA* male assisting in feeding neighboring *TP* young can be explained by his double breeding failure. The loud call of *TP* young could also contribute to the male's Collared Flycatcher decision. All these facts confirm recent knowledge that interspecific feeding can be the result of close nest position of the donor, the donor's breeding failure, and that the donor was the male during the time, when his mate was incubating (Shy 1982). There are several instances of closely related birds feeding another species after their own nest was destroyed. For example, a pair of *Erithacus rubecula* fed *Turdus philomelos*, in other case a pair of *Muscicapa striata* fed *Turdus merula* after their nest was destroyed

in a storm (see Shy 1982, Skutch 1999). My episodic observation contributes to the knowledge about reproductive strategies, pair and extra-pair associations, their consequences for the involved individuals and the role in their progeny survival.

## Súhrn

Medzidruhové kŕmenie mláďat ako pomocníctvo medzi druhmi *Ficedula albicollis* (ďalej *FA*) a *Turdus philomelos* (*TP*) bolo pozorované v období 12. – 14. 6. 2009, v malom jablňovom sade (0,6 ha) na okraji dubovo-hrabového lesa pri Zvolene (48°34' s. š., 19°05' v. d.; 320 m n. m.). V tejto lokalite sme v rokoch 1995–2008 pravidelne pozorovali vnútrodruhové pomocníctvo v populácii *FA* v búdkach, ktoré je u tohto druhu známe. Na jednom hniezde (v júni 2006) sme zistili dokonca až 3 samčích pomocníkov. Jeden z nich bol 4 ročný samec, narodený na rovnakom mieste, čo potvrdilo známu vernosť rodisku. Hustota *FA* je v tomto ekotonovom biotope aj vďaka vysokej ponuke búdok veľmi vysoká (5 hniezd/ 1 ha, n = 2,6 ha). Zistili sme, že dospelý samec *FA* počas inkubácie vajíčok samičou (4 vajcia náhradného hniezdenia), kŕmil nielen svoju partnerku v búdke (4–8 krát/ h, n = 9 h), ale aj 11–14 dní staré mláďatá blízko susediaceho *TP*. Drozd plavý mal hniezdo cca 5 m severne a 2 m vyššie na susednom strome od hniezda *FA*. Párik *TP* kŕmil svoje mláďatá v obvyklej frekvencii 6–11 krát/ h (n = 9 h, medzi 9–14 h SELČ). Samec *FA* kŕmil mláďatá tohto nadrozmerne veľkého suseda, a to vo frekvencii 3–4 krát/ h (n = 9 h v rovnakom čase). Po nakŕmení mláďat drozda vynášal aj ich trus do 50 m od hniezda do príľahlého lesa. Zloženie prinášanaj potraviny medzi vlastným rodičom a medzidruhovým pomocníkom sa výrazne líšilo, muchárík kŕmil len hmyzom a drozd aj dážďovkami a plodmi čerešní. Hniezdenie *TP* bolo úspešné, všetky 4 mláďatá vyleteli 4 dni po opísaných pozorovaniach, hniezdenie *FA* bolo neúspešné. Všetky uvedené fakty potvrdzujú doterajšie poznatky, že medzidruhové pomocníctvo pri kŕmení mláďat sa vyskytuje u blízkyh hniezdnych susedov a v prípadoch keď u donora dochádza k neúspešnému hniezdeniu.

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## Habitat characteristics of the Wallcreeper (*Tichodroma muraria*) breeding and wintering sites in the Western Carpathians

*Charakteristiky habitatu v hniezdných a zimných lokalitách murárika červenokrídeľho (Tichodroma muraria) v Západných Karpatoch*

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The fact that the very rare Wallcreeper (*Tichodroma muraria*) is a typical habitat specialist, occupying rock faces often remote from human civilization explains the low level of knowledge about its life and behaviour. There have been several key ecological and ethological studies of this bird in Central Europe, both in the wild (e.g. Noll 1957, Müller 1962, 1965, Bezzel 1967, 1993, Dorka 1976, Maire 1987, Hernández et al. 1993, Géroutet 1994a, b), and in the captivity (Noll 1956, Kottek 1965). The most comprehensive appraisal Wallcreeper biology was made by Löhr (1967, 1970, 1971), who had studied Wallcreepers in the wild as well as in the captivity. Habitat selection and habitat require-

ments were studied especially by Hauri (1970, 1978) and Löhr (1975, 1976). The populations of the Wallcreeper in the Veľká Fatra Mts. were systematically studied in the period 1982–1998 and in the Malá Fatra Mts. in 1988–2008. Some results concerning the ecology and ethology of this bird have already been published (Saniga 1993, 1995a, b, 1999). The aim of this study is to describe habitat characteristics of the breeding and wintering grounds of the Wallcreeper in the Western Carpathians.

In the period 1982–2008, the habitat requirements of the Wallcreeper were studied in the wild throughout the year (breeding territory size, structure of rock faces and vegetation co-