The role of blunt egg pole characteristics for recognition of eggs in the song thrush 
(Turdus philomelos)

Lenka Polačiková1,2,4), Bård G. Stokke3), Petr Procházka2), Marcel Honza2), Arne Moksnes3) & Eivin Røskaft3)

(1 Department of Zoology, Palacký University, tř. Svobody, 26, CZ-771 46 Olomouc, Czech Republic; 2 Institute of Vertebrate Biology, v. v. i., Academy of Sciences of the Czech Republic, Květná 8, CZ-603 65 Brno, Czech Republic; 3 Department of Biology, Norwegian University of Science and Technology, NTNU, NO-7491 Trondheim, Norway)

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Summary

Colour and speckling of avian eggshells play important roles in egg recognition behaviour. However, only a few studies have paid attention to whether specific parts of eggs may be more important than others in rejection decisions by hosts. We hypothesised that the blunt pole in song thrush (Turdus philomelos) eggs possesses important cues for recognition of own eggs because this is the most visible part of the egg in the nest. We examined host response towards conspecific eggs painted blue either at the blunt or sharp poles, and used unpainted conspecific eggs as a control. We found, as predicted, that the experimental eggs painted blue at the blunt poles were rejected significantly more often than the experimental eggs unpainted at this pole. Rejection rates of experimental eggs were higher with increasing differences in number of spots between the two poles of own eggs. Our results confirmed that the essential cues used for egg discrimination in song thrushes are found at the blunt egg pole.

Keywords: brood parasitism, egg discrimination, eggshell characteristics, recognition cues, rejection behaviour.

Introduction

In many bird species, discrimination against alien eggs has evolved as an adaptation to counter interspecific or intraspecific brood parasitism to ensure
own reproductive success (Stokke et al., 2005; Underwood & Sealy, 2006). Different species have evolved various degrees of sensitivity to alien eggs that differ sufficiently from their own (Rothstein, 1975). The mechanism of recognition of own eggs has been studied in a handful of species experimentally exposed to both interspecific (e.g., Moksnes, 1992; Peer & Sealy, 2001; Moskát & Hauber, 2007) and conspecific brood parasitism (Lyon, 2007).

Eggshell colouration varies between and within bird species from immaculate to diversely spotted eggs (Harrison & Castell, 2004; Kilner, 2006). Hole-nesting birds tend to lay more brilliant and UV reflective eggs than open-nesting birds (Avilés et al., 2006), in which maculated eggshells usually predominate (Lack, 1968). Eggshell speckles may be evenly or unevenly distributed over the whole surface (Lack, 1968; Davies & Brooke, 1989b), and often concentrated at the blunt egg pole (Gosler et al., 2005; Kilner, 2006). Intraclutch patterns of host egg appearance or appearance of whole eggs or only part of eggs may allow discrimination and rejection of alien eggs (Brown & Sherman, 1989; Lahti & Lahti, 2002; Polačiková et al., 2007; Stokke et al., 2007; Moskát et al., 2008a). Specifically, eggshell speckling may serve as a fingerprint of individual females (e.g., Davies & Brooke, 1989b), and be used in recognition and rejection of foreign eggs (López-de-Hierro & Moreno-Ruedo, 2009).

In this study, we investigated egg discrimination behaviour in the song thrush (*Turdus philomelos*). This monogamous passerine possesses a good recognition ability showing rejection of both mimetic and non-mimetic model eggs (Davies & Brooke, 1989b; Grim & Honza, 2001; Honza et al., 2007). The good ability to discriminate foreign eggs has been explained as a defence against interspecific or intraspecific brood parasitism. There are indications that the song thrush can be considered a suitable common cuckoo (hereafter cuckoo (*Cuculus canorus*)) host (see Grim, 2006). However, the song thrush is regarded as a rare cuckoo host throughout its breeding range (Géroutet, 1950; Bock, 1966; Numerov, 2003). Similarly, Moksnes & Røkskaft (1995) found only 11 parasitized song thrush clutches out of 12 000 passerines clutches containing cuckoo eggs held in European museum egg collections. Additionally, the song thrush may suffer from intraspecific brood parasitism (Grim & Honza, 2001), which may also exert selection pressures favouring evolution of egg discrimination.

Song thrush eggs have a uniform bluish background colour with small black spots particularly concentrated on the blunt egg pole, which is the most