

tracking and then to elucidate the overall variance of their migration strategies.

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## Random pairing with respect to plumage coloration in Hungarian Barn Owls

(*Tyto alba*)

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### Summary

Between 1998 and 2000, 64 breeding birds of Barn Owl in Hungary were checked for plumage coloration. No relationship between the colour morphs of partners were found. Thus, coloration does not influence pairing.

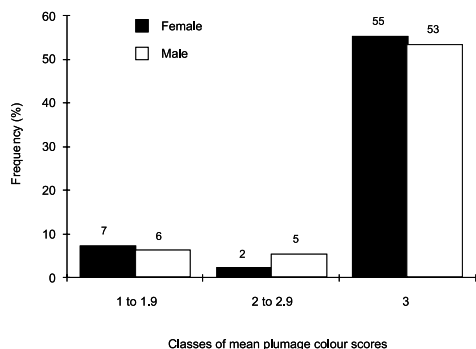
### Zusammenfassung

Paarbildung und Gefiederfärbung bei ungarischen Schleiereulen (*Tyto alba*)

Zwischen 1998 und 2000 wurde die Gefiederfärbung von 64 Brutpaaren der Schleiereule aus ganz Ungarn untersucht. Zwischen den Gefiederfärbungen der Partner bestand kein Zusammenhang. Die Gefiederfärbung hatte damit keinen Einfluss auf die Partnerwahl

In the European Barn Owl, plumage coloration varies from white to reddish-brown, females being usually redder than males. Inter-individual variation in coloration has a genetic basis and is neither sensitive to the environ-

ment nor to body condition (Roulin et al. 1998). Plumage coloration may signal investment in reproduction, since in Central Europe darker males had a heavier heart, fed their brood at a higher rate and produced more



**Fig. 1.** Frequency of differently coloured female and male Hungarian breeding Barn Owls. Numbers above bars indicate number of individuals. One is for white, 2 for a transitional colour and 3 for reddish-brown.

**Abb. 1.** Häufigkeit der verschiedenfarbigen Vögel in Ungarn. Die Zahlen über den Säulen geben die Stichprobengröße an. Farbskala: 1 = weiß, 2 = Übergangsfarbe; 3 = rotbraun.

offspring per breeding attempt (Roulin et al. 2001). In Europe, this trait varies clinally in the two sexes, birds being pale in southern countries including Spain, Italy and France (subspecies *Tyto alba alba*), and reddish-brown in north-eastern countries (subspecies *T. a. guttata*; Voous 1950). In Central Europe, where the two subspecies interbreed, inter-individual variation in colour is large and pairing with respect to this trait random. In other words, given the frequency of differently coloured individuals, reddish-brown birds were paired with reddish-brown and pale partners as often as could be expected by chance alone (Baudvin 1975, Roulin 1999). Since there are no previous data on pairing with respect to plumage coloration from regions where individuals of one of the two subspecies are typically found, we report data from Hungary, where most individuals are reddish-brown and a minority display a pale plumage (Kalotás and Pintér 1984, Nagy 1998).

From 1998 to 2000, 64 breeding pairs (128 different individuals) were captured through-

out Hungary. R.M. scored as either white (score 1), transitional (score 2) or reddish-brown (score 3) coloration on the underside of the wings (two places) and tail feathers, on the legs, belly and chest. For each individual, we calculated a mean value from the six colour scores. This latter value was used in two-tailed statistical analyses.

The fact that there was little variation in plumage coloration with most individuals being reddish-brown may explain why this trait was not sexually dimorphic ( $\chi^2$ -test:  $\chi^2 = 1.4$ , d.f. = 2,  $p = 0.50$ ; Fig. 1). Pairing with respect to plumage coloration was random, since mean colour scores of female and male partners were not significantly correlated (Spearman correlation:  $r_s = 0.06$ ,  $n = 64$ ,  $p > 0.50$ ). Three non-mutually exclusive hypotheses can explain the absence of detectable assortative or disassortative pairing in Hungary. First, birds displaying a given plumage coloration do not mate preferentially with partners displaying a similar or dissimilar colour. Second, similarly (or dissimilarly) coloured individuals do not necessarily occupy the same environments, a situation that could have increased the likelihood of their breeding together. No data are yet available to evaluate these two hypotheses. Third, even if Hungarian birds did tend to pair with a similarly coloured partner (i. e. assortative pairing), random pairing took place because white individuals are so rare (number of breeding pairs in Hungary is 500–1000, Magyar et al. 1998; unpubl. results) that for pale individuals the likelihood of breeding with a similarly coloured mate is very low. Given the frequency of pale individuals we found in our study (about 15% for each sex, Figure 1), there would only be one white individual of each sex per 600–1200 km<sup>2</sup> in Hungary. In conclusion, this study emphasises the fact that in the three European Barn Owl populations that have so far been studied (France: Baudvin 1975; Switzerland: Roulin 1999; Hungary: present study), pairing choice with respect to plumage coloration does not diverge from random.

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