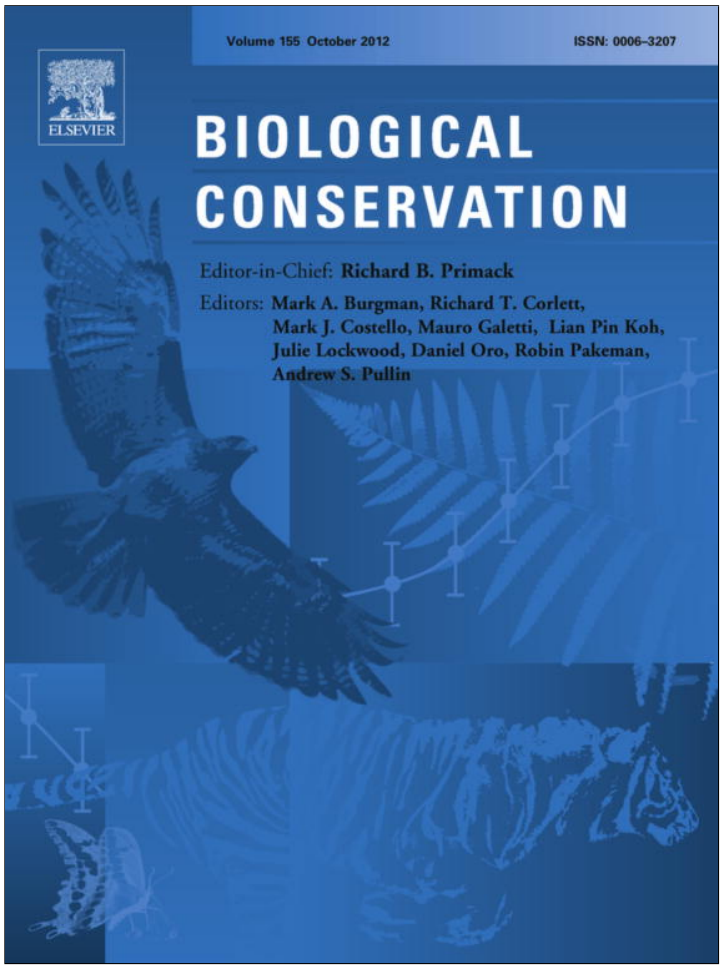

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Letter to the Editor

## Road-killed birds and body condition: A comment to Bujoczek et al. (2011)

The interest in the impact of roads and traffic on wildlife populations has been steadily growing in recent decades. One of the recent papers devoted to this subject, by Bujoczek and co-authors (Biological Conservation 2011, 144: pp. 1036–1039), tries to provide a new insight into the body condition of road-killed birds. The authors have shown with the use of ptilochronology, that individuals of three species of road-killed birds (collected between April and August) – Barn Swallow *Hirundo rustica*, Yellowhammer *Emberiza citrinella* and Chaffinch *Fringilla coelebs* – were in significantly better nutritional condition than those killed by raptors. However, the presented comparison of body condition of both groups of birds fails to consider their age, which has a critical significance in the process of development of plumage and moulting, and is the key factor explaining differences in feather growth bar width between different age groups (Le Tortorec et al., 2012 and references herein).

In general, the road traffic victims in Europe are apparently dominated by young birds (1st calendar year), whose proportion (as in the case of Barn Swallow) can reach up to 84% of all registered road-kills (Erritzoe et al., 2003). The proportion of juveniles among road-killed birds increases markedly throughout the breeding season, being only 5% in May and going up to over 80% in late summer, August–September (Erritzoe et al., 2003). Hence, it must be assumed that most of the bird remains found by the authors near the nests of Sparrowhawk *Accipiter nisus* during spring (April–May) belonged to adult birds ($\geqslant$+2 cy) from local breeding populations, while the road-killed birds found in summer were most likely juveniles (1 cy). Bearing that in mind, it seems that the statistically significant higher indices of body condition of road-kills compared to predated individuals result actually from a high proportion of juveniles (1–3 months of age) among road-kills. Based on logical reasoning, you should assume that the juveniles in their much shorter life are potentially less exposed to the nutritional stress than adult birds. Even considering some earlier findings, that the width of feather growth bar could be a valid index of nutritional condition of fledglings, which mirrors the intensive increase of body mass resulting from growing food intake rate during post-hatching development (Grubb et al., 1998; but see also opposite results and some constrains of ptilochronology in Le Tortorec et al. (2012)), the dramatic differences between adults and juveniles in the context of their individual life history (i.e. migration, reproductive episodes or moulting) do not allow a joint analysis of body condition of so different age groups.

In spite of methodological imperfections, the results presented by Bujoczek and co-authors, undoubtedly show a new and important direction of future research in the area of road ecology, namely comparative studies of body condition of individuals from bird populations subject to variable pressure of road traffic. Finally, in the light of the published results of studies on application of ptilochronology and as a logical conclusion of the above comment, it must be stressed that the comparison of nutritional condition within or between road-kills and other groups of birds should always involve the same categories of: (i) age or (ii) sex; or (iii) even similar habitats, which may also affect the 'nutritional environment' of birds (*sensu* Grubb et al., 1998; Le Tortorec et al., 2012). Therefore I think that a rather limited numerical data of Bujoczek and co-authors should be supported by the addition of precisely classified material, which would allow for repeatable comparisons between different groups of birds with similar properties, finally re-verified in statistical analyses. Ultimately, the question whether road-kills are in better nutritional condition than the birds killed by raptors still remains open.

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