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[Notes from the field]

Comparison of the Diet of Two Desert-living Owls, the Long-eared Owl (*Asio otus*) and Little Owl (*Athene noctua*) from Southern Mongolia

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Abstract

The diet of two sympatric owl species, the long-eared owl (*Asio otus*) and the little owl (*Athene noctua*) was investigated in an arid area of southern Mongolia using pellet analysis. In total 334 pellets of long-eared owl and 52 pellets of little owl were analysed, revealing the presence of five small mammal species (Dipodidae, three Muridae and one Soricidae), small birds and invertebrate fragments. Accumulative composition plots indicated a batch size of 35 - 60 pellets was sufficient to reveal representative diet composition. Small mammals comprised the largest component of the diet of long-eared owls with four species recorded, *Phodopus* was the most frequently occurring (85 %), followed by *Meriones* (33 %). Bird and invertebrate remains were also found in long-eared owl pellets but comprised less than 2 %. In contrast, invertebrates were the highest occurring component of the diet of little owls (35 %), with small mammals occurring in only 40 % of pellets. *Meriones* was the most frequently recorded small mammal in little owl pellets (23 %) and contributed the greatest in terms of overall rodent biomass. There was a highly statistically significant difference in the diet of the two species ($\div^2 = 2043$, d.f. = 4, $P < 0.001$). Levin's measure of niche breadth was greater for little owls (0.71) than long-eared owls (0.51), but overall the two species had low niche overlap using Levin's index (0.22). These results are discussed in relation to previous findings of these two species.

Key words: desert, diet, little owl, long-eared owl, Mongolia, niche

Introduction

The competitive exclusion principle states that two species with identical requirements cannot coexist in the same place, at the same time (Gause, 1934). Competition will occur between species that overlap in their resource requirements. One mechanism of species coexistence is differences in feeding ecology, such as predatory behaviour and/or dietary separation (Capizzi *et al*., 1998; Csermely *et al*., 2002). A species dietary range can be expressed in terms of niche width, and evidence of competition and/or diet separation can be investigated by examining the niche overlap between two species (Levins, 1968).

Twelve species of owl (Strigiformes) have been recorded in Mongolia (Fomin & Bold, 1991), however they have not been subject to intensive studies and little is known about their ecological requirements such as diet (Batdelger, 1994, 2001). The long-eared owl (*Asio otus)* and little owl (*Athene noctua*) are two sympatric species found in Mongolia, which can coexist in a range of habitat types (e.g. Navarro *et al*., 2003; Martinez & Zuberogoitia, 2004). Previous investigations into the trophic niche of these species have indicated that the dietary niche overlap between these two species is intermediate, between 30 - 60% (Navarro *et al*., 2003). The long-eared owl is a widely distributed medium sized owl, found throughout central Asia, Europe, North Africa and North America. It inhabits a wide range of habitat types, from woodlands (e.g. Tome *et al*., 2004) to deserts (Brown, 1995). It is known to require a mosaic of wooded and open habitats, for roosting and hunting respectively (Klippel & Parmalee, 1982). In Europe the long-eared owl has been described as a restricted feeder specializing on mammals, which can make up to 80 - 98% of its diet (Marti, 1976; Cecere & Vicini, 2000). However, studies have also demonstrated a wider range of prey items, including small birds and bats (Speakman, 1991; Cecere & Vicini, 2000; Navarro *et al*., 2001). The study of Bertolino *et al*. (2001) in Italy described it as being "an adaptable predator that expands its food niche in the presence of diversified prey". In the North