# Parental investment in two large raptors breeding in a high prey density area

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**Abstract**

We investigated the breeding behaviour of Bearded Vulture *Gypaetus barbatus* and Golden Eagle *Aquila chrysaetos* between 2008 and 2011 in the Stelvio National Park (the Alps, Italy), which harbours one of highest densities of wild ungulates in the Alps. Parental care behaviours (incubation and chick brooding, nest attendance, changeover, food provisioning and nestling feeding) were recorded at nests of both species (four Bearded Vulture and 14 Golden Eagle pairs). Differences in investment between sexes and periods were found in both species: the time spent in incubation and nest attendance was higher in females and decreased with the progress of the breeding season (from incubation to post-hatching and to pre-fledging). A significant effect of the interaction between sex and period was also found. Compared to the literature, our results suggest a lower contribution by Bearded Vulture males, whereas Golden Eagle males spent more time in incubation and nestling brooding than reported. The higher investment shown by Golden Eagle males in our study area may be due to the high availability of live prey and ungulate carrion, which could allow males to spend less time in hunting, resulting in more time at the nest. Most changeovers for both species took place in the central hours of the day. No difference in food provisioning was observed between the sexes of the two species, consistent with information available for Bearded Vultures, but not for Golden Eagles. The patterns we found revealed a female-biased investment (unexpected for the Bearded Vulture), although males significantly contributed to nest behaviour, especially during the incubation period (unexpected for Golden Eagles). The large amounts of natural prey and carrion in the study area may contribute to the nest behaviour of these large raptors.

**Keywords**

Alps*Aquila chrysaetos*Carrion abundance*Gypaetus barbatus*Sexual investm