



## **Predation risk as a factor affecting sexual segregation in Alpine ibex**

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Alpine ibex (*Capra ibex*) are polygynous ungulates that exhibit extreme sexual dimorphism and segregation. To test the hypothesis that risk of predation plays a key role in the development of sexual segregation (habitat segregation) in this species, compositions and locations of groups of ibex were recorded from February 2003 to October 2004. Individual fixes of marked adult males and females in the Gran Paradiso National Park in Italy were collected monthly over a 4-year period (January 2000–December 2003). Distances were measured between each location and the nearest refuge area (rocky slopes), and between each location and the nearest source of disturbance (roads and hiking trails). Group size was not related to distances from refuge areas or from sources of disturbance, but sex, age, and weaning played a key role in spatial segregation. During the period of rut, females kept nearer to rocky slopes and further from hiking trails than males. The presence of young also influenced the spatial behavior of females: mothers made use of refuge areas more frequently and of areas near hiking trails less frequently than other females. In contrast, no difference between the spatial behaviors of pregnant and non-pregnant females was recorded in spring. Age played an important role in space use by males, but not by females. Young males (2–5 years) stayed closer to rocks than did middle-aged males (6–11 years), and both stayed closer to rocks than did adult males (>11 years). Adult males stayed closer to hiking trails than middle-aged males; likewise, the latter stayed closer to hiking trails than young males. Males stayed near areas with human presence, likely because of good foraging opportunities. Although our findings do not exclude other explanations, they support the reproductive strategy–predation risk hypothesis. Moreover, predation risk was shown as an important factor leading to both sexual and age segregation in males.

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