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Title: Woodland features determining home range size of roe deer

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1   **Woodland features determining home range size of roe deer**

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10   **Abstract**

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12   Use of ecotones by ungulates may be mediated by their movements between main feeding
13   areas and woodland, where they locate their shelter. The roe deer *Capreolus capreolus* has
14   been termed as a woodland species, although we suggest that it did not evolve as a forest
15   ungulate, but depending on forest glades. Roe deer feed on a wide range of vegetal species,
16   although their diet is mainly dominated by woody plants. Our study was carried out in a
17   fragmented area covered with small forest patches of Mediterranean "*macchia*" scrubwood,
18   interspersed in an agricultural matrix. Aim of our study has been to test how ranging
19   movements of roe deer are influenced by landscape heterogeneity and to evaluate which
20   features of woodland affect home range size. Radio-locations of 22 female and 12 male adult
21   roe deer, monitored for three years, were used to assess home range size. A linear mixed
22   model was fitted to investigate variation in home range size according to eleven spatial
23   parameters estimated to describe home range size and composition. Throughout the year, no
24   significant difference was found between home range sizes of males (median: 16.70 ha, Q_1-Q_3:
25   13.20-31.60 ha) and females (median: 23.52 ha, Q_1-Q_3: 13.30-44.00 ha: lme: F = 0.9; P = 0.35).
26   Habitat density, edge density, percentage of woodland within home range and woodland
27   structure determined home range size. Home ranges with few habitat types and a small
28   amount of wood were large, while roe deer occupied small home ranges when habitat density
29   was high and when a high proportion of wood was concentrated in a single large patch.
30   Woodland covered a mean ± SE of 36.2±17.9% in each home range. In conclusion, roe deer
31   seem to be particularly well adapted to live in human transformed, peripheral habitats, e.g.
32   farmlands, as long as a minimum quantity of woodland is included within their HR.

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