

Life path analysis: influences of environment at different scales on dispersal and other movements.

Kenward, R.E. Walls S.S. & Hodder, K.H. 2001.
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1. Movements of many animals along a life-path can be separated into repetitive ones within home ranges and transitions between home ranges. We sought relationships of social and environmental factors with initiation and distance of transition movements in 114 buzzards *Buteo buteo* that were marked as nestlings with long-life radio tags.
2. Ex-natal dispersal movements of 51 buzzards in autumn were longer than for 30 later in their first year and than 35 extra-natal movements between home ranges after leaving nest areas. In 2nd and 3rd springs, distances moved from winter focal points by birds that paired were the same or less than for unpaired birds. No post-nuptial movement exceeded 2 km.
3. Initiation of early ex-natal dispersal was enhanced by presence of many sibs, but also by lack of worm-rich loam soils. Distances travelled were greatest for birds from small broods and with relatively little short grass feeding habitat near the nest. Later movements were generally enhanced by absence of loam soils and short grassland, especially with abundance of other buzzards and probable poor feeding habitats (heathland, long grass).
4. Buzzards tended to persist in their first autumn where arable land was abundant, but subsequently showed a strong tendency to move from this habitat.
5. Factors that acted most strongly in ½ km buffers round nests, or round subsequent focal points, usually promoted movement compared with factors acting at a larger scale. Strong relationships between movement distances and environmental characteristics in ½ km buffers, especially during early ex-natal dispersal, suggested that buzzards became primed by these factors to travel far.
6. Movements were also farthest for buzzards that had already moved far from their natal nests, perhaps reflecting genetic predisposition, long-term priming or poor habitat beyond the study area.