FRACTAL PATTERNS IN SPECIES DISTRIBUTION OF SOME RARE BRITISH PLANTS

Georges Herbert[1], Chekuimo Tagne[1]*, W. E. Kunin[2], M. Pocock[2] and R. Aston[2]

[1]C.B.C.S, P. O. Box 8047 Yaounde, Cameroon
[2]Faculty of Biological Sciences, School of Biology,
Centre for Biodiversity and Conservation, Leeds University, Leeds, LS29JT, UK

ABSTRACT

The analysis, measurement, and management of species abundance are central to ecology and conservation biology, but it has proved difficult to find a single index that adequately reflects the commonness or rarity of species across a range of spatial scales. The spatial distribution and fractal structure of two rare British plants, *Lobelia urens* (heath lobelia) and *Phyteuma orbiculare* (round-headed rampion), have been examined at several different scales. The two species have similar degrees of local patchiness at scales coarser than 50 km and have contrasting coarse-scale between 50 km and 1 km, but differed consistently in the slopes of their scale-occupancy curve distributions at scales finer than 1 km. The slope of the log-log plot of *L. urens* is not constant, but varies systematically with spatial scale, and from habitat to habitat at the same spatial scale. Abundance estimates suggest that the species *P. orbiculare* is found to be clumped at all scales, whereas *L. urens* is dispersed at intermediate scales. Fractal dimension analysis suggests that this changes through scale. The distribution pattern varied from highly clumped to randomly dispersed. Fairly accurate predictions of *L. urens* can be made from 50 m to 200 m.

*Corresponding author. P. O. Box 8047, Yaounde, Cameroon,+237 220 8205, +237 221 4683, azpa01@hotmail.com

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