

Oral paper for symposium: "**Quantifying the effects of forest fragmentation: implications for landscape planners and resource managers**",

Changes in the functional connectivity of woodland habitats across Great Britain between 1990 and 2007

K. Watts<sup>1\*</sup>, P. Handley<sup>1</sup>, P. Scholefield<sup>2</sup>, A. E. Eycott<sup>1</sup> & A. Peace<sup>3</sup>

<sup>1</sup> Forest Research, Alice Holt Lodge, Farnham, Surrey, GU10 4LH, UK.

<sup>2</sup> Centre for Ecology and Hydrology, Lancaster Environment Centre, Bailrigg, Lancaster, LA1 4AP, UK.

<sup>3</sup> Forest Research, Northern Research Station, Roslin, Midlothian, EH25 9SY, Scotland, UK.

\* Corresponding author: kevin.watts@forestry.gsi.gov.uk

In order to monitor progress towards international biodiversity conservation targets the UK has developed a suite of 18 biodiversity indicators. One indicator, which is aligned to CBD and EU indicators, is intended to assess the change in the impacts of habitat fragmentation on habitat connectivity and biodiversity. In common with much of Europe, the habitats and landscapes of the UK have undergone considerable loss and fragmentation through a long history of human activity. Habitat loss and fragmentation is regarded as a serious threat to biodiversity conservation.

The UK connectivity indicator adopts a species-based perspective to examine functional connectivity. Firstly, the indicator accounts for edge impacts (i.e. negative effects of adjoining land cover that differs from the habitat of interest) by applying an internal edge buffer, weighted by the intensity of surrounding land cover. The indicator then calculates the probability of movement within and between the remaining habitat patches. These potential movements are weighted by the area of the patch; a negative exponential dispersal curve; and a least-cost distance measure (which indicates greater potential movement through permeable, ecologically similar, landscape features, as opposed to intensive, urban features). This paper reports on changes in functional connectivity of woodland habitats in 591 1km sample squares across Britain between 1990, 1998 and 2007.