

Managing for biodiversity in a range of Irish forest types

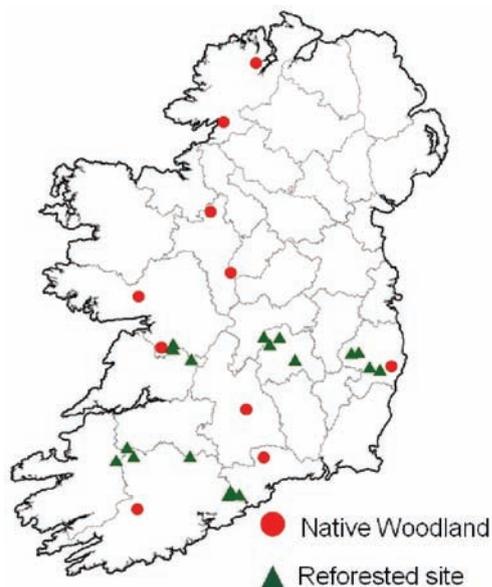
PROJECT TEAM

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COMPLETION DATE

June 2010



Locations of study sites for 2007 surveys.

OBJECTIVES

- To determine the biodiversity of second rotation forests, forests composed of different mixes of tree species, forests under the Native Woodland Scheme and rehabilitated native woodlands at different stages of the forest cycle.
- To make inter-forest type comparisons and comparisons with data from BIOFOREST project sites to build a picture of the variety of forests in Ireland today.
- To identify indicators of biodiversity for different forest types and describe monitoring techniques for the future in permanently marked study sites.
- To identify measures which may be used to enhance the biodiversity of the different forest types, including second rotation forests, first rotation mixes under conventional afforestation and those under the Native Woodland Scheme.

PROGRESS

FORESTBIO aims to provide an inventory of the higher and lower plants, birds, beetles and spiders of a range of forest types in Ireland together with set of refined protocols for the study of these taxonomic groups. This will be achieved by conducting biodiversity surveys at representative forest sites throughout Ireland. Twenty sites each of three different forest types (reforestation sites, mixed tree plantations and native woodlands) will be surveyed focussing on the following target taxa:

- Birds;
- Ground-dwelling invertebrate animals;
- Canopy invertebrate animals;
- Lepidoptera;
- Ground-dwelling plants;
- Epiphytes.

The bulk of the project fieldwork has been split between two field seasons during the summers of 2007 and 2008. Twenty reforestation sites and



Canopy fogging in background with sample collectors in the foreground.

ten native woodland sites (five each of oak and ash) were surveyed during 2007.

Strict site selection criteria for each of the reforestation and native woodland surveys were compiled and used to select suitable study sites prior to commencement of the field season. Biodiversity surveys of a range of taxa were conducted at these sites using a variety of complementary methods:

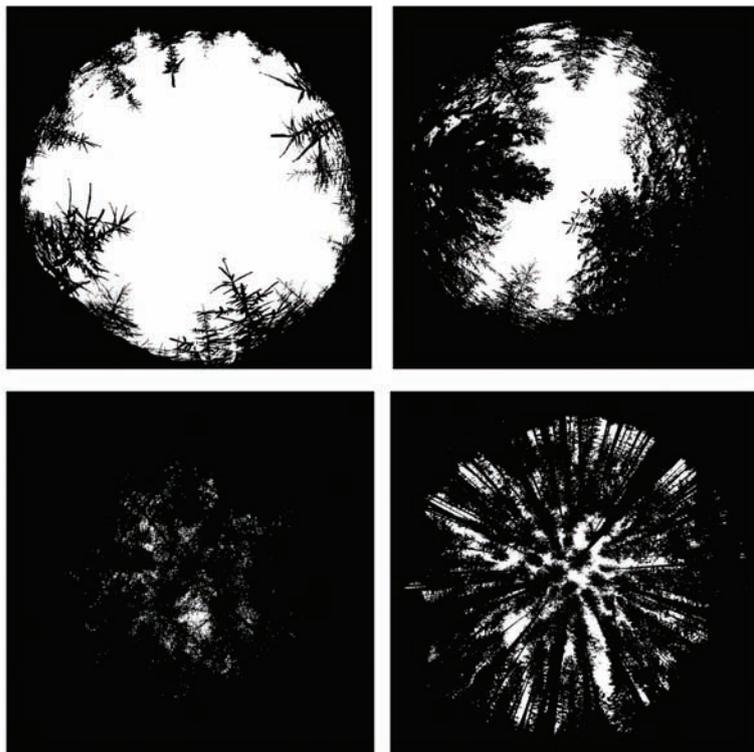
- Ornithological surveys were conducted twice during summer at each site using point counts which were repeated at a subset of sites during winter.
- Pitfall traps were used to survey active ground dwelling spiders and Carabid beetles while thermal fogging and canopy beating

were used to survey invertebrates of the forest canopy.

- Ground flora surveys focussing on cover of each species and including assessment of canopy cover using hemispherical photography and deadwood assessment were conducted in conjunction with epiphyte surveys at two heights, with tree climbing used to access the forest canopy.

ACTIVITIES PLANNED

Winter bird surveys will continue until February 2008. Sorting and identification of invertebrate samples collected during the 2007 field season will be completed where spiders and Carabid beetles from pitfall samples will be identified to species level and various invertebrate groups from the thermal fogging and beating surveys of canopy invertebrates will be sorted and identified. A special study of Lepidoptera will commence in 2008 using light traps and transect walks to survey Lepidoptera at all study sites. Identification of all plant specimens collected will be completed and hemispherical photographs analysed. In all cases priority will be given to samples from the reforestation survey. Data entry to the FORESTBIO GIS database will begin in early 2008 and preliminary data analysis will commence soon after. Analysis of reforestation survey data and comparisons with BIOFOREST



Hemispherical photographs from pre-thicket, thicket, mid-rotation and mature sites respectively.

data will be prioritised and followed by preliminary analysis of 2007 native woodland survey data, ahead of final native woodland surveys during the 2008 field season. Biodiversity surveys of the ten remaining native woodland sites and the twenty mix-species forests will commence in March 2008. Preliminary results from FORESTBIO will be presented at a number of national and international meetings during 2008.

OUTPUTS

Popular articles:

- Irwin, S. 2007. Management for biodiversity in Ireland's contemporary forests. *Science Spin* 24:29.
- Irwin, S. 2007. Woodland biodiversity v forest industry: Is there an answer? *UCC News* September 2007: 1.

Presentations at workshops and conferences:

- Martin, R., Kelly, T., Oxbrough, A., Wilson, M., Irwin, S. and O'Halloran, J. 2007. *Assessing the biodiversity of canopy arthropods in a range of forest types*. Forest Task Force Annual Workshop, Białowieża, Poland, 24 –27 October 2007. (Poster presentation).
- Sweeney, O., Kelly, T., Wilson, M., Irwin, S. and O'Halloran, J. 2007. *What affects bird diversity in native and plantation woodlands?* Institute of Ecology and Environment Management Irish Section Conference, Dublin, October 2007. (Poster presentation).
- Sweeney, O., Kelly, T., Wilson, M., Irwin, S. and O'Halloran, J. 2007. *What affects bird diversity in native and plantation woodlands?* Forest Task Force Annual Workshop, Białowieża, Poland, 24 –27 October 2007. (Poster presentation).

Theses:

- Moore, K. 2007. *Ground flora biodiversity of Sitka spruce reforestation plantations in comparison with afforestation plantations in Ireland*. MSc Thesis, Trinity College Dublin.
- Vézeau, C. 2007. *Investigating the light regime over the forest development stages in second rotation Sitka spruce plantations in Ireland*. Project from UREKA site Integrating Ecology and Evolution in a Changing World, Trinity College Dublin.

Inputs to curriculum development and teaching:

- Oxbrough, A. 2007. *Spiders as biodiversity indicators in Irish plantation forests*. Biodiversity Components of Forestry Certificate Course, UCC.
- Wilson, M. 2007. *Hen Harrier and forestry*. Biodiversity Components of Forestry Certificate Course, UCC.
- O'Halloran, J. 2007. *Introduction to biodiversity with particular reference to forests*. Biodiversity Components of Forestry Certificate Course, UCC.
- O'Halloran, J. 2007. *Assessing biodiversity in forest: some approaches*. Biodiversity Components of Forestry Certificate Course, UCC.
- O'Halloran, J. 2007. *Discussion session: Approaches and challenges in maintaining biodiversity in forests*. Biodiversity Components of Forestry Course, UCC.