



# PLANFORBIO

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# BACKGROUND

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- Forests support over 40% of the world's species and have high biological diversity
- To maintain a healthy forest they need healthy level of biodiversity
- Historically Irish forest cover reduced to <1%.
- Currently 10% with government targets of 17% by 2030.
- Forest expansion can be managed to create sustainable and biodiverse forest habitats in the Irish landscape

# FOREST BIODIVERSITY

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- Ireland is committed to the conservation of biological diversity in accordance with Article 6 of the Rio Convention on Biological Diversity.
- National strategy – National Biodiversity Plan.
- The Forest Service is committed to conserving and enhancing biodiversity in forests.
- Forestry practice in Ireland must conform to Sustainable Forest Management, a core component of which is biodiversity conservation.
- Research is necessary to underpin policies.

# PLANFORBIO programme

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- 2007 – 2012
- COFORD funded under NDP
- Collaboration – UCC, TCD, WIT, Coillte
- Aims (Scientific, Strategic, Economic)
  - inform management decisions and underpin sustainable forest development
  - 6 academic staff, 4 postdocs, 7 Phds, 4 MScs and numerous RAs
- Forming a centre of excellence for forest biodiversity research

# PLANFORBIO projects

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## FORESTBIO

Managing for biodiversity in a range of Irish forest types

## RHODO

Achieving effective rhododendron control

## HEN HARRIER

Optimum scenarios for Hen Harrier conservation in Ireland

## BIOPLAN

Implementation of an assessment and monitoring programme  
for biodiversity in Irish and Scottish forests

# FORESTBIO (2007-2010) PLANFORBIO

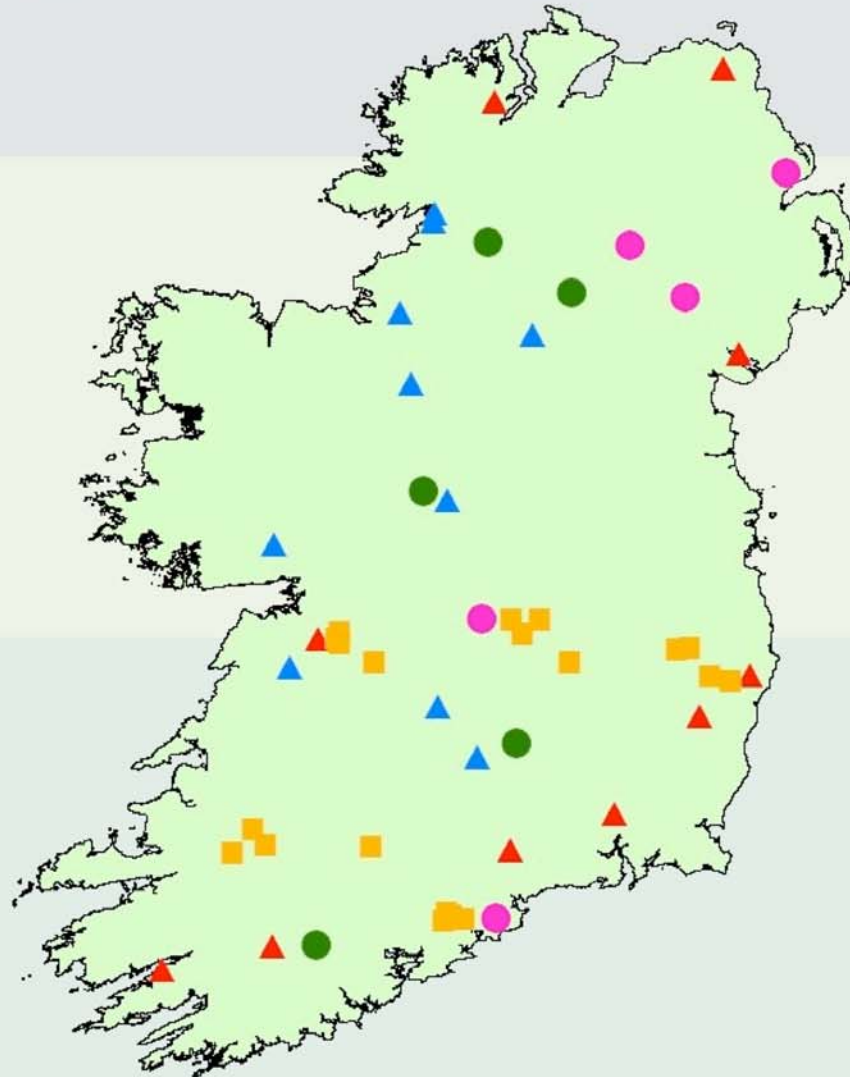
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## – Aims

- Assess biodiversity in second rotation, canopy mixes and native woodlands
- Identify indicators of biodiversity and make recommendations on its enhancement in forests

– Project participants: UCC, TCD, Coillte

# FORESTBIO study sites



- ▲ Oak Native Woodlands
- ▲ Ash Native Woodlands
- Reforestation Plantations
- Norway Spruce:Scots Pine Mixes
- Norway Spruce:Oak Mixes

# Taxonomic groups

- Ground-dwelling plants
- Ground-dwelling invertebrates
- Canopy ephyphytes
- Canopy invertebrates
- Lepidoptera
- Birds





# Methodologies

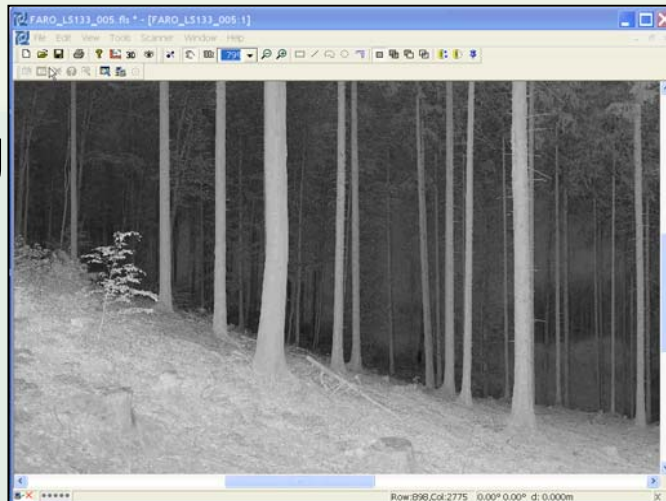


Canopy Fogging

Epiphyte Surveys



Laser Scanning



# New Spider Species

- New spider species to Ireland
- *Entelecara acuminata*
- Native Oak Woodland in Co. Kilkenny
- One male and one female
- Canopy fogging technique

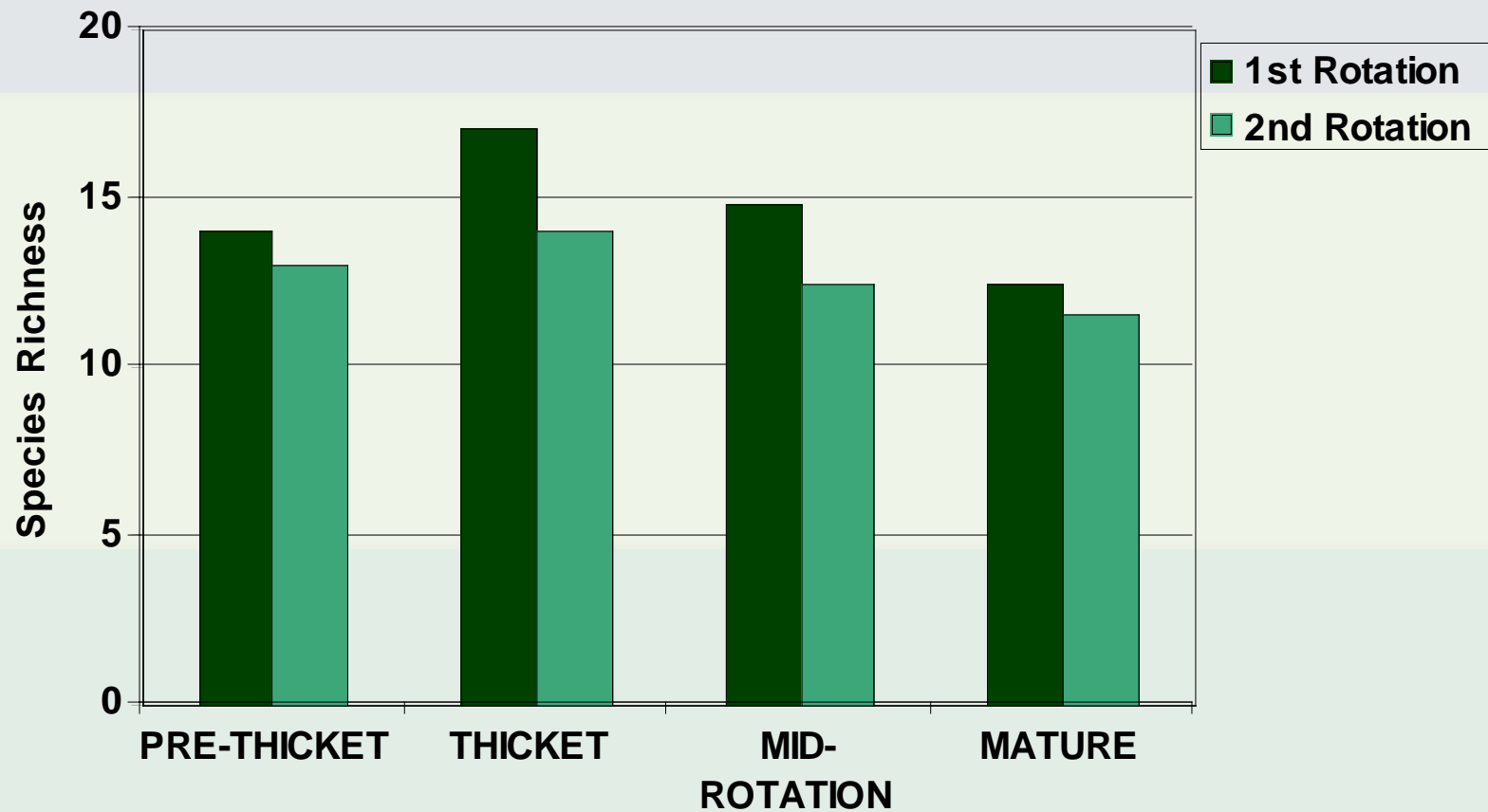


# Lepidoptera Species

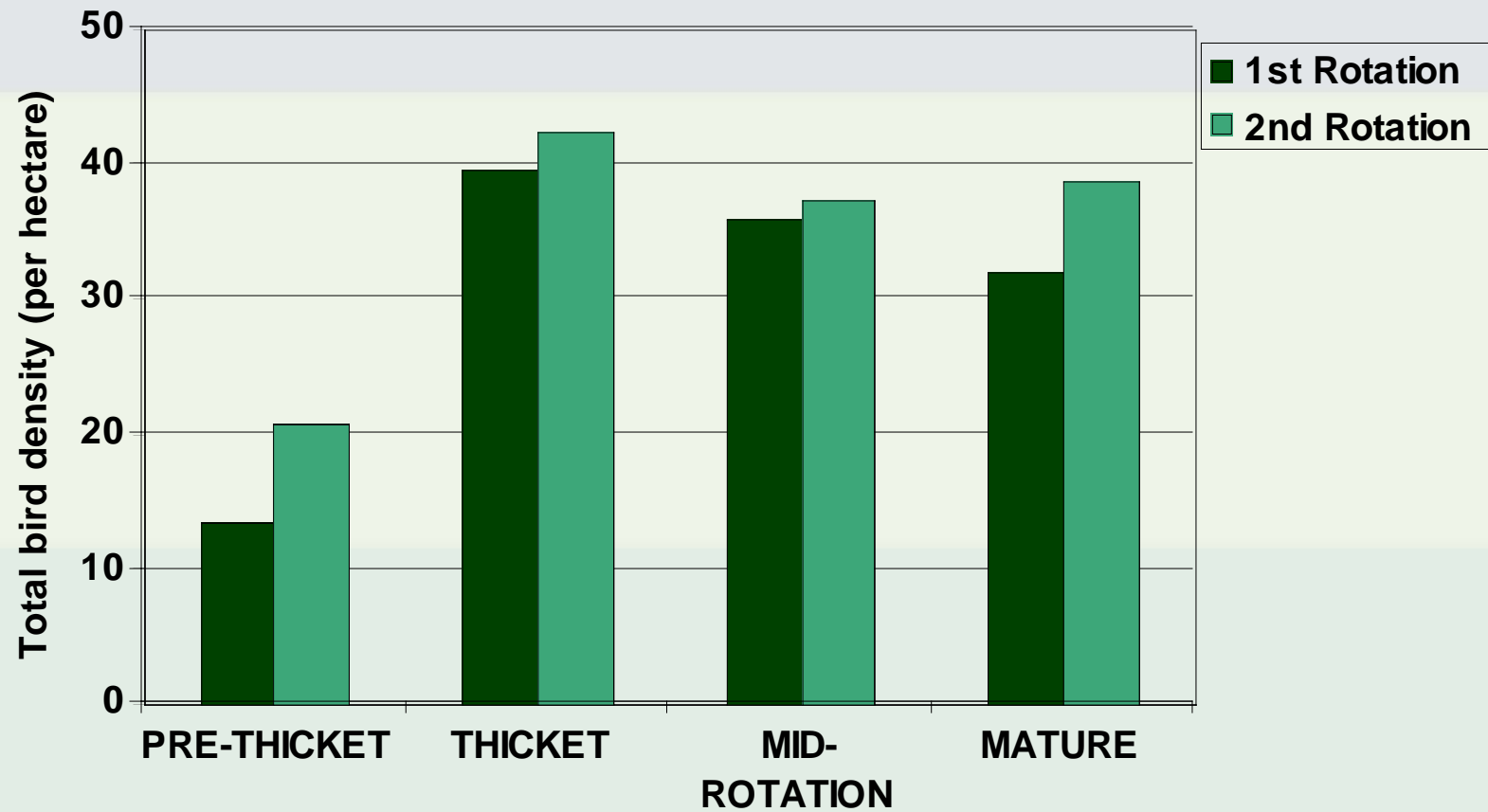
- Clouded Magpie  
(*Abraxas sylvata*)
- Native Oak  
Woodland in Co.  
Down
- Scarce
- Resident and  
suspected local  
migrant



# Bird Species Richness in Plantations



# Total bird density in Plantations



# FORESTBIO Outputs

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- Baseline species data of rarely studied habitats
- Recommendations for management
- Peer reviewed papers in international journals
- New spider species to Ireland and other rare records
- PhDs, MScs, undergraduate training & upskilling
- Novel techniques (scanning, fogging)
- Horizontal measures

# Hen Harrier (2007-2010) PLANFORBIO

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## – Aims

- Make recommendations for incorporating HH into Indicative Strategy for Hen Harrier management in SPAs
- Improve knowledge of HH ecology, foraging behaviour and requirements at the landscape level

– Project participants: UCC & NPWS

# Hen Harrier Outputs

*Ibis* (2009), 151, 332–343

## The importance of pre-thicket conifer plantations for nesting Hen Harriers *Circus cyaneus* in Ireland

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Hen Harriers *Circus cyaneus* are threatened across much of their range and their conservation requires appropriate habitat management. The locations of 148 Hen Harrier nests found in the Republic of Ireland during national breeding surveys in 2000 and 2005 were used to assess nest-site selection. The distribution of these nests was compared to distributions of randomly located points to investigate selection at the scale of the nest-site and landscape. The main nesting habitats selected were pre-thicket stage of first and second rotation plantations, mostly of exotic conifers. There was no evidence particularly, second rotation plantations negatively affected Hen Harrier nest distribution. There was a positive correlation across study areas between changes in pre-thicket that the area of post-closure plantations negatively affected Hen Harrier nest distribution. There was a positive correlation across study areas between changes in pre-thicket that the area of post-closure plantations negatively affected Hen Harrier nest distribution. There was a positive correlation across study areas between changes in pre-thicket that the area of post-closure plantations negatively affected Hen Harrier nest distribution.

**Keywords:** commercial forestry, conifer plantation, conservation, grassland, habitat selection, heath, raptors, second rotation, upland management.

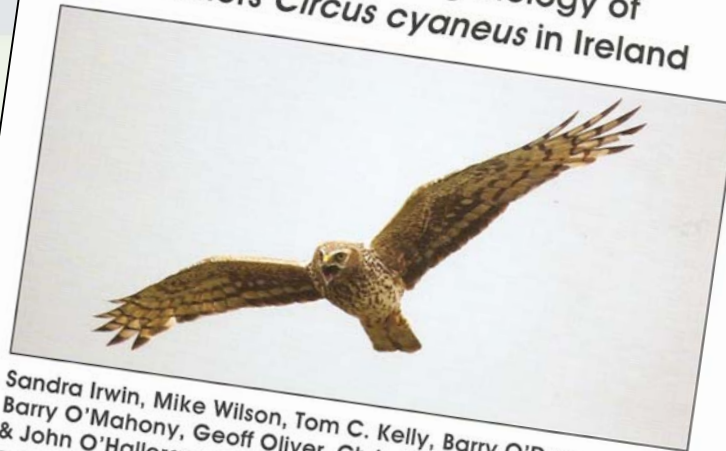
The nominate race of Hen Harrier (*Circus cyaneus cyaneus*) is distributed across much of Europe and Asia, with the conspecific Northern Harrier *Circus cyaneus hudsonius* occurring across most of North America. Though previously widespread in Europe, it has suffered a large historical decline (Ferguson-Lees & Christie 2001) and is assessed as 'Depleted' by BirdLife International (2004). Hen Harriers are

vulnerable across a large part of their European range; they are a Species of European Conservation Concern (BirdLife International 2004) and are included in Annex 1 of the EU Birds Directive (European Council Directive 79/409/EEC). The Directive obliges EU Member States to take measures to protect populations of Annex 1 species within their boundaries, including the establishment of Special Protection Areas (SPAs). The Hen Harrier is one of the bird species of greatest conservation concern in Ireland (Newton *et al.*

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## Aspects of the breeding biology of Hen Harriers *Circus cyaneus* in Ireland



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Hen Harriers are a species of great conservation concern in Ireland at present and efforts are being made to protect the habitats they require. Knowledge of breeding biology is crucial in formulating effective conservation management plans, yet to date no targeted research has been conducted on breeding Hen Harriers in Ireland. The aim of this study is to present the preliminary findings of a long-term study of the breeding biology of Hen Harriers at four strongholds in Ireland, using data collected during the 2007 and 2008 breeding seasons. During these two years, 105 breeding pairs were located in these areas. Peak egg-laying occurred during May and clutch size ranged from two to six. Survival was similar through the egg and chick stages of the breeding season with eggs hatching in more than 80% of nests, and more than 70% of these nests fledging young. The average success rate of nests was 64% in 2007 and 62% in 2008 with each successful nest fledging an average of 2.6 ( $\pm 0.1$  se) young.

### Introduction

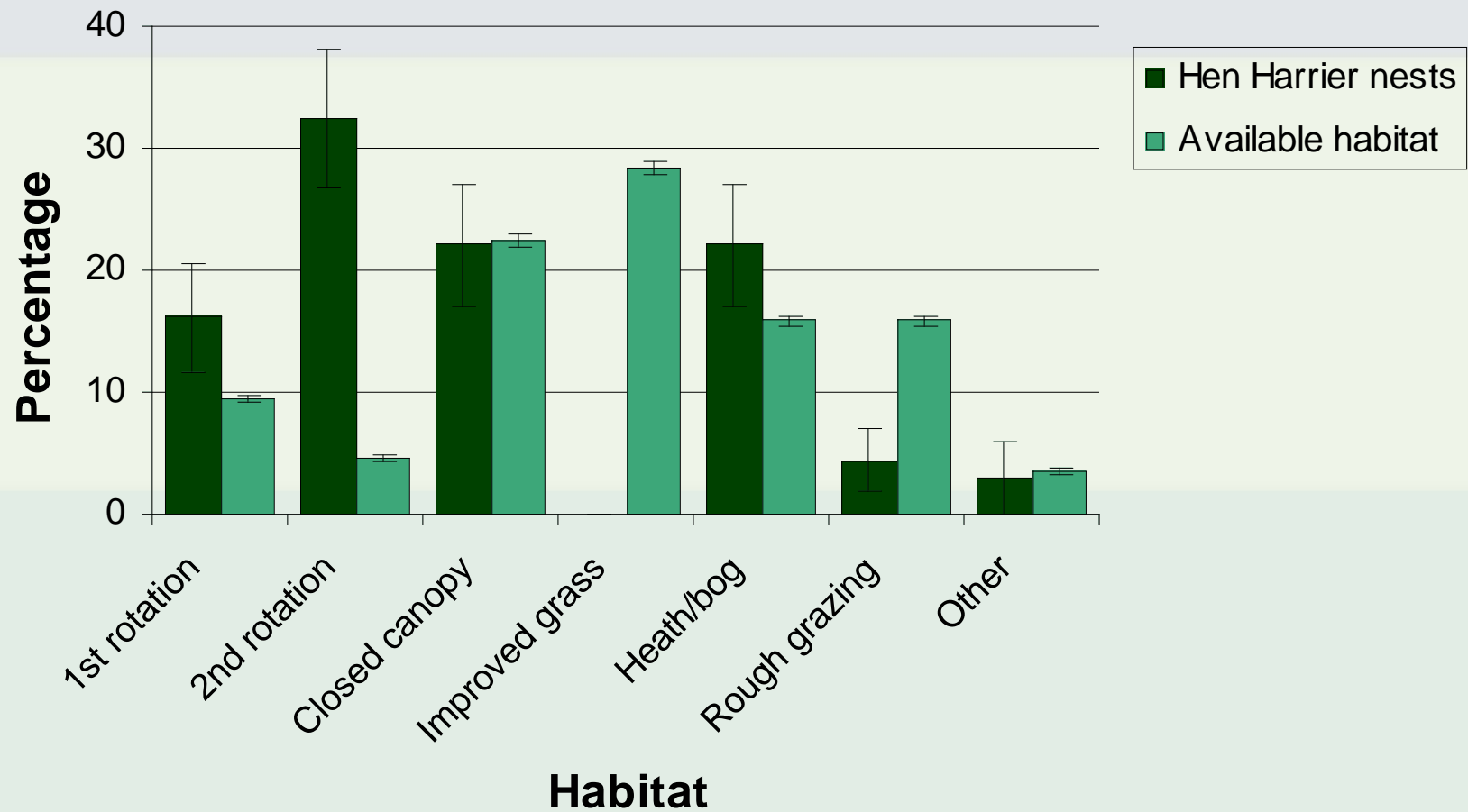
The Hen Harrier is a territorial raptor that breeds in the upland areas of Ireland. The breeding population is concentrated in the southwest, and recent population estimates suggest that as many as 150 breeding pairs may be located in

this country (Barton *et al.* 2006). During the last century, their distribution in Ireland has been linked with fluctuations of available young forestry (O'Flynn 1985); Hen Harriers nest in

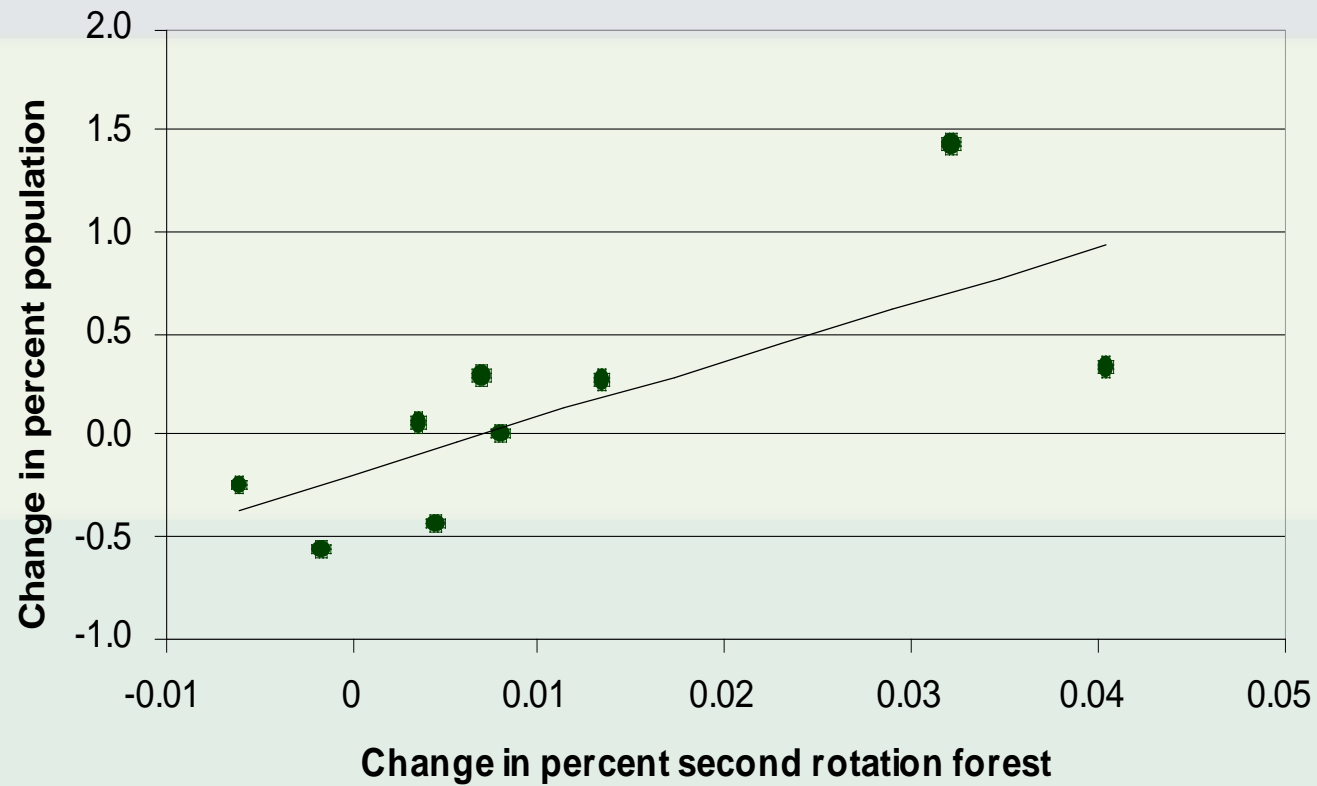
Plate 89. Hen Harrier (Richard T. Mills).



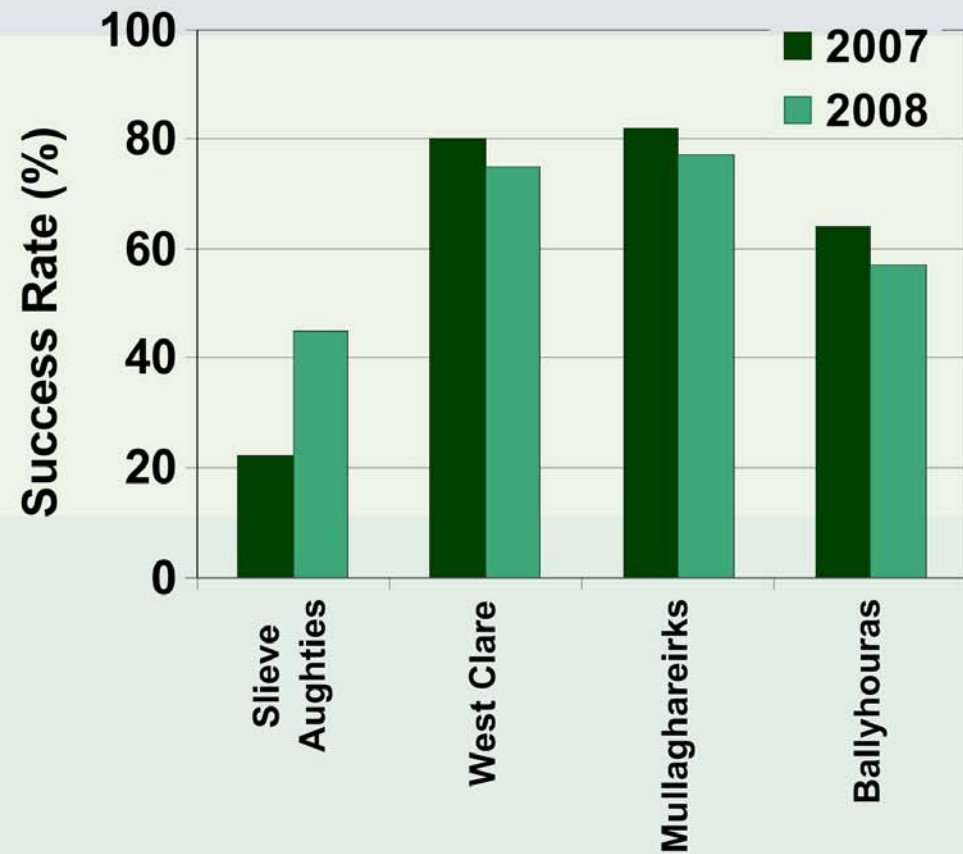
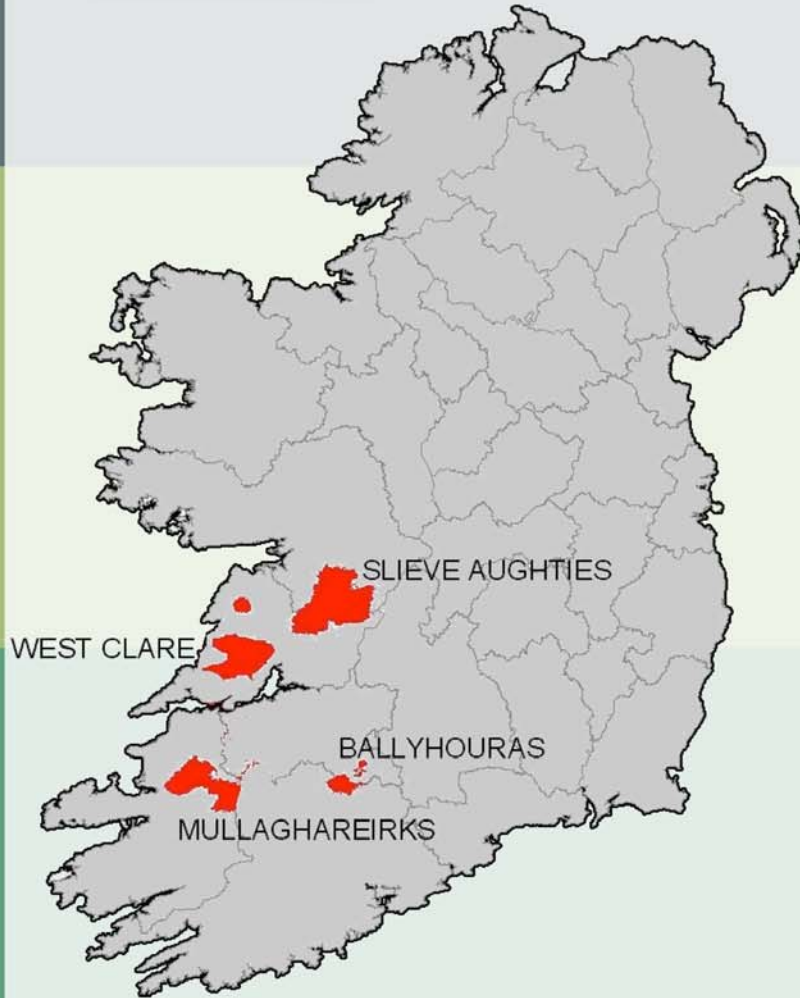
# Hen Harrier habitat preferences



# Use of second rotation plantations



# Hen Harrier breeding ecology



# RHODO (2007-2011)

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## – Aims

- Development of a Best Practice manual for rhododendron clearance based on a set of judicious control trials, quantitative monitoring and planning tools.



- Project participants: WIT, UCC

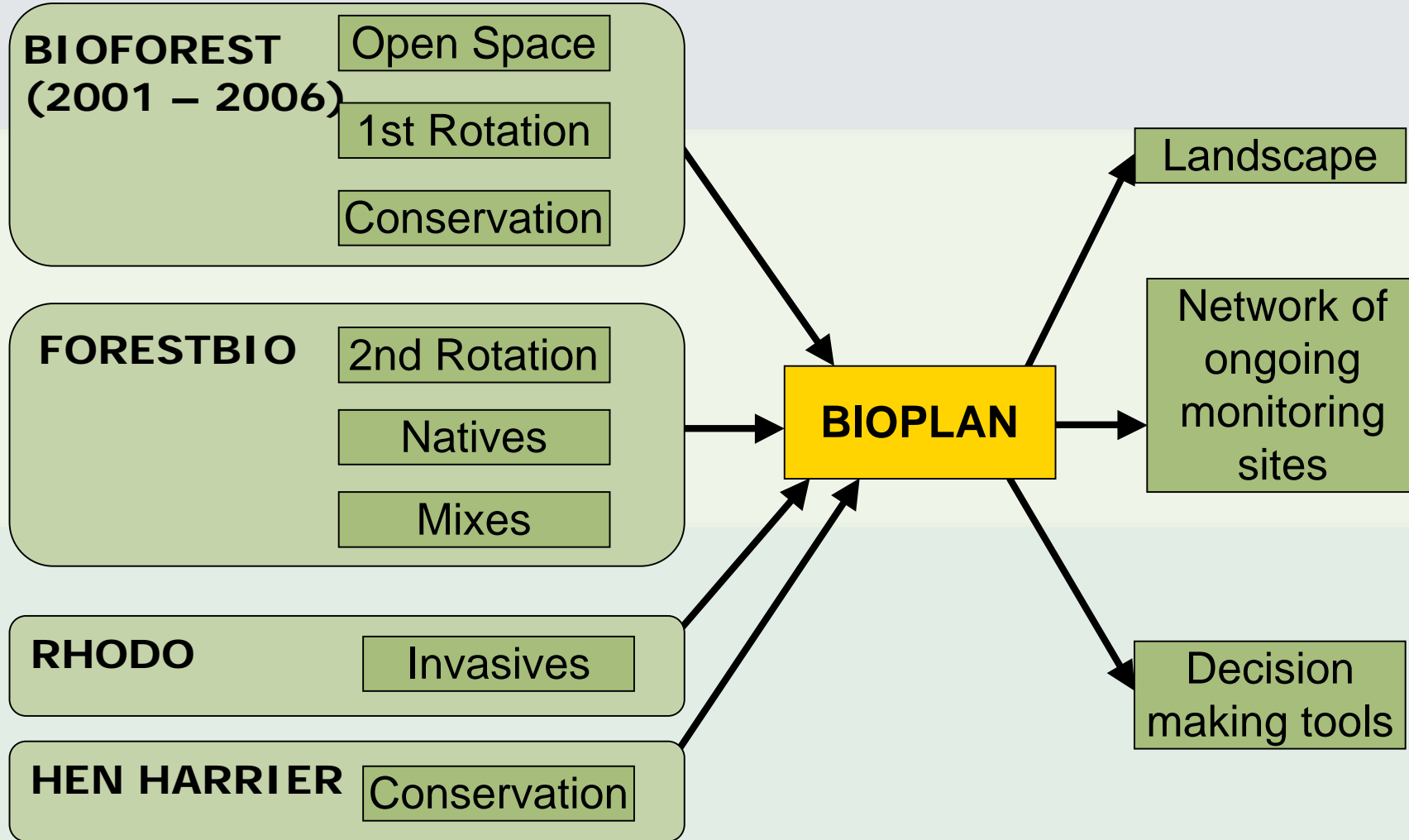
# RHODO - Progress

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- Four areas selected for investigation
  - Developing an ageing key for rhododendron
  - Invasion dynamics of rhododendron
  - Calorific value of rhododendron
  - Seed longevity and viability
- Protection of the forest estate against invasive species.
- Provide an environmentally friendly method of clearing the rhodo (bio-herbicide) and a long term cost effective management practice to prevent it re-colonising sensitive areas of a plantation forest.

# BIOPLAN (2010-2013)



# BIOPLAN (2010-2013)

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## – Aims

- Support better practice
  - Indicators of biodiversity for the variety of forest types in Ireland
  - Practice protocols for forest managers and practitioners
  - Forest condition criteria for Irish Native Woodland Scheme forests
  - Support collaboration for forest biodiversity research between Britain and Ireland leading to synergistic information exchange
  - Predict the future species composition of the variety of Irish forests that will prevail under different climate scenarios
  - Continue the monitoring of permanent plots
- Project participants: UCC, TCD, Coillte

# PLANFORBIO outputs

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- Outreach such as IUFRO forest biodiversity conference
- Build critical mass - PhDs, Masters, Undergrad projects
- Support future forestry activities
- Underpin strategic planning for forests
- Training for foresters/practitioners
- Underpinning sustainability of forest sector