



# Can spruce plantations support a diverse, forest-associated arthropod fauna?

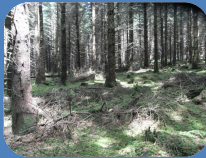


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## Background

Plantation forests constitute a large proportion of the forest estate in many countries.

In Britain and Ireland, a large proportion of these plantations are comprised of non-native conifers, particularly *Picea sitchensis* and *Picea abies*.



Cover of plantations and natural woodlands is low and fragmented within intensively managed agricultural landscapes.



In light of this, it is important that the potential of these plantations to support a diverse flora and fauna, particularly of forest-associated species, is assessed.

## Study Questions

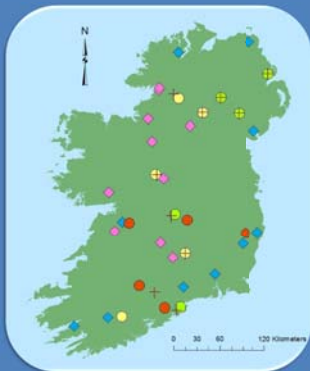
1. Do arthropod assemblages differ between plantations and semi-natural woodlands?
2. Can plantations support a forest-associated fauna?

## Experimental design

Stand type	No. stands	
	Spiders Beetles	Moths
<b>Semi-natural woodlands</b>		
◆ Oak	10	3
◆ Ash	10	3
<b>Plantation forests</b>		
+ Norway spruce (NS)	10	6
● NS - Oak mix	5	3
● NS - Scots pine mix	5	3
● Sitka spruce	5	-

Arthropod species examined:

- Spiders
- Beetles: Family Carabidae
- Macro-moths



## Arthropod sampling

### Spiders & Carabid beetles

- 5 pitfall traps per plot.
- Three plots per site.
- Samples collected over 9 weeks from May 08 or 2009.

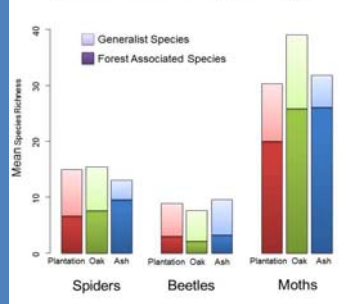


### Macro-moths

- Sampled Summer & Autumn 08, Spring 09.
- Two light traps per site.
- Adjacent to pitfalls.

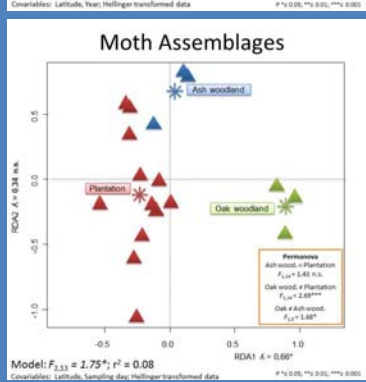
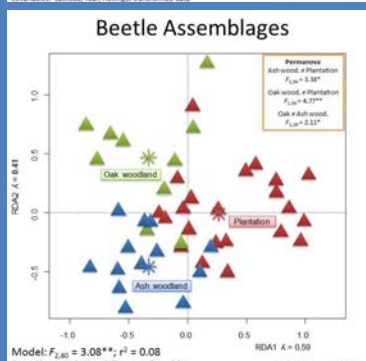
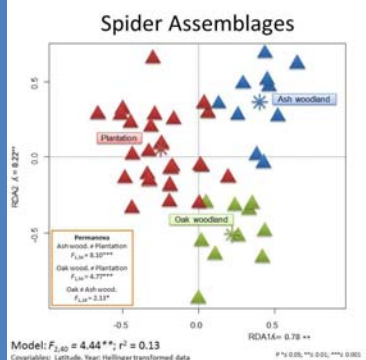


## Species richness among forest types



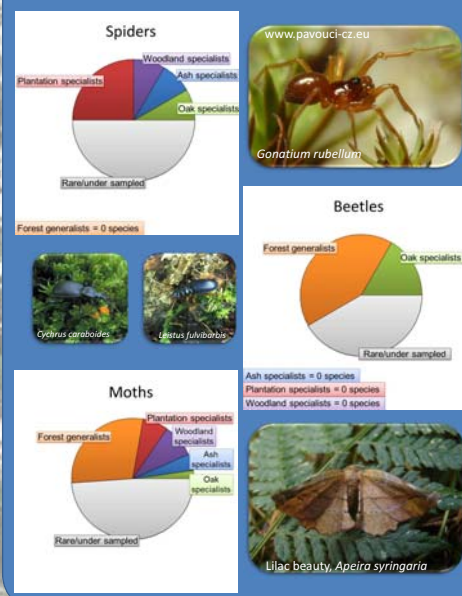
No significant difference in total or forest-associated species richness among forest types for any taxa.

## Redundancy Analysis



Assemblages differ among forest types for all three taxa

## Proportion of forest species associated with particular forest types as identified by Indicator Species Analysis



## Conclusions

Plantations support a similar number of forest-associated species as semi-natural woodlands but assemblages differ.

- Spiders and moths**
- Forest specialists unique to conifer plantation or broadleaved woodlands.
  - Conifer specialists may have survived in natural woodlands in low numbers or recolonised Ireland in recent years.
- Beetles**
- Forest generalists found across forest types.
  - Loss of specialists in Ireland which have not recolonised.

Increased planting of conifers has led to a change in common forest species in Ireland.