

What are native woodlands for?

A contested biological, cultural and economic space

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**Native woodlands -
links to the
Wildwood**

**'tree-land before it was
affected by settled
human activities'
(O. Rackham 2006)**



Ancient woodland

Woods with historical continuity - at least over the past 3-4 centuries.

Have not been cleared for agriculture or other uses - at least not within that period.

For Ireland, the surveys of the 1650s provide the best starting-point.

Glen of the Downs

Wood shown in Down Survey map of 1655 -1657 A.D.



A. Dousseau, ca. 1830-1869

**Native woodlands –
an economic resource**



**Coppiced oak
Glen of the Downs
- photo 1996**

L. Rommelaars




Cantharellus cibarius
(Chanterelle)

Non-timber
forest
products



Boletus edulis
(Cep, penny bun)

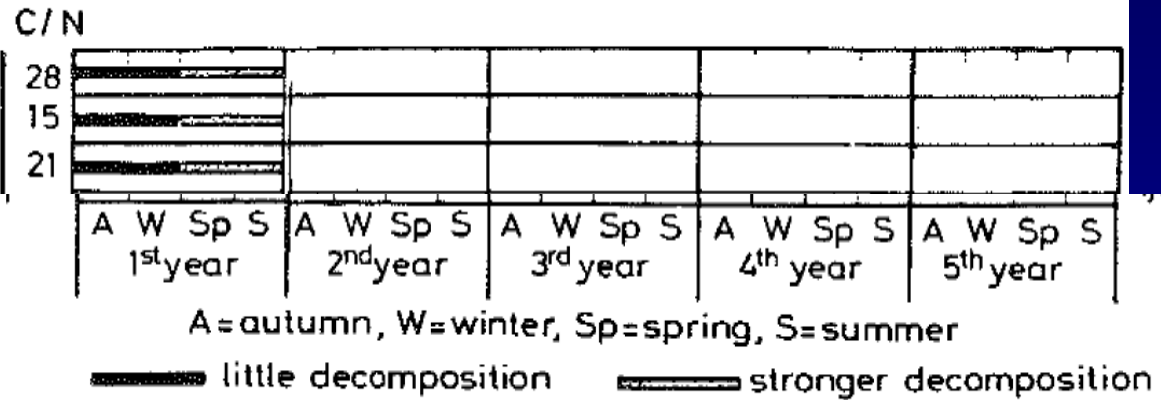
Native broadleaves are good for the soil



**‘Alders have root-nodules with symbiotic microorganisms that fix atmospheric N, so they are important in building up the nutrient capital of the wet woods in which they grow’
(M. Proctor, 2013)**

Native broadleaves are good for the soil

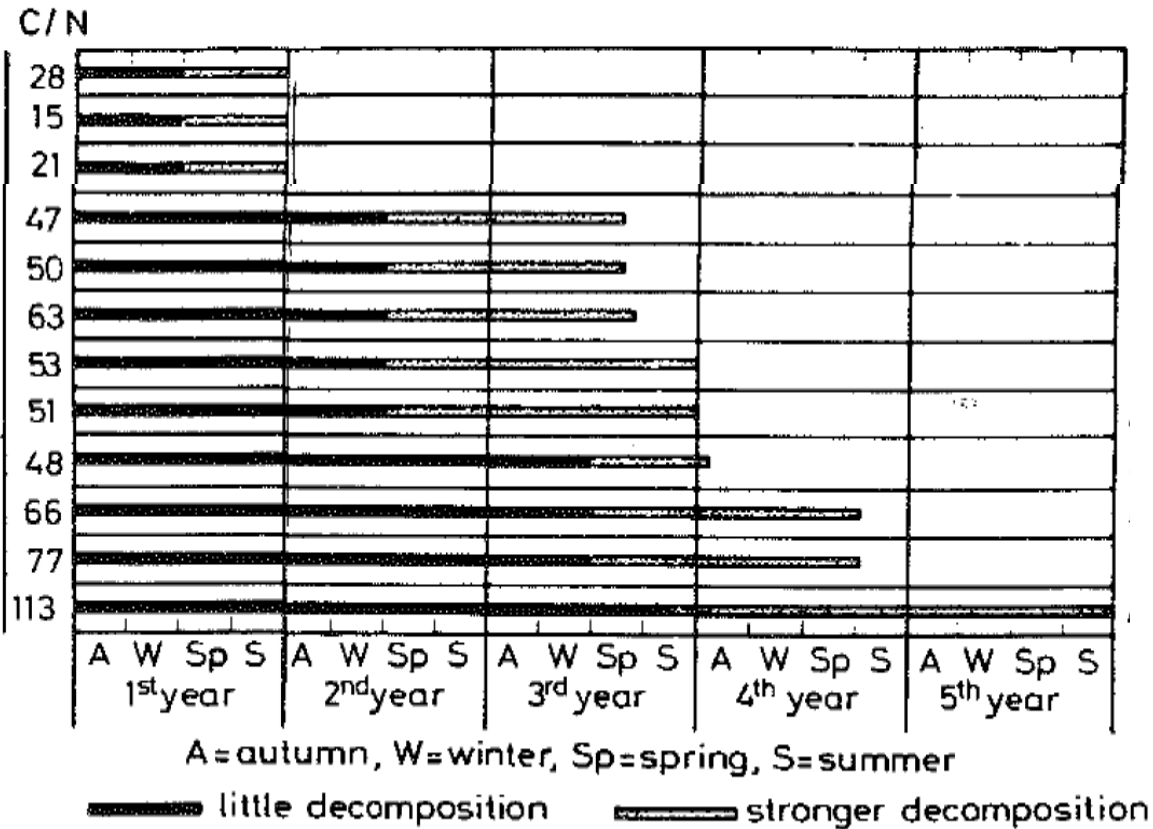
elm	<i>Ulmus</i>
black alder	<i>Alnus glutinosa</i>
ash	<i>Fraxinus excelsior</i>



Average time for breakdown of leaf litter of different tree species on a medium brown-earth soil

elm	<i>Ulmus</i>
black alder	<i>Alnus glutinosa</i>
ash	<i>Fraxinus excelsior</i>
oak	<i>Quercus</i>
birch	<i>Betula</i>
aspen	<i>Populus tremula</i>
red oak	<i>Quercus rubra</i>
beech	<i>Fagus sylvatica</i>

moder	spruce	<i>Picea abies</i>
	pine	<i>Pinus sylvestris</i>
	Douglas fir	<i>Pseudotsuga menz.</i>
	larch	<i>Larix europaea</i>



Average time for breakdown of leaf litter of different tree species on a medium brown-earth soil (H. Ellenberg 1988, cf. Scheffer & Ulrich 1960)

Climate change

- Evidence of ‘thermophilization’ of woodland ground flora over recent decades
 - warmth-adapted species increased
 - cold-adapted species declined

Mitigation:

- Response attenuated where forest canopies became denser - increased shading has probably led to cooler forest-floor temperatures

(De Frenne et al. 2013: 1,409 plots in Europe & N. America, surveyed across interval of 12-67 years)

Also: trees take up carbon dioxide

Native woodland: cultural and aesthetic associations

Old Irish period (7th-9th c. A.D.)

***Bretha Comaithchesa* (Laws of Neighbourhood)**

28 trees and shrubs listed. Fines for damage, graded by category of tree.

Some woods privately owned;
others commonage belonging to a community.

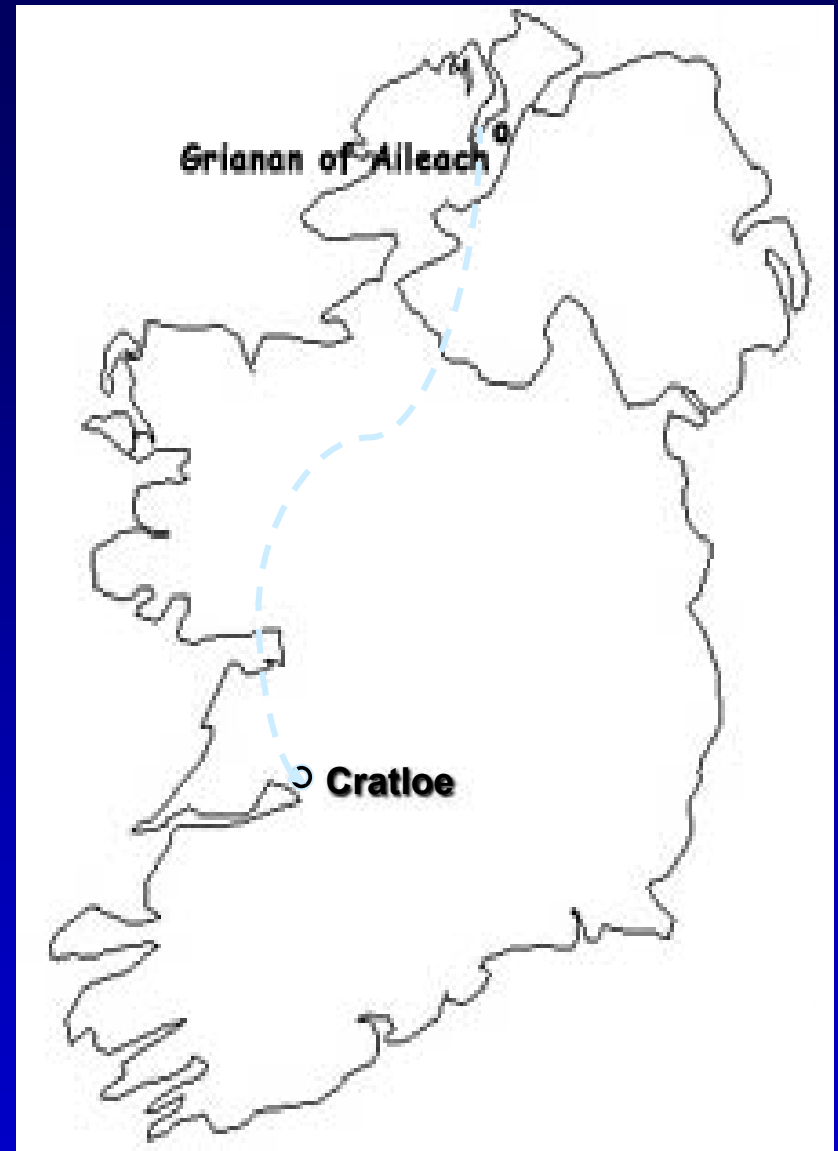
Hunting of **red deer** and **wild pig** popular among kings & nobles

- no records of hunting preserves.

(F. Kelly, 2005)

Few Old Irish records for individual woods

10th century A.D.:
King of Aileach makes hostages
carry enough oak from Cratloe
to re-roof his palace
(McInerney 1978)



Anglo-Norman period: increase in site-specific documents

1215: “gift for ever to Godfrey Luterel of the Kings wood of Cratelerch, in Thomond” (letter of King John)

1252: “Robert de Muscegros to have in the forest of Cracelauh 200 good oaks of the king’s gift” (mandate of Henry III)

Cratloe one of v. few Royal Forests in Ireland

(R. Bohan 1997)

Cratloe



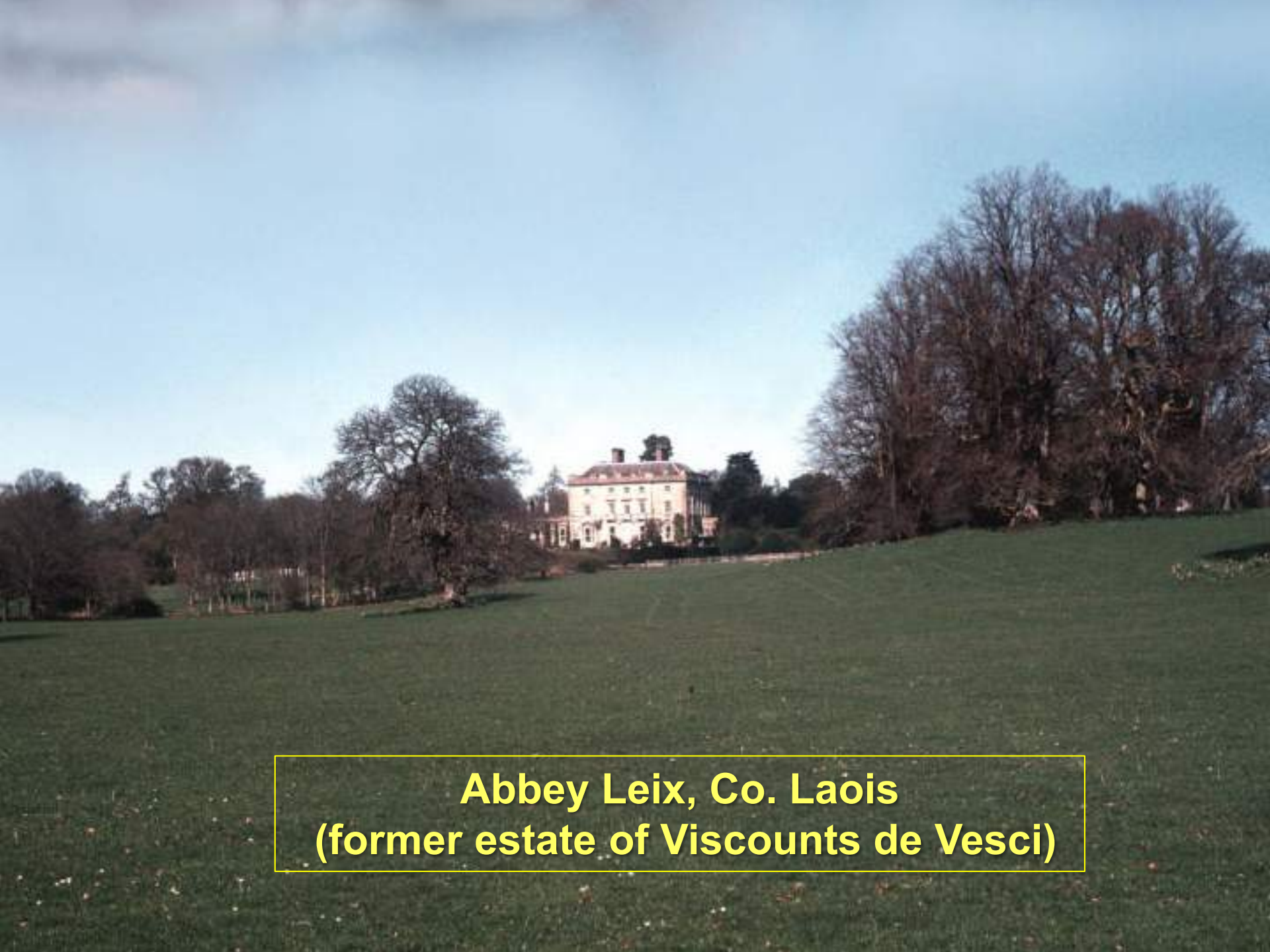
Bunratty Castle





Garranone Wood, Cratloe:

- mostly 19th-c. oak plantation**
- some old coppiced oak & alder near margins**



**Abbey Leix, Co. Laois
(former estate of Viscounts de Vesci)**



Park Hill, Abbey Leix



Curraghmore
- Marquess of
Waterford

**18th-19th centuries:
woodland virtually
confined to private
estates**

**‘The greatest part of
this kingdom
exhibits a naked,
bleak, dreary view
for want of wood’
(Arthur Young, 1780)**



Glenveagh, Co. Donegal



Mansions, gardens and woods of landlord era increasingly recognised as National heritage



**St John's Wood,
Co. Roscommon**

Photo: F.J.G. Mitchell

**Rare woodland type:
Residual alluvial forest**

**'Lowlands'
Abbey Leix**

The Gearagh, Co. Cork



The 'genius loci'

**Photo by
Iva Pocock**



**The Gearagh
1954**

Native woodland a storehouse of indigenous biodiversity.

- **Native:** ‘colonised [a region] by natural means, often long ago, from other native areas’ (Stace 2010).

Native flora and fauna have coevolved.

- **Alien [Non-native]:** ‘introduced to a region deliberately or accidentally by man’ (Stace 2010).
 - **Include major invasive species**
 - **‘Predator release hypothesis’**

The Irish flora

~34 native tree species

- <10% of Europe's flowering plant species
- 44% of Europe's mosses
- 51% of Europe's liverworts



Native woodland fauna?

Picture confused – and contentious!

Fossil evidence limited and patchy

Genetic evidence from DNA

Early Holocene native large herbivores

(after F.J.G. Mitchell, 2005)

Species	Ireland	Britain	NW Europe
Wild boar	(+)	+	+
Red deer	(+)	+	+
Roe deer	-	+	+
Elk	-	+	+
Reindeer	-	+	+
Horse	-	+	+
Aurochs	-	+	+
Beaver	-	+	+
Bison	-	-	+
Fallow deer	-	-	+

Herbivory levels in the Irish wildwood?

Wild boar

History obscure. Apparently plentiful as far back as there have been people.

Irish hare

DNA analysis confirms genetic distinctness of *Lepus timidus* subsp. *hibernicus* (especially vis-à-vis Scottish populations) (R.M. Hamill et al. 2006).

Possible explanations: 'genetic drift, long isolation (possibly dating from the late glacial era) and/or separate postglacial colonisation routes.'

Other plant-animal interactions in the wildwood: seed dispersal



Burdock
(Arctium)

- How were seeds transported to Ireland?
How were seeds transported across Ireland?

Fast-forwarding:

Ireland's woodland cover shrunk steeply:

- **c. 2.1% (3% at most) by the 1650s (Rackham 2005)**
- **0.5% by 1920s**

**Biotic communities of the native woodlands
have been depleted**

Native woodland plants - apparently extinct

Scientific name	English name	Last recorded
Carex buxbaumii	Club Sedge	1886
Hordelymus europaeus	Wood Barley	1949*
Gymnocarpium dryopteris	Oak Fern	1986*

***NI Protected List 1985**

Native woodland plants – rare and declining

Numbers: 10km x 10 km squares in which species has been recorded as native

Scientific name	English name	Last record prior to 1987	Recorded 1987-
Cardamine impatiens	Narrow-leaved Bittercress	0	1**
Carex depauperata	Starved Wood Sedge	0	1**
Geranium sylvaticum	Wood Cranesbill	2	2*

****RI Protected List, *NI Protected List**

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Melampyrum sylvaticum	Small Cow-wheat	17	3*
Hypericum hirsutum	Hairy St. John's Wort	5	5**
Cephalanthera longifolia	Narrow-leaved Helleborine	24	7**
Hypopitys monotropa	Yellow Bird's-nest	16	8*

****RI Protected List, *NI Protected List**

Yellow Bird's-nest
(Hypopitys monotropa)



Not seen in Killarney woods since 1896

Threats to Irish native woodlands

1. Overgrazing

- Tree regeneration
- Other grazing-sensitive plant species



Photo: M. Newman





**Bark damage
to young
Rowan (*Sorbus
aucuparia*)**

**Tomies Wood,
Killarney**

A photograph of a large, gnarled tree with a significant section of its trunk missing. The tree is the central focus, with its thick, dark bark and intricate branch structure. The missing section of the trunk is a jagged, light-colored scar. The background shows a dense forest of bare trees, suggesting a winter or late autumn setting. The sky is a pale, overcast blue.

Trees are not immortal

**Killarney
March 2014**



Killarney, March 2014

Undergrazing - also an issue



fenced

unfenced

Reenadinna wood, Killarney (1969 enclosure)

Ground flora changes in exclosures over 32 years

		Cover (%)		P
		Fenced	Unfenced	
GRAZING-SENSITIVE SPECIES				
Ivy	<i>Hedera helix</i>	9.2	0.14	***
Honeysuckle	<i>Lonicera periclymenum</i>	1.8	0.1	**
Wild Madder	<i>Rubia peregrina</i>	1.1	0.1	**
Bramble	<i>Rubus fruticosus</i>	21.9	0.6	***

P.M. Perrin, F.J.G. Mitchell & D.L. Kelly (2011)

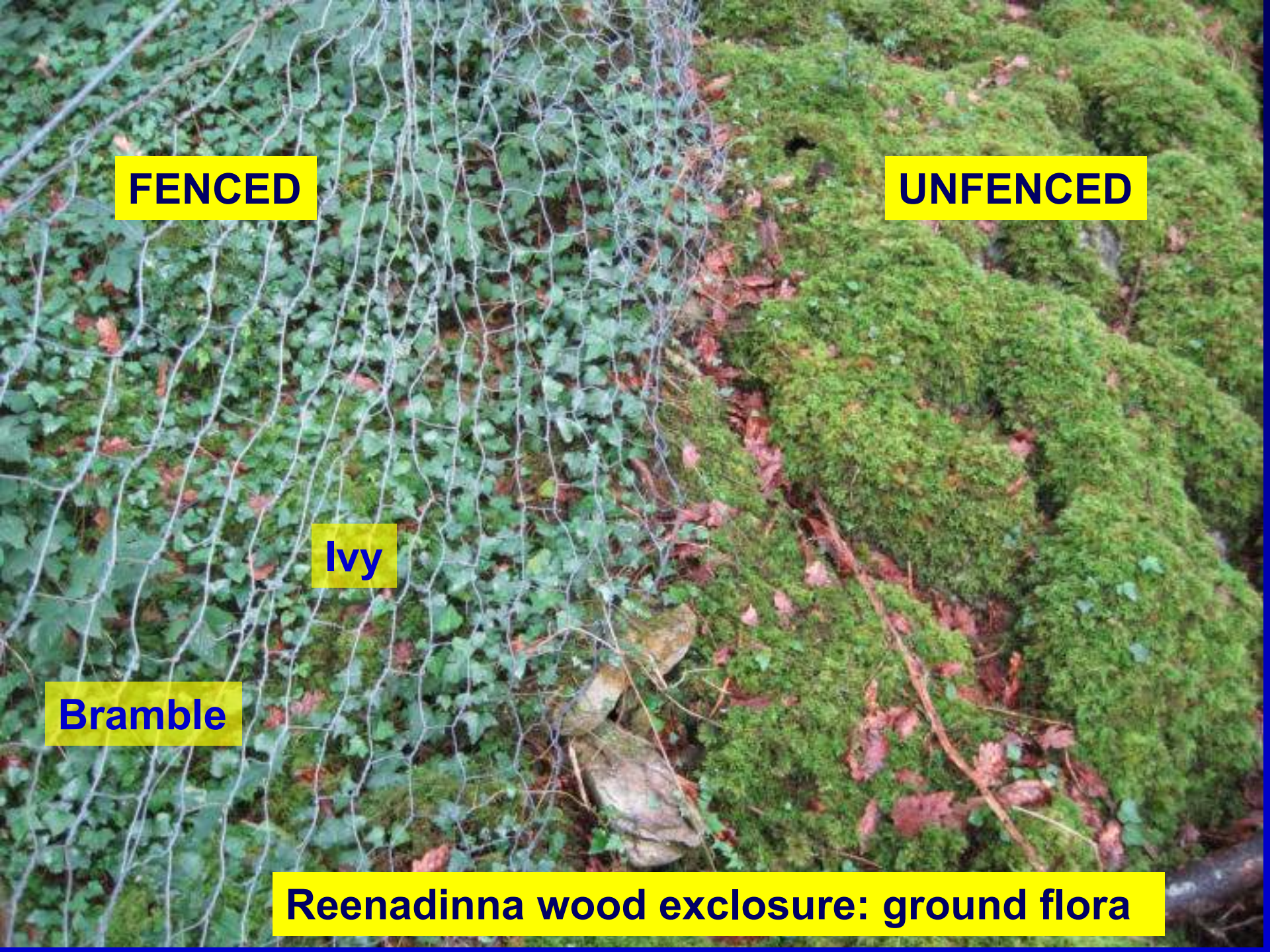
FENCED

UNFENCED

Ivy

Bramble

Reenadinna wood enclosure: ground flora



Zero grazing: **Competitive Exclusion** may eliminate small plants

Cover (%)		P
Fenced	Unfenced	

Ground flora changes over 32 years

WINNERS

GRAZING-SENSITIVE SPECIES

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LOSERS

GRAZING-TOLERANT SPECIES

St John's Wort	<i>Hypericum pulchrum</i>	0.0	0.1	*
Wood Sorrel	<i>Oxalis acetosella</i>	0.0	0.2	*
Barren Strawberry	<i>Potentilla sterilis</i>	0.0	0.1	**
Sanicle	<i>Sanicula europaea</i>	0.3	1.5	*
Speedwell	<i>Veronica chamaedrys</i>	0.0	0.1	*
Violet	<i>Viola riviniana/reichenbachiana</i>	0.5	2.0	***



Invasive non-native species in Irish woodland

Beech
(*Fagus sylvatica*)

Beech saplings inside enclosure and **outside**

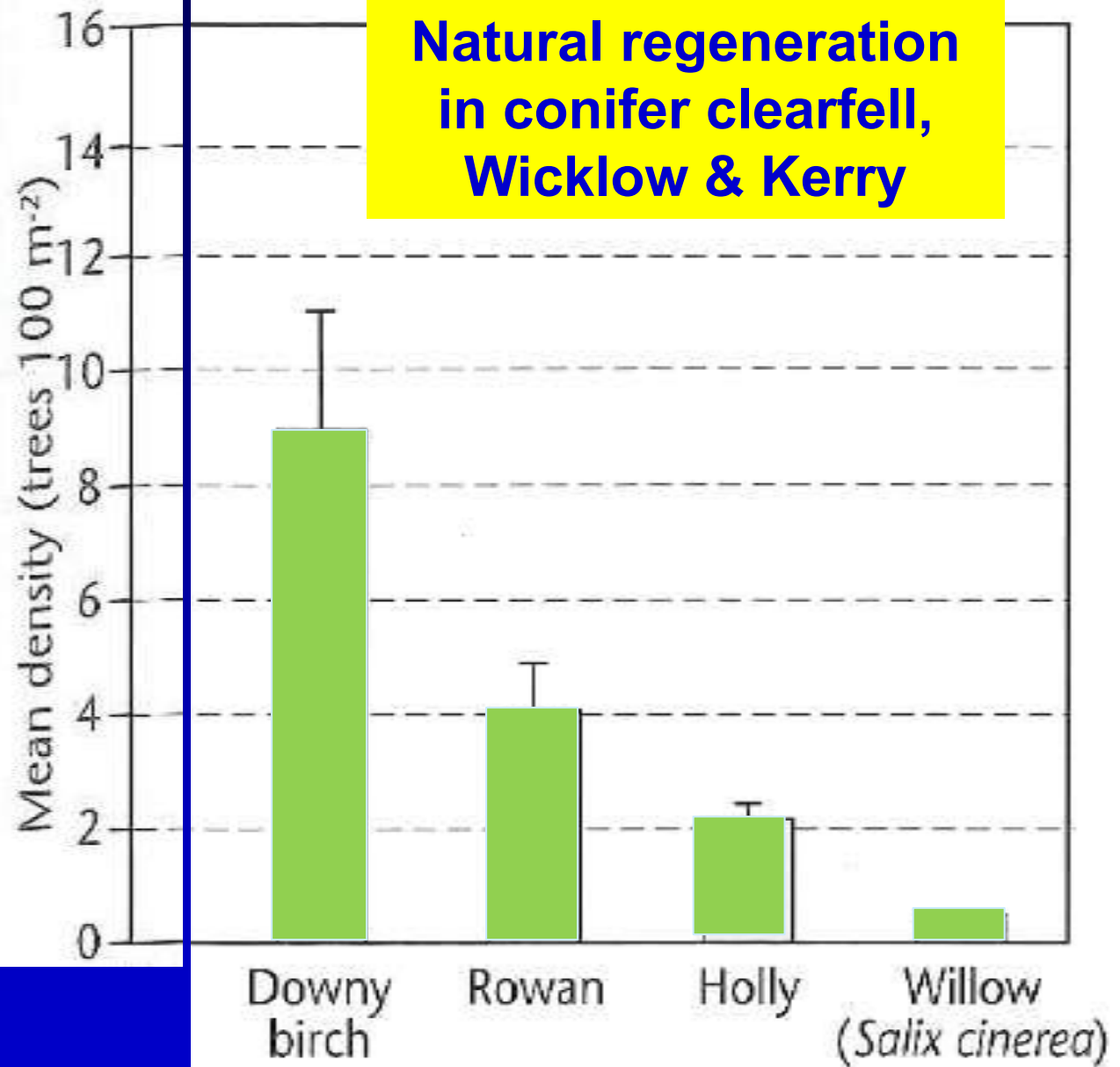


**Invasive non-native
conifers**



Photos:
M. Lyons

**Lodgepole pine (*Pinus contorta*)
Letterkeen, Co. Mayo**



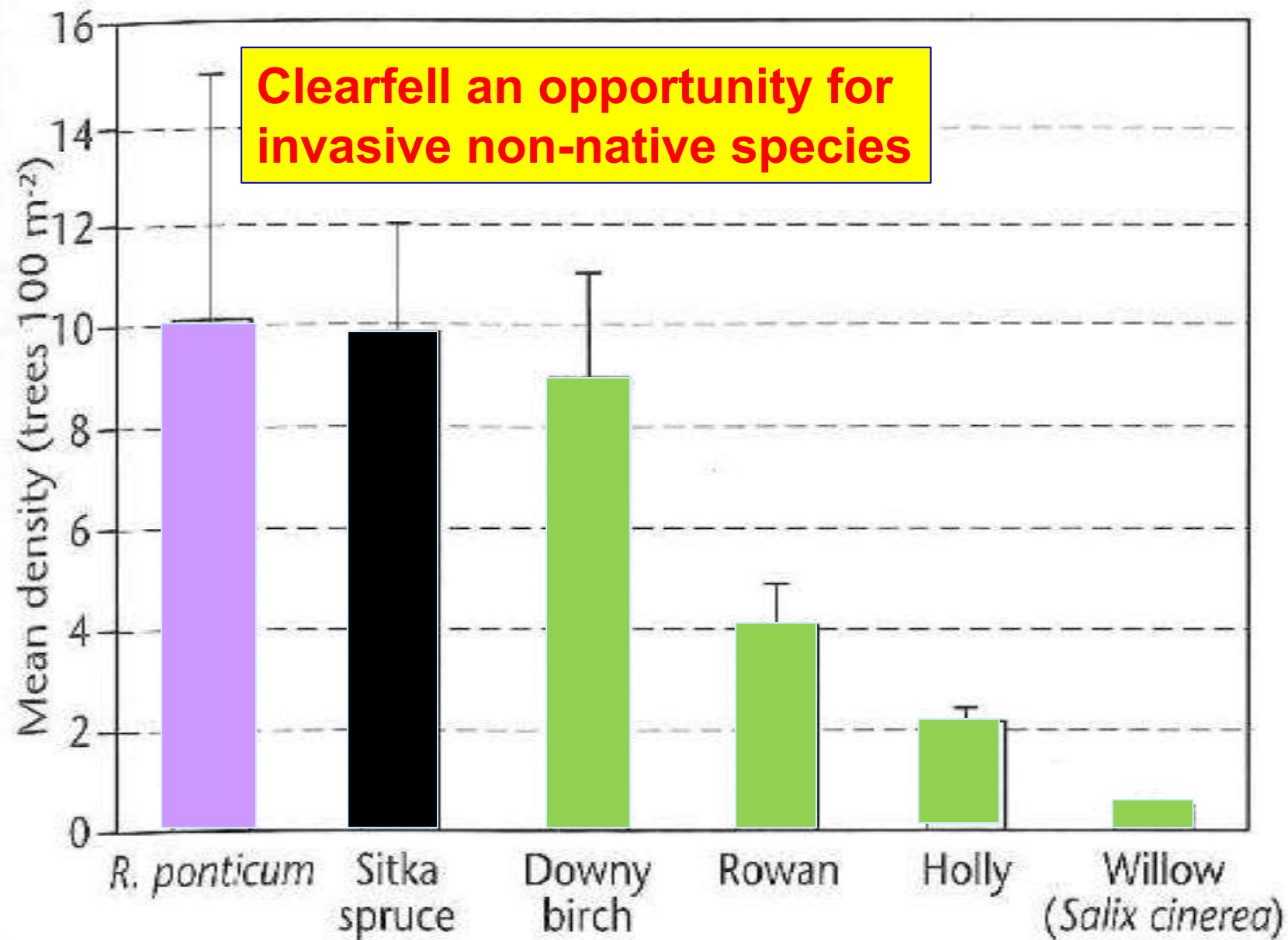
Smith, G.F., Kelly, D.L. & Mitchell, F.J.G. (2003)

**Fraughan
Rock Glen,
Glenmalure**



**17 years after clearfell -
former Sitka Spruce-Lodgepole Pine forest**

**Photo: Amadain17,
July 2014**



Smith, G.F., Kelly, D.L. & Mitchell, F.J.G. (2003)

**Invasive non-native
broadleaved
evergreens**



'Rhodo'
Rhododendron ponticum

Cherry-laurel
Prunus laurocerasus



‘FRANKENSTEIN ECOSYSTEMS’?

Letterkeen, Co. Mayo

Rhododendron ponticum
- a mounting crisis

- **Stop spread into & within “Protected” areas**
- **Stop vicious circle of clearance – reinfestation – repeat clearance**



**Dutch elm
disease**

[seedtofeedme.blogspot.ie/2016/08/
ash-dieback-disease](http://seedtofeedme.blogspot.ie/2016/08/ash-dieback-disease)

stories.rbge.org.uk/archives/23883

**New tree pests
and diseases**



**Ash die-
back**

Total area of native woodland in Ireland still small.

Republic of Ireland:

Forest comprising >80% native species

= 100,667 ha

= 1.43% of area of State

(Second National Forest Inventory, DAFM 2013).

Area of most individual native woods is tiny.

Republic of Ireland:

- 50% of sites 6 ha or less

- Only ten sites over 100 ha.

(National Survey of Native Woodlands 2003-2008, P. Perrin et al. 2008)

Habitat fragmentation an issue for survival of woodland ecosystems.

Woodland specialists often 'sedentary'

Ecological 'corridors' needed.



cartell.ie
Rally of The Lakes

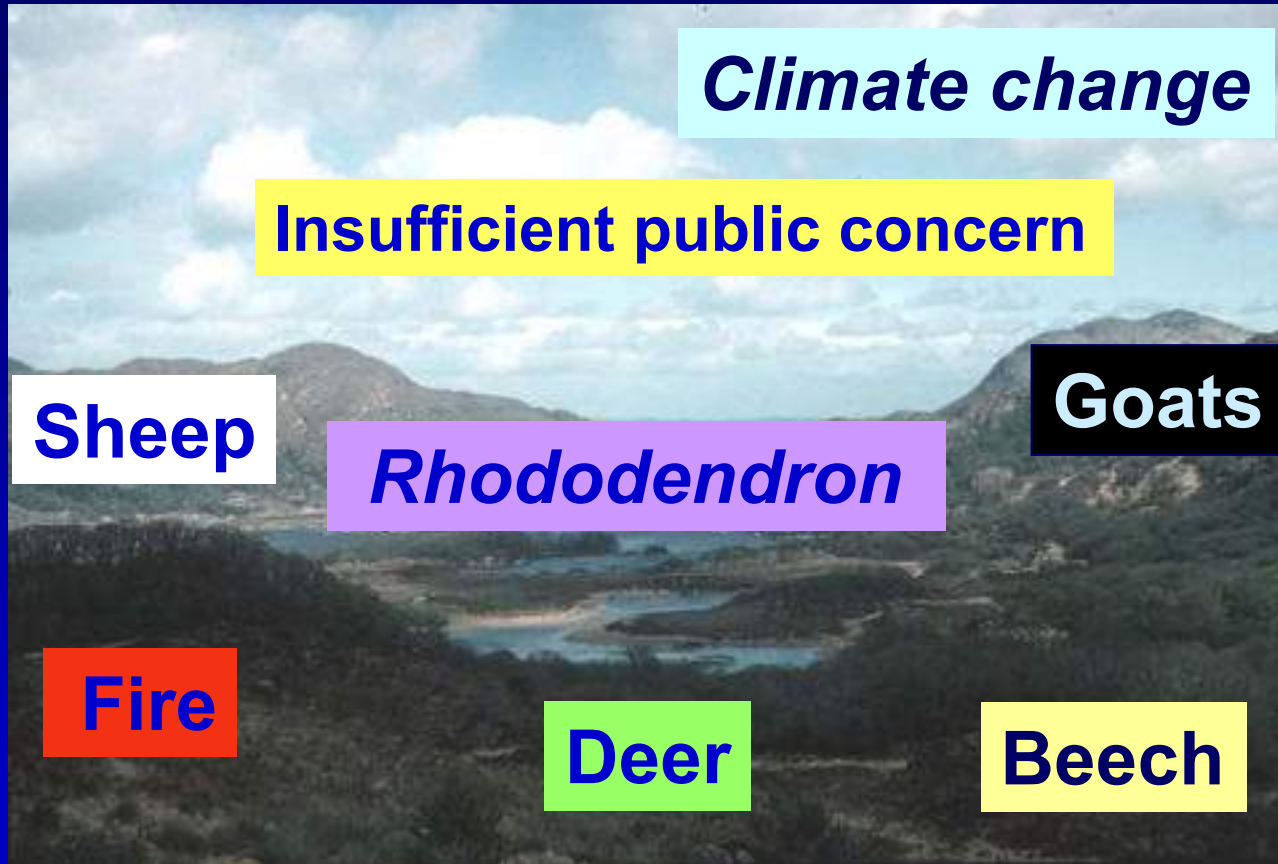


Killarney National Park: 4-6 May 2018



‘The 39th running of the Cartell.ie International Rally of the Lakes will again no doubt attract an unprecedented entry across its four sections – International, modified, historic and junior’ - <http://rallyofthelakes.com/>

Native woodlands are threatened by...



The state of our native woodlands is precarious

**Nature conservation in Ireland is
undervalued and under-resourced**

**May this conference prove a clarion call for action
to protect, conserve and restore our woodlands!**