

# Vegetation recovery at blanket bog restoration sites



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## Outline of presentation

1. Introduction to blanket bog in Ireland

2. Effect of afforestation on blanket bog vegetation

3. Recovery of blanket bog vegetation

## Blanket bog in Ireland



- Confined to areas with a moist, cool climate – Rainfall in excess of 1250mm per year, falling on 200-250 rain days.
- Have been growing for the past 5 to 7 thousand years.
- Peat depth typically between 1.5 and 4 metres.
- Very restricted world distribution e.g. NW Europe, NE Canada, Japan.
- Intact blanket bog once covered 11% of the country.
- C. 18% of the original area is intact, with c. 45% lost to turf cutting and c. 25% afforested.



The world distribution of blanket bog

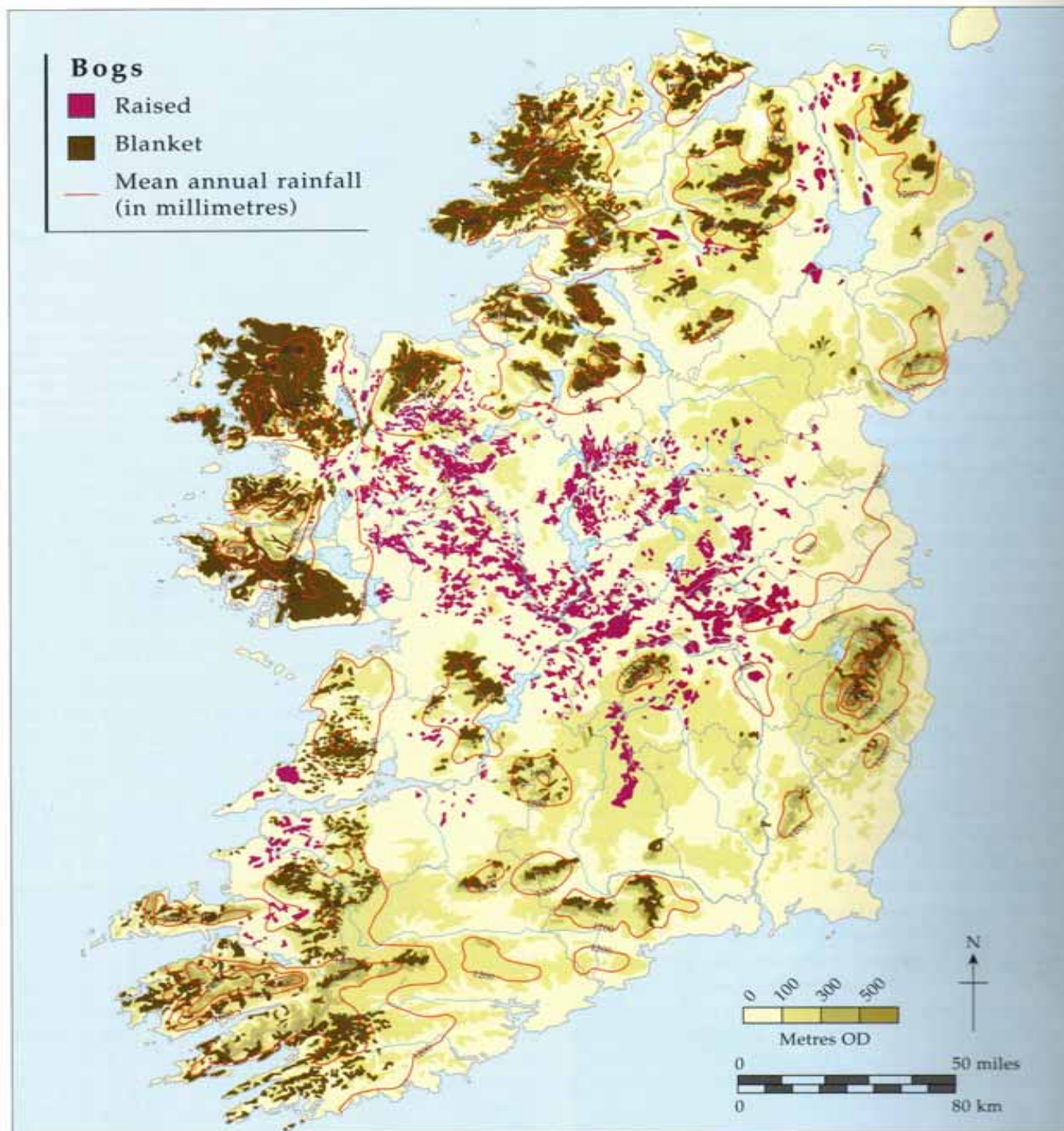


Fig. 2 The distribution of bogs types in Ireland. Blanket bogs grow more extensively in western and northern areas with high rainfall and waterlogged acid parent soil. Unlike raised bogs, they occur in elevated positions as well as lowlands and are found on major mountain masses throughout







***Molinia caerulea* – Purple moor-grass**





***Schoenus nigricans* – Black bog-rush**



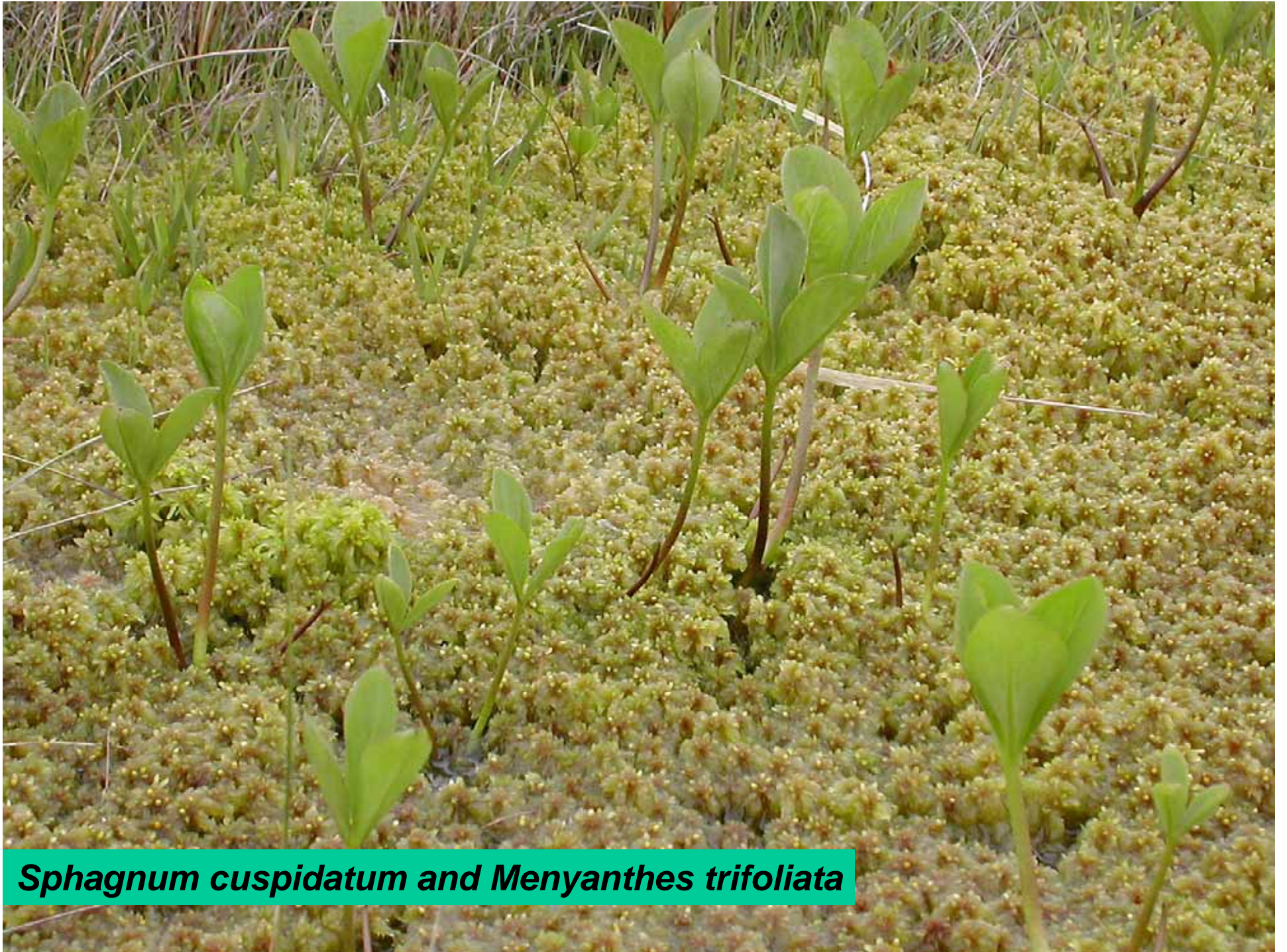
***Calluna vulgaris* – Ling**




***Erica tetralix* – Cross-leaved heath**



***Eriophorum angustiolium* – Common bog-cotton**



***Sphagnum cuspidatum* and *Menyanthes trifoliata***



The effect of afforestation on blanket bogs?

**Intact blanket bog**

**Dominated by purple moor-grass, black bog rush and cross-leaved heath. Sphagnum cover typically 30 to 70%.**

**Average no. of plant species in 4m<sup>2</sup> = 19 (15-24)**

**Blanket bog planted for c. 10 years**

**Dominated by purple moor-grass. Loss of “wet” bog species. Sphagnum cover typically less than 50%.**

**Average no. of plant species in 4m<sup>2</sup> = 10 (6 to 14)**



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- **Net effect of afforestation – Reduction in plant species-richness by half & replacement of wet bog species with species of dry woodland.**

**Blanket bog planted for c. 30 years**

**Blanket bog vegetation +/- killed off. Layer of pine needles dominant with occasional moss and fern species, e.g. *Hypnum cupressiforme* and *Dryopteris dilatata*. Average no. of plant species in 4m<sup>2</sup> = 9 (6-12)**

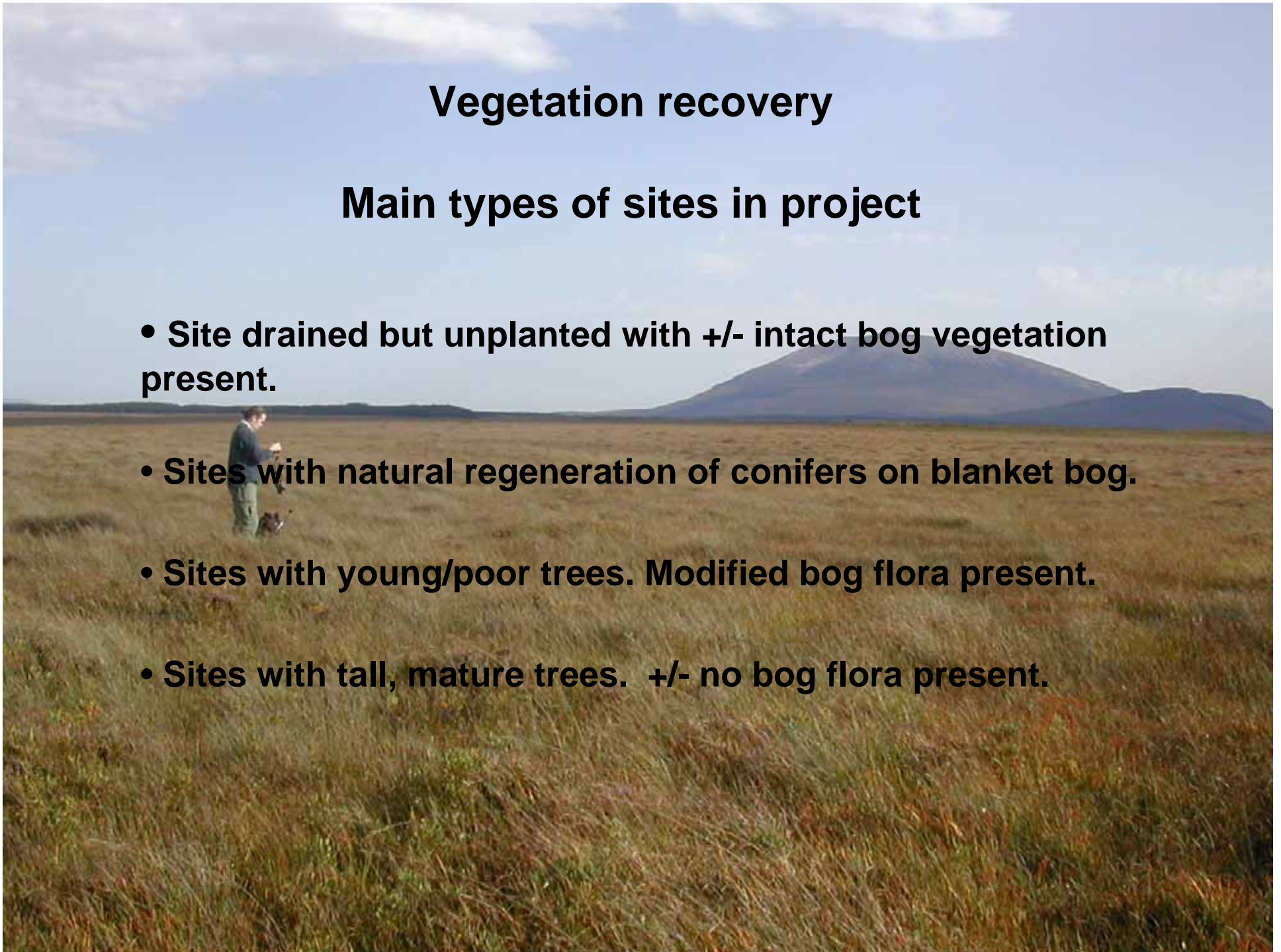




# Vegetation recovery

## Main types of sites in project

- **Site drained but unplanted with +/- intact bog vegetation present.**
- **Sites with natural regeneration of conifers on blanket bog.**
- **Sites with young/poor trees. Modified bog flora present.**
- **Sites with tall, mature trees. +/- no bog flora present.**



## Croaghonagh, Co. Donegal

- **Total site area 33 hectares**
- **12 ha of site intensively drained in early 1990's but trees not planted**
- **Drains blocked**







Sphagnum regrowth in wet drains has been slow

## **Bellaveeny, Co. Mayo**

- **Total site area 344 hectares, planted in 1982**
- **160 ha planted with conifers, 184 ha of open blanket bog, heath, lake and rock outcrop**
- **Mainly lodgepole pine with some small areas of Sitka spruce**
- **Felled, windrowed and drains blocked**



Bellaveeny 2000





Bellaveeny 2003





Bellaveeny 2007



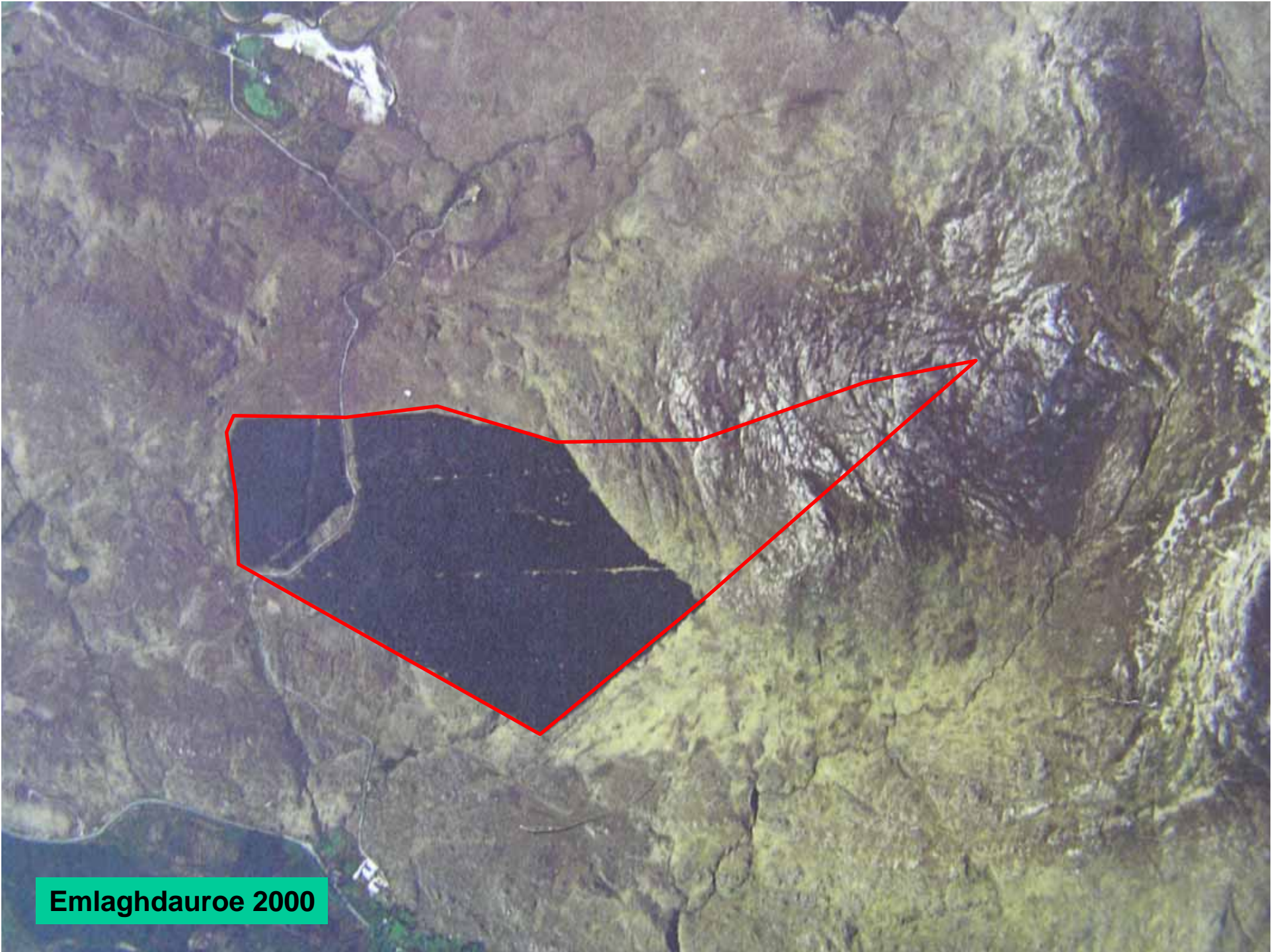
**Bellaveeny Permanent Plot No. 2, 2004**

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- Increase in cover of *Molinia* from c. 20% to c. 70% in 3 years

**Bellaveeny Permanent Plot No. 2, 2007**

## **Emlaghdauroe, Co. Galway**

- **Total site area 90 hectares, planted in 1975**
- **72 ha planted with conifers, 18 ha of open, heath and rock outcrop**
- **Mainly lodgepole pine with some small areas of Sitka spruce**
- **Commercially felled and drains blocked**



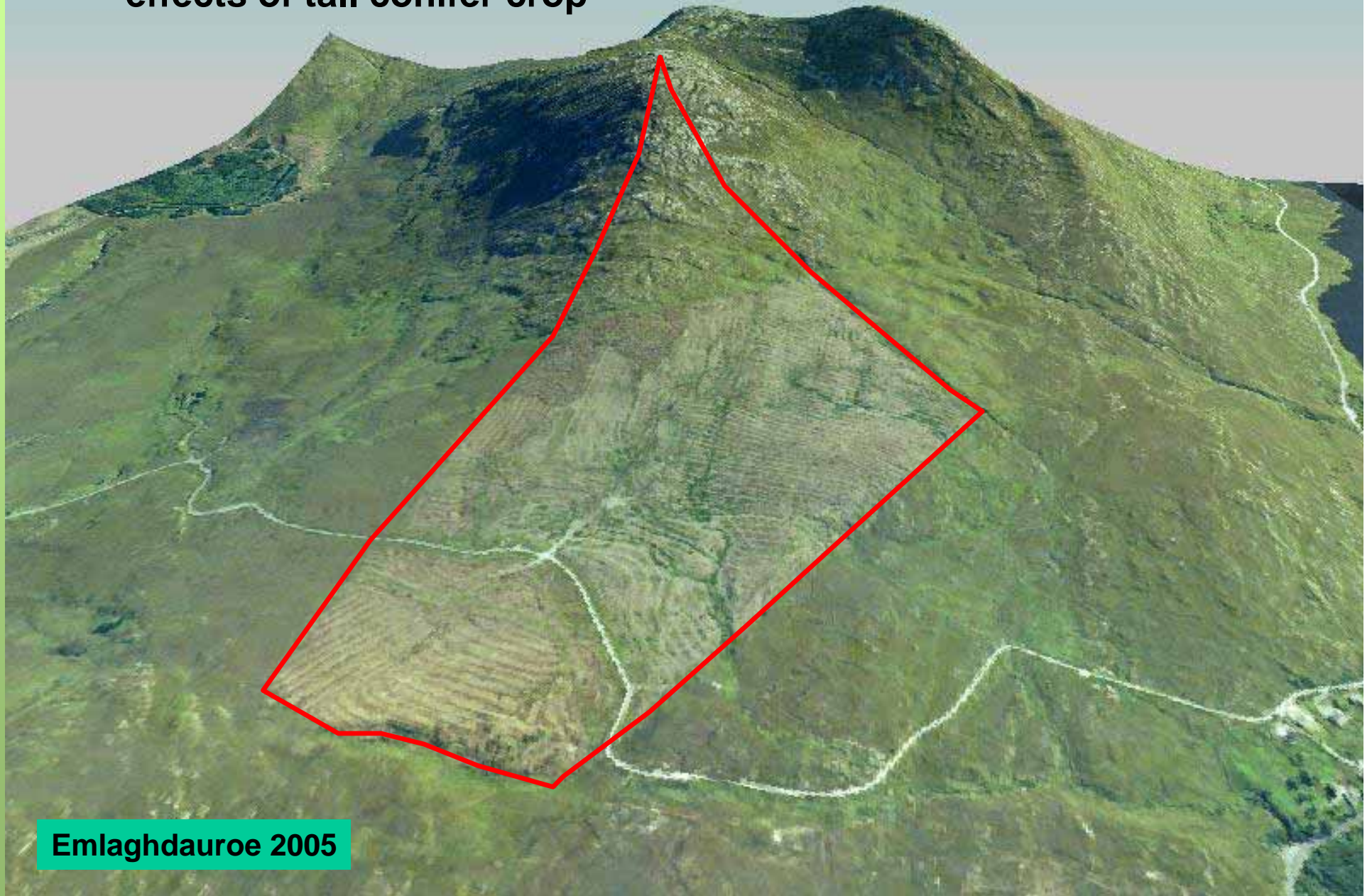
**Emlaghdauroe 2000**



**Emlaghdauroe 2002**



- Recovery of bog vegetation slow due to drainage and shading effects of tall conifer crop



Emlaghdauroe 2005



**Emlaghdauroe Permanent Plot No. 2, 2003**

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- Increase in cover of soft rush (*Juncus effusus*) from <5% to 80% in 3 y
  - High cover of soft rush confined to areas which are sloping, flushed and previously planted with Sitka spruce.

Emlaghdauroe Permanent Plot No. 2, 2006

**Emlaghdauroe Spring 2003**



**Emlaghdauroe Autumn 2006**





## Vegetation recovery - Main results/conclusions

- Speed of blanket bog recovery depends on age/size of the tree crop.
- In sites with young/low yielding trees *Molinia caerulea* (purple moor grass) is the first species to recolonize and dominate with *Calluna vulgaris* (ling) in drier areas.
- Initial vegetation is quite species-poor but it is hoped that other wet bog species will recolonize over time.
- Sphagnum regeneration is best in damper areas such as blocked drains.
- Invasion of *Juncus effusus* (soft rush) a problem in some sites which carried a commercial crop.
- Regeneration of trees - mainly birch and lodgepole pine – generally only a problem in areas where the peat cover is thin or in previously cutover areas.
- Ongoing monitoring of plots will reveal future recovery trends of bog vegetation.