NATIVE WOODLAND AND CLIMATE CHANGE
FIELD COURSE THEME- SUNDAY, OCTOBER 12TH 2008
VENUE: WILDLIFE ARBORETUM, BROADFORD, CO. LIMERICK

"We, the undersigned, senior members of our world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the earth and life on it is required if vast misery is to be avoided and our planet is not to be irretrievably mutilated".

This statement was signed by 58 of our world's most prestigious scientific academies in 1993, at the Rio Earth Summit Convention on Biodiversity. The UN Rio Summit was a response to a new consciousness of ecology throughout the world and was endorsed by 170 nations including Ireland in addition to half of all living Nobel Laureates and 1600 leading scientists. Threats to our global home listed by the signatories included deforestation, loss of topsoil, acidification, acid rain, shortages of water and loss of biodiversity, leading to and compounding climate change.

Ireland's natural environment is native tree cover- at 87,298 hectares (Higgins 2005), Ireland has by far the least natural environment in Europe (less than 1.1% of territory).
The average 'meaningfully protected' landscape in the 26 O.E.C.D. countries is 7.7% of national territory- in 1997, Ireland had no territory protected as Scientific Reserves (I); Natural Monuments (III), or Protected Landscapes (V). If natural plant succession is the foundation of native biodiversity in Ireland, how well are we equipped to honour our endorsement of the 1993 Convention?

Over the next twenty years (1996 Strategic Plan) the forestry sector is scheduled to increase to 17% of national territory ie. 2.5 fold increase. The Heritage Council (June 1999) expressed concern that Ireland's landscape should not be overwhelmed through our 'over dependence on non-native conifers'.

"To protect your rivers- protect your mountains"
(Emperor Yu, 1600BC)

Because of deforestation and inappropriate reforestation in its upland source waters, the Huang river in China dumps one and a half billion cubic metres of soil into the sea annually. Here in Ireland we need only read the judgement of the European Court in July 2008 concerning the Derrybrien landslide. In paragraphs 88 and 107, it queries why no Environmental Impact Assessment was carried out in advance of 'the deforestation of large areas of coniferous forest amounting to 263 hectares' . (hectare= 2.5 acres)

The UN Food and Agriculture Organisation (FAO) estimates that between five and seven million acres of soil are lost annually, but that our earth's soils must feed an additional 90 million humans annually!

On 16 August 2008, one month's rain fell in Northern Ireland in 12 hours- phenomena likely to be repeated for several years in Ireland. Valuable clay content and plant nutrients are leached and soils lose their water-holding capacity and become acidified.

Research published in July 2007 (Coford-National Council for Forest Research and Development) - though not under Irish conditions because we can no longer 'wait on decades of experiment' - demonstrated that native trees help to buffer rising acidity by releasing neutralising molecules of calcium, magnesium and potassium into the shallower upland soils. Zero afforestation of our highland moors seems our safest option. For 'acid-sensitive areas' coford recommends Sessile Oak (our deep-rooting Climax Tree of the Hillside) and Downy Birch (our trusted soil improver that raises pH of acid soils) and Rowan (Mountain Ash).

The Scots Pine, being high in associated rare insects and companionable with Birch, and European Larch (although not native to post-glacial Ireland but deciduous), is capable of reducing Ireland's progressively sour soil chemistry. Earlier research (2003) by woodland botanists Daniel Kelly etc. investigated restoring Irish Oak woods on former Upland Blanket Sitka plantations and found that Sessile Oak, Birch with Holly and Rowan were their chosen species to 'mend our hills and repair our streams, their pH and their insect and aquatic life" . In 1996, 63 studied upland salmonoid watercourses were found to be at the limits of their pH tolerance due primarily to inappropriate blanket plantation forestry. (Kelly, Quinn 1996).

CREATING SPACE FOR NATURE TO FUNCTION

In support of our theme that our native trees and woodlands, with their deeply penetrating heart-roots, can evapo-transpire c. 38% of rainwater back into the atmosphere (during the growing season) and store (capture) moisture in the deep litter (during the dormant season) , we profiled the associated volume of insect species-

Oak	**284**	**Willow**	**266**	**Birch**	**229**
Hawthorn	**149**	**Aspen**	**97**	**Scots Pine**	**91**
Alder	**90**	**Hazel**	**83**	**Rowan**	**28**
Sycamore	**15**	**Horse Chestnut**	**4**		

(D.A.N.I. 2000)

In a Woodland Trust publication of 2001 we discover that in one acre of native woodland there are:

Bacteria	**4 tons**
Fungi	**1.5 tons**
Field Plants	**0.5 tons**
Earthworms	**500lbs**
Protozoa	**340lbs**
Slugs and snails	**90lbs**
Spiders	**50lbs**
Beetles	**9lbs**

and all busy building themselves from carbon and sustaining local biodiversity!

At our Community Ecology Restoration Initiative at Broadford, the bulk of the 770 native tree and shrub species, representing each of Ireland's indigenous 'Pillars of Nature' (26) have been sourced within a 10 kilometre radius with a view to preserving local genetic character (provenance). Plants form local ecotypes and races and underpin diversity.

'PROPERLY MANAGED WOODLAND IS AN INFINiTELY RENEWABLE SOURCE'
(Rackham 1990)

Sustainable management, according to the definition offered at the 1993 Rio Convention, includes the use of resources 'in a way and at a rate that does not lead to the long-term decline of bio-diversity'. Selective felling and coppice management alongside generous areas and margins left for their own evolution under a management that remains people- based and locally sourced might be a model in a countryside that few politicians seem- or seek- to understand.

Pete Beaumont remarked that a maiden Hazel may just about clock up 150 years, but when managed sustainably by rotational coppicing, the same hazel can supply c. 37 human generations (@ 40 years a generation) with abundant protein-rich nuts nuts; it can supply browsing for outwintered livestock as part of a wood pasture regime: hazel poles can be harvested for wattle, hurdling, fencing, scallops for thatching and shafting for brooms. Its winter flowers beckons contemplation and spiritual growth- because as Darwin states in his 'Struggle for Existence'
" the healthy and the happy survive and multiply".

With CO_2 concentrations at 320 parts per million (ppm) predicted to increase to 770ppm by 2100 (driving climate change) we were reminded that coppicing makes a tree become five times more effective at storing CO_2.

‘THERE’S NOTHING NEW UNDER THE SUN’
Shakespeare

Biomass/ Biofuel are modern terms for man’s oldest woodland management tradition- coppice.
There is evidence of coppicing in England 3,000 years ago, states Rackham. At Ballyseedy Wood (near Tralee), according to Ray Monahan in his 1997 paper, there survives coppiced alder of 25 feet in girth supporting shoots of 8 feet in girth. Perhaps the alder with the ‘largest recorded girth in Ireland’ measuring 5.88 meters in circumference at Glasún na Marbh (Killarney National Park) is facing stiff competition. Such is its might and age that it is at once a coppice and a pollard and an advancement on both
At Broadford, ‘Nurse Alder’ comprises one quarter of the ‘Treestoration Project’. It fixes nitrogen through associated root bacteria. Nitrogen was barely detectable during soil analysis on the site in 1998/99. In addition to improving the shallow mud, Alder raises the nitrogen for the benefit of the entire grove of trees and shrubs.

HARES’ CORNER (CÚINNE NA nGIORRIACHA)

Earlier generations of farmers consciously provided for our hares- every field had its hares’ corner and churchyards, formerly called ‘God’s Acre’ were dedicated to wildlife.
What have we become when our native wild beings have been pushed to their last refuges- forgotten corners of fields obsessively tidied up and our church grounds now carparks- as if we grudged them a living.

The lesson for all of us on the day remains- the land’s mutual relationship with all organic beings faces creeping monogenetic uniformity as forgotten corners are annexed with military precision to flowerless meadows. But so long as there remains sufficient ‘native banks’ no matter how small and dislocated- ladies in waiting, like Broadford’s Wildlife Arboretum -the mycorhizzam contained within cannot forget its passion for existence.

Our field day concluded with the planting of a juniper (j. communis) sourced from the limestone pavements of Creeves, Co. Limerick by Liam Dundon.