① THE PANEL - Introducing Glensaugh

The panel explains the history of our demonstration project and how the site is managed today. Look out across the Slack Burn and see the project area on both sides of the Birnie Burn.

The early project never achieved the expected decrease in livestock production - rather the opposite. Today, we can see this as a benefit of this kind of diversification. Walk on....

From the panel follow the track down to the Slack Burn. Cross the stream over the bridge, and continue up the track to the corner of the Scots Pine plot (19) and look for POST/STOP 2.

② PLOT 19 - Scots Pine 400/ha

Meet the softwoods. Walk around and take a look at the trees; now providing good shelter for livestock. Scots pine is our best-known, native, conifer. Notice the needles - dark green/grey and in pairs.

Young Scots pine needs protection, until the bark becomes less palatable. Lambs will strip the bark, especially if they have a selenium deficiency.

We pruned this plot in 2006, and removed the netmesh in 2008. For comparison, we left some un-pruned, in the corner towards the burn and larch. Compare the grass sward since pruning.

Continue, at the same level, into the Hybrid Larch plot to POST/STOP 3

③ PLOT 20 - Hybrid Larch 400/ha

Look around and spot the differences with the Scots pine.

Hybrid larch is a fast growing, non-native, but deciduous conifer. This pasture is no longer productive because we left the trees too long without further pruning or thinning. Our management decision here is to convert the area to woodland, after 14 years of sheep production.

Turn uphill and climb up to the grass field above and POST/STOP 4.

④ WOODLAND CONTROL PLOTS - Sycamore, Scots pine and Hybrid larch

Where you stand was cleared of low density Hybrid larch in 1995. The three woodland control plots form the western edge of this pasture.

The control plots were planted at conventional forestry densities. What differences do you see between the trees in the control and agroforestry plots? Look at the form, height, girth and timber quality of the trees, and visual impact and grazing potential of the forest plots.

On the eastern edge is a plot of Sycamore planted at 100/ha. The trees here have been slow growing and pasture production has been unaffected.

Continue up the edge of the control plots and into the Sycamore 400/ha - plot 15 and POST/STOP 5

⑤ PLOT 15 - Sycamore 400/ha

Meet the hardwoods. Sycamore is a non-native, fast growing, deciduous broadleaf. Once the canopy closes, as here, leaf fall can reduce grass growth and grazing potential. Only hard pruning and/or thinning gets the sward back. Or, we can develop it as a timber resource, using thinned trees (with poor growth form) as firewood.

Late pruning (2002 & 2007) leaves a tangle of larger branches on the forest floor- a problem for access and animals if they are not removed. Piles of brash can make useful wildlife habitat but this is not an option here - due to the need to control rabbits.

Continue to the top left corner, and cross the fence onto the track, and over to the Sycamore plot opposite and POST/STOP 6

⑥ PLOT 10 - Sycamore 100/ha

Take a walk into the plot and down the slope. Compare what you see with the last stop - the impact of wind exposure, in addition to lower density planting on the trees and the grazing potential? Closer (400/ha) planting can bring balancing benefits in tree growth rate, form, and landscape impact.

Retrace your steps to the track, and continue down hill. Pass the Hybrid Larch plot and appreciate the effects of exposure, until you reach the Scots Pine and POST/STOP 7.

⑦ PLOT 12 FENCING REMOVED - Scots Pine 400/ha

We are keen to continue our experimental grazing, incorporating access to both open and planted areas around here. Suckler cows will be introduced in 2008. What will result? We don't know now, but you will be able to see the results!

- will bark protection be needed; will pruning aid more effective grazing?
- can seasonal grazing avoid tree damage from soil compaction around the trees?
- what benefits will tree pasture bring for the cattle, and the grass pasture?

Continue down hill across the open grazing to the rocky knoll and POST/STOP 8.

⑧ VIEWPOINT

You are looking into the valley of the Birnie Burn, and our remnant area of native woodland. Tree cover (birch, rowan and hazel) has survived on steeper slopes, providing protection from grazing livestock. We have also planted native species in this area, and protected naturally regenerating trees - some would argue for less intervention. This is always a good subject for debate.

Look around you! You can see how tree cover helps the visual interest and biodiversity value of our Scottish countryside, as well as benefiting our livestock. Enjoy the views, near and far - if the weather is fine.

Head back across the pasture, towards the Slack Burn. Carefully descend to the track, retracing your steps back to the main road and your vehicle/s.

Welcome to Glensaugh!

This self-guided trail introduces you to the integrated sheep grazing and woodland (silvopastoral) system we manage here. Using the site, we hope to share some practical tips, and potential benefits, associated with this kind of land management in Scotland.

PLEASE pick up an Information Sheet from the Farm Office for more technical detail.

Come prepared! The ground is hilly and rough with long grass in places. There are no paths. Please wear suitable clothing and footwear for the outdoors - the weather can change rapidly.

**** The trail route is shown on the map and described in green in the text. Match the numbered posts on site with the text in the leaflet. On your way down the track, stop at the panel ① for an overview of the site.***

Agroforestry adj.-n.
Any system of land use management combining farming with forestry on the same land, taking into account ecological, economic and cultural factors, and supporting sustainable development.

MORE INFORMATION

PLEASE let us know what you think, after your visit. To tell us, or find out more:

- call in at the Farm office and collect an information sheet;
- visit our website www.macaulay.ac.uk, or
- write to us at Glensaugh Research Station, Laurencekirk, Aberdeenshire AB30 1HB.

THE MACAULAY INSTITUTE
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A self-guided trail at

Glensaugh

Research Station

Introducing the benefits of agroforestry in Scotland, and sharing some practical advice

THE MACAULAY INSTITUTE
research today for land use tomorrow

Welcome to Glensaugh's Self-Guided Trail and some top tips.

MANAGEMENT MATTERS!

Bring in some vision as well as value

- Your long and short-term aims need early consideration.
- Your management choices involve a balance between maintaining the grazing, and the timber value of the trees.

Benefit: You can get more grazing from an agroforestry system, compared with an open hill grazing system. Tree shelter can encourage better pasture growth, feeding, and animal welfare.

Benefit: Trees and woodlands can add greatly to the landscape quality of the countryside and its tourism value. The careful choice of species and planting pattern can add to this effect.

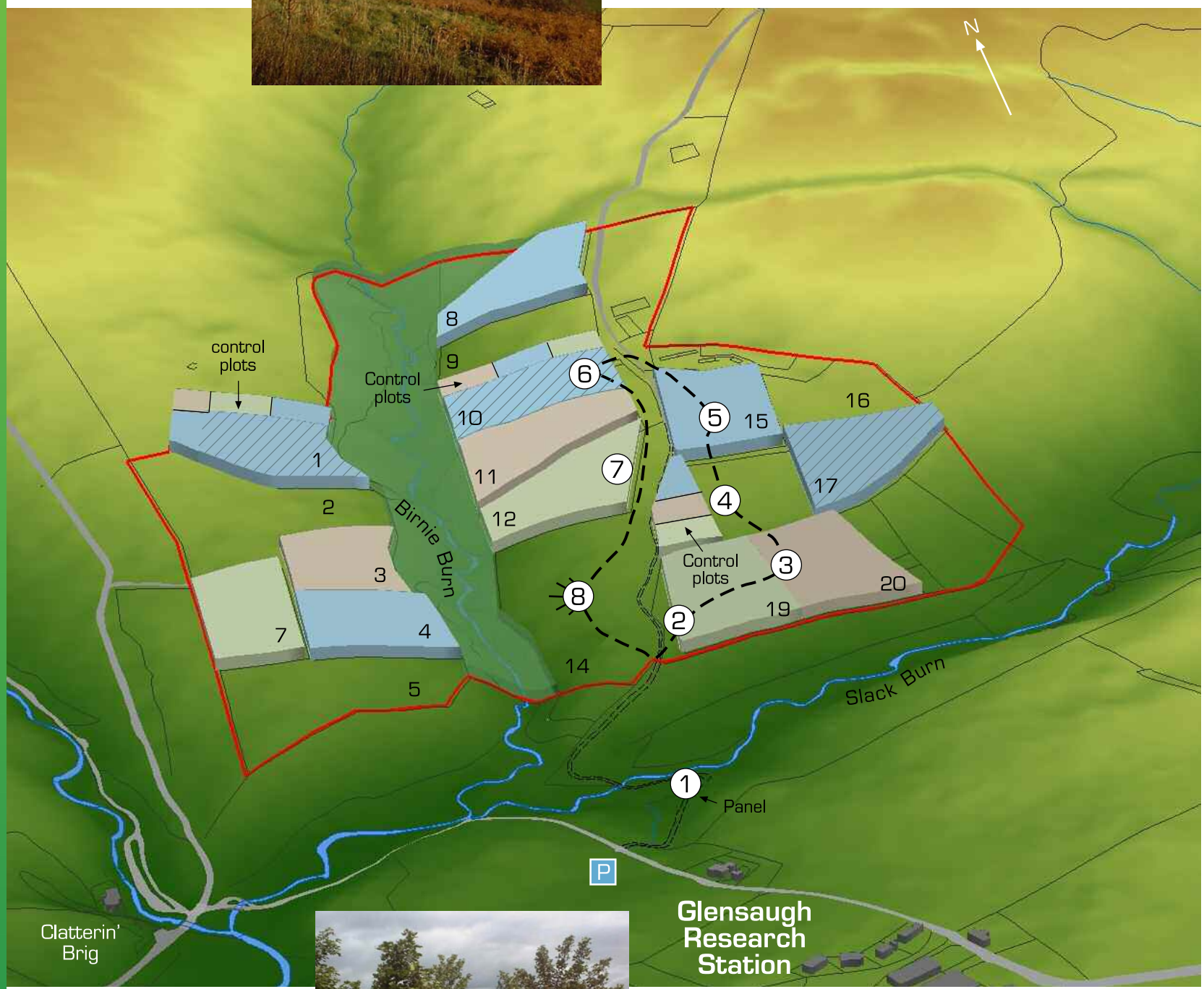
PLANNING & TREE SELECTION

Choosing which tree species will depend on your aims - economic, social, or environmental. Do your research carefully, and seek advice from local woodland management specialists.

- Whichever species you choose, obtain whips of local provenance, from a local tree nursery source. The saplings are better adapted to local conditions and will grow better. Replant (beat up) unsuccessful whips after 1 year.
- Planting parallel with the contours, and avoiding straight lines enhances the landscape value of tree planting. Otherwise, plant in a grid and thin selectively later, for a more nattural look.

Benefit: Trees add biodiversity value to integrated systems - increasing the variety of species present, as well as the numbers of individual species. Especially, trees benefit less visible insects, bats, birds and lower plants.

Benefit: Both hardwoods and softwoods on a farm can bring socio-economic benefits from diversification, within rural areas. Every part of a tree can be used for a variety of purposes, e.g. craftwork, art/photography, firewood, or timber.



Scots pine 400 trees/ha
Hybrid larch 400 trees/ha
Sycamore 400 trees/ha
Sycamore 100 trees/ha
Native woodland
15 Plot number
P Parking layby (unsurfaced)
Panel/Stop 1
3 Posts/Stops
Shortest route (no path)
Track
Main road
Boundary of agroforestry experiment
Viewpoint

0 100 m

TREE PROTECTION

Use plastic tubes and/or netmesh protectors to give protection from browsing animals (hare, deer, rabbits, and livestock), and wind exposure. Be aware they are costly and labour intensive to maintain.

The original rigid plastic tubes caused damage to tree form of the Hybrid larch. After 6 years we replaced the tubes with netmesh, but the trees never recovered. Generally, protection can be removed after 10-12 years depending on species.

- Use netting tree protectors for all conifers, not rigid plastic tubes.
- Hybrid larch is less susceptible than Scots pine to de-barking by lambs; Sycamore appear unattractive to sheep.

TREE PRUNING

Pruning reduces the tree canopy, allows transmission of light for pasture growth, and improves the timber value. At Glensaugh the knots are much larger than normal - pruning took place too late. Even so, although taking more time and effort, all pruning on Glensaugh was achieved with hand tools.

Once the canopy closes, the most likely plants to colonise after pruning are pernicious weeds e.g. nettles and thistles, and pruning can be hazardous requiring cherry pickers and/or chainsaws.

- Decide early on whether you want a timber resource, or to continue under-grazing
- Similar issues apply to pruning hardwoods or softwoods.

- Use the rule of thumb - when a branch gets to thumb thickness it's time for pruning.
- Generally aim to prune to a level 50% of the trees top height.
- Thin branches can be left to decompose and recycle nutrients to the soil, without being a hazard for people/livestock.

TREE THINNING

Selective thinning is an option, enhancing the amenity and landscape value of the plot, the grazing, and the remaining timber value. At Glensaugh, no thinning was considered during the early experimental phase.

- Use selective thinning strengthens tree stems - giving protection from wind and snow damage.