

Self-led activities to support the land-based diploma at Delamere Forest.

This pack offers a range of self-led activities based on the key concepts of the productive and working environments, plants and animals and developing the sustainable environment. The initial question posed is **What is a natural forest?** Students must use their skills to decide whether the forest can be considered natural or not?

Students will be given the opportunity to undertake activities that allow them to **experience the environment** outside of the classroom, **enquiry based learning** and **practical investigation**.

The activities are designed to incorporate basic identification, monitoring and recording techniques; identify the environmental impact of human activities; discuss the relevance of conservation work in terms of the local environment.

For this activity students will need writing/note making equipment, mobile phones or cameras to document findings, pH indicators (either universal indicator solution or universal indicator paper), waterproof containers/bags to test samples.

Suggested timings

10:00am – Students arrive at the information centre. Discuss health and safety, general forest information and timings for the day at the picnic tables. All the students will take part in all the activities. Split the students into groups and direct them as to which activity they will begin with. Each group is allocated a map and equipment.

Typical Day

Activity 1 – 10:30am – 11:15am

Objectives - Identification, classification and recordings of species

Equipment/resources: Forest Map, Species Identification Sheet, 'Tree Trail Through Your Wood' sheet, Leaf Identification sheet, note making equipment

1. Students follow the red route (marked on map) (through the gate and walk sensibly towards the picnic area).
2. Identify tree and plant species using keys, descriptions, pictures
3. Students should record findings using cameras/mobile phones to compare at end of the day.

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4. Observe the way the trees are planted in the forest – think about why they are growing this way?
(Meet back at picnic area)

Extension activity (back at school/college) – students use their observations to create a dichotomous key of species recorded.

Activity 2 – 11:15am – 12:00pm

Objectives – Observe the planting patterns of the trees and discuss the benefits & disadvantages of intensive forestry, Assess woodland habitats under canopy

Equipment/resources: Forest map, note-making equipment

1. Follow blue route and observe forest floor and discuss differences between pine/larch areas and mixed woodland. Pay particular attention first to the area A and then area B.
2. Underneath canopy, observe and annotate a description of the forest floor and the habitat – amount of open space, type of canopy tree, variation in plants, interdependence, amount of light, possibility for animal habitats, moisture/dryness etc.
3. Discuss why the Forestry Commission would choose to manage the forest in both ways.
4. Compare habitat A with habitat B.
5. Use the information on different species and decide on the benefits/disadvantages of intensive forestry?
(Meet back at the picnic area)

Lunch 12:00pm – 12:30pm

Activity 3 – 12:30pm – 1:30pm

Objectives – Identify soil types according to pH levels and organic matter content

Equipment/resources: Forest soil map, pH indicator, pH chart, and plastic container/bag, soil charts

1. Go to each of the locations (1, 2, 3 and 4) to compare different types of soil
2. Take a small sample and test using your pH indicator – either add some universal indicator solution and observe colour change or add some water and touch Universal indicator paper to water and observe colour change
3. Assess the composition of soil type according to key
4. Determine if the plants growing in this area correspond with those typically found in this soil type

Concluding session – 1:30pm – 2:00pm

Consolidations in picnic area or classroom if available/ booked – groups pair up and compare their findings and opinions.

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Species Identification – around Delamere Forest



Corsican Pine – Conifer, average height 18-45m. Leaf = long needles found in pairs. Green/grey colour Seed = cone, grey/brown when ripe. Widely grown for its timber



Likes sandy soil sites. Can withstand salt exposure and drought well

Scots Pine – Conifer, average height 12-36m. Leaf = thick needles found in pairs. Green/grey colour. Seed = cone, green maturing to brown. Bark = distinctly orange colour. Strong softwoods and is widely used in the construction industry and joinery
Grows well on almost any other soil type except chalk



Japanese Hybrid Larch – “Deciduous Conifer” average height 30-40m. Leaf = light green in bundles on short shoots, turn orange then brown before dropping in winter. Seeds = rounded cones. Bark = grey/brown regular pattern. Hardy and resistant, durable timber. Deep, moist, alkaline and well-drained soils are best for growth.

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Acid Brown Earth

General: An ideal soil for almost any land use, often found in gardens, the high fertility and depth of good rooting make it an excellent forestry soil. The profile is normally brown throughout, well drained, and aerated. Typical acid pH (5.5-6.0)

Description: Vegetation – Bramble, bracken, wavy hair grass, shield fern, oak, pine, holly, rowan

0-15 cm Reddish brown to brown sandy loam. Stony with rounded to angular pebble. Medium blocky to fine crumb structure, Many Fibrous roots and tree roots.

15-27 cm Light grey slightly sticky sand, friable sandy loam rather weak structure becoming more cemented further down, occasional fine roots.

Podsol

General: The commonest soil type in Delamere Forest. This is free draining, deep rooting soil. Note better growth of the trees compared to those growing on the wetter, lower areas.

Description: Vegetation – Bracken, shield fern, birch, Scots pine, Japanese larch, rowan.

0-4 cm Fresh un-decomposed organic litter

4-7 cm Partial decomposition of litter. Material compact

7 – 10 cm Black/sandy, abundant white sand grains

10-14 cm Dark grey matter, bleached sand mixture, soil slightly sticky and stony, many roots

14 – 29 cm Light grey slightly hard, sticky sand. Few fine roots.

Peat Bogs

General: Peat develops from a build up of organic material, which is very slow to decompose. Found in the lowest lying areas of the forest where the water table is closest to the surface. As a consequence it is very wet and low in nutrients. Birch and alder are the commonest species of tree on this soil type at Delamere.

Description: Vegetation – wood sorrel, hard fern, shield fern, wavy hair grass, bramble, bracken, birch, Scots pine, holly

0-30 cm Dark brown fibrous peat consisting of partially decomposed organic material. Very spongy.

Ground Water Gley/Peaty Gley

General: waterlogged soil characterised by a thick layer of slowly decomposing peat over a wet mineral soil with few plant roots. The surface vegetation is an indicator of this soil type, as are the water loving trees nearby. A common soil but quite rare at Delamere.

Description: Vegetation – bramble, shield fern, bracken, alder, Scots pine, birch, oak

0-20 cm Black peaty more humus with tree roots

20-60 cm Greyish brown loamy sand. Few stones. Slightly sticky and plastic