# BS111 Practical 2 & 3

## Correlation of species richness to soil properties from different habitats

# Instructions.

- Work in 4 groups: W, X, Y Z (already allocated)
- Each group will go with a GLA/lecturer to a different site on campus
- Within the 4 groups you will split into groups of 3 (6 groups and 1 group of 2) (sub-group)
- Note on your group register you sub-group partners.
- Each sub-group and group will collect data about the habitat which will be used to describe the site and also evaluate it using scientific methods to quantify observations.
- Each group has  a copy of the group and sub-group data sheets.
- By the end of today's session: provide gmail account on your group register.

# Table 1: Part of Wivenhoe Campus: Habitats and Biodiversity Survey and Plan (description) showing sites to be surveyed in BS111

| | Habitat name | Location | Description | Key plants and insects | Management issues |
|---|---|---|---|---|---|
| 13 (Z) | Campus Farm and Pond | East of Wivenhoe House | Farm/allotments to the north of the old pond Old pond with some wetland plants; | Acid grassland Garden trees | Water to pond and farm |
| 14 ( Y) | Kingfisher Lake | Top lake, between VC's house and road | Wetland habitat | Fallen mature mulberry tree | |
| 15 (X) | Bluebell Wood | Shelter belt alongside main road from lake to middle lodge | Woodland along Clinghoe Hill road | Oak, ash, sweet chestnut, bluebells | Open up some glades in woodland |
| 16 (W) | Benton's Top Heath and Hay Meadows | Triangle of heathland | Large expanse of acid grassland | Relict acidic grassland, a scarce habitat with an extremely rich invertebrate fauna. Dominated by Red Fescue, Sheep's Sorrel & Field Wood-rush, with rare Slender Parsley-piert and Blinks occurring in damp seepage areas | Cut carefully and late to ensure best invertebrate diversity |

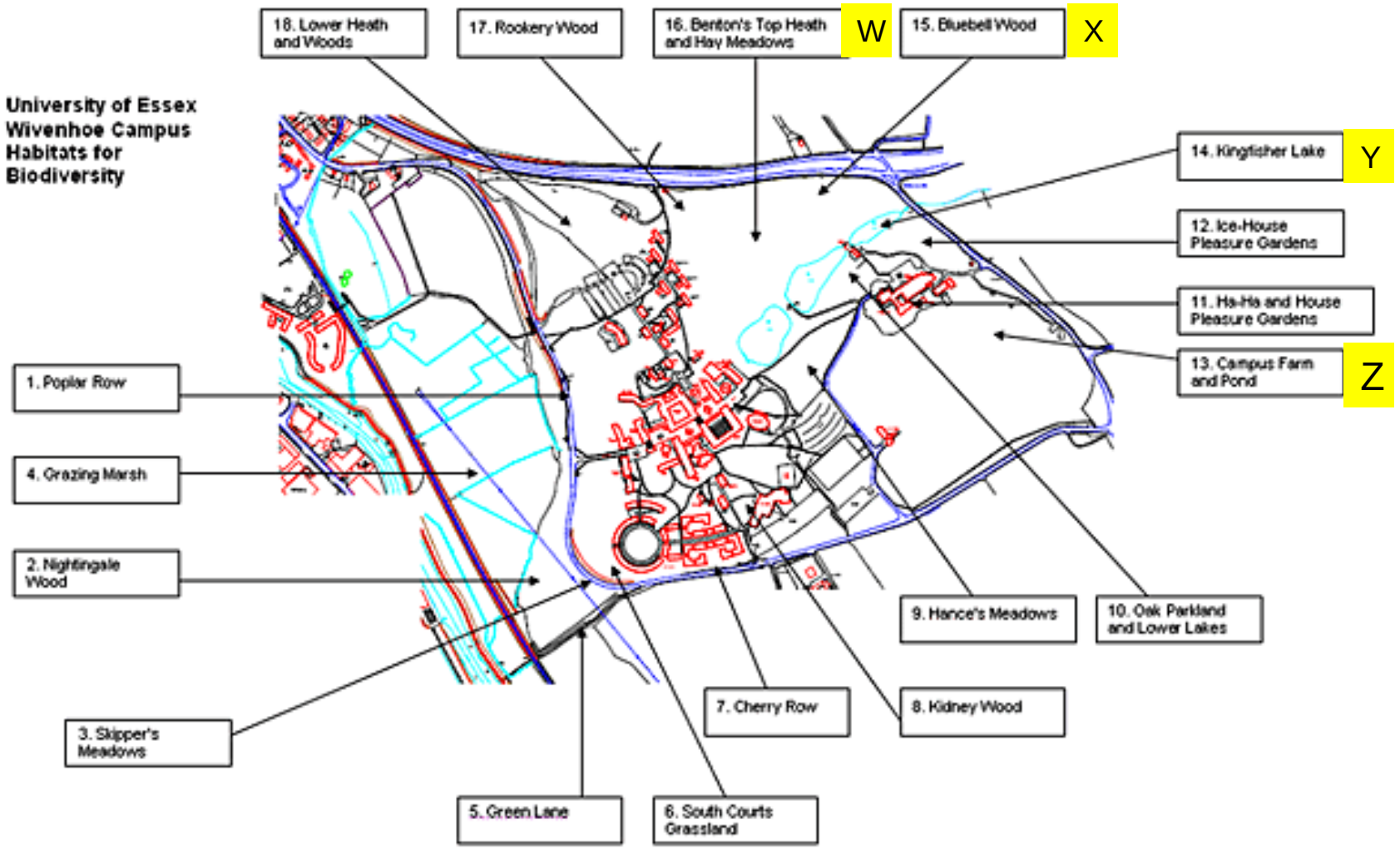
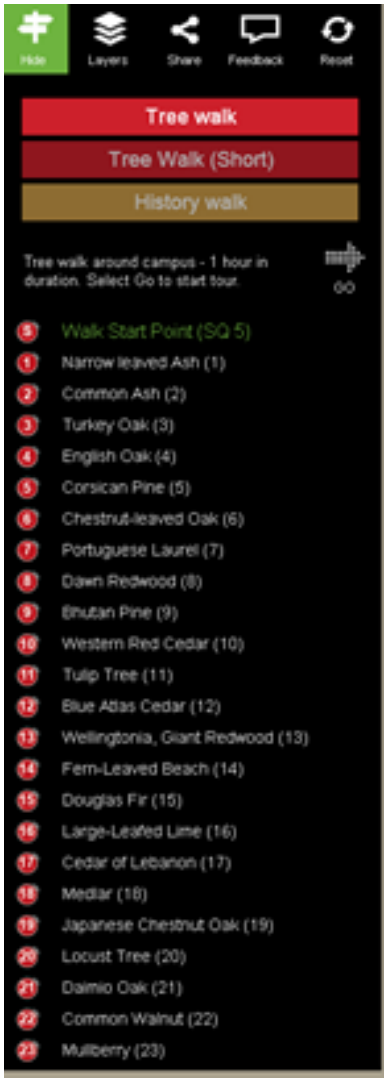
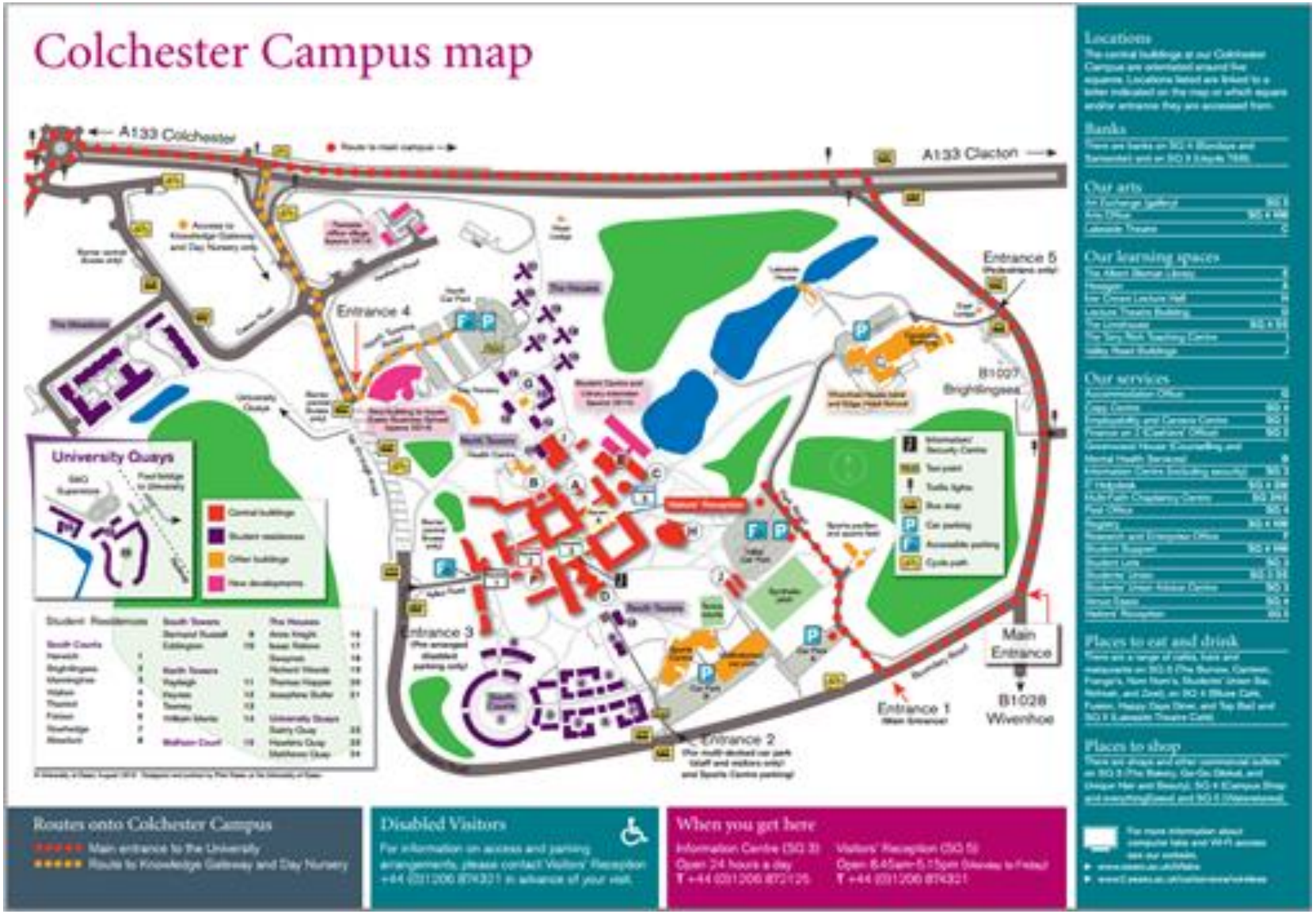



Fig 1: Wivenhoe Campus: Habitats and biodiversity survey and plan (map) http://www.essex.ac.uk/gtf/biodiversity.aspx Accessed 22.08.14 11.45





http://findyourway.essex.ac.uk/RL3/Apps/Tours/index.php last accessed: 11.09.14




http://www.essex.ac.uk/about/getting_here/colchester/colchester_campus_map.pdf

# Equipment to take to field

**Sub-group Equipment.**

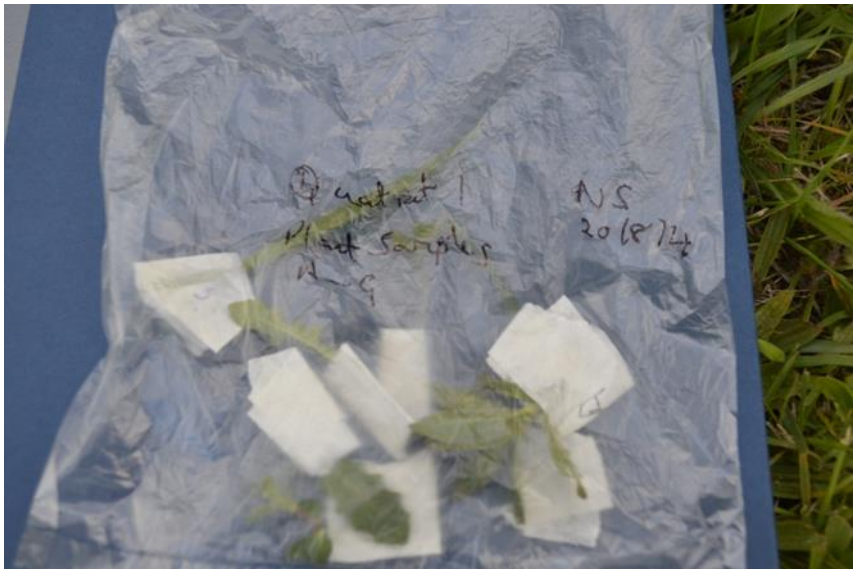
- a quadrat
- point quadrat
- Ruler
- clipboard, this handbook. data recording sheet, paper, pencil
- **Device to take photos**

**Group Equipment**

- Thermal probe /gun
- Garden trowel
- Large plastic bags (14 for soil/vegetation and some extras for plant samples.
- Masking tape for labelling
- Guides: monocot/dicot distinction/ FSG of plants
- Marker pens

# Group Sampling

## Plant ID: A – e.g. T: Monocot/Dicot, sample label, samples as a group



- Overview the site first
- look at the different plant species in the grassland as a group of 20/21 take some samples of the different plants and allocate them an alphabetic code – attach a label (tape) to stem and carefully put in a large plastic bag & take photos.
- Decide if the sample is a dicot or a monocot plant, note name if known or distinguishing features (see laminated sheets).
- Each group needs to note plant/code to standardize your group data collection from the quadrats.

Image provided that showed Simple differences between Dicotyledon and Monocotyledon

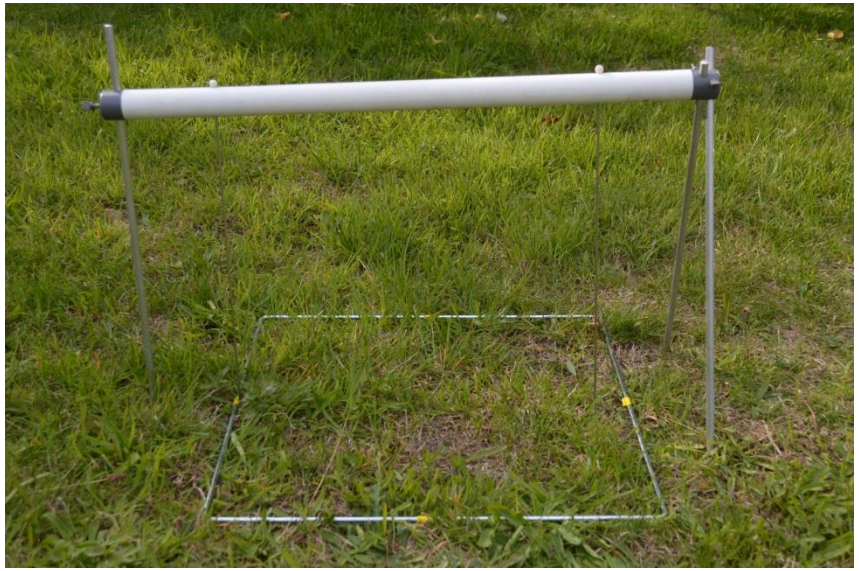
# Sub-group Sampling:

1. Random throwing of quadrat (care not to hit anyone)
2. Take temperature of, air, (plants), and soil (using shared group equipment).
3. Count the number of different types of species,

- & % cover of bare ground & different plants – use same code as for group ID.
- Point Quadrat – height & number of hits

5. Core sample : Vegetation and soil sample.
6. Take a sample from the middle of the quadrat using the trowel to a depth of 10cm (approx).
7. Separate the vegetation from soil and put into two labeled bags.
8. Feel the soil to determine how much water it contains and smell to determine type of respiration taking place – aerobic, or anaerobic.
9. Record the colour of the soil.

- Repeat steps 1 - 9
- Once completed, as a group, return to the teaching lab room 6.04 for further work.



# Back in the lab. Samples

- 2 bags per quadrat
  - soil sample
  - Vegetation (shoot & root)

# Day 2: Aims of practical's 2 & 3

- Links between Natural History and Ecology
- Ecology: scientific analysis
  - Descriptive Ecology: Part A
  - Abundance of species: How many different types (Part A & B)
    - Quadrat data – standard and point quadrats
    - Invertebrate analysis
  - Where are they found & why?
    - Looking at different habitats
    - Quantifying different aspects of the habitats (data submission for part A)
      - Temperature
      - Water content
      - pH
      - Variety and abundance of species
    - Finding patterns in the data
      - (Worksheet submission for Part B)

# Day 2

- Groups
- W
- X
- Y
- Z

- Activities:
- Sign register
- Check your gmail is OK
- Data Collection in lab:
  - Update sheet

  Stagger the activities to make sure there are no bottlenecks.

# Groups.

W: Start by looking at dry weights of :

- Soil
- Shoot
- Root material
- X: start with soil text ture

- Y start with soil pH and porosity
- Z to start with invertebrate analysis
- All to do all activities.
- Remember to check if your gmail account is OK and sign register.

## Part A Submission: Team/ Collaborative work: You all need to access you own accounts in Google drive. You will be given permission to share files

- At group file level. Access to 2 documents
  - PowerPoint type file for Figures/Photos of habitat & site
  - Word-type document for description of site.
- At sub group level access to 1 document
  - Excel type document to add your data.

These documents were shown to you in practical 3 (second session).
If you have not been given access, contact me at nicola@essex.ac.uk.
And provide your name, gmail account, your group and sub-group details.

# Recommended Reading:

Krebs, C.J. (2014) Ecology, The experimental analysis of distribution and abundance. 6th Ed. Pearson Ch 1. p 14 – 28; Ch. 6 p89.

Waugh, D. (2000) Geography, An integrated approach 3rd Ed. Nelson Thornes Ch. 10 p 260 – 270 (newer edition also available)

Jones, A. et al ( 2003) Practical Skills in Biology 3rd Ed Prentice Hall Ch. 3 p 12 – 15; Ch. 29 p174 (newer editions available)