

# Itinerary: Ecological Sampling Techniques



Toohy Forest  
Environmental  
Education  
Centre

## Learning Goal:

To **collect** distribution and abundance data of plant species as they transition from a wet to dry sclerophyll forest (using a belt-line transect), then **analyse** the data and **identify** the possible factors (e.g. abiotic) that cause this change.

## Students will:

- **understand** that ecosystems are composed of varied habitats (microhabitat to ecoregion)
- **interpret** data to classify and name an ecosystem
- **describe** the process of stratified sampling in terms of purpose (estimating population, density, distribution, environmental gradients and profiles, zonation, stratification) site selection choice of ecological surveying technique (quadrats, transects) minimising bias (size and number of samples, random-number generators, counting criteria, calibrating equipment and noting associated precision) methods of data presentation and analysis
- **measure** abiotic factors in the field (e.g. soil moisture, soil pH, light intensity, soil and air temperature, humidity)
- **use** the process of stratified sampling to collect and analyse primary biotic and abiotic field data to classify an ecosystem
- **use** appropriate technology, such as data loggers, chemical tests, range finders (canopy height) and other equipment to measure factors

Inspiring Science beyond the classroom	Time	Activity
	9.00–9.20am (20 min)	<b>Introduction to staff, program and facilities</b> <b>Mile a Minute Activity:</b> <i>Students use a game format to recall a variety of terms associated with ecological sampling techniques.</i>
	9.20–10.00am (40 min)	<b>Plant Identification:</b> <i>Samples of local native plants identified using Plant ID booklet</i>
	10.00–10.10am (10 min)	<b>Toilet and drink break (10min Only)</b>
	10.10am–12.00pm (1hr 50 min)	<b>Group Roles:</b> <i>Discussion and Allocation of Quadrats</i> <b>Ecological Sampling — 2 quadrats:</b> <i>plant abundance; vertical plant heights, recording of abiotic data (e.g. temperature, light, pH, soil composition and moisture etc)</i>
	12.00–12.30pm (30 min)	<b>Lunch</b> <i>Visiting teacher to supervise completion of field booklets through data sharing</i>
	12.30-1.30pm (1 hr)	<b>Research Question Construction &amp; Data Analysis:</b> <i>Continue sharing/collate data. Outline how a research question may be constructed. Discuss the identification of patterns, trends and relationships in the data, analysis and research. Discuss the reliability of the data and uncertainty</i>
	1.30–1.45pm (15 min)	<b>Toilet and drink/snack break (15min Only)</b>
	1.45-2.25pm (40 min)	<b>PowerPoint:</b> <i>What is stratified sampling? Ecosystems, abiotic and biotic factors, transition zones, zonation patterns, transects, quadrats</i> <b>Sampling Scenarios Activity:</b> <i>In their allocated groups, students critique 2 different scenarios to determine sampling options and opportunities to reduce data bias. Critique and grade an exam question from a previous 'external exam'</i>
	2.25-2.30pm (5 min)	<b>Farewell and Depart</b>

## Students will need:

- Covered footwear
- Sun safe clothing and hat
- Sunscreen and insect repellent already applied
- Water Bottle
- Morning Tea and Lunch
- Field booklet, Clipboard, Pencil

## Litter Free Lunch

We encourage students and staff to pack a litter free lunch. A litter free lunch contains no throwaway packaging. Everything in it can either be re-used, composted or recycled. Therefore food is brought in re-usable containers rather than disposable plastic wrap. Drinks are brought in refillable plastic bottles. Pre-packaged foods are discouraged.

