Itinerary:
Surveying the Natural Environment

Toohey Forest Environmental Education Centre

Learning Goal:

To **collect** distribution and abundance data of plant strata 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. **Collect** data on bird sightings within defined environments and **use** indices to compare these areas.

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

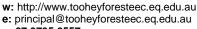| Time	Activity
8.30–8.50am (20 min)	**Introduction to staff, program and facilities**
8.50 – 10.00am (1hr 10min)	**Bird Survey:** 4 Sites surveyed using sight/sound (10min per site) observations for birds. 2 Sites per group (Site 1 & 2 swap/Site 3 & 4 swap)
10.00 – 10.30am (30 min)	**Lunch** *Visiting teacher to supervise completion of field booklets through data sharing*
10.30–11.00am (30 min)	**SDI:** Students to calculate SDI for bird areas and discuss limitations/bias and control measures that could be enacted. Students also discuss SDI limitations.
11.00–11.40am (40 min)	**Sampling Scenarios Activity:** 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'
11.40–11.50am (10 min)	**Toilet and drink break (10min Only)**
11.50am–1.10pm (1hr 20min)	**Group Roles:** Discussion and Allocation of Quadrats **Ecological Sampling — 2 quadrats:** strata abundance; vertical plant heights, recording of abiotic data (e.g. temperature, humidity, light, pH, soil composition and moisture, canopy height. etc)
1.10–1.30pm (20 min)	**Lunch** *Visiting teacher to supervise completion of field booklets through data sharing*
1.30-2.25pm (55 min)	**Research Question Construction & Data Analysis:** 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 - pValues
2.25-2.30pm (5 min)	**Farewell and Depart**

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.

Queensland Government