



Year 11

Biology/Investigating Science

Biology/Investigating Science outcomes

Biology – BIO11-10, BIO11-11, BIO11-2, BIO11-3, BIO11-4, BIO11-5

Investigating Science – INS11-9, INS11-2, INS11-3, INS11-4, INS11-5

Content

Biology:

Module 3: Biological Diversity

- Inquiry question: How do environmental pressures promote a change in species diversity and abundance?
- Inquiry question: How do adaptations increase the organism's ability to survive?

Module 4: Ecosystem Dynamics

- Inquiry question: What effect can one species have on the other species in a community?
- Inquiry question: How can human activity impact on an ecosystem?

Investigating Science:

Module 2: Cause and Effect- Inferences and Generalisations

- Inquiry question: What inferences can be drawn from observations?

Program Description

All students will participate in a collaborative investigation to collect qualitative and quantitative primary data, discuss the validity and reliability of data and improvement to fieldwork methods. This program may be used as part of a depth study.

Biology students will engage in first hand investigations using a variety of sampling techniques to obtain data to analyse the biotic and abiotic factors operating within the wetland ecosystem and their impact on species diversity and abundance. Students will also investigate how human activity has impacted on this wetland in the past, the present and the future.

Investigating Science students will engage in first hand investigations using a variety of sampling techniques to obtain data to assess the water quality of parts of this wetland ecosystem and calculate the Stream Pollution Index and Taxa Richness of this wetland. Students will also investigate how human activity has impacted on this wetland in the past, the present and the future, including the impact on water quality.

Prior to the fieldwork- students are to complete an online pre learning activity, which will be provided when a booking is made.

On the day students complete fieldwork including:

- Abiotic Investigations- Measuring abiotic factors to investigate their impact on a wetland ecosystem and to determine the water quality (including measuring: water and air temperature, humidity, water depth, pH, turbidity, dissolved oxygen and using data loggers in fresh and brackish systems).
- Biotic investigations – Comparing the biodiversity and abundance of pond animals at two sites, using data collected to determine the water quality of the pond, identification and description of plant and animal adaptations including the use of microscopes, investigation of biotic factors including predation, competition and symbiotic relationships in a wetland ecosystem.
- Human Impact Investigation- Discussion on the past human activity and subsequent impacts on this wetland ecosystem including the water quality. Discussion and observation of strategies used to rehabilitate the site and past management practices that have informed future management approaches.

Conclusion

Short discussion on climate change and the future of this wetland ecosystem.

This program is delivered over 4 ½ hrs.

The basic program will be changed to suit larger groups or weather conditions.

Location

Wetlands Environmental Education Centre (WEEC) located at Hunter Wetlands Centre, 412 Sandgate Rd, Shortland, Newcastle
Please use School entry.

Site Description

Wetlands EEC is located at the Hunter Wetlands Centre, which is a managed wetland reserve with natural and artificial water features accessed by decks and established walking tracks. The site is classified as part of the Hunter Estuary Ramsar Site under the International Convention on Wetlands (Ramsar). WEEC have a purpose built education centre including theatre, wet room and classroom.

Excursion information

What to bring: Printed workbook per student, clipboard and pencils, recess and lunch, refillable water bottle, hat, sunscreen, comfortable, covered walking shoes plus any special requirements of the group. (Wet weather gear when necessary). Non-aerosol insect repellent is advisable.

The WEEC is a NSW Department school and staff are trained DoE teachers specialising in Environmental Education. WEEC teachers rely on the participation of visiting teachers to meet recommended supervision levels. Visiting teachers are ultimately responsible for behaviour of students, students with existing medical conditions or special needs.