Assessment task: Depth Study

Module 4 – Ecosystem Dynamics

Population Dynamics

Outcomes

Inquiry question – What effect can one species have on the other species in a community?

Values and attitudes

- develop positive, informed values and attitudes towards biology
- recognise the importance and relevance of biology in their lives

Working scientifically

- BIO11/12-3 conducts investigations to collect valid and reliable primary and secondary data and information
- BIO11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
- BIO11/12-5 analyses and evaluates primary and secondary data and information
- BIO11/12-1 develops and evaluates questions and hypotheses for scientific investigation
- BIO11/12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes
- BIO11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose

Knowledge and understanding

BIO11-11 analyses ecosystem dynamics and the interrelationships of organisms within the ecosystem

Inquiry question: What effect can one species have on the other species in a community?

the ecological niches occupied by species (ACSBL023)

- investigate and determine relationships between biotic and abiotic factors in an ecosystem, including: (ACSBL019)
  - the impact of abiotic factors (ACSBL021, ACSBL022, ACSBL025)
  - the impact of biotic factors, including predation, competition and symbiotic relationships (ACSBL024)

measuring populations of organisms using sampling techniques (ACSBL003, ACSBL015)

predicting consequences for populations in ecosystems due to predation, competition, symbiosis and disease

Learning across the curriculum

Sustainability

General capabilities

Critical and creative thinking
Information and communication technology capability
Literacy
Numeracy

Task outline

To investigate the inquiry question "What effect can one species have on the other species in a community?" through secondary research and a field trip to Brewongle Environmental Education Centre to conduct a primary investigation into the inter-relationship of the red fox and spotted tailed quoll.

Task

Part A: Secondary source investigation (10 marks)

- Complete pre-excursion research tasks
- To create a specific inquiry question relating to the inter-relationship of foxes and quolls
- Predict/hypothesise the outcome of your field study based on your research of fox/quoll population dynamics

Part B: Primary source investigation (10 marks)

- Complete a firsthand investigation as part of a field trip to collect primary data.
- You will be marked on the completion of your field booklet and quality of data.

Part C: Analysis and communication of data from Part B (10 marks)

- Complete the post visit task in the student booklet provided.
- Process and analyse the data to help solve the problem presented by your inquiry question.
- Communicate your scientific findings using a medium of your choice.

Your summary should be written to show a deep understanding of the inquiry question. Your responses should be written in your own words.

Marking guidelines (Part A)

Marks	Marking criteria
8-10	Student able to communicate summary of main ideas using their own language, relevant scientific terminology is included and used accurately. Adequate information provided. Student shows an excellent level of understanding of concepts. Adequately formatted and 3 or more sources used.
5-7	Student able to communicate summary of main ideas using their own language. Student shows a good level of understanding. Inadequately presented in format but a reasonable attempt made to acknowledge 2 sources
2-4	Student summary completed but does not show student understanding in their own words. Student shows a basic level of understanding. Inadequately presented in format, poor attempt made to acknowledge sources.
0-1	Limited communication of ideas and limited use of scientific terminology

Marking guidelines (Part B)

Marks	Marking criteria
8-10	Student data booklet completed with calculation of all means and averages. Data interpretation questions answered showing a high level of understanding. Student shows an excellent level of understanding of concepts.
5-7	Student data booklet mostly completed with some interpretation questions completed Student shows a good level of understanding. Some primary data missing
2-4	Student data booklet not completed fully and majority of interpretation questions not attempted. Student shows a basic level of understanding. Missing significant amounts of primary data
0-1	Limited collection of any data, interpretation questions not attempted, booklet not completed.

Marking guidelines (Part C)

Marks	Marking criteria
8-10	Student has shown evidence of processing and analysing both primary and secondary data collected, relevant scientific terminology is included and used accurately. Adequate information provided. Student shows an excellent level of understanding of concepts. Adequately formatted and 3 or more sources used.
5-7	Student able to communicate summary of main ideas using their own language. Some evidence of processing and analysing data and use of scientific terminology Student shows a good level of understanding. Inadequately presented in format but a reasonable attempt made to acknowledge 2 sources
2-4	Student summary completed but does not show student understanding in their own words. Student shows a basic level of understanding. Inadequately presented in format, poor attempt made to acknowledge sources.
0-1	Limited communication of ideas and limited use of scientific terminology