**Yr 11 Biology depth study assessment task. Research poster**

**Course:** Year 11 BIOLOGY **Module:** Module 4 - Ecosystem Dynamics (Teacher: note option to integrate Module 3 content in outcomes below) **Task No:** ………. **Task Title:** Field Study and Research Poster

**Weighting:** ……….. (suggest 40%) **Due date:** …….....

**Task:**

1. Take part in a fieldtrip to Sugarloaf Hill in East Ryde.

2. Conduct an investigation of the biotic and abiotic factors and management of the site, record data & information in the excursion workbook

3. Create an A3 poster presentation of your research and findings, addressing one of the inquiry questions. (Font size no smaller than 12)

**Syllabus outcomes assessed:**

* develops and evaluates questions and hypotheses for scientific investigation BIO11/12-1
* designs and evaluates investigations in order to obtain primary and secondary data and information BIO11/12-2
* conducts investigations to collect valid and reliable primary and secondary data and information BIO11/12-3
* selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media BIO11/12-4
* analyses and evaluates primary and secondary data and information BIO11/12-5
* communicates scientific understanding using suitable language and terminology for a specific audience or purpose BIO11/12-7
* describes biological diversity by explaining the relationships between a range of organisms in terms of specialisation for selected habitats and evolution of species BIO11-10 (Module 3 K+U content)
* analyses ecosystem dynamics and the interrelationships of organisms within the ecosystem BIO11-11 (Module 4 K+U content)

**Criteria for Assessment:** See attached Marking criteria and scaffold

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**Background**

In class students have been learning about Biological diversity and/or Ecosystem dynamics (Teacher: please edit).  
This has included investigation of the effects of abiotic factors on the distribution and abundance of species. The impacts of interactions between species have also been covered. As part of this module students will now undertake a field study, at the Sugarloaf study site to measure biotic and abiotic variables. The data collected from the field study will then be used to answer a selected inquiry question.

The Sugarloaf site is part of Lane Cove National Park, which exists mainly for the purposes of biological conservation, public nature appreciation, personal enjoyment, and as a site for valuable scientific research. The area contains remnant forest ecosystems which are home to threatened species such as the Red-crowned toadlet, and perilously isolated populations of some other species such as the Long-nosed bandicoot.

During the field trip to the Sugarloaf site students will be collecting data and information to answer the following fieldwork inquiry questions:

* Which study site is most suitable for the long-term conservation of the Red-crowned toadlet?
* Which study site is most suitable for the long-term conservation of the Long-nosed bandicoot?
* How should the ecosystems at the Sugarloaf study sites be managed for maximum biodiversity?
* What fieldwork and analysis methodologies must be used to ensure a reliable study of the habitats of the above species at the Sugarloaf?

After the excursion a final report poster is to be completed. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Your Assignment Explained:**

**1. Participate in fieldwork and complete your field notes.**

Students are required to participate actively in the fieldwork at Sugarloaf. All data collected and information gathered on the day must be recorded in the excursion workbook which is to be submitted with the final report poster.  
All relevant sections in the workbook must be completed and all information in the workbook must be handwritten.

**2. Select the Inquiry Question.**

Once the fieldwork has been completed and the data has been accurately recorded, students must select ONE inquiry question to address in their research poster.  
Data collected on the fieldtrip along with research conducted before and after the fieldtrip MUST be used to address the inquiry question.

You may choose ONE of the following Inquiry questions:

* Which study site is most suitable for the long-term conservation of the Red-crowned toadlet?
* Which study site is most suitable for the long-term conservation of the Long-nosed bandicoot?
* How should the ecosystems at the Sugarloaf study sites be managed for maximum biodiversity?
* What fieldwork and analysis methodologies must be used to ensure a reliable study of the habitats of the above species at the Sugarloaf?   
  (*Teacher: These inquiry questions are flexible and can be edited, however please check with Field of Mars EEC so we can ensure the excursion experience*)

**3. Create Research Poster**

* Scientists often use research posters to present their research at conventions, to share knowledge with their peers or to present to potential donors. In this assessment task you will present information collected from secondary sources and first-hand data collected on your fieldtrip to address your selected inquiry question.
* A research poster is effectively a condensed version of a scientific report prepared for a time-poor, scientifically aware audience.  
  It must contain an introduction, methods, results, discussion, conclusion and references.  
  Each of these sections must be clear and CONCISE, presenting only a summary of the main components of each section.  
  The following information must be included in each section:

**Introduction**: Describe the study site, human actions and associated environmental impacts. Then introduce the research question and provide a justification of the importance of the research that was conducted.

**Method**:Outline methods used to collect data in the study.

**Results**:Describe results and present significant results in graphs, tables and/or figures, whichever is most effective at displaying data and identifying trends.

**Discussion**: Explain the findings of the study, discuss whether the findings were expected, draw conclusions (these should be linked to and address your inquiry question) and support them with data. Also identify limitations of the study and make recommendations for future research.

**Conclusion**: State main findings and suggest further research

**References**:List secondary sources used to collect information presented on your poster

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| **Marking criteria** | | |
| Marking guide / scaffold | | Mark |
| **SKILLS ASSESSMENT** | |  |
| Fieldwork notebook (worksheet) | Valid, reliable data and information recorded accurately in **fully** completed excursion booklet – **3m** Valid, reliable data and information recorded accurately in **mostly** completed excursion booklet – **2m**  Valid, reliable data and information in partly (**less than 50 %**) completed excursion booklet – **1m** Minimal work completed - 0 marks | /3 |
| Fieldwork | Participation in activities, eg: Bandicoot adaptation video completed as part of a group – **1m** | /1 |
| Research poster: Introduction – part 1 | Name, location, natural characteristics and features of study site all provided – **3m**  Name, location, natural characteristics and features of study site provided (but not all) – **2m**  Study site named – 1m | /3 |
| Research poster: Introduction – part 2 | Outline 3 or more human actions and associated environmental impacts that have affected the study site – **2m**  Outline 1 or more human action and/or associated environmental impact that have affected the study site – **1m** | /2 |
| Research poster: Aim / questions(s) | Inquiry questions identified, explained & justified, with reference to the human & natural characteristics of study site – **3m**  Inquiry questions identified & explained, some reference to human & natural characteristics of study site – **2m**  Inquiry questions stated – **1m** | /3 |
| Research poster: Method(s) – part 1 | Methods outlined by description of 4 or more techniques used to sample both biotic and abiotic factors – **3m** Methods outlined by description of 2 or more techniques used to measure biotic and/or abiotic factors – **2m**  General outline of methods without specific reference to techniques used – 1m  *(Note: effective method outlines need to identify equipment, units of measurement, procedure for usage etc)* | /3 |
| Research poster: Method(s) – part 2 | Detailed description of how 2 or more techniques need to be performed for valid results, reliable data and (where possible) safety – **2m**  Outline of 1 or more techniques with some reference to validity, reliability and/or safety – **1m** | /2 |
| Research poster: Results – part 1 description | Results described in sentences using appropriate scientific terminology with reference to specific data, tables and/or graphs – **2m** Results described using sentences – **1m** | /2 |
| Research poster: Results – part 2 data presentation | Data presented effectively using appropriate graphs AND/OR tables AND/OR figures that follow correct scientific conventions – **4m** (*Max 2 marks per effectively used graph, figure or table which follows correct scientific conventions*)  Minus 1 mark for any incorrect use of a table, figure or graph or any deviation from following scientific convention. – **1m** | /4 |
| Research poster: Results – part 3 findings/trends | Trends in graphs, tables AND/OR figures identified and described in sentence(s) – **1m** | /1 |
| Research poster: Discussion - part 1 | Results explained and linked to reasoning and conclusions which address the selected inquiry question – **3m** Results described with an attempt to link data to an answer to the inquiry question - **2m**  Results outlined in discussion - **1m** | /3 |
| Research poster: Discussion - part 2 | Identifies limitations of study and/or suggests further research and management strategies 1 mark for each valid limitation (max 2m), 1 mark for each valid suggestion of future research (**max 2m**) | /4 |
| Research poster: Conclusion | Significant findings summarised in conclusion and linked to inquiry question - **2m**  Significant findings stated - **1m** |  |
| Research poster: Communication | Descriptive and informative title, with sub headings used to organise information - **1m** | /1 |
| Concise sentence structure and relevant scientific terminology used - **2m**  Concise sentence structure OR relevant scientific terminology used - **1m** | /2 |
| Poster is visually appealing and engages the audience - **1m** | /1 |
| **Total mark for skills** | | **/35** |
| **KNOWLEDGE AND UNDERSTANDING ASSESSMENT** | |  |
| Information illustrates an understanding of interactions between biotic and abiotic factors in the study site - **3m** Biotic and abiotic factors discussed but interactions not made explicit - **2m** Biotic or abiotic factors identified - **1m** | | /3 |
| Inquiry question is explicitly addressed with recommendations for management plans or research methods supported by data 1 mark - inquiry question explicitly addressed 1 mark - for each recommendation for management plan or research method (**max 3m**)  1 mark - for each direct link between collected data and recommendations stated (**max 3m)** | | /7 |
| **Total mark for knowledge** | | **/10** |
| **Total mark** | | **/45** |
| **Feedback:** | | |