

Small Animal Study

LOCATION: NZ Marine Studies Centre, Portobello, Dunedin

PROGRAMME DESCRIPTION:

Students are guided through building a background on the biology of one animal species and carrying out a practical investigation in a biological context. Day one introduces the animal and its ecological context, animal handling, valid environmental variables and various animal responses. The day ends with students deciding on and formulating their own investigation. Day two begins with an overview of bioethics in the practical context of research and education and their own investigations. Staff provide guidance for students as they set up and carry out their investigations. The day ends with a quick review. Day three allows for a replicate and any minor changes students deem prudent as a result of review. The programme concludes with a quick guide to finding and using references and links to biological concepts in the interpretation, explanation and discussion of their investigation.

Extensions: If desired a more in-depth explanation of statistics, with a handout, can also be given.

LEARNING OUTCOMES:

Students will:

- extend and apply concepts of adaptation and ecological niche to design and carry out their own practical biological investigation.
- formulate and critique hypothesis formation and practice translation of sound hypothesis to a rigorous methodology that addresses issues of validity and reliability.
- carry out practical work and collect data to meet the needs of NCEA Bio 3.1 Achievement Standard 91601.
- apply bioethical understanding to practical research with animals.
- begin to make connections between their own research and biological concepts, models or other research.

Extras:

Gain a new understanding of the depth, detail and determination needed in sound science.

Gain a new or renewed appreciation for marine life (particularly crabs) and the marine environment.

Gain a new appreciation of marine science as a possible field of study or a future career.

YEAR/LEVEL: Year 13, Biology level 8

CURRICULUM LINKS:

Living World: level 8, life processes, ecology and evolution. Understand the relationship between organisms and their environment. Develop and carry out investigations that extend their science knowledge.

KEY COMPETENCIES: Thinking, language symbols and text, managing self. Nature of Science: understanding, investigating, communicating, participating and contributing.

PRE TRIP PREPARATION: Teachers should share and unpack the Achievement standard requirements and assessment criteria with the students before coming. Some general background research on crab adaptations and behaviours may be helpful.

RESOURCES AVAILABLE TO SUPPORT PROGRAMME:

A student booklet is sent out with booking confirmation. While on the programme, teachers can select suitable papers and readings to support student report writing from a comprehensive file held at the Centre. Additional videos used to support bioethics and conceptual and resource links during the delivery of the programme are available to teachers on request.

RELATED TOPICS: Behaviour of Marine Invertebrates.

The NZ Marine Studies Centre is part of the Marine Science Department, University of Otago.
This programme is supported by the Ministry of Education's LEOTC service.

See WWW.MARINE.AC.NZ for more programmes and resources.

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PROGRAMME COSTS: Approx \$76.00 per student (GST excl.)

PROGRAMME LENGTH: Approx 19 hours over 3 days.

GROUP INFORMATION: Groups of 15 or more are preferred up to a maximum of 35 students. If more than 35, we divide the group into two separate labs for the duration of the programme.

SAFETY ACTION PLAN:

In the field: as per field operations.

In Laboratory: as per Lab safety.

Covid guidelines: as per Government and University of Otago operations.

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Example itinerary

Day One

10.00am Arrive at NZ Marine studies centre

10.10am LAB: Welcome and introduction

10.30am AQUARIUM: Investigation #1 Adaptive Radiation

11.00am Morning Tea

11.15am LAB: Investigation #2 Morphology of Crabs

12.00pm LAB: Investigation #3 preparation

12.30pm Lunch

1.00pm SHORE: Investigation #3 Distribution of Shore Crabs
(time dependent on low tide)

LAB: review data

2.30pm: LAB: Investigation #4 Responses of Half Crab
Validity and reliability

3.00pm: Afternoon tea

3.15pm: LAB: The Hypothesis. Students to decide on hypothesis with teacher and NZMSC staff

4.15pm: Students hand in hypotheses and planned equipment needs. Set up work station for the next day.

5.00pm: Depart NZ Marine Studies Centre

Day Two

9.00am: Arrive at NZ Marine Studies Centre

9.15am: LAB: Bioethics. Socio-scientific perspectives and good practice

10.00am: Setup and start investigations. Time management is up to the individual student in terms of lunch and breaks.

4.00pm: Clean up and prepare for next day. Review of work and data management, changes to methodology for day three.

5.00pm: Depart NZ Marine Studies Centre

Day Three

9.00am: Arrive at NZ Marine Studies Centre

9.15am: Setup and start repeat investigations. Time management is up to the individual student in terms of lunch and breaks.

2.00pm: Finish investigations and clean up lab. Review of work

2.30pm: Depart NZ Marine Studies Centre