

Programme Outline

BOOKINGS: Email: marine.studies@otago.ac.nz
Phone: 03 479 5826



Intertidal Investigations: patterns in the environment

LOCATION:

New Zealand Marine Studies Centre, Portobello, Dunedin

PROGRAMME DESCRIPTION:

This programme can operate as either a formative or summative assessment field trip for achievement standard 91158. Investigate a pattern in an ecological community, with supervision.

Students are supervised to carry out a valid and reliable transect survey of species distribution on an intertidal rocky shore.

An introduction to the intertidal environment and to the identification of most common intertidal species lays a foundation for reliable data collection.

On the shore students are guided to take abiotic measurements with instruments provided and their identification of species is supported by knowledgeable staff.

A review adds information about seasonal changes in abiotic factors and starts the process of identifying and reasoning about any patterns discovered.

Extensions: This programme is best done in conjunction with the Marine Metre Squared project where the school/students can access other data sets, details about intertidal species and post their own data on to the website: <http://www.mm2.net.nz/>

Most commonly this programme is done in conjunction with Diversity in Form and Function which relates to practical hands on background for AS 91155 - Understanding animal adaptations in relation to their way of life.

LEARNING OUTCOMES:

Students will

- Increase understanding of the role abiotic and biotic factors play in survival and distribution of marine animals in time and space.
- Identify some common intertidal species and relate adaptations to the animal's environment and niche.
- Carry out a practical survey of the distribution of marine organisms in the intertidal environment.
- Identify some general distribution patterns of organisms in the intertidal environment from data collected.
- Increase understanding of the factors that cause these patterns and the processes by which the patterns develop and are maintained.

Extras:

- Gain a new or renewed appreciation of marine life and the marine environment.
- Gain an introduction to ways in which the general public can be involved in 'citizen science'.

YEAR/LEVEL:

Year 12, Biology level 7

CURRICULUM LINKS:

Nature of Science (NoS): level 7 understanding, investigating, participating and contributing (particularly if students use marine metre square website to load and use data and information).

Science: Living World:level 7, Life Processes-explore the diverse ways which animals and plants carry out the life processes. Ecology-Explore ecological distribution patterns and explain possible causes of these patterns. AS 91158 Investigate a pattern in an ecological community, with supervision.

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KEY COMPETENCIES:	Thinking, using language, symbols and text, managing self, relating to others.
PRE TRIP PREPARATION: Teachers should share and unpack the relevant achievement standard and assessment criteria with the students before coming. Some general background on tidal cycle and conceptual ideas related to patterns in the environment (Gause's exclusion principle, niche partitioning, potential and realized niche, adaptation=niche 'fit', limiting factors, tolerance limits, etc.) Teachers will find it helpful to refer to the resource "Ecology of the New Zealand Rocky Shore Community: A Resource for NCEA Level 2 Biology", Author: Darren Smith. Publisher: New Zealand Marine Studies Centre. Address: 185 Hatchery Road, Portobello, Dunedin 9014. ISBN: 97800047302317704 (PDF). January 2013.	
RESOURCES AVAILABLE TO SUPPORT PROGRAMME: Transect method, data sets, information on the ecology of the rocky shore for secondary schools, etc, are easily accessed through the Marine Metre Squared website: http://www.mm2.net.nz/resources A student booklet with supporting worksheets can be supplied with booking confirmation. Class sets of Rocky Shore and Sandy and Muddy Shore identification guides are available on application to the NZMSC.	
RELATED TOPICS:	Level 7. Life Processes - explore the diverse ways which animals and plants carry out the life processes. AS 91155 - Understanding animal adaptations in relation to their way of life.
PROGRAMME COSTS:	\$7 per student (GST excl.) for 2 hrs. If the programme is combined with Diversity in Form and Function to make a full day programme, the cost is between \$14.50 and \$16 per student depending on time.
PROGRAMME LENGTH:	2 hours. If combined with Diversity in Form and Function then total time is 4.5 - 5 hrs.
GROUP INFORMATION:	Groups of 15 or more are preferred up to a maximum of 60 students. With 20 or more we divide the group up and rotate through activities.
SAFETY ACTION PLAN: On beach: as per field operations In Laboratory: as per Lab safety	
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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.