

# Intertidal Investigation

**LOCATION:** NZ Marine Studies Centre, Portobello, Dunedin / Coastline local to the school

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## PROGRAMME DESCRIPTION:

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 identification of the most common intertidal species. Students are guided to take abiotic measurements with instruments provided. A review adds information about seasonal changes in abiotic factors and starts the process of identifying and reasoning about any patterns discovered.

**Extensions:** Most commonly this programme is done in conjunction with Diversity in Form and Function.

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## LEARNING OUTCOMES

Students will:

- Increase understanding of the role abiotic and biotic factors play in the 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'.

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**YEAR/LEVEL** Year 12, Biology level 7

## CURRICULUM LINKS

**Nature of Science (NoS):** level 7, understanding, investigating, participating and contributing (particularly if students use the [Marine Metre Squared website](#) to load data and use information).

**Science:** Life Processes - explore ways in which animals and plants carry out their life processes. Ecology - explore ecological distribution patterns and explain the possible causes of these patterns. Supports AS91158. Data gathered can also be used to support AS91153 in pattern-seeking investigations.

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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 the 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)

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## RESOURCES AVAILABLE TO SUPPORT PROGRAMME

[Marine Metre Squared website](#).

A student booklet with supporting worksheets can be supplied with booking confirmation.

Class sets of [Shore Species ID guides](#).

Booklet: [Ecology of the New Zealand Rocky Shore Community: A Resource for NCEA Level 2 Biology](#).

**RELATED TOPICS:** Life Processes, explore the diverse ways in which animals and plants carry out life processes. Form and function, understanding animal adaptations in relation to their way of life.

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# Intertidal Investigation

**PROGRAMME COSTS:** \$12.00 per student (GST excl.)

**PROGRAMME LENGTH:** 3 hours. If combined with Diversity in Form and Function then total time is 4-5 hrs.

**GROUP INFORMATION:** Groups of 15 or more are preferred up to a maximum of 60 students.

With 20 or more students we divide the group and rotate through activities.

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## 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

### 10.00 am

Arrive at NZ Marine studies centre

LAB: Intro and overview of programme

### 10.15 am

LAB: Understanding the rocky shore environment, abiotic factors and tide cycle

### 10.45 am

AQUARIUM: Getting to know your critters. Exploration of species found in the intertidal zone and understanding their key traits for identification

### 11.15 am

Morning tea

### 11.30 am (time dependent on low tide)

Shore survey!

LAB: Preparation of methods and gear

SHORE: survey shore using transect method or MM2 method (teachers choice)

Measure abiotic factors

### 12.45 pm

Review of the day

### 1.00 pm

Opportunity to stay for lunch / Depart NZ Marine studies centre