NEW ZEALAND
MARINE STUDIES CENTRE

Give your Rocky Shore Study a new twist with a special look at creepy, crawly...CRABS

Crab Surveys

Why not conduct a scientific survey of the crab population on your local shoreline and develop your student's investigative skills and attitudes.

What is a Survey?

Scientists use survey methods to learn about biological communities. Many of the methods they use can be used by students of all ages. Surveys need to be uncomplicated, logical and systematic. Techniques used in shore sampling include using **quadrats** and **transects** to determine patterns of abundance and distribution of organisms.

Quadrats (square frames which define a measured area) are used to obtain data from a sample of the population when it is impossible or too time consuming to obtain data from the whole population. As long as the data is collected from a large enough number of samples and those samples are a good representation of the whole population, then the data can represent the whole population. Use hoops (from Phys. Ed. Class) to define spaces if your school does not own a set of quadrats.

Transects (measured lines) are used to look at the change in a community over an environmental gradient (e.g. the tidal level). The transect line should be positioned across the gradient (e.g. from high tide to low tide). Use measuring tapes or measured lengths of rope as your transect line.

Before the Field Trip

Visit the shore yourself to become familiar with the crab species found there, identify potential hazards and define the boundaries of the study.
Check tide tables and plan your visit around the time of low tide.

Seashore Code

Please minimise disturbance of the seashore community during your study.

- Observe crabs and marine species where you find them. You may place them in containers in cool sea water for short periods only and return them to the place of collection.
- Handle crabs and other marine species carefully and only when necessary.
- Remember to turn rocks back the way you found them.
- Wear appropriate footwear and watch the waves!
- Take your rubbish home with you and pick up any left by others.

Useful Equipment

- Ice cream containers
- Transect (measured line)
- Quadrat (square frame)
- Thermometers
- Crab identification wheel
- Small aquarium nets
- Camera
- Rubbish bag to collect shore litter

Habitat Description

Have students record the physical features of the shore with photographs, sketches, written descriptions and measurements. Details may include:

- Map of study area (e.g. open coast or protected bay)
- Weather (e.g. wind direction and strength, cloud cover)
- Temperature of water and air
- Tidal level and range
- Direction of exposure (e.g. west facing)
- Level of exposure (e.g. size and frequency of waves)
- Sediment type (e.g. sand, mud, loose cobble or bedrock)
- Signs of human impact

Give students time to explore the environment and let off steam before you expect them to focus on the survey.

Crab Survey Ideas

Tidal mud flats are good areas to study crabs that live in burrows. Surveys may involve counting the burrow entrances rather than actual crabs. Some questions you may want to explore include:

- Do different crab species make different types of burrows?
- Does the size of the burrow relate to the size of the crab?
- Do different crab species live in different tidal zones?
- Where are the crabs at low tide? Do you think their behaviour changes when the tide comes in?
- What do you think the crabs eat? (what other plants and animals are found in the area?)
- How could you get the crab out of the burrow without damaging the burrow?
- What impact might your survey have on the crabs and other animals of the mud flat?

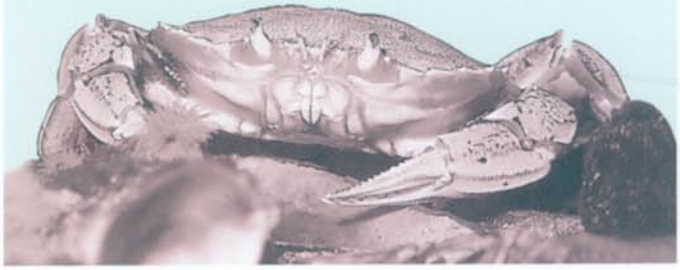
Rocky shores are rich with crabs hiding under rocks and seaweed, in rock crevices and tidal pools. Some questions to explore include:

- What is the most common type of crab found at high tide? low tide?
- Are there more female crabs then male crabs? How many are carrying eggs?
- How many crabs have missing legs?
- What is the average size of crabs on the shore?
- Are more crabs found under bigger rocks?
- Do you find different types of crabs under the same rock? in the same tidal pool?

Design a crab survey with your class

1. **Brainstorm** the conditions crabs experience on the seashore at low and high tide.
2. **Choose a crab species** known to be common on your chosen seashore.
3. **Research** as much information about your chosen species as possible (e.g. distribution, diet, life cycle, predators).
4. **Develop questions** about your chosen crab species that can be answered by surveying a local population.
5. **Design a survey** to investigate a question. Show the class a list of the equipment available to them and discuss how it may be used.
6. **Make a tally sheet** to record the data you want to collect.
7. **Predict** what you expect to find out with your survey and give your reasons.
8. Conduct the survey and **collect your data**.
9. **Collate and present the data** (e.g. tables and graphs). You may want to compare or pool the findings of different groups.
10. **Analyse and discuss** your data. Suggest reasons for the patterns observed.
11. **Compare** your results with your predictions.
12. **Identify the limitations** or problems with your survey. How would you change the survey method if you had more time? What other equipment would be useful?

The shoreline next to the NZ Marine Studies Centre has an interesting crab population and experienced staff will work through this process with your class.



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Other resources on crabs available from the New Zealand Marine Studies Centre include:

- Shore Crab Life Cycle Poster and Resource Unit
- Crab Identification Wheel

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