
Crab Surveys

Level

5-8

Key question

What crab is that?

Key outcome

Develop techniques including initial site inspection, identification of specimens and writing keys, survey techniques, pre-visit activities, working in the field and analysing data.

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What you need

Field sheets
Clipboard, pencil, ruler
A field guide to crabs
Plastic bucket
Hand lens
Watch or timer

What you do

The teacher should make an initial site inspection.

Ideally a relatively broad rock platform with a surface cover of loose boulders that can be easily 'rolled' is required. This is usually an ideal habitat for inter-tidal crabs.

The initial site inspection should:

- Locate a suitable survey site, one with a supply of easily accessible crabs.
- Collect (if this is legal or if an appropriate permit is held) and begin to identify all crabs present.
- Start to plan the survey program.

Writing species identification keys

In a new area identification of all crabs is a critical step and may require a number of visits to the area.

The 'look-book' method of identification is recommended. In other words, go hunting for crabs (look), collect a few if possible, then work through field guides (book) until the teacher becomes familiar with the crabs in the area. Another secret of success is to search for scientific publications or previous surveys that list the species in the chosen area.

If there is a range of species in the area, say 10 or more different species, it is worth writing an identification guide. Keys are an excellent way of achieving this and have the added bonus of really testing knowledge of the distinguishing features of each species. See an example of a simplified Crab ID Key on following pages. For further identification, refer to a standard field guide.

Working in the field

- Always aim for the lowest (spring) tide possible and double check the tides.

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- Be prepared for bad weather.
- Review safety warnings and procedures before venturing onto the rock platform.
- Have plenty of spare survey sheets, pencils, buckets and rulers.
- Allow students to do their own group organisation rather than provide a formal routine.

Pre-visit activities

Dried crab specimens can be used for a ‘classroom’ based introduction to identification and keys. If collection is difficult or illegal, photographs or illustrations may be used.

Survey techniques and recording methods are also thoroughly reviewed in the classroom prior to the actual survey. Slides of the area to be surveyed and of a previous group’s survey work are most useful (Figure 1).

Also, thoroughly address safety issues in the classroom before the survey.

Developing survey techniques in the field

Students should work in small groups, using the equipment listed above.

Females

small
nippers



wide abdomen

Males

big
nippers



narrow abdomen



Ovigerous female
(with eggs)

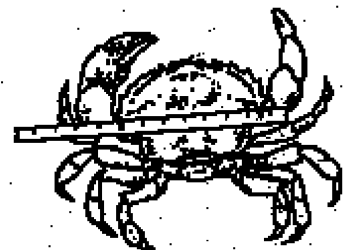


Figure 1. Illustration of size differences related to sex

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General survey

This is a simple survey that involves collecting crabs, identifying them, and determining their sex, recording this information, and then releasing them.

Collecting should take 15-20 minutes. Organise the group with one person lifting rocks while the others pick up crabs and put them into the container. Move from rock to rock catching crabs as quickly as possible. Check that a large crab does not then eat a smaller one!

Record and release

When collecting is finished, the group should sit close to their collecting area and complete the General Survey Data Sheet. One person in the group should act as a data recorder while the others pick crabs out of the container to identify them and determine their sex. Great care is needed so as not to damage the crabs. The data recorder then enters this information on the data sheet. Once a crab has been recorded, it should be released at the collection site to find its own way home.

General survey data Sheet

Record the following information:

Habitat Information _____

Location: _____

Rock type: _____

High tide time: _____

Survey time- start: _____

Group members: _____

Date: _____

Tidal conditions: _____

Low tide time: _____

Survey time-finish: _____

Crab species

Male																			
Total																			
Female																			
Total																			

Crab Surveys

Back at school

- The whole class could combine its results on one data sheet.
- Compare the crab populations at different places in the survey area.
- Use bar graphs or pie diagrams to compare the populations of the crabs found. This can be done with the results from each group or with the combined class results.

Species surveys

This activity involves a more detailed study of a single species of crab. Any area where crabs are common would be suitable for this survey, but if working on tidal flats special care should be taken to avoid damage to the area.

Collecting should take 15-20 minutes. Organise the group with one person lifting rocks while the others pick up crabs and put them into the container. Move from rock to rock catching crabs as quickly as possible. Record and release. Use the same method as above to identify species.

One person in the group should act as a data recorder while the others pick crabs out of the container. They should identify each crab, relating crabs that are not of the species being surveyed. Crabs of the appropriate species should have their sex determined, then be measured and checked for eggs and soft bodies. Once these details have been recorded, the crab should be released close to the collection site.

Species survey data sheet

Habitat information	
Location	
Rock type	
High tide time	
Survey time – start	
Crab species being surveyed	
Group members	
Date	
Tidal conditions	
Low tide time	
Survey time – finish	

Crab Surveys

Crab	
Sex	
Size	
Eggs	
Soft	

It is best to select the species of crab being surveyed before going on the field trip. It is possible for one group to survey more than one species, or for different groups to survey different species.

Back at school

The whole class could combine its results on one data sheet. Use these results to graph numbers in each size range against size.

Extension

Using available field guides, develop a key for crab species found in the area.

The Crab ID key

This is a two-way key. Go to No. 1, look at your crab and make your first choice. Then obey the instructions that follow. Because the shape of a crab's shell (carapace) is used in identification, most diagrams leave out legs and nippers and only show the shape of the carapace and the number of notches on its sides. Never count eye sockets as notches.

- 1 Four pairs of walking legs, one pair of nippers — **Go to 3**
Two or three pairs of walking legs, one pair of nippers — **Go to 2**
- 2 Living in shells, soft abdomen — **Hermit Crab**
Three pairs of walking legs, hairy — **Hairy Stone-crab**
- 3 Paddle-shaped last walking leg — **Go to 4**
Last walking leg pointed — **Go to 7**
- 4 Two dark spots at rear of carapace — **Surf crab**
No Spots — **Go to 5**
- 5 Four pairs of notches, bumps between the eyes — **Edible crab**
Carapace with three pairs of notches — **Go to 6**
- 6 Pimpled carapace, small notch between eyes — **Rough rock-crab**
Smooth carapace, no notch — **Rock crab**



- 7 Eyes on stalks, two notches along side — **Sentinel crab**
Not like this — **Go to 8**
- 8 Seaweed-covered, spiky and hairy — **Seaweed crab**
Not like this — **Go to 9**
- 9 Four notches each side, one large nipper — **Reef Crab**
Less than four pairs of notches — **Go to 10**
- 10 Three pairs of notches — **Go to 11**
Notches less than three — **Go to 13**
- 11 Purple, fine hairs, "V" groove between eyes — **Smooth-handed crab**
Not like this — **Go to 12**
- 12 Three big notches, two grooves between eyes, large, covered with fine hairs — **Cleft-fronted shore-crab**
Small, dark, large white spots, three notches — **Little shore-crab (if grooved go to 19)**



The Crab ID key

- 13 Two small notches on each side — **Go to 14**
 Less than two pairs of notches — **Go to 15**



- 14 Yellow-brown, brown spots, fine hairs on front of first walking legs — **Spotted shore crab**
 Square carapace, purple-red, mottled white, one wide groove between eyes — **Mottled shore-crab**



- 15 One small notch on each side — **Go to 16**
 No notches or very small notches — **Go to 17**



- 16 Yellow, fine brown spots, shallow notch between eyes — **Notched shore crab**
 Orange, thin legs, vaulted body — **Mud crab**



- 17 Fine ridges on carapace, two or three fine notches — **Go to 18**
 Not like this — **Go to 20**



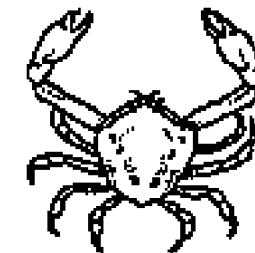
- 18 Square green carapace, fine ridges on top and sides, end of nippers red — **Red-fingered crab**
 Not like this — **Go to 19**



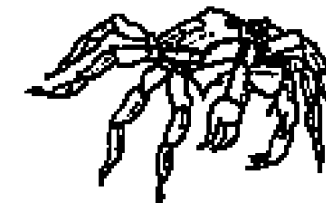
- 19 Round carapace, 2 grooves on top, 2-3 small notches each side, purple underneath — **Burrowing shore crab**
 Round carapace, many ridges, 2-3 small notches each side, blue underneath — **Common shore crab**



- 20 Round carapace, shell and long legs and nippers grey-blue — **Smooth pebble-crab**
 Not like this — **Go to 21**



- 21 Oval-shaped blue body, 2 big bumps on top, small yellow legs and nippers, burrows — **Soldier crab**
 Not like this — **Go to 22**



- 22 Pink or orange-red carapace, no mottling, tufts of hairs at base of legs — **Smooth shore crab**
 Purple-red carapace mottled white, no hairs at base of legs — **Purple-mottled shore crab**

