  
 Hauraki Gulf Forum  
 Tikapa Mōhanga

# Introduction to Shellfish Monitoring

Preparing students to undertake a shellfish survey  
**PART 1: Why do a shellfish survey?**

  
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## Part One Why do a shellfish survey?



  
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### Why do we monitor shellfish?

To find out information about what is living on the beach in order to:


- ensure that shellfish are being harvested sustainably
- ensure that this precious resource is conserved for future generations
- preserve the biodiversity (variety of life) of the Hauraki Gulf

  
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### What is a shellfish survey?


- A survey is an investigation to find out information about the shellfish that live on a beach
- The questions we find answers to are:
  - What kinds of shellfish live on the beach?
  - How many are there?
  - How big are they?
  - Where on the beach are they most abundant?



  
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### What is shellfish monitoring?

- A monitoring programme is when surveys are repeated in the same way through time eg each year.
- We can then compare the information from each survey to see what is changing.
  - Is the biodiversity (variety of marine life) changing?
  - Are the numbers of cockles/pipi going up or down?
  - Is their size changing?



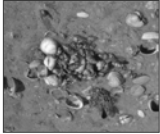
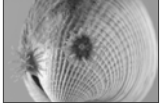
  
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### Why are shellfish important?

1) They provide 'ecosystem services'

These include

- a) filtering the water to improve water quality
- b) providing an essential food source for other organisms in the marine ecosystem. eg cockles are a food source for whelks, crabs, birds, fish and rays
- c) Providing a habitat for other organisms. eg limpets, anemones and chitons attach themselves to cockles

## Why are shellfish important?



2) They are kaimoana, and provide a significant food source for many people



3) They are used as an 'environmental indicator' to measure the health of the surrounding ecosystem

## Maori traditional use



- Kaimoana
- Fishing: harpoon heads, fish hooks, spinners
- Scaling fish, scraping vegetables
- For pendants, necklaces, earrings
- For fastening cloaks (paua)
- Making instruments
- Tattooing

## What are threats to shellfish?



1) Sediment run-off from cleared areas and building sites. Forestry and farming are the main sources of sediment in rural areas.



## What are threats to shellfish?



- Mud/silt running off from the land into the sea clogs the gills of filter-feeding shellfish eg cockles, pipi



## What are threats to shellfish?



2) Pollution eg stormwater contaminants, detergent, oil, rubbish, sewage



## What are threats to shellfish?



- Shellfish collect toxic substances from pollution in the surrounding water. These can accumulate in the shellfish over time, and cause toxicity and death, both to the shellfish and the organisms that eat them (including humans!)

## What are threats to shellfish?



3) Over harvesting – people taking more than they're allowed to



## What are threats to shellfish?

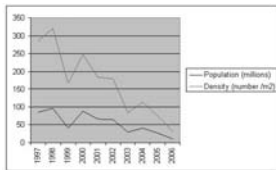


- 4) Invasive species
  - Can affect shellfish by competing with them for food and space, by preying upon them or by introducing new parasites and diseases.
- 5) Climate change
  - Possible future threats due to climate change may be:
    - Warmer water temperatures
    - More invasive species (due to warmer water)
    - More storms and stormwater inputs

## What is the survey information used for?



- We want to collect enough data over a period of several years so that trends can be determined
- A trend is a consistent change through time



## What is the information used for?



- If the trend shows that shellfish numbers and /or biodiversity are decreasing this might mean that
  - Too many shellfish are being taken
  - The shellfish are being affected by what is happening on the land
- From these trends the agencies of the Hauraki Gulf Forum can determine areas of concern for further investigation & appropriate management responses