

Species diversity, density & abundance



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Te Kuratini o Poike

Karakia

- Ko Rangi
- Ko Papa
- Ka Puta ko Rongo
- Ko Tanemahuta
- Ko Tāwhirimātea
- Ko Tangaroa
- Ko Haumietiketike
- Ko Tumatauenga
- Ko te Rangi ki runga
- Ko te Papa ki raro
- Ka Puta te ira tangata
- Ki te whaiao, ki te ao marama
- Tīhei mauri ora



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Species Abundance

- MarineWatch looks at the number of individuals of a particular species that are living in the area.
- The number of individuals of a particular species living in an area is known as
 - **SPECIES ABUNDANCE**
- Surveying abundance requires a bit of thought - **How easy do you think it would be to count the whole cockle population across an entire beach?**
- **How might we make this task easier?**



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Surveying abundance



- Because we can't physically count the whole population of a species we count a small subset of the population to provide an indication of what the population might be for an area
- Quadrats (or small squares) help us to do this
- By counting the organisms within a number of quadrats or small squares across the beach we can estimate the population size

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Quadrats

- The size of the quadrat used can affect the results of a survey
- Organisms aren't necessarily distributed evenly across the estuary. They might be in clumps or patches.
- What different results could we get from calculating the abundance per unit area from several small quadrats v using one large quadrat that is eight times the size?



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Species Abundance



- Plants provide a whole other set of problems as sometimes they are too hard to count individually
- Scientists often use % cover to describe the abundance of seaweeds and plants.
- In this picture there is probably about 95% cover of sea rimu

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Species density



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- We can also look at the **density** of shellfish within an area. This will mean finding how many of a species there are within a measured area
- For example: we might find there are 100 mussels in a m^2
- We might count mussels in several small squares or quadrats and work out that there are an average of 85 mussels per m^2



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Species Diversity

- MarineWatch looks at the variety of species living in an area or an area's
 - **SPECIES DIVERSITY**
- Species diversity is the variety of organisms living in an area
- Some estuary beaches will be more diverse than others
- We can describe species diversity as high or low or by the number of species living in an area
- Describe the diversity of organisms on each of the following slides:



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Species Diversity



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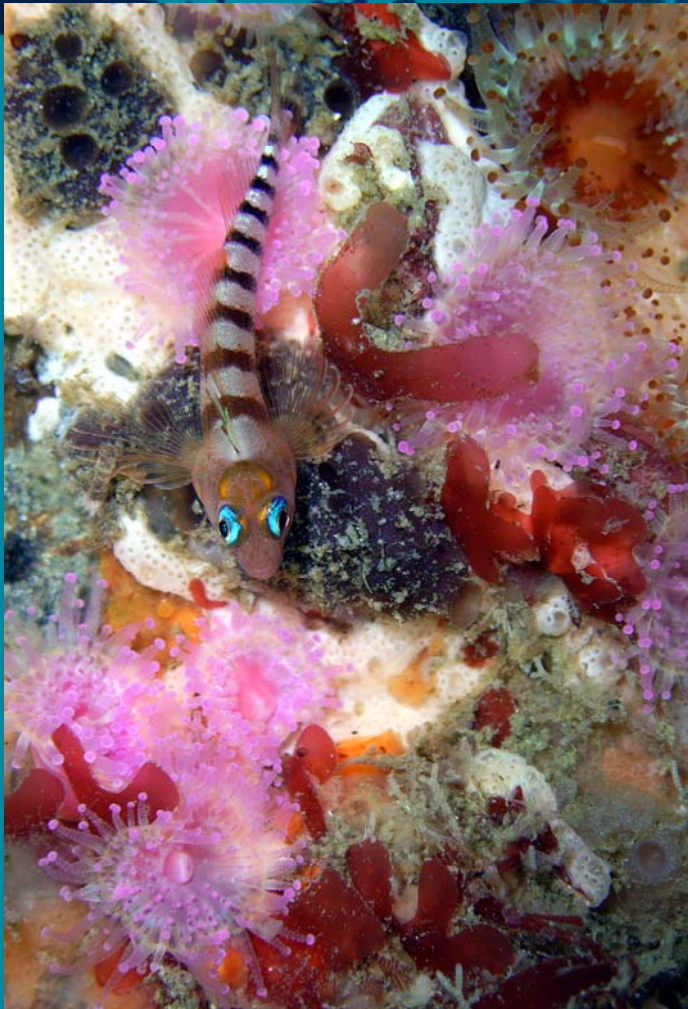
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Zonation

- In the estuary we are particularly interested in how different animals and plants are distributed between the high and low tide.
- For example we might find pipis like the middle tide zone whilst mangroves prefer the high tide zone.
- The **distribution** of animals between the high and low tide is called **zonation**.



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