

Healthy Ecosystems

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An ecosystem is made up of animals, plants and bacteria which share an environment with non-living elements, such as water, sand and rocks. These living and non-living elements interact with each other in complex ways.

An ecosystem is made up of animals, plants and bacteria which share an environment with non-living elements, such as water, sand and rocks. These living and non-living elements are all interconnected.

The living parts of an ecosystem are called [biotic](#) [3] factors. The non-living elements of the environment that they interact with are called [abiotic](#) [3] factors. Because living things both respond to and are influenced by their environment, it is important to study abiotic and biotic factors together to get a full picture.

What makes up an ecosystem?

An ecosystem must contain [producers](#) [3], [consumers](#) [3], [decomposers](#) [3], and dead and inorganic matter. All ecosystems need energy from an external source – this is usually the sun.

- Producers make food from inorganic matter. Plants are producers – they make sugar through [photosynthesis](#) [3] using sunlight, water and carbon dioxide to produce food.
- Consumers eat producers. All animals are consumers. They cannot make their own food so they must eat plants and/or other animals.
- Decomposers break down dead matter. They may be bacteria or animals and they feed off dead plants and animals.
- Inorganic matter is what non-living things are made from. These are things like air, water, rocks, soil, metals and nutrients (nitrogen, phosphorus and carbon). Inorganic matter is important in an ecosystem because it is what producers use, and it is the physical and chemical, non-living environment that we live in.

Why is knowing about ecosystems important?

The interactions within an ecosystem are linked, and they can get very complex. Anything that affects one part of the ecosystem will, in turn, affect others. Unfortunately, people often do things that disrupt an ecosystem.

Even though our actions may seem small, they can have large effects.

For example, over-fishing sharks can have catastrophic effects for reef ecosystems. By removing the top-level [predator](#) [3], the species it normally eats thrive and then over-populate. This disrupts the whole reef ecosystem.

Resilient ecosystems

Resilience of an ecosystem is its capacity to withstand stress and adapt to change without losing important species of plants or animals, or the connections between these.

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“Anything that affects one part of an ecosystem will, in turn, affect others...”

Why is this true?

What does this make you wonder about how people use marine areas?

A resilient ecosystem can cope with environmental change, or recover from a disturbance. Without resilience, an ecosystem eventually cannot cope with the effects of change and/or a disturbance and will collapse, or change in significant ways (usually losing [biodiversity](#) [3] and [ecosystem services](#) [3]).

Biodiversity

The variety of life in natural ecosystems is known as biodiversity. Biodiversity is believed to play a crucial role in resilience, by helping ecosystems cope with various natural and human [stressors](#) [3]. Ecosystems seem to be particularly resilient if there are many species performing the same essential function or service (such as filtration or photosynthesis).

[Ready for a quiz?](#) [4]



[4]

An ecosystem has living parts that rely on non-living things. Because living things are affected by where they live, it is important to study both living and non-living things together to get a full picture.

What makes up an ecosystem?

An ecosystem must have:

- [producers](#) [3]

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- [consumers](#) [3]
- [decomposers](#) [3]
- dead and [inorganic](#) [3] matter.

All ecosystems need energy from an outside source – this is usually the sun.

- Producers make food from [inorganic matter](#) [3]. Plants are producers – they make sugar through [photosynthesis](#) [3] using sunlight, water and carbon dioxide to make food.
- Consumers eat producers. All animals are consumers. They cannot make their own food so they must eat plants and/or other animals.
- Decomposers break down dead matter. They may be bacteria or animals and they feed off dead plants and animals.
- Inorganic matter is what non-living things are made from. These are things like air, water, rocks, soil, metals and nutrients (nitrogen, phosphorus and carbon). Inorganic matter is important in an ecosystem because it is what producers use.

Why is knowing about ecosystems important?

Anything that affects one part of an ecosystem will, in turn, affect others. Sadly, people often do things that harm an ecosystem. Even though our actions may seem small, they can have large effects.

For example, over-fishing sharks can have terrible effects for reef ecosystems. By lowering the number of sharks, the fish sharks normally eat increase and then there are too many. This puts the whole reef ecosystem out of balance.

Strong ecosystems

A strong ecosystem is able to cope with stress and adapt to change without losing important plants or animals.

“Anything that affects one part of an ecosystem will, in turn, affect others...”

Why is this true?

What does this make you wonder about how people use marine areas?

A strong ecosystem can cope with change, or recover from a disturbance. Without this strength or resilience, an ecosystem eventually cannot cope with the effects of change and will collapse or change in large ways where less variety of plants and animals can survive.

Biodiversity

The variety of life in natural ecosystems is known as [biodiversity](#) [3]. Biodiversity is believed to play a key role in the strength of an ecosystem. Ecosystems seem to be stronger if there are many species all carrying out the same functions or services (such as filtering water or photosynthesis).

[Ready for a quiz?](#) [4]

Welcome to this interactive activity for the LEARNZ Sustainable Seas virtual field trip.

Before trying this activity you may wish to view the web page "[Healthy Ecosystems](#)".

Good luck and have fun!



Image: LEARNZ

[4]

Māori keywords:

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Audio Māori keywords:

- [hauora - health, well-being](#) [5]
- [kaimawhaiwhai - food web](#) [6]
- [mauri - life force, ecosystem](#) [7]
- [taiao - environment](#) [8]
- [whenua - land](#) [9]
- [haumako - productive, fertile](#) [10]
- [kāinga - habitat](#) [11]
- [momo - species](#) [12]
- [huata - plants](#) [13]

What ecosystems can you identify in the area where you live and what lives within these ecosystems?

What ecosystems can you identify in the area where you live and what lives within these ecosystems?



[14]

An ecosystem is made up of animals, plants and bacteria which share an environment with non-living elements, such as water, sand and rocks.
Image: Sustainable Seas Challenge.

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[15]

An ecosystem must have producers such as this kelp to produce food.
Image: LEARNZ.



[16]

An ecosystem also has consumers which eat producers and or other consumers. Image: Sustainable Seas Challenge.

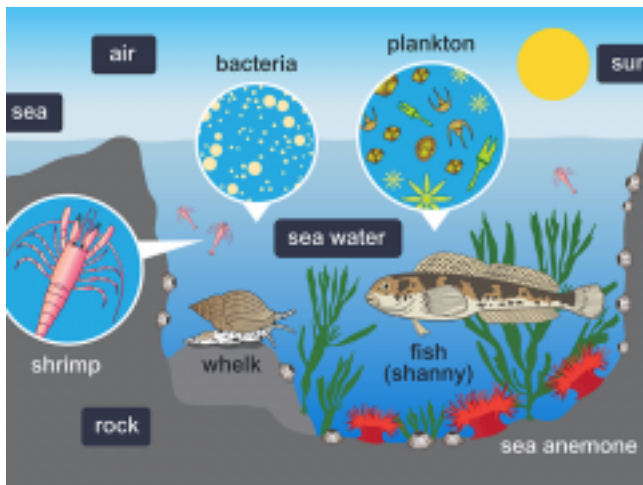


[17]

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An ecosystem includes living and non-living elements. These living and non-living elements interact with each other in complex ways. Image: Sustainable Seas Challenge.



[18]

This diagram shows a marine ecosystem. It includes the living and non-living elements which interact within this ecosystem. Image: [Open University](#) [19].

Source URL: <http://www.learnz.org.nz/node/2188>

Links

[1] <http://www.learnz.org.nz/sites/learnz.org.nz/files/healthy-ecosystems.mp3?uuid=5c6da02e82226>

[2] http://www.learnz.org.nz/sites/learnz.org.nz/files/healthy-ecosystems-easy_0.mp3?uuid=5c6da02e81bd3

[3] <http://www.learnz.org.nz/sustainableseas181/glossary>

[4]

http://activities.learnz.org.nz/ss181/ss181-a04-healthy-ecosystems/quiz_html5.html

[5] http://www.learnz.org.nz/sites/learnz.org.nz/files/hauora_2.mp3?uuid=5c6da02e8237e

[6] http://www.learnz.org.nz/sites/learnz.org.nz/files/kaimawhaiwai_2.mp3?uuid=5c6da02e82481

[7] http://www.learnz.org.nz/sites/learnz.org.nz/files/mauri_2.mp3?uuid=5c6da02e8257b

[8] http://www.learnz.org.nz/sites/learnz.org.nz/files/taiao_10.mp3?uuid=5c6da02e82675

[9] http://www.learnz.org.nz/sites/learnz.org.nz/files/whenua_19.mp3?uuid=5c6da02e82769

[10] <http://www.learnz.org.nz/sites/learnz.org.nz/files/haumako.mp3?uuid=5c6da02e8285c>

[11] http://www.learnz.org.nz/sites/learnz.org.nz/files/kainga_0.mp3?uuid=5c6da02e8294f

[12] http://www.learnz.org.nz/sites/learnz.org.nz/files/momo_0.mp3?uuid=5c6da02e

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[13] http://www.learnz.org.nz/sites/learnz.org.nz/files/huata_1.mp3?uuid=5c6da02e82b33

[14] <http://www.learnz.org.nz/sites/learnz.org.nz/files/b-ss181-01-ecosystems.jpg>

[15] <http://www.learnz.org.nz/sites/learnz.org.nz/files/b-ss181-02-ecosystems.jpg>

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[17] <http://www.learnz.org.nz/sites/learnz.org.nz/files/b-ss181-04-ecosystems.jpg>

[18] http://www.learnz.org.nz/sites/learnz.org.nz/files/ecosystem_mooc_diagrams_fullset-07.png

[19] https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=18461&extra=thumbnailfigure_idp3038064