



Human Interactions in Food Chains and Food Webs

STUDENT WORKBOOK

YEAR 7 & 9

This resource has been developed by:



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STORM & FLOOD INDUSTRY
RECOVERY PROGRAM



Primary Industries Education
Foundation Australia



WORKSHEET 1:

Soil Food Chains And Food Webs

Use the terms below to write in the box next to the correct definitions.

Ecosystem Interdependence, Soil Food Chain, Biotic, Food Web, Trophic Level, Abiotic, Saprophytes

DEFINITIONS

A sequence of organisms in the soil, each of which serves as a source of food or energy for the next.

Any organism that breaks down decomposing bits of organic matter.

The relationship between trophic levels in a food chain or food web is one of interdependence, where each level depends on the level below it for energy and nutrients.

A system of interlocking and interdependent food chains.

Any living component that affects another organism and the functioning of ecosystems.

Non-living chemical and physical parts of the environment that affects living organisms and the functioning of ecosystems.

A position in a food chain or food web that describes the organism's feeding status or nutritional level.

Soil fungi and bacteria involved in the processing of decayed organic matter.

TERMS

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WORKSHEET 2:

Banyula Farm Food Web

Use these cards to make a food web that displays the organisms found at Banyula Farm.

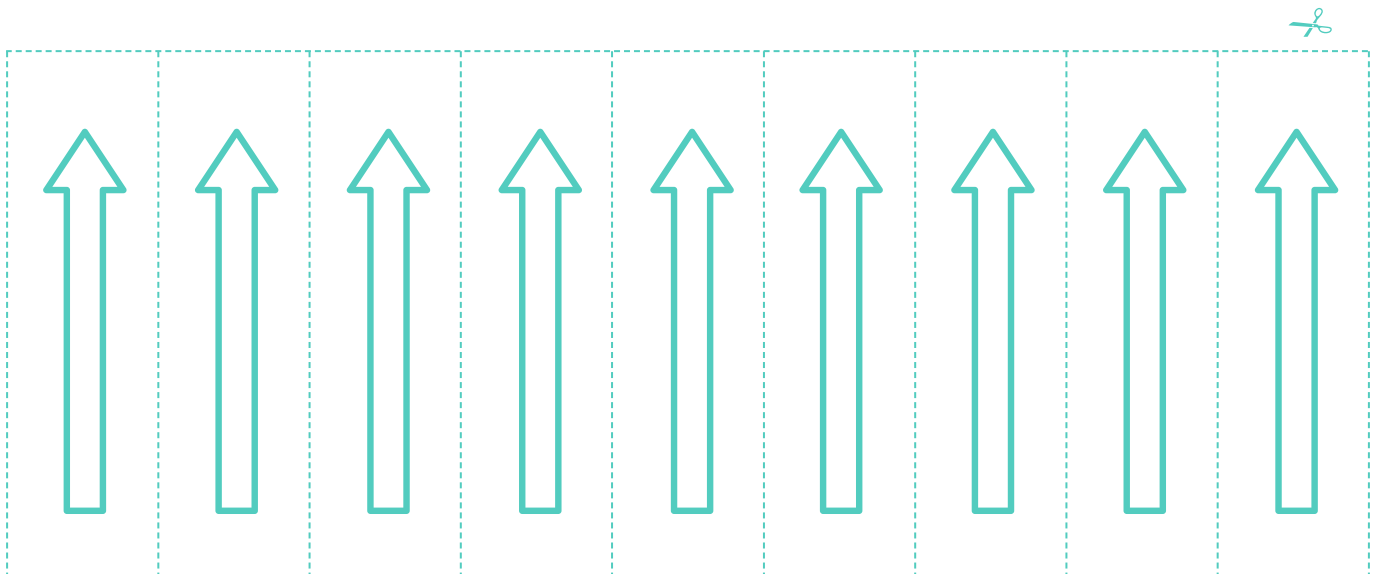
Instructions:

1. Read the information on each card and **highlight** the **feeding relationship** described.
2. Cut out each card using scissors.
3. Follow your teacher's directions and use the cards to complete food chains and/or food webs.

Making a food web:

Food webs are multiple food chains joined together to show the more complex relationships in an ecosystem.

1. Identify the producer card and place it down on a flat surface.
2. Locate a card that shows an organism that feeds on the producer and place it above the producer card.
3. Draw in arrows or use arrows provided to show the direction of matter and energy flow (who eats whom).
4. Locate another organism that feeds on the producer and repeat steps 2 and 3.
5. Continue to add organisms and arrows to show the feeding relationships until no more organism cards can be added and the food web is complete.



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WORKSHEET 2:

Banyula Farm Food Web



Banyula Farm Food Web



Construct a food web by cutting out each of the boxes. Add arrows to show the feeding relationships.

Ambrosia Beetle



Feed on fungus and attack sick or dying trees.

Black Cockatoo



Eat Eucalyptus and Grevillea seeds.

Parasitoid Wasp



Lay their eggs on or in the bodies of arthropods. An effective biocontrol against Nut Borer.

Macadamia Nut Borer



Biocontrol with parasitoid wasps.
Photo Source:
NSW Department of Industry

Silky Oak Forest



Makes its own food by photosynthesis. Absorbs water from the soil and nutrients from organic matter in the soil through its roots.

WORKSHEET 2:

Banyula Farm Food Web



Cattle



Eats grass and biodiverse pastures. Brahman cross cattle are more resilient to difficult environmental conditions such as drought.

Davidson's Plum Tree



Produces a sour fruit that is used in jam, wine, ice-cream and sauces.

Macadamia Tree



Produces macadamia nuts, which may be eaten by Nut Borer.

Worms and Decomposers



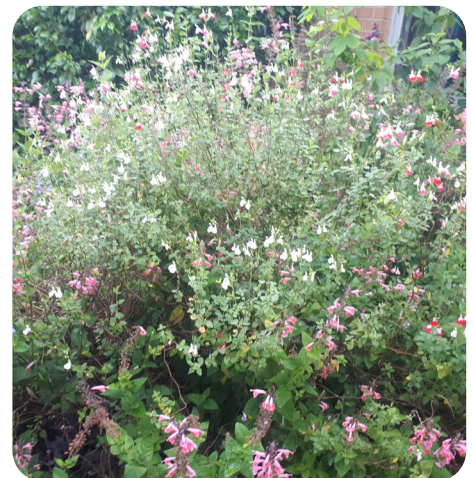
Chemically breaks down organic matter into nutrients such as Nitrogen, Phosphorus, and Potassium. The nutrients are used by plants growing in the soil.

Organic Matter



Contains decomposing bodies and wastes of animals, plants and microorganisms. It improves the ability of soil to hold water and nutrients, which plants absorb through their roots.

Insectary Species



Pollinator habitat. Makes energy from sun. Pollen and nectar eaten by pollinators; herbivore insects eat leaves.

WORKSHEET 2:

Banyula Farm Food Web



European Honey Bee



Eats nectar and pollen on macadamias and is eaten by birds and spiders.

Firetailed Resin Bee



Eats nectar and pollen. Uses resin from macadamia sap to seal hive/nest. Eaten by birds and spiders.

Common Black Rat



Eats seeds, fruit, stems, leaves, fungi, invertebrates and vertebrates.

Carpet Snake



Eats small mammals, birds and lizards.



WORKSHEET 3:

Human Effects on Farming Interactions

- a) Read the following scenario about a hypothetical farm and predict how human activities affect interactions within the food web. Write your responses in the spaces provided (*please note this is not Banyula Farm*).

Scenario 1 Hypothetical Farm

This farm practices monoculture, growing only macadamia trees with conventional farm practices and farm management techniques, such as a reliance upon pesticides, slashing and pruning.

Food Web: Macadamia trees > Herbivorous insects > Insect-eating birds

Predicted Impact on Food Web:

- Low plant diversity could **increase** / **decrease** (select one) the diversity of herbivorous insects.
increase decrease
- A decrease in the diversity of food for insect eating birds may cause poor health and nutrition, which could lead to an **increase** / **decrease** (select one) in their population.
increase decrease
- How might the changes in the insect population affect the health and productivity of macadamia trees?

- An outbreak of pest species in this orchard is managed with an insecticide treatment across the orchard. Use this video as a stimulus to answer this question. **Integrated pest management in protected cropping**

Suggest any new strategies farmers use to prevent or control a pest species in a horticultural enterprise.

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b) Banyula Farm’s positive human interactions

Refer to <https://www.banyula.com.au/regenerativeagriculture> to research their regenerative agricultural practices. Outline and predict the effects of Banyula Farm implementing the following:

	OUTLINE <i>(sketch in general terms; indicate the main features of)</i>	PREDICT <i>(suggest what may happen based on available information)</i>
REGENERATIVE AGRICULTURAL PRACTICE AT BANYULA FARM Regenerative agriculture aims to create the right conditions for life to flourish through conservation and rehabilitation techniques.		
COVER CROPS AND INSECTARIES Insectary plants are those grown to attract, feed, and shelter insect parasites (parasitoids) and predators to enhance biological pest control.		

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