



FRIENDLY FOOD WEBS

By the end of Year 9, students are able to understand that ecosystems consist of communities of interdependent organisms and abiotic components of the environment and matter and energy flow through these systems.

A visit to Currumbin Wildlife Sanctuary provides a holistic experience where the curriculum area is presented using real world examples and encounters, creating a meaningful teaching and learning experience.

By combining the knowledge from one of our experienced Education Officers, with the experience of “seeing” the curriculum, students will become engaged in the topic area.

YEAR LEVEL: Year 9, Stage 5

DESCRIPTION: Learn about living things that have beneficial friendships in the world of food webs! Friendly Food Webs focuses on mutualism such as our important pollinators and seed dispersers like birds, bats, bees and more, Students, armed with food web knowledge, can build and expand on this to a more in-depth level as they will discover that not everything is simple in the food web world! Students will discover external factors impact significantly on the flow of energy of the ecosystem.

EXCURSION FORMAT: This excursion provides a mix of self-guided activities as well as a lesson presented by one of our educators. Students will be able to discuss the role various animals, seasonal change/natural disasters and human activities play in the animal’s food web organisms as they embark upon a learning journey to complete the provided work sheet (optional) and meet and interact with some of our resident animals learn.

AUSTRALIAN CURRICULUM LINKS:

YEAR 9: ACSSU176; SC5-14LW

ACTIVITIES



BEFORE YOUR VISIT:

In small groups, have students design a community conservation campaign about bats or bees, including points such as their positive contribution to the ecosystem, effect of human activities and simple achievable actions that the community can undertake to save the species. Students to present information verbally as well as visually in the form of a poster, flyer or similar.

Ecosystems unit (by ScienceWeb Australia) -

<http://scienceweb.asta.edu.au/years-9-10/unit1/overview/yr910-unit1-overview.html>



What value wildlife -

<http://www.scootle.edu.au/ec/viewing/S3835/index.html>

Flying Fox Ecosystems (All About Bats of Southern Qld) -

<http://www.allaboutbats.org.au/sqffek-year-9/>

DURING YOUR VISIT — SELF GUIDED:

In small groups, have students complete the work sheet, 'Friendly Food Webs', to discover how some animals benefit from interactions with other animals in the food web.

WILDLIFE DISCOVERY EXPERIENCE — LESSON — OPTIONAL — GUIDED TOUR

Our Education Officer will introduce your students to three various animals and discuss the role that each plays in an ecosystem including mutually beneficial relationships with other animals. Animals may include python, parrot or Spiny Leaf Insect.

The Education Officer will also discuss seasonal changes/natural disasters, abiotic factors and human activities that directly affect the animal's ecosystem and explain how.

Students will also be able to have a close look at these animals, while our Education Officers discuss and point out a few of their key adaptations that assist them with their role in the ecosystem.

Students will have time to ask questions of our Education Officers (it would be great if questions could be prepared beforehand).

AFTER YOUR VISIT:

Individually, have students research an animal that has a mutually beneficial relationship with another living organism. If applicable, discuss effect of human activities and simple achievable actions that the community can undertake to save the species. The animal must be an animal that they did NOT observe at Currumbin Wildlife Sanctuary.

How can we protect our precious ecosystems?

As a class, discuss simple achievable actions that students can undertake to minimise the effect of human activities e.g. introduced species > responsible pet ownership and deforestation > planting a wildlife friendly habitat in your backyard and constructing and erecting a nest box in your backyard.



GLOSSARY

What is an ecosystem? An ecosystem is a community of living things and their non-living environment, and may be as large as a desert or as small as a puddle. An ecosystem must contain producers, consumers, decomposers, and dead and inorganic matter. All ecosystems require energy from an external source – this is usually the sun.

What is a food web? Food webs show the feeding relationships between organisms in an ecosystem.

What is a community? All the living organisms in a geographical area at that time.

What is symbiosis? A close, long-term association between organisms of different species.

What is mutualism? A relationship where both organisms benefit (insects get nectar and flowers become pollinated).

What is parasitism? A form of symbiosis in which one organism (called parasite) benefits at the expense of another organism usually of different species (called host); the association may also lead to the injury of the host.

What is commensalism? A form of symbiosis between two organisms of different species in which one of them benefits from the association whereas the other is largely unaffected or not significantly harmed or benefiting from the relationship.

What is a producer? Producers make food from inorganic matter. (Plants are producers – they make sugar through photosynthesis – they use sunlight, water and carbon dioxide to produce food).

What is a consumer? Consumers eat producers – they are unable to make their own food and so must eat other plants and animals. (All animals are consumers).

What is a decomposer? Decomposers break down dead matter – these may be bacteria or animals that feed off dead plants and animals.

What is an autotroph? Autotrophs are organisms that use inorganic matter (chemotrophs) or sunlight (through photosynthesis) to produce chemical energy.

What are heterotrophs? Heterotrophs are organisms that obtain their energy through the eating of other living organisms (consumer) or their products (detritivore or decomposer).

What is a carnivore? An animal or plant (particularly insect- and invertebrate-eating plants) that requires a staple diet consisting mainly or exclusively of animal tissue through predation or scavenging.

What is a herbivore? An animal that consumes herbaceous vegetation

What is an omnivore? An animal that includes both plants and animals in its normal diet

What does abiotic mean? Nonliving, as in abiotic factor, which is a nonliving physical and chemical attribute of a system, for example light, temperature, wind patterns, rocks, soil, pH, pressure, etc. in an environment.

What does biotic mean? Pertains to a living thing (such as plant, animal, fungus, etc.) as well as its products (e.g. secretions, wastes, and remains).

What is a competitor? A symbiotic relationship between or among living things that compete for a limited resources, such as food, space, shelter, mate, ecological status, etc

What is a pollinator? A pollinator is the agent that moves pollen from the male anthers of a flower to the female stigma of a flower to accomplish fertilization or syngamy of the female gamete in the ovule of the flower by the male gamete from the pollen Grain.



DETAILED AUSTRALIAN CURRICULUM LINKS

| Australian Curriculum links: | | Elaborations: |
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| Year 9 Biological Sciences ACSSU176 | Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems | <ul style="list-style-type: none"> exploring interactions between organisms such as predator/prey, parasites, competitors, pollinators and disease examining factors that affect population sizes such as seasonal changes, destruction of habitats, introduced species considering how energy flows into and out of an ecosystem via the pathways of food webs, and how it must be replaced to maintain the sustainability of the system investigating how ecosystems change as a result of events such as bushfires, drought and flooding |
| NSW Syllabus links: | Outcomes: | Content: |
| Stage 5 SC5-14LW | A student analyses interactions between components and processes within biological systems | <p>Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)</p> <p>LW2 Conserving and maintaining the quality and sustainability of the environment requires scientific understanding of interactions within, the cycling of matter and the flow of energy through ecosystems.</p> <p>Students:</p> <ol style="list-style-type: none"> recall that ecosystems consist of communities of interdependent organisms and abiotic components of the environment outline using examples how matter is cycled through ecosystems such as nitrogen describe how energy flows through ecosystems, including input and output through food webs analyse how changes in some biotic and abiotic components of an ecosystem affect populations and/or communities assess ways that Aboriginal and Torres Strait Islander peoples' cultural practices and knowledge of the environment contribute to the conservation and management of sustainable ecosystems evaluate some examples in ecosystems, of strategies used to balance conserving, protecting and maintaining the quality and sustainability of the environment with human activities and needs |