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Photocopy Master Sheets

Years 7-8

Ecosystems

Disk filename = “11.Ecosystems”

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Topics Available

Year 7-8 General Science

Disk Filename	Topic Name
01.Energy	Energy
02.Forces	Forces
03.Matter	Solids, Liquids & Gases
04.Mixtures	Separating Mixtures
05.Elements	Elements & Compounds
06.Cells	Living Cells
07.Life	Living Things
08.LifeSystems	Plant & Animal Systems
09.Astronomy	Astronomy
10.Earth	The Earth
11.Ecosystems	Ecosystems

Year 9-10 General Science

Disk Filename	Topic Name
12.Waves	Wave Energy (inc. Light)
13.Motion	Forces & Motion
14.Electricity	Electricity
15.Atoms	Atoms & Elements
16.Reactions	Compounds & Reactions
17.DNA	Cell Division & DNA
18.Evolution	Evolution of Life
19.Health	Health & Reproduction
20.Universe	The Universe
21.EarthScience	Earth Science
22.Resources	Resources & Technology

Year 11-12 Science Courses

Biology
Preliminary Core
Local Ecosystem
Patterns in Nature
Life on Earth
Evolution Aust. Biota
HSC Core
Maintain. a Balance
Blueprint of Life
Search for Better Health
Options
Communication
Genetics:Code Broken?

Chemistry
Preliminary Core
Chemical Earth
Metals
Water
Energy
HSC Core
Production of Materials
Acidic Environment
Chem.Monit.&Mngment
Options
Shipwrecks, Corrosion...
Industrial Chemistry

Earth & Envir. Science
Preliminary Core
Planet Earth...
Local Environment
Water Issues
Dynamic Earth
HSC Core
Tectonic Impacts
Environs thru Time
Caring for the Country
Option
Introduced Species

Physics
Preliminary Core
World Communicates
Electrical Energy...
Moving About
Cosmic Engine
HSC Core
Space
Motors & Generators
Ideas to Implementation
Options
Quanta to Quarks
Astrophysics

All Topics Available as PHOTOCOPY MASTERS and/or KCiC

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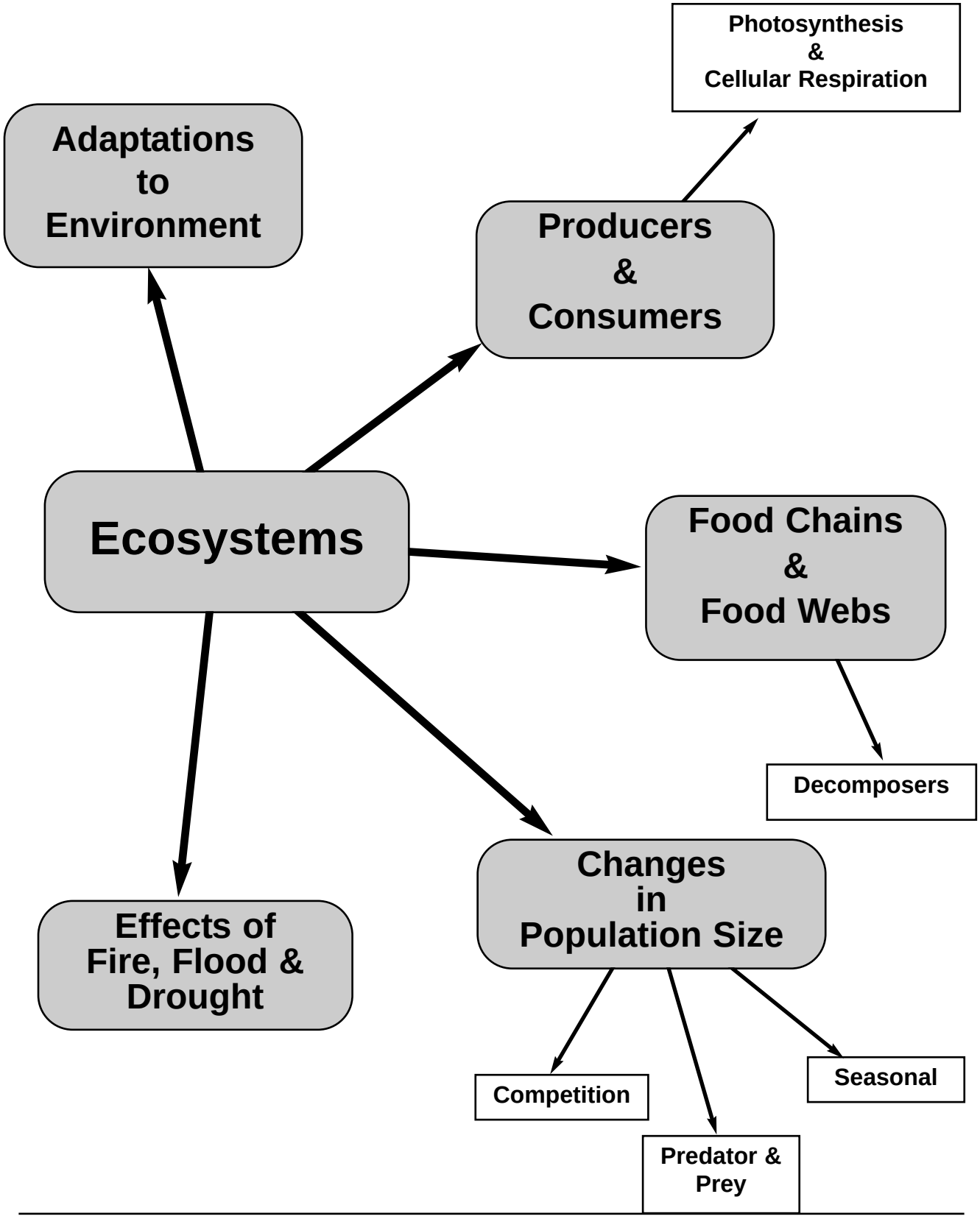
"Mind-Map" Outline of Topic

**This topic is a study of Ecology, which is a branch of Biology.
Ecology is a study of living things and their environment, with emphasis on
how living things fit into the environment, and how they all interact with each other.**



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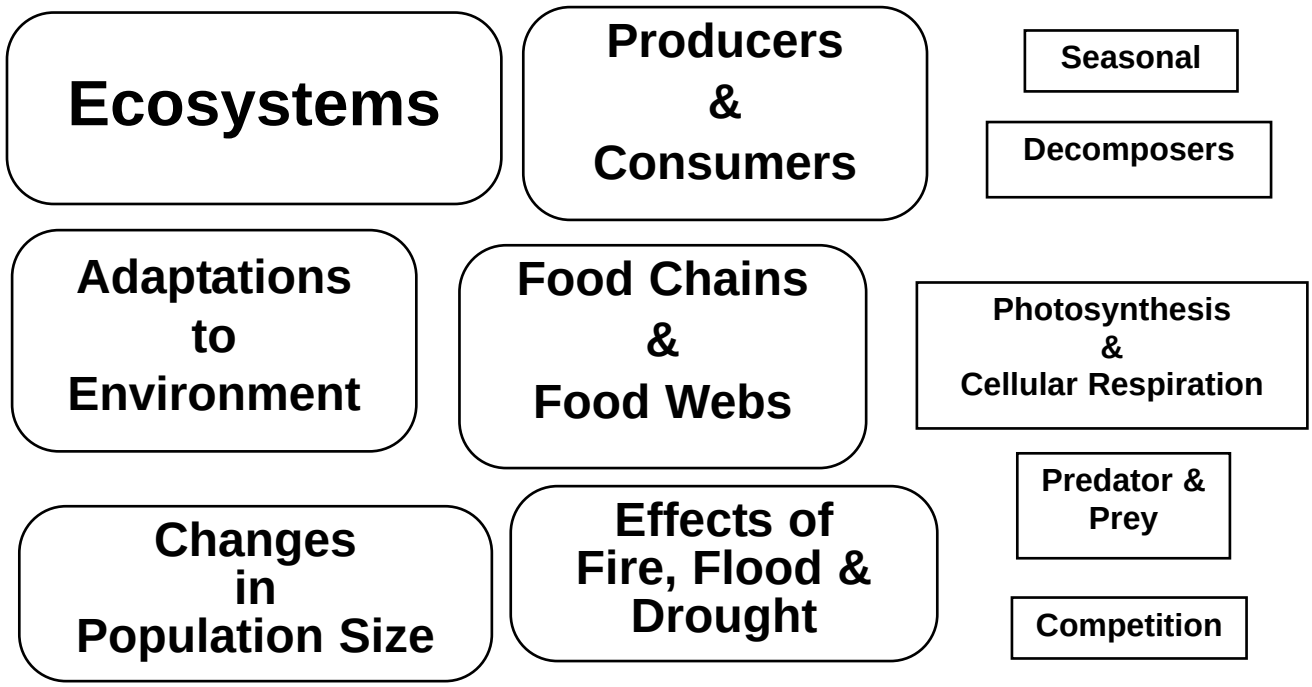
Make your own "Mind-Map" TITLE PAGE.
Cut out the boxes. Sort them into an appropriate lay-out on a page of your workbook, then glue them down. Add connecting arrows and colour in.



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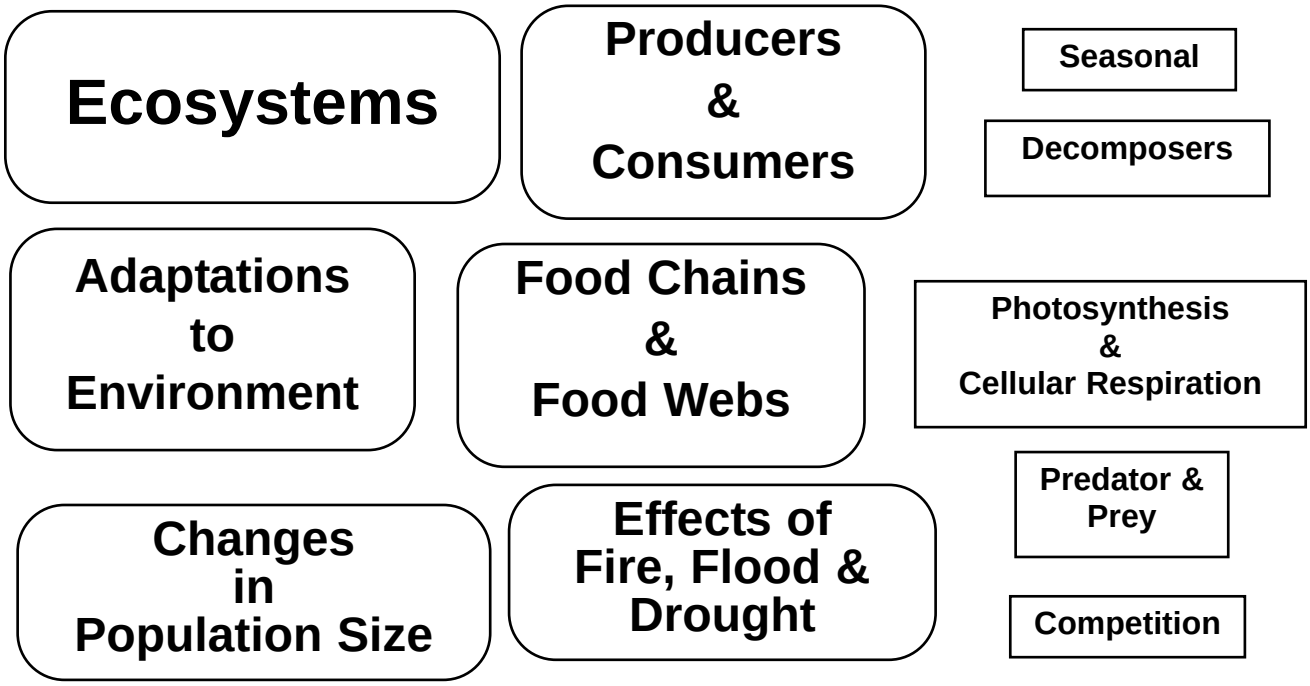

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Ecology

Ecology is the study of living things and their environment.
Ecology studies the way living things depend on each other.
Ecology looks at the environment itself, and how living things fit into it.

What is an Ecosystem?

An ecosystem can be as large or as small as you like. The whole Biosphere of the Earth is one ecosystem, or you might study just one little rockpool as an ecosystem.

One valley can be an ecosystem, or an entire continent... it just depends on how large, or small an area you want to study.

A coral reef ecosystem

Every ecosystem is made up of 2 parts.

Non-Living Environment

Amount of Water

Amount of Light (e.g. for plants)

Amount of O_2 and CO_2 gases

Temperature Range

Soil Quality

All these things (and many more) can have a huge effect on which plants and animals can live in any particular ecosystem.

For example, no plants can live in a totally dark cave, or the deep ocean, because there is no light for photosynthesis.

Very few plants and animals can survive in a desert, or on an ice-cap because of the extreme temperatures and/or lack of water.

Living Community

The "community" is all the living things within the ecosystem being studied. All the plants, animals and microbes are part of the community.

They all depend on each other, and interact with each other in many important ways.

Food

Living things eat one another.

Examples:

- kangaroos eat grass.
- spiders eat insects.

Space & Shelter

They share living spaces, and give each other shelter.

Example:

birds nest in trees.

Survival

Living things help each other carry out vital processes.

Example:
bees pollinate flowering plants.

Parasites & Diseases

Some living things are parasites and feed from others without killing them. Some microbes cause infectious diseases.

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Adaptations

If you study any living thing in its natural environment, you will always find that the plant or animal is well-suited to survive and live in that place.

It has special features which seem to help it "fit-in" to the place it lives.
These special features are called "adaptations".
We say it is adapted to its environment.

Some Examples of Adaptations

Kangaroo

Huge Legs & Feet
allow for hopping, which is a very efficient way to move around.

Powerful Tail
acts as "3rd foot" when standing, and is a counter-balance when hopping.

Large Ears
not only help hearing, but act as radiators for cooling down on a hot day.

Koala

Claws
give good grip for climbing.

Dense Fur
keeps it warm on cold nights and sheds water in the rain.

Slow Moving, slow thinking, sleeps 20 hours a day.
This helps the koala survive on gum leaves which are a very poor-quality food.

Kookaburra

Large Beak
helps it catch and kill its prey.

Colour Pattern is good camouflage, so its prey do not notice it waiting in ambush.

Good Eyesight
helps it spot insects, lizards, etc.

Feathers
keep it warm, and are light-weight for flight.

Gum Tree

Roots
go deep to find water.

Leaves
are tough and water-proof to resist drying out in dry weather.

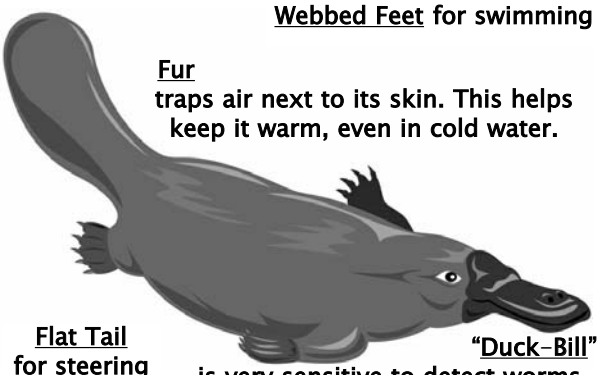
They droop downwards so the heat of midday is avoided.

Branches
are dropped in drought times, so the tree needs less water.
(Don't camp under gums in a drought!)

Platypus

Webbed Feet for swimming

Fur
traps air next to its skin. This helps keep it warm, even in cold water.



Flat Tail
for steering in water

"Duck-Bill"
is very sensitive to detect worms, yabbies, etc in the mud or gravel.

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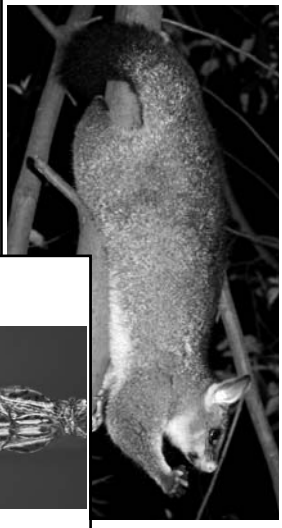
Worksheet 1
Adaptations (2 pages)

Student Name.....

For each adaptation listed, suggest how this might help survival.

You need to know the plant or animal's way of life and normal habitat. This may require some research and/or class discussion.

Possum



Sharp Claws

Tail that can grip

Large eyes

Excellent sense of smell

Nocturnal (Active at night)

Freshwater Crocodile

Webbed feet

Flattened, powerful tail

Long jaws with many sharp teeth

Eyes and nostrils on top of head

Wedge-Tail Eagle

Good eyesight

Powerful talons

Sharp, curved beak

Broad, soaring wings

Sturt's Desert Pea

Wide, shallow root system

Leaves are tough and waterproof

Seeds can survive in soil for decades

Can also reproduce from fast-growing "runners" from stem

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Worksheet 1
Adaptations (cont)

Green Tree Frog

Green colour

"Suction-pads on toes

Large mouth and sticky tongue

Large, powerful hind legs

Echidna

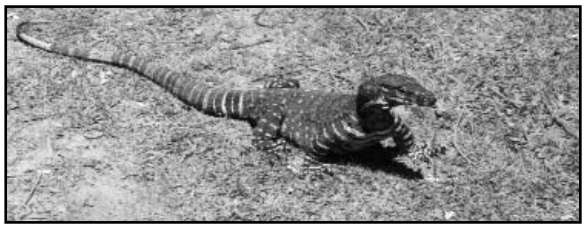
Powerful, sharp claws

Sharp spines cover body

Long snout and sticky tongue

Can you think of other adaptations that these animals have?

Goanna (rainforest species)



Stripes & spots colour pattern

Excellent sense of smell by "tasting the air"
(with flickering, forked tongue)

Long, sharp claws

Wombat

Powerful claws

Female's pouch opens backwards

Large, flat grinding teeth

Sleepy, docile nature
(hint: it's closest relative is the Koala)

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Producers and Consumers

All living things need food.
Food has chemical potential energy stored within it. When this energy is released, it powers all the life-functions... growth, movement, etc.

There are two main ways for a living thing to get food:

Producers Make Food
from simple chemicals, and a source of energy.

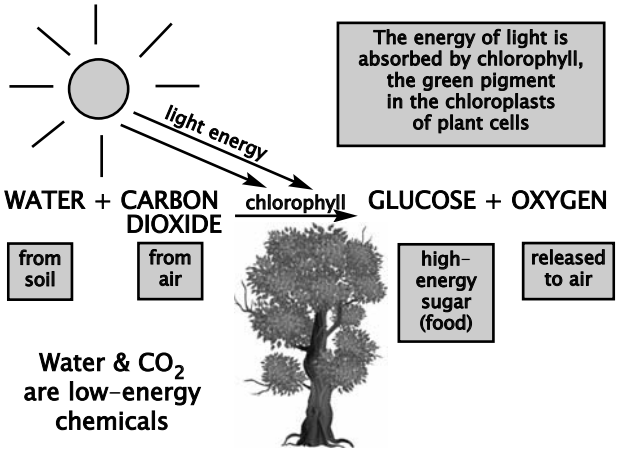
Consumers Eat Food
that some other organism has already made.

Plants are Producers

It is the plants that are the major producer organisms in most ecosystems.
(Some microbes make food too.)

Plants make their food by the process of

Photosynthesis



What photosynthesis really does is absorb energy from the Sun, and store energy in the food chemicals.

Luckily for us animals, the plants make more food than they need. They store the excess food in their fruits, leaves, roots and stems. We eat the plants or we eat other animals that ate plants.

The Producers (plants) make all the food on Earth.

They also make all the oxygen for us to breathe.

Animals are Consumers

Animals are unable to make food. They must eat some high-energy food that has been made by a producer, or they must eat other animals that ate plants.

Once they get their food, they extract its energy to move, to grow, to reproduce and so on.

The process of extracting the energy from food is

Cellular Respiration

Glucose + Oxygen → Carbon Dioxide + Water + Energy

high-energy sugar from food | from the air | These are waste products | MAIN PRODUCT

Don't forget that plants carry out cellular respiration as well... not just animals.

You already know that CO_2 and O_2 are constantly re-cycled between photosynthesis and cellular repiration.

The energy however, is NOT recycled.

It comes from the Sun, and is stored in food by the plants. Eventually either the plant, or an animal that ate it, uses the energy for some life function.

Energy cannot be destroyed, but once a living thing uses food, the energy becomes low-grade heat which is useless and cannot be re-used.

So the plants absorb more sunlight!

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Food Chains

Since all the food on Earth is made by the plants ("producers"), and all animals ("consumers") either eat plants, or each other, the result is a "chain of feeding"... a Food Chain.

Food chains are the most basic relationships within an ecosystem.

Food chains are often described by a diagram like this:

Grass → Kangaroo → Dingo

Every food chain must begin with a plant

is eaten by

is eaten by

The arrow shows the direction that food energy flows.
NEVER DRAW THEM BACKWARDS!

The pattern of a food chain is always:

Producer → Consumer 1 → Consumer 2

It can also be described as:

Plant → Herbivore (plant eater) → Carnivore (flesh eater)

Another Example

This food chain shows a number of important points:

It doesn't matter which way the food chain diagram is drawn, as long as the arrows point in the direction of energy flow.

There can be any number of living things in the chain, although it is rare to have more than about 6 steps.

Kookaburra
↑
Lizard
↑
Spider
↑
Insect
↑
Flower (plant)

Ocean Food Chains

On land the food chains usually begin with a familiar plant such as grass, or the leaves of a tree or shrub.

In the oceans, most food chains begin with plankton. (the word means "drifter")

Microscopic diatom, a unicellular producer

Plankton includes microscopic sea life which drifts in the water.

The base of the food chains are single-celled "Phytoplankton" which have chlorophyll and make food by photosynthesis. There may be millions of them in each cup of seawater.

Feeding on them are the "Zooplankton". Most zooplankton are the tiny larval stages of jellyfish, crabs, barnacles, and so on. These in turn are eaten by shrimp-like krill, and these by fish, then bigger fish, then dolphins, etc. Many whales feed directly on the krill, eating a tonne or more every day.

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Worksheet 2
Producers, Consumers & Food Chains

Student Name.....

Fill in the blank spaces

Plants are a)..... of food. They make food by b)..... using c)..... and ....., plus the energy of d).....

All animals are e)..... of food. This means they must eat food that f).....
The result is that all animals eat g)....., or other h)..... which have eaten plants.

All living things use the i)..... from food to power all life processes. To get this energy, they carry out j).....

This process needs k)..... gas from the air as well as l)..... from food. The waste products are m)..... and .....

A food chain describes the flow of n)..... through an ecosystem. Arrows are used to show the direction that the o)..... flows.

Food chains always begin with a p)..... because they are the q)..... which make all the r).....

An animal that eats plants is called a s)....., and if it eats other animals it is a t).....

Worksheet 3
Food Chains

Student Name.....

Each box names an organism, and states what it eats.
Cut out all the boxes and re-arrange to form 4 different food chains.
Glue down and add connecting arrows to complete each diagram.

Eagle
eats Butcher Birds

Frog
eats spiders

Grass

Lizard
eats grasshoppers

Flowers

Oyster
feeds on plankton

Butterfly
eats nectar from flowers

Butcher Bird
eats caterpillars

Starfish
eats oysters

Grasshopper
eats grass

Snake
eats frogs

Plankton

Spider
eats butterflies

Kookaburra
eats lizards

Octopus
eats crabs

Tree Leaves

Caterpillar
eats leaves of trees

Crab
eats starfish

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The Decomposers

All living things produce wastes.
As well as their dung, there are dead leaves, shed fur, skin & feathers, etc.
The amount of wastes and dead bits-and-pieces produced each day in every ecosystem is enormous.

Luckily, in every ecosystem there are lots of garbage-disposal organisms who get rid of the waste materials.

Bacteria & Fungi

If you have studied the "Kingdoms of Life" you may recall that bacteria are tiny, single-celled organisms.

Fungi include things like mushrooms and "toadstools". The familiar "caps" shown in the photo are actually just the reproductive structures. Most fungi grow in the soil as a network of thin threads.

Most bacteria and fungi are decomposer organisms. They feed on wastes and dead materials and cause it to <u>decompose</u> (rot) so that it is broken down into simple chemicals.

Importance of Decomposers

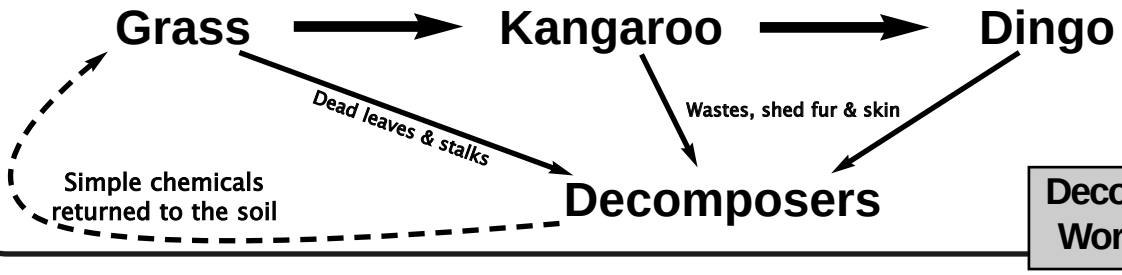
The decomposers eat all the wastes and clean up the environment.

Their real importance is that by decomposing the left-overs, they <u>re-cycle</u> many chemicals that are needed in the ecosystem.

Without the decomposers, the soil minerals such as nitrates and phosphates would soon be depleted. These "minerals" are needed by plants for healthy growth.

The decomposers break-down the wastes and return essential chemicals back into the soil. This way the plants continue to grow and make the food for all the food chains to continue.

Food Chain Including Decomposers



Decomposers Worksheet 6

Are Decomposers the Same as Scavengers?

Aren't the decomposers doing the same job as <u>scavengers</u>? e.g. vultures, which eat dead remains.

No, there is a big difference.

Seashore Scavenger

A scavenger eats dead remains, but it also produces its own wastes, sheds skin, etc, etc. Scavengers do not cause rotting, and they do not cause the re-cycling of soil minerals and other simple, but important chemicals in the environment.

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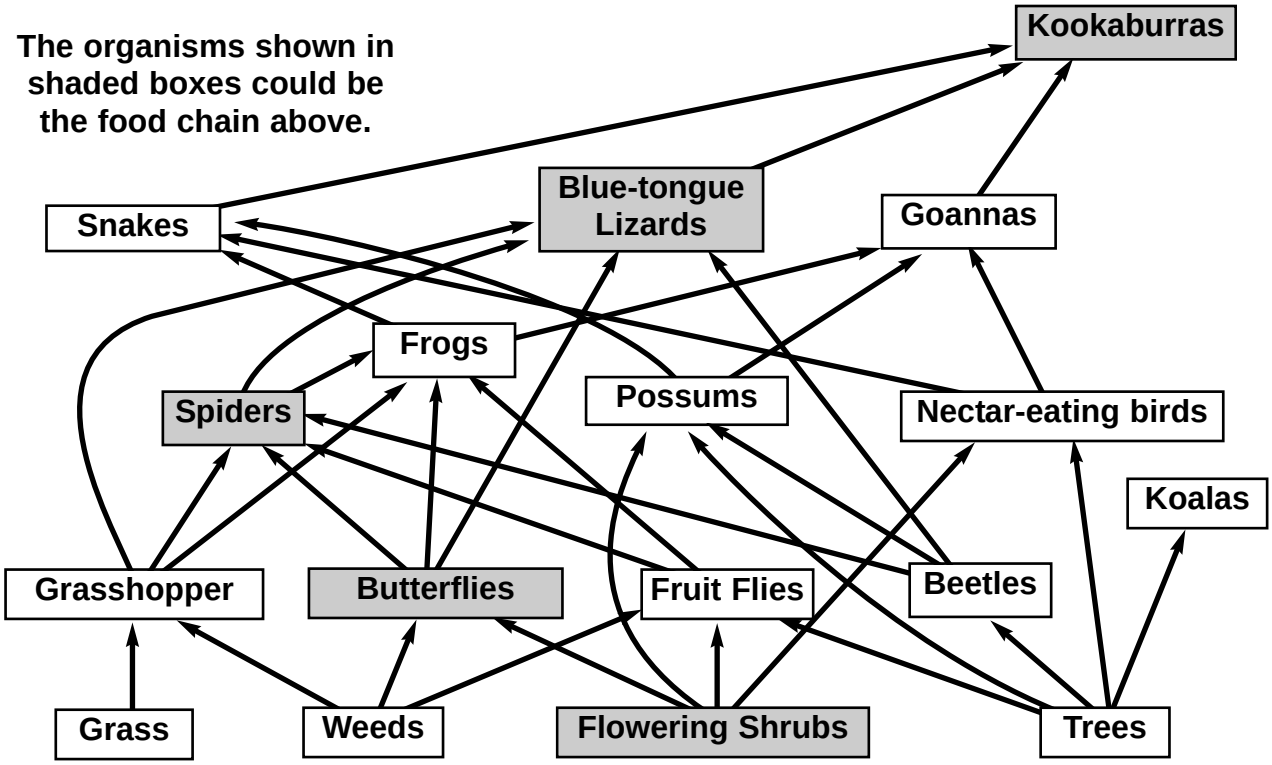
Food Webs

**Although we think in terms of food chains, this is really too simple.
Single food chains never exist by themselves in nature.
In a real ecosystem, many different food chains inter-connect
with each other to form a Food Web.**

For example, here is a food chain:

Plant → Insect → Spider → Lizard → Kookaburra

but this might be only <u>part</u> of all the feeding relationships occurring.



Complicated?

Even the food web shown is far too simple for a real bush environment.

In a natural ecosystem there may be hundreds of different species of insects and spiders, dozens of types of lizards and birds, and so on. We haven't included insect eating birds and mammals, the bats, or the many types of plants that are the basis of all the food supplies.

Design of a Food Web Diagram

Because food webs get very complicated, it is important that the diagrams we use are well-organised.

Plants are usually placed at the bottom, in a line. As far as possible the herbivorous animals are placed in a line above the plants, and so on.

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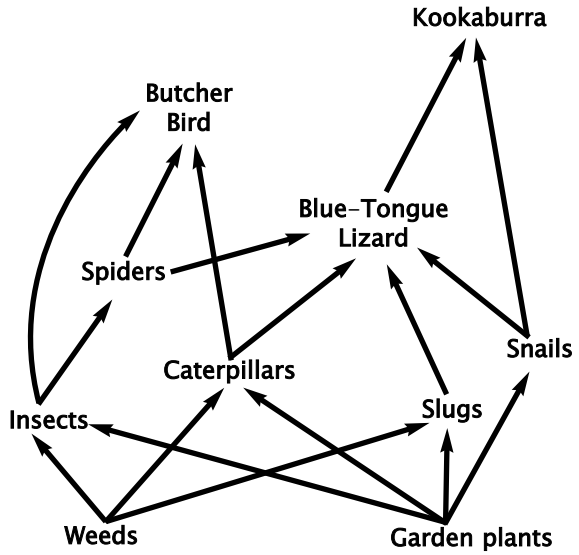
Worksheet 4
Food Webs

Student Name.....

This diagram shows a food web that might exist in your back-yard.



Answer the questions

1. According to this food web:
a) what eats caterpillars?

.....

b) what do butcher birds eat?

.....

c) which animals are the "herbivores"?

.....

2. What is the reason (shown in the diagram) why many people like to have blue-tongue lizards in their garden?

3. List all the "carnivores" shown.

Worksheet 5
Make a Food Web

Student Name.....

Here is information about some feeding relationships in a coastal rock pool. Your task is to construct a food web from this information.

Producer Organisms
Phytoplankton, seaweeds.

Herbivores
Zooplankton eat phytoplankton.
Periwinkles (snails) and sea urchins eat seaweeds.

"Filter Feeders"
(Collect plankton from the water. Therefore, they are eating both phytoplankton and zooplankton.)
Barnacles, shrimp, mussels and tube worms.

Scavengers
Crabs eat dead scraps from barnacles, mussels and periwinkles.

Predators (hunter-killers)
Octopus eat crabs, shrimp & sea urchins
Starfish eat mussels and periwinkles.

Hints
- **Start with plants in a line at the bottom.**
- **Arrange herbivores in a line above that.**
- **Continue working upwards.**
- **Connect with arrows to show all feeding relationships described.**
- **It may be wise to do a "draft version" on scrap paper first. From this you can see better lay-outs that will keep it neat and organised.**

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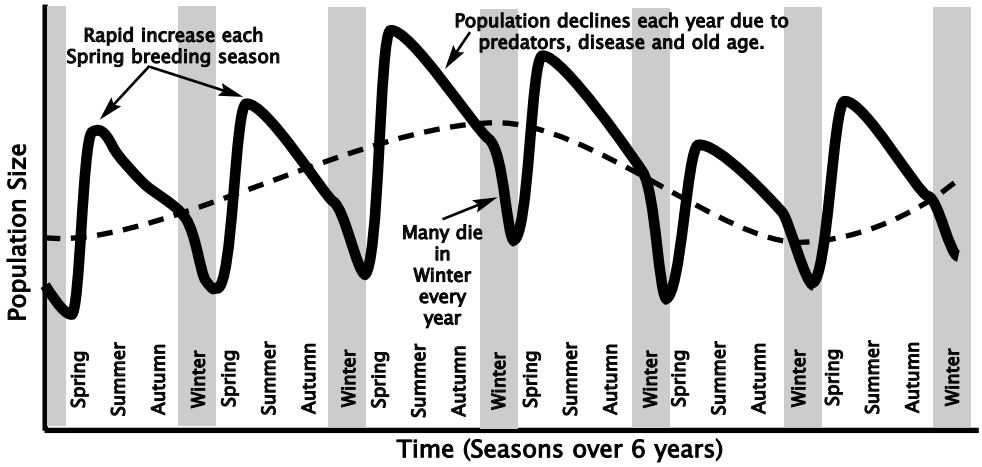
Changes in Population Size

**Humans are used to the idea that our population keeps rising.
This is NOT normal for animals and plants in nature.
In natural ecosystems, the population of each species often goes up and down with the seasons, or due to the impact of other species.**

Seasonal Changes

**In the northern hemisphere (e.g. Nth America & Europe) the seasons are very regular and predictable. Winter is harsh, but Spring always brings new plant growth, good food supplies and warm weather.
Population size always follows a yearly cycle.**

Seasonal Population Change in a Temperate Climate



Annual Cycle

Each Spring the population jumps as many babies are born at the same time.

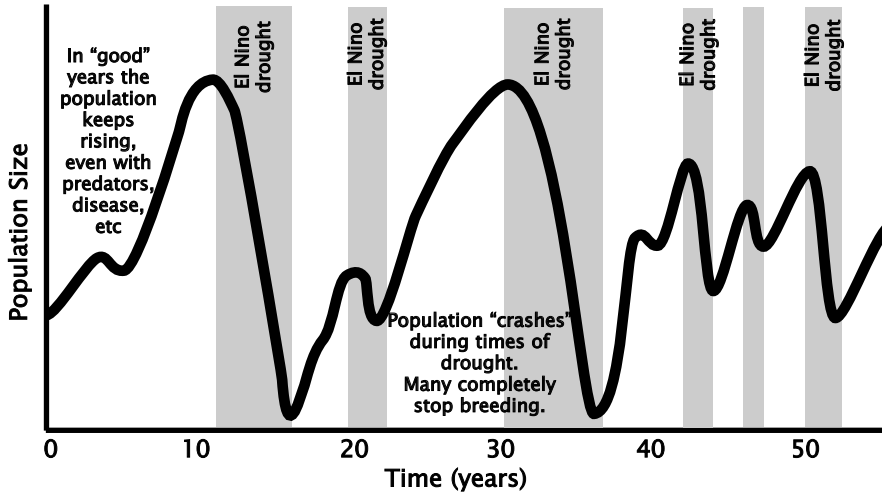
Then the population decreases steadily as some are killed by predators or die of various natural causes.

The death rate is higher in Winter, so population drops faster.

The dotted line shows the "yearly average" population. It goes up and down over a number of years because of "good" and "bad" years.

Australia's Climate is Unpredictable

**Australia has seasons, but their effect is often less important than the unpredictable "El Nino" events which cause severe droughts.
Many Australian animals do not have a "breeding season", but produce babies whenever there is food and conditions are good.**



Many Australian animals, such as Red Kangaroos, will breed continuously in years when there is plenty of food and water. The population grows larger even though many die from disease, old age or predators.

When droughts occur the population "crashes". Breeding stops, and many die from lack of food and water.

Once again, the graph shows "highs and lows", but it is more irregular, and the "cycle" is over many years.

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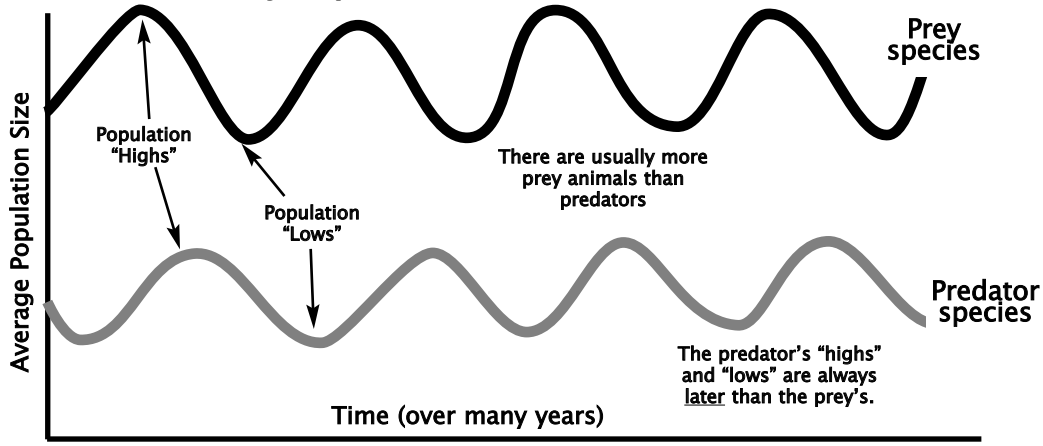
Changes in Population Size

Humans are used to the idea that our population keeps rising.
This is NOT normal for animals and plants in nature.
In natural ecosystems, the population of each species often goes up and down with the seasons, or due to the impact of other species.

Predator & Prey Populations

Some population sizes are affected by another species.
The population of a predator is often dependent on the population of its main prey.
Meanwhile, the prey species population is affected by the predator's population.

Predator-Prey Populations



This graph has been "smoothed-out" to show average population over many years

What Happens

When the prey species population is high, the predators can catch a lot of food.

The predators breed more successfully and raise bigger families because they have more food. The predator population rises.

As the predators increase in numbers, they eat more and more prey, so the prey population goes down.

When the prey population gets low, the predators have less food. They raise fewer babies, and some starve to death.

Gradually, the predator population decreases. This means fewer prey get eaten, so their population begins to increase, and the whole cycle starts again.

Competition

If two species eat the same food, or need the same nesting sites (e.g. hollow logs) or any other resource in the ecosystem, they must compete for survival.
In nature this often results in a clear winner, and an extinct loser.

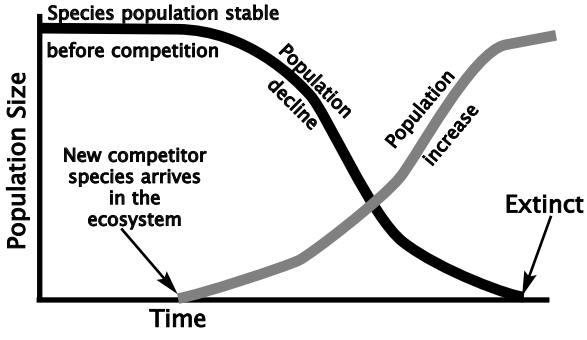
Competition

When 2 species need the same food (or other resource) one species is always a little better at it than the other.

The "better" competitor's population increases, while the other declines, and it may become extinct in that ecosystem.

Unfortunately, this is often what happens when species are introduced to new ecosystems. Humans have introduced many new species to Australia with devastating results to some native species.

Typical Competition Graph



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Worksheet 6
Decomposers

Student Name.....

Fill in the blank spaces

All living things produce a)..... materials. As well as their dung or droppings, there are tonnes of dead b)..... from plants, and c)..... and ..... which animals lose or shed.

All this waste and dead matter is eaten by the d)..... organisms, especially the e)..... and .....

As they eat this material they cause it to f)..... (rot). This means it is broken down into g)..... chemicals.

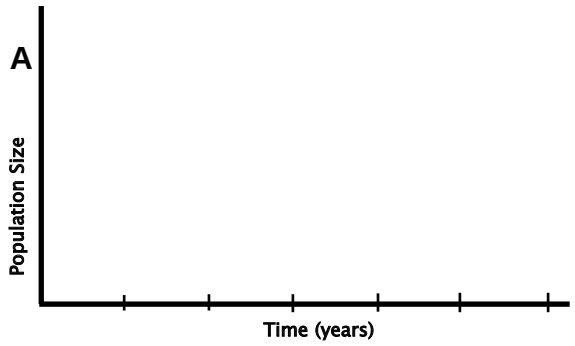
This is vital for h)..... the soil minerals which i)..... need to be healthy. This allows the plants to continue to grow and make all the j)..... for each ecosystem.

Decomposers are not the same as k)..... which eat dead remains of other creatures. These produce more l)....., and do not cause material to rot and be re-cycled.

Worksheet 7
Population Changes

Student Name.....

1.
a) Sketch on this grid (start at point A) a graph showing how the population of an animal might change over a period of years, if it breeds in a regular cycle.



b) What causes the graph to go up?

c) What can cause it to go down?

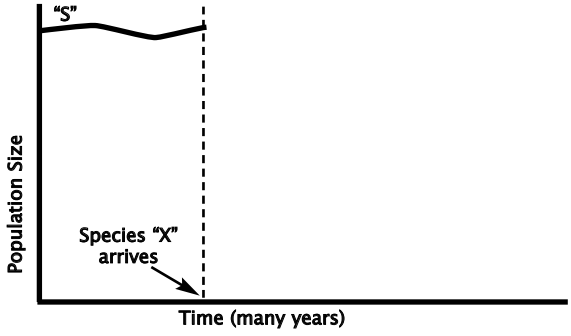
d) Assume this is a <u>prey</u> animal.
On the same grid sketch the graph of its main <u>predator</u>.

2. This graph below shows the population of a species ("S") whose numbers have remained the same (more or less) for thousands of years.

Then a new species ("X") moves into this ecosystem. The new species "X" eats exactly the same food as "S" does.

a) What do we call the relationship between "S" and "X"?

b) Sketch on the graph the population changes to "S" and "X", if the new species is better adapted and more successful.



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Fire, Flood & Drought

The only certain thing about the Australian environment is that it is unpredictable! Droughts can last for years, and then devastating floods arrive. Bushfires are common in most years and can cause widespread damage to both human property and natural environments.

Effects on Australian Ecosystems

Fire: Destroy & Re-New

Humans see fire as a destroyer. To native Australian ecosystems it is also a great renewing force.

Bushfires have been common in Australia for ages. The aboriginal people deliberately set fires for thousands of years before European settlement.

The ash from fire fertilizes the poor soils. Many plants are adapted to fire, and re-sprout quickly after a blaze. Many seeds will only grow after they are scorched by fire. Some Australian ecosystems can only remain healthy by regular burning.

Flood: Flush & Re-Charge

Farmers know the value of flooding to deposit silt on the fields and replenish the topsoil. A flood may destroy this year's crop, but it helps guarantee future fertility.

In some natural ecosystems flooding is vitally important. In inland Australia, floods re-fill the wetlands that vast numbers of plants and animals live in and rely upon for survival.

Floods re-charge the underground water supplies which emerge elsewhere as "springs" and feed the creeks, even in dry times.

The salt lake ecosystems of Central Australia (e.g. Lake Eyre) cannot survive without the irregular flooding.

Many coastal estuaries need to be "flushed out" by flood water. Without a flood the estuary silts-up, closes up and becomes a stagnant swamp instead of a healthy breeding area for fish and birds.

Drought

Drought makes life very tough for farmers and for rural communities, but most native plants and animals are well adapted for long dry periods. Many individuals may die, but the populations always recover.

When there is little food and water, the animals simply stop reproducing. Many may die, but even just a few survivors can rapidly re-grow the population after years of drought.

Many Australian plants produce drought-resistant seeds which can survive for decades, and sprout when conditions improve many years later.

Most Australian mammals are marsupials (pouched). This form of reproduction helps drought survival.

As well, many can survive on very little water because their body systems are adapted to conserve water.

Many, like kangaroos, are highly mobile so they can move long distances to search for food and water supplies.

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Different Viewpoints

A major ecological issue that has emerged in recent years concerns Australia's inland waterways, especially the Murray-Darling River System.

A hundred years ago, paddlewheel steam boats used to travel thousands of kilometres up and down the Darling River carrying wool, people and supplies. The town of Bourke was a major shipping port.

Today, the upper Darling River is just a string of shallow pools during most years. You'd be lucky to get to Bourke by canoe, much less cargo boat.

The reasons for the change are complex, but certainly a major factor is the extraction of river water for irrigation. So much water is taken from the river systems that there is not enough left to flow to the sea.

The Scientific View **is that this is an ecological disaster. The river ecosystem is dying. Plant and animal communities are severely threatened. The vast inland wetlands are not being "re-charged" and may be permanently destroyed unless "ecological flows" are re-established.**

The Farmers' View **is radically different. The crops of rice and cotton they grow provide income, not just for their families, but for the struggling bush towns.**

Their produce is worth many millions of dollars to Australia's export economy. To suddenly stop using water to irrigate the crops would be an economic and social disaster. They want to put people before trees, birds and fish.

The Aboriginal Peoples' View **tends to agree with the scientists, but for different reasons. The Aborigines see themselves as part of the land and have a responsibility to protect it and all its inhabitants.**

The Government View **is that they must try to find a compromise that works for everyone. For most of our history the Aborigines were ignored and the economy always got its way. Modern governments heed the Science, and must try to find ways to satisfy all the different groups of people.**

How Science Can Help

It's not up to scientists to make decisions to settle problems which have social, political and economic implications.
However, there's plenty that Science can do to help.

New Crop Varieties

Australia's top research body, the CSIRO, has already helped develop and breed new varieties of disease-resistant and drought-tolerant crop plants.

Further research may help develop crops that require less water so that farmers can get economical yields with less irrigation.

Ecological Studies

How much water in the rivers is enough? Only by continuing to study the plant and animal communities can we be sure of what we're doing and why.

Environmental Management

Our National Parks systems are managed scientifically to preserve ecosystems and provide places of refuge for native species.

By destroying introduced pest species and protecting remnants of wilderness areas, at least some of our natural heritage is preserved for future generations.

More and more Aboriginal people are being consulted and employed in this role. Their traditional methods are often most effective at preserving and repairing the natural environment.

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Topic Test
Ecosystems

Student Name..... Score = /20

Answer all questions in the spaces provided.

1. (7 marks)

True of False?	T or F
a) Adaptations always help survival in some way.	.....
b) The webbed feet of a platypus help it grab its food.	.....
c) A predator is always a herbivore.	.....
d) The energy in a food chain comes from the Sun.	.....
e) Decomposers are the same as scavengers.	.....
f) A food web contains many food chains.	.....
g) The population graph for a predator always "lags behind" the prey.	.....

2. (3 marks)
Humans think a bushfire is always a disaster. Is it always a bad thing for natural ecosystems?

Explain your answer.

3. (5 marks)
Match each description to an item from the list. To answer, write the letter (A,B,C, etc) of the list item beside the description.

Description	matches with	List Item
a) A special feature of a living thing which helps it survive.		.....
b) Type of decomposer living thing.		.....
c) Producer organism for most ocean food chains.		.....
d) Flesh-eater.		.....
e) What food provides.		.....

List Items Not all will be used. Some may be used more than once.

A. phytoplankton	D. adaptation
B. fungi	E. energy
C. herbivore	F. carnivore

4. (5 marks)
Unscramble these living things and draw a food chain diagram from them.

spider, snake, tree, insect, frog

Answer Section

Worksheet 1

Freshwater Croc.
Webbed feet... swimming.
Tail... power for swimming.
Jaws & teeth... catching prey (fish).
Eyes (etc) on top... allows it to see and breathe while mostly submerged.

Desert Pea
Roots... gather what little water might fall when it rains.
Leaves... resist losing water.
Seeds... can wait for the end of drought.
Runners... can quickly reproduce when conditions are good.

Possum
Claws... climbing trees.
Tail... helps in climbing, holding on.
Eyes... see well in dim light.
Smell... finding food eg fruit.
Nocturnal... avoids predators which hunt by day. eg eagles.

W-T Eagle
Eyes... spotting prey at long range.
Talons... killing prey.
Beak... tearing flesh.
Wings... can glide & soar with little effort while searching for food.

G-T Frog
Colour... camouflage.
Toes... helps in climbing, clinging.
Mouth & tongue... catch & swallow insect prey.
Legs... hopping, which is good to escape from predators.

Goanna
Colour pattern... camouflage.
Smell... can detect food at long range even when not visible.
Claws... tree climbing.

Echidna
Claws... breaking open termite nests.
Spines... defence against predators.
Snout, tongue... catching ants & termites.

Wombat
Claws... burrowing, digging roots (food).
Pouch backward... pouch doesn't fill with dirt when digging.
Teeth... eating tough plant food.
Dopey... can survive on poor quality food.

Worksheet 2

a) producers **b) photosynthesis**
c) CO_2 & water **d) sunlight**
e) consumers
f) another organism has made
g) plants **h) animals**
i) energy **j) cellular respiration**
k) oxygen **l) glucose**
m) CO_2 and water **n) energy**
o) energy **p) plant**
q) producers **r) food**
s) herbivore **t) carnivore**

Worksheet 3

Grass > grasshopper > lizard > kooka.

Flower > Butterfly > spider > frog > snake

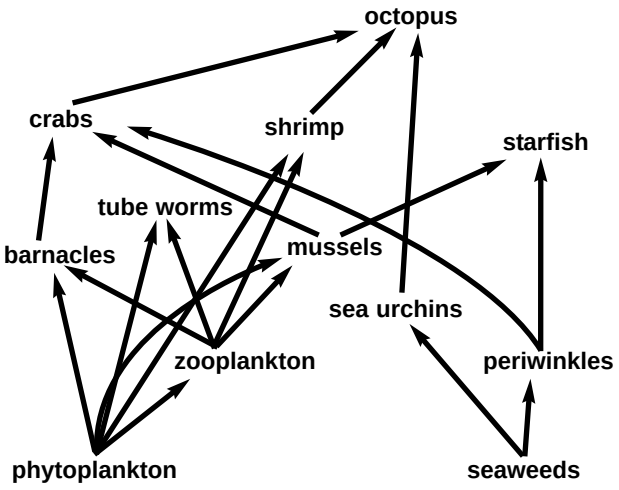
Leaves > caterpillar > B.bird > eagle

Plankton >oyster > starfish > crab > octo

Worksheet 4

1.
a) butcher birds & blue-tongue lizards
b) insects, spiders and caterpillars
c) insects, caterpillars, slugs & snails
2.
They eat garden "pests" such as slugs, snails & caterpillars
3.
spiders, butcher birds, b-t lizards, kookaburras

Worksheet 5

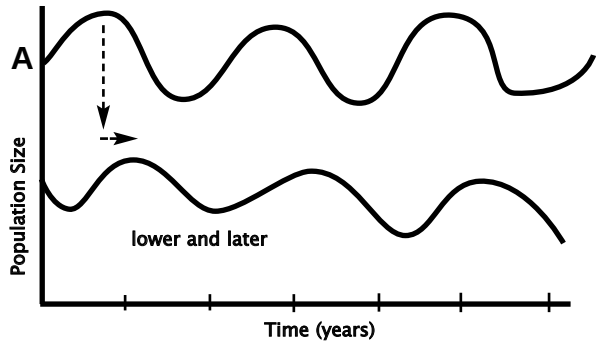


Worksheet 6

a) waste b) leaves
c) skin, fur (etc) d) decomposer
e) fungi & bacteria f) decompose
g) simple, small h) re-cycling
i) plants j) food
k) scavengers l) wastes

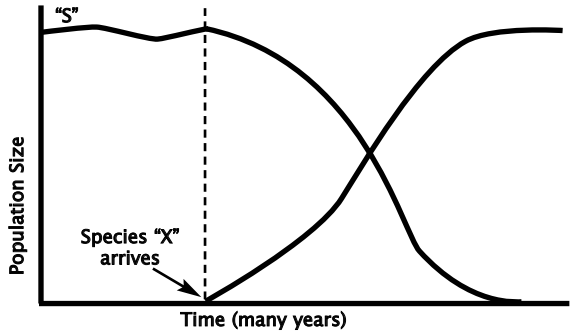
Worksheet 7

1.



a) graph should go up and down.
b) reproduction of young
c) death, because of predators, disease
d) predators graph should be lower, and later than first graph.

2. a) competition
b)



graph for S should decline, X should rise

Topic Test

1.
a) T b) F c) F d) T
e) F f) T g) T

2.
No.
Bushfires are needed to keep some natural ecosystems healthy.
The ashes from fires fertilize poor soils, and some seeds can only sprout after being scorched.
Many Aust. plants are adapted to fire and quickly re-grow.

3.
a) D b) B c) A d) F e) E

4.
tree → insect → spider → frog → snake

(arrows must point correct way!)