

KESAB Patawalonga and Torrens Waterwatch

Activity 6 – FOOD WEB WORKSHEET

Read through the text. Design a food web and answer some questions from the following information:



The Torrens River starts in the Adelaide hills as several small creeks which join to form one larger creek. As it winds its way down the hills to the city, more and more water is added. It generally only flows in winter, when the rainfall is sufficient, and dries up into small waterholes during the summer. A weir is used to hold water permanently in the city. It is surprising how many organisms rely on the river for their existence.

Algae can be observed growing in the water, as well as water ribbons (*Triglochin procerum*). On the water's edge, fluffy topped reeds such as the common reed (*Phragmites australis*) and the bulrush (*Typhus sp*) grow. Water boatmen are observed swimming in the water. They are eating the algae and reeds. Mosquito larvae also eat the algae while the freshwater snail eats both the algae and water ribbons. A long necked tortoise pokes its nostrils above the water. The tortoise eats the algae too, as well as feeding on snails, boatman and yabbies. The water boatman provides food for many species including fish, frogs, diving beetles and dragonfly larvae. The yabbies are scavengers, feeding on rotting plant and animal matter, while bacteria also help break down this dead material by digesting it and recycling nutrients in the food web. The mosquito larvae are considered a delicacy for several varieties of fish (such as the big-headed gudgeon or the congoli).

Birds are in abundance along the waterway. Pacific black ducks are feeding on fish, dragonfly larvae and diving beetles, while the occasional visiting pelican feeds on fish, frogs and dragonfly larvae. Black swans make a beautiful sight, bending their elegant necks to forage under the water grazing on the water ribbons, snails and an occasional fish. The white-faced heron makes a meal of the fish and frogs. The purple swamp hen runs quickly from the bulrushes where it feeds on the tender growth of the bulrushes and also makes its nest. On the bank a blue-tongue lizard is sunning itself in a warm rock. It snaps at the dragonflies and diving beetle and beware the unwary frog, the lizard will sometimes eat them too.

1. Use the pictures provided to construct a food web

It is best to start with the producers and build up. When you are happy with your placement, glue/write the animals in place and complete the arrows to show the flow of energy. You may need to read through parts of the text again.

2. Divide the organisms into the following categories:

Producers	1 st Order Consumer	2 nd Order Consumer (and higher)

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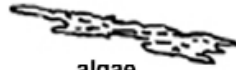
Wetland Food Web Images



bulrushes



water ribbons



algae



mosquito larvae



frog



heron



mosquito



reeds



dragonfly



fish



swamp hen



freshwater snail



lizard



water boatman



diving beetle



dragonfly larvae



tortoise



black swan



pelican



yabby



duck

SOLUTIONS...

1. Complete the chart.

(10)

Producers	First Order Consumer	Second Order Consumer and Higher
<ul style="list-style-type: none"> - algae - water ribbons - common reed - bulrush 	<ul style="list-style-type: none"> - water boatman - mosquito larvae - freshwater snail - tortoise - gabby - black swans - swamp hen - dragonfly - bacteria 	<ul style="list-style-type: none"> - tortoise - fish - frog - diving beetle - dragonfly larvae - pacific black duck - pelican - black swan - heron - lizard

2) Food Web: Cut and layout organisms FIRST...then tape/glue.

*** All possible food chains [32 total] are...**

5

- algae → water boatman → dragonfly larvae → pelican
- algae → water boatman → dragonfly larvae → duck
- algae → water boatman → diving beetles → duck
- algae → water boatman → diving beetles → lizard
- algae → water boatman → tortoise

4

- algae → water boatman → fish → pelican
- algae → water boatman → fish → heron
- algae → water boatman → fish → black duck
- algae → water boatman → fish → black swan

4

- algae → mosquito larvae → fish → heron
- algae → mosquito larvae → fish → black swan
- algae → mosquito larvae → fish → pelican
- algae → mosquito larvae → fish → black duck

2

- algae → freshwater snails → tortoise
- algae → freshwater snails → black swan

1

- algae → tortoise

- 1 [Common reed → water boatman → tortoise
- 2 [Common reed → water boatman → dragonfly larvae → pelican
Common reed → water boatman → dragonfly larvae → duck
- 2 [Common reed → water boatman → diving beetles → lizard
Common reed → water boatman → diving beetles → duck
- 4 [Common reed → water boatman → fish → black swan
Common reed → water boatman → fish → heron
Common reed → water boatman → fish → pelican
Common reed → water boatman → fish → black duck
- 3 [Common reed → water boatman → frog → pelican
Common reed → water boatman → frog → lizard
Common reed → water boatman → frog → heron

- 2 [Water ribbons → fresh water snails → black swan
Water ribbons → fresh water snails → tortoise

1 [Water ribbons → black swan

1 [bulrush → purple swamp hen

*** Answers will vary...be sure to have correct number of species!**

3. Write your food chains below.

(7)

(i) water ribbons → black swan
algae → tortoise
bulrush → purple swamp hen

water ribbons → freshwater snails → black swans

(ii) algae → freshwater snails → black swan
producer first consumer second consumer

(iii) common reed → water boatman → diving beetle → lizard
producer herbivore first carnivore second carnivore

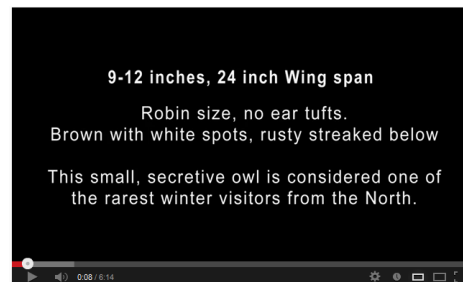
Check out these after you complete the lab...



You Know: Owls spit up pellets.



W Vomit



oreal Owl - Visitor From The North



aby owl ejects pellet



hite barn owl regurgitates a pellet - Audubon Starr Ranch, Ca.

Matter in Ecosystems

An ecosystem needs more than energy to function. It also needs matter. Matter is used by organisms in ecosystems for life processes. Most ecosystems need over 20 elements. Just the plants in most ecosystems need 16 elements. These essential elements are called **nutrients**.

NOTES - Nutrients and Cycles.pdf

Re-order the descriptions on the right to line up with the terms on the left.

non-mineral nutrients

magnesium - one of the atoms
in a chlorophyll molecule

mineral nutrients

needed in relatively large amounts for
plant growth (found in commercial fertilizers)
-nitrogen, phosphorus and potassium

macronutrients

iron - needed to make hemoglobin
molecules in red-blooded animals

primary macronutrients

nutrients which enter an
ecosystem from bedrock

secondary macronutrients

nutrients which enter an ecosystem
in the form of water and carbon dioxide
- oxygen, carbon, hydrogen
(building blocks of life)

micronutrient

required in greater amounts than micronutrients

Correct Matches

non-mineral nutrients → nutrients which enter an ecosystem in the form of water and carbon dioxide
- oxygen, carbon, hydrogen
(building blocks of life)

mineral nutrients → nutrients which enter an ecosystem from bedrock

macronutrients → required in greater amounts than micronutrients

primary macronutrients → needed in relatively large amounts for plant growth (found in commercial fertilizers)
-nitrogen, phosphorus and potassium

secondary macronutrients → magnesium - one of the atoms in a chlorophyll molecule

micronutrient → iron - needed to make hemoglobin molecules in red-blooded animals

Remember: Energy flows through an ecosystem in one direction.

Nutrient Cycles

Nutrients are recycled through ecosystems...

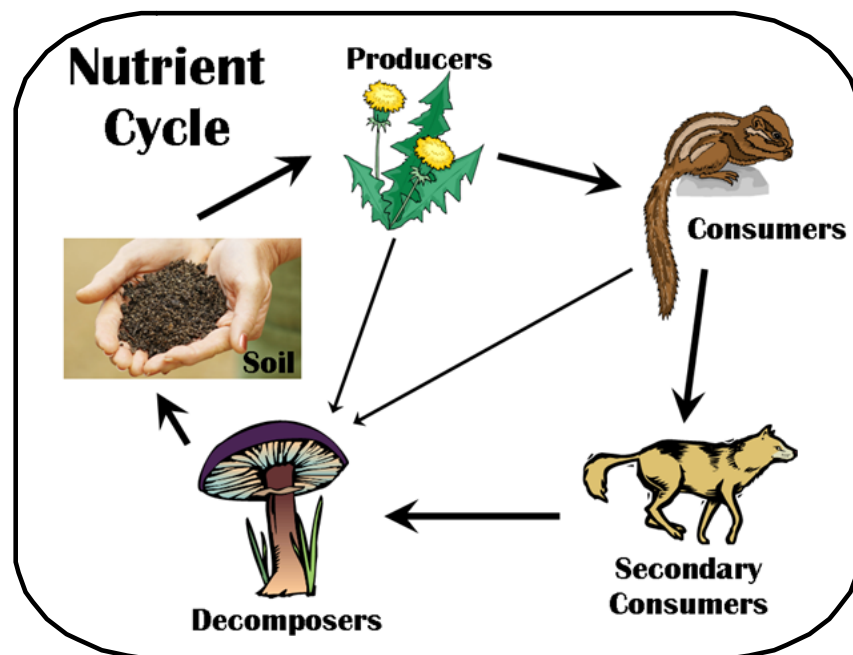
Producers get their nutrients from the soil, water and air.

Herbivores get nutrients when they eat producers.

Carnivores get nutrients when they eat herbivores.

Decomposers break down animal wastes and dead organisms.

The actions of decomposers release nutrients back into the soil, water and air so producers can use them again.



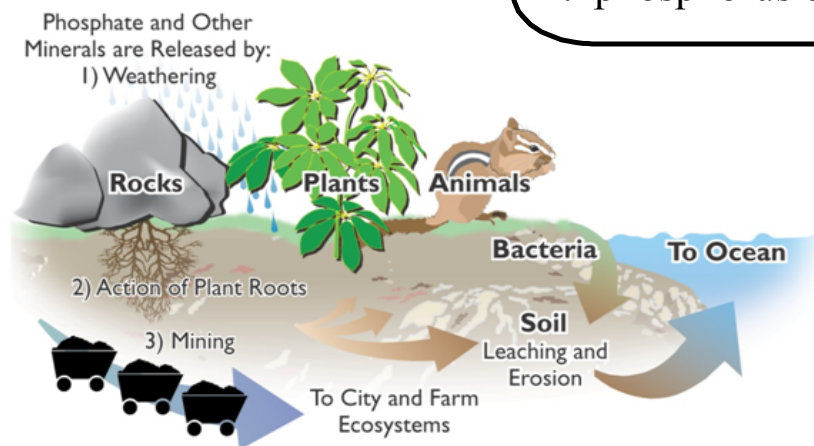
(Water and air not shown in this diagram.)

Mineral Cycle

 [Notes - Cycles.pdf](#)

Cycles to be studied:

1. water cycle
2. carbon cycle
3. nitrogen cycle
4. phosphorus cycle



Attachments

NOTES - Nutrients and Cycles.pdf

Notes - Cycles.pdf