



Interdependence

"Finding out & enquiry"

Learners study the interdependence of organisms in a tree ecosystem.

Grading: Y Y Y

Time: XXXX

Place: Inside /Outside

Group size: 2 - 3

Activity Outcomes:

Learners are able to:

- understand the interdependence of organisms in a tree
- appreciate the fragility of such interactions and the importance of preserving it

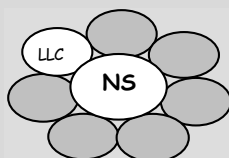
Assessment:

- Educator assesses learners' ability to collect and interpret information i.e.:
 - is information relevant
 - is information accurate

Skills:

- Exploring and recording
- Communication
- Appreciation of the importance of trees in an ecosystem

Learning Area links



The tree is a house with many rooms

Background

A tree is like a house with many rooms, each offering a different meal and a different environment to living organisms. From the trunk to the edge of the tree and from the bottom to the top, the environment changes. A casual observer might notice little, because many animals are hidden from view.

Most species are found in a specific part of the tree, where they live (their habitat). Every species has a job or role in the community, known as its niche. The **niche** of a species includes its diet, where it finds its food, how it gathers its food and what services it renders to the system of which it is a part. The tree is called a producer, since it produces food on which the other organisms, the herbivores and carnivores, depend. The herbivores and carnivores are the consumers.

The following are examples of how trees provide for organisms in various ways:

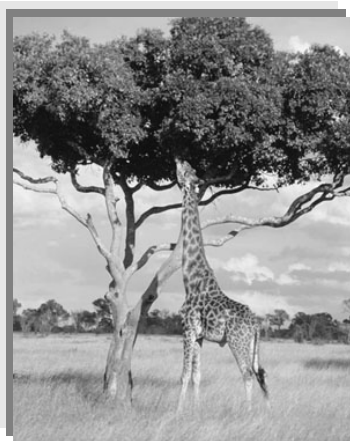
- Seeds - eaten by birds, rabbits, pigs
- Spiders, scorpions, millipedes - hunters
- Owls, snakes - hunters
- Mycorrhizal fungi help absorb nutrients formed when earthworms, mites, bacteria and fungi break down leaf litter.
- Tree may be sat on, excreted on and nested on by birds.
- Chewed by larvae
- Sucked by aphids
- Defoliated by larvae of moths
- Leaves, twigs, branches, trunks and roots used by different animal species for cover, shelter and food.

Activity Guidelines:

Needed: Pen, paper, bio-viewer, sweep-net, camera.



See Enviro Fact 39:
The value of Trees



- ✎ Divide your learners into groups.
- ✎ Choose a mature tree, indigenous or exotic, either in your school grounds, in your neighbourhood, a nearby park or along the road. Study it carefully using some of the following guidelines. Do not forget to use the magnifying glass.
 - Examine the underside of leaves
 - Turn over some stones near the tree
 - Go out at night with a torch
 - Examine fruits and seeds
 - Examine the bark
 - Examine the roots
- ✎ You might encounter some of the following organisms mammals, birds, bees, earthworms, ants, beetles, mice, flies, wasps, insect larvae, aphids, spiders, fungi, slugs, frogs, lizards, snakes, dead organisms.
 - Compile individual lists of herbivores, carnivores, omnivores and possible saprothrophs.
 - Trees support a much greater variety of animal life than any other plants as you might have observed. This illustrates the complexity of feeding interactions in nature.
 - Construct a food web based on your observations

Variations

🌍 Create a "Green Island"

Plant a quick growing tree in the school grounds or in the midst of asbestos and concrete homes.

Start a diary and record all your observations. Very soon you will be able to study the intricate relationships of some living organisms which either visit the tree or make it their home. Make a list of organisms which are found on indigenous trees or, visit the indigenous trees which you have planted, and a separate list of organisms, which visit or live on the exotic trees, which you have planted.

What are your conclusions?



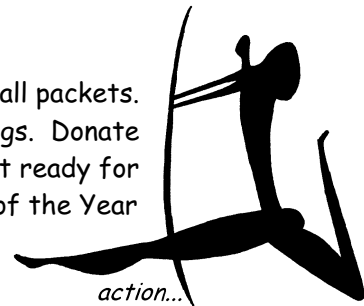
This activity can be done individually or as a class effort stretching over an extended period of time (throughout the school year or even longer).



🌍 A study of microhabitats (use approach as before)

- Divide your learners into groups. Assign a square study plot to each group, which has to examine a series of different microhabitats, such as a wooded area, a grassy lawn or an area near the school. Ask the learners to describe all life-forms found.
- Try to establish symbiotic relationships between some of the living organisms which you have encountered eg. predator-prey, mutualism.
- Create a food web and compare it with those of the other groups.

Collect seeds from indigenous trees and place them in small packets. Label the packets and sell the seeds or grow own seedlings. Donate money to an environmental / conservation organisation. Get ready for next year's Arbor Day by planting seeds for the Tree of the Year



TREE STORIES ...

TREE STORIES

Stories were and to a large extent still are, a traditional means of conveying indigenous knowledge.

THE UPSIDE-DOWN TREE

Adansonia digitata

baobab (Eng.); muuyu (Sh.); umkhomo (Nd.)

The baobab is so-called the king of trees because of its gigantic size. It is said that in the past the gods permitted trees to grow as big as they could as long as they did not grow past the clouds into the sky where the gods lived. The baobab in its ambition to be the king of the trees grew and grew until, without noticing, it exceeded the accepted limit. The gods were very angry at it and decided to punish it severely. So they uprooted the baobab and buried it upside down in the ground with its roots facing the sky, hence the name 'the upside-down tree'. When a baobab is viewed not in leaf (which is its appearance for the greater part of the year) its swollen trunk does resemble the main root of a plant while its branches resemble side (adventitious) roots.

Notes

The baobab is a very large succulent plant highly adapted to hot, dry areas. The swollen stem serves to store water and the lack of leaves during the greater part of the year is an adaptation to conserve water. It is a multipurpose tree, highly valued for its fruit whose edible pulp ('cream of tartar') is rich in vitamin C. The young leaves are cooked as relish while the bark is woven into mats, hats and baskets.

The ethic of the story is, take only what you need of a resource.

THE RAIN TREE

Lonchocarpus capassa

rain tree (Eng.); muyamharadzi, mupandapanda (Sh.); icithamuzi (Nd.)




People call this tree 'ichithamuzi' or 'muyamharadzi', literally meaning 'the breaker of the family', because it was believed that if someone cut it down and used it for firewood there would be discord in the family, and people would quarrel and part ways. As a result of this myth the tree was never cut for firewood and

anybody using it was associated with witchcraft.

Notes

This is a common tree in the low altitude areas. The tree is called the rain tree because droplets of water fall from it just before the summer rains break. The droplets are produced by insects called 'frog-hoppers' which at this time during the year infest the tree soon after it has flushed out its new summer leaves, the frog-hoppers suck the sap of the leaves and then pass out excess water from their bodies. When there are many of these insects the droplets are released in sufficient quantities to appear like rain and the soil below becomes moist.

The myth was so created because people used the above phenomenon in the tree as a sign for them to prepare their lands for the next growing season.

For this reason the tree was thus traditionally conserved. 

Indigenous Knowledge Series - A Share-Net resource.

