

Interdependence

"Finding out"

Learners investigate what the consequences would be when the links of interdependence in nature are broken.

Grading: YYY

Time: ⌚

Place: Inside

Group size: Class divided into 6 groups

Activity Outcomes:

Learners are able to:

- conduct an investigation
- realise the importance of every link in nature

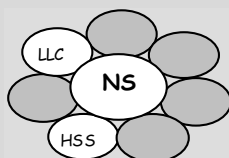
Assessment:

- Educator evaluates the planning and presentation of the case studies using a rating system: very good, good, average, poor

Skills:

- Research topics
- Record and communicate
- Awareness of damaging environmental practices and responsibility to protect and restore

Learning Area links



Breaking the links: when things come apart

Background

When the links of interdependence are damaged or broken and destroyed, the consequences can be very severe. When plants and animals become threatened or extinct, it will have a negative effect on the balance of the ecosystem. The other species in the area are also affected, because they are all interdependent in one way or another. Particularly damaging is the loss of "keystone species". These are species with **significant** roles in an ecosystem.

Usually it is human activities that cause damage to ecosystems. These activities include **fragmentation of habitats, pollution, overfishing, introduction of alien species and wildlife trade**. If we as humans use more than we need or produce substances that interfere with natural processes, we do not live sustainably. By doing this we threaten the delicate balance of nature and therefore the ability of earth to sustain itself.

This activity is designed to guide your learners on an open-ended investigation of damaging environmental practices. They will find out how links are damaged or broken and why things can fall apart in nature.

Activity Guidelines:

Needed: Copies of "Get on your Case" for each team.
(see pp E33 and E34)

- ✂ Conduct a class discussion on the importance of **interdependent links** in nature and why they should not be broken. (See Enviro-facts nos. 9, 14, 15 & 16)
- ✂ Divide the class into six teams of four or five learners.
- ✂ Let each team pick one of the "Get on your Case" cards.



- ✎ Give the learners several days to conduct their investigation. Encourage them to use **magazines, newspapers, books, libraries and the Internet** or visit **websites for information**.
- ✎ Each team should
 - Describe the topic investigated
 - Name and discuss examples
 - Explain the research methods used
 - Describe the results of their research
 - Describe how links can be destroyed
- ✎ When the learners have completed the investigation, let them share their results with the rest of the class.
- ✎ Finish the discussion by asking learners to reflect on the importance of different interactions between living things and why they should not be damaged or destroyed.

Variation:

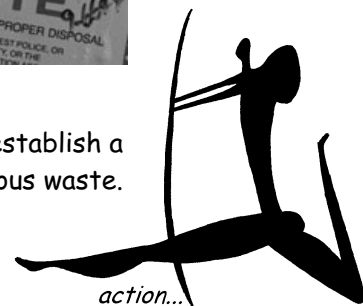
Poisons in the Home and Garden



- Make a list of the different biocides used to kill living things. Explain the effects they have on organisms living in your home and garden.
- Compile a list of safer alternatives and indicate which organisms they control.



Encourage your local municipality to establish a facility for the disposal of hazardous waste.

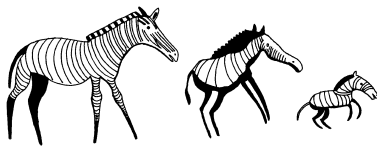


"Get on your Case"-cards:

POLITICAL INSTABILITY

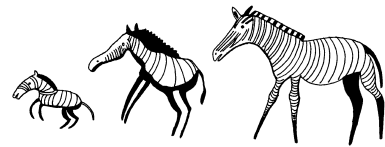
Political instability is another contributing factor to environmental degradation. In Ethiopia six national parks were under threat from civil war. Conservation areas in Zaire, Sudan and Liberia are also threatened by civil unrest.

Social structures collapse during war, which often results in food shortage. A hungry population will start hunting indiscriminately which will lead to species loss.



WILDLIFE FOR SALE

Trade in wild animals and plants is a big threat to biodiversity world-wide. Although most wildlife and wildlife products that are for sale are legal purchases, one quarter of this is illegal. Driven by consumer demand, people poach thousands of rare and endangered plants and animals from their habitat. Rhinos, tigers, wild dogs and elephants are just a few examples. Once we understand the seriousness of this problem, we will realise the importance of conservation.



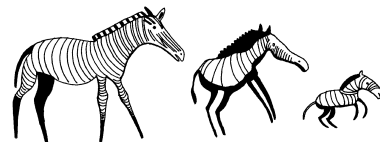
DEFORESTATION

In many developing countries wood is the only source of fuel. As populations have increased, so has the consumption of wood. Trees play a very important role in sustaining plant and animal populations. Rainforests are fast disappearing. In Africa people cut down trees to create new farmland and as a source of fuel. This happens faster than they are replacing them, thus forests are not sustainable.



HABITAT FRAGMENTATION

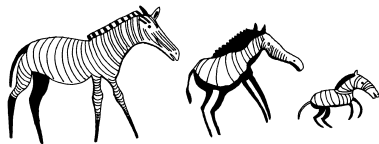
The loss of habitats, the places where organisms live and get food, water and shelter (living space) they need to survive, is the primary reason why biodiversity is on the decline. Often habitats are not destroyed outright but are chiselled away little by little and become fragmented. Roads, housing developments, industry are all causes of habitat fragmentation.



"Get on your Case"-cards (cont.)

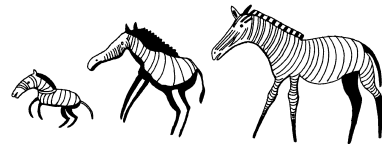
OVERFISHING

With the introduction of mechanised trawlers and factory ships by industrialised countries, the global commercial fish catch has increased alarmingly. We have probably exceeded the upper limit of sustainable fishing from the sea. Some fish populations are declining fast, while others have disappeared altogether.



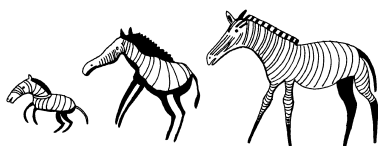
COMMUNITY CORNERSTONES

Individual species interact in many different ways within the ecosystems in which they live. Loss of one species can affect others as well. Some species called "keystone species", are especially important in their communities. If keystone species disappear, populations of many other organisms can be affected.



INTRODUCTION OF ALIEN SPECIES

Another contributing factor for biodiversity decline is introduced species. When people introduce organisms into new areas, either intentionally or accidentally, the organisms can take a toll on native plants and animals. Introduced species, also called alien, invasive or exotic, often have no natural enemies and are resistant to disease. Indigenous species often have no defence against the introduced species or the diseases they carry. As a result, introduced species may thrive at the expense of the native species. Sometimes an introduced species will have a beneficial effect on its new home, but overall, however, alien species cause more harm than good.



ENDANGERED WETLANDS

Wetlands are intricate, fragile ecosystems which can easily be upset by human disturbance. They support an extraordinary biodiversity of plant, bird, insect and animal life, which adapt to this environment. Wetlands were drained for development and agriculture. Today they are still threatened by pollution, over-fishing and introduction of alien plants and fish. Ramsar - 1971 conference to protect the wetlands. South Africa registered in 1973 and has 8 registered wetlands.

