



What's the Big Deal?

Summary

Students will discuss and explore why species, including species at risk, are so important to humankind and prepare a brochure celebrating the value of species at risk.

Activity Information

Level: Grades 10 and 12 (sec. III and V)

Subjects: Sustainability of Ecosystems, Evolution, Change and Diversity, Interactions Among Living Things, Science, Geography, Resource Management

Estimated Duration: One to two 60-minute class period(s) to introduce and begin work. Homework to complete the brochure.

Materials: Paper for brochures.

Learning Outcomes

Sustainability of Ecosystems

Explain how a paradigm shift can change scientific world views (e.g., give examples such as the shift from a world view centered on humans to one focused on inter-relationships among all species, or the shift to the acknowledgement that all biotic and abiotic factors on Earth are interrelated).

Explain various ways in which natural populations are kept in equilibrium and relate this equilibrium to the resource limits of an ecosystem.

Explain how the biodiversity of an ecosystem contributes to its sustainability.

Evolution, Change and Diversity

Identify multiple perspectives that influence a science-related decision or

issue (e.g., identify various perspectives on such issues as the origin of life, the protection of wild species of plants, and the preservation of wilderness areas).

Interactions Among Living Things

Describe population growth and explain factors that influence population growth. Evaluate Earth's carrying capacity, considering human population growth and its demands on natural resources.

Teacher Background

The reality of life is that nearly all species on Earth eventually die out. New species are evolving every moment and replacing original species; old species are dying out and their place in the fabric of the natural world is taken over by one of the “new” species. We all have heard the news about the loss of species in the world – passenger pigeons, the Great Auk, the sea mink, the Labrador duck, the Macoun's shining moss, and many others that are gone forever from the planet.

Between 1900 and 1975, the rate of extinction rose to one species per day. In fact, some scientists believe that the Earth loses between one and three species a day. The IUCN (World Conservation Union) thinks the rate of extinction is currently 1000 to 10 000 times higher than what it should be under natural conditions. At the same time, there are new species being discovered from time to time. So what's the big deal about loss of species, about species being “at risk”? Are our conservation efforts really necessary?

The big deal is that almost all of the recent extinctions are a result of human activities and the new species being discovered are not really “new”, it's just that we never identified them before. As Canada was developed, people drastically increased the loss of biological diversity to make way for their own communities. We have managed to remove whole ecosystems from our landscape and replace them with subdivisions, strip malls and hockey arenas and other structures. Everyday things that all of us rely on like roadways, pipelines, hydro corridors and telephone towers have caused great harm to habitat and wildlife. We've moved in and taken over the homes of other species.

It's true that some species are more susceptible than others. Some have very specific habitat requirements, such as large ranges, or mature ecosystems (e.g., old growth forests) that are harder to come by with increased human development. Others have low productive rates and simply can't keep their numbers up. Others may be at the limit of their range or are unable to withstand human disturbance during times of breeding or migration. But regardless of these reasons, humans are still having an impact, putting more pressure on what may already be a delicate situation.

We all know that we share the planet with other living species – plants and animals. Often times we believe we are the most important beings; sacrificing others for our survival. So back to our question: What's the big deal?

Does it really matter if a forest company with a great environmental record slips and destroys a critical piece of habitat, pushing a species closer to the brink of extinction?

If the benefits of a species at risk can be measured by economic or personal value for individuals, it is easier to justify spending money to protect and conserve it. Usually, it's a matter of balancing measurable values with many competing interests. However, some important benefits of species at risk are not easily measured, such as genetic and medicinal values. Every species is part of a food web and if one part of the web is damaged everything else will be affected too. But, if the benefits are intangible in nature, and not easily measurable, it becomes more difficult to justify their protection.

In this activity, students will explore and justify the “value” of particular species at risk, explaining why Canadians should or should not work to conserve, protect and preserve these very special plants and animals that are so critical to the health of the planet.

Procedure

1 **Begin with a simple discussion about the diversity of living things** and how everything interacts within ecosystems, focusing on the sustainability of those ecosystems. Ask your students what they believe are some of the critical factors necessary to ensure the sustainability of ecosystems? What role do humans have in ensuring that sustainability? Document key points on the board or chart paper.

Then introduce the notion of species at risk. Ask students why some species are at risk while others are not. What are the key factors that put them at risk (e.g., habitat loss, invasive species) and what role do humans play in this?

2 **Prior to distributing the assignment, have a brief discussion about ethics.** Ask your students what they think ethics means. Do they know the difference between right and wrong? Are ethics important? How do ethics enter into the discussion around species at risk?

Ethic: the discipline dealing with what is good and bad and with moral duty and obligation; a set of moral principles or values.

3 **Organize your students so that each has a partner.** Explain that their task will be to inform and educate their fellow students about the value of species at risk by creating a six-panel brochure and associated distribution plan. Their first step is to select a species currently designated at risk by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) found at www.cosewic.gc.ca. Ensure that they select different species to prevent overlap and provide a wide variety of arguments and associated values. Include representatives from each of the following categories: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, lichens and mosses.

4 **Once each partner group has selected its species at risk,** provide them with the details of their brochure development. They need to create a brochure that includes the following:

- six panels with information on each panel (i.e., 8.5” x 11” paper, fanfolded in three, both sides of the page);
- detailed information about their selected species at risk;
- a convincing argument stating why this particular species should be protected and conserved;
- an explanation of the value of this species;
- illustrations or photographs of the species;
- the issues that are preventing the species from recovering its population successfully; and
- the groups (government and/or non-government) involved in its recovery.

Associated with the brochure development, the student partners need to also prepare a detailed distribution plan (minimum 700 words) including the following:

Q: Who is the primary target audience for this brochure?

Q: How have you designed the brochure to attract the target audience or should they modify its design?

Q: How many brochures would they need to print to distribute them effectively?

Q: Where will they distribute the brochure in order to reach the greatest number of their target audience?

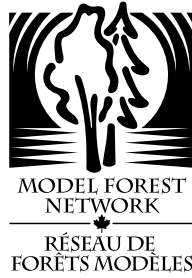
Q: How will they determine if their brochure has helped change any attitudes about their selected species at risk?

5 When the brochure development is complete, each partner group will prepare a 10-minute presentation on their selected species at risk. The presentation will explain the students' understanding of the value of the species, and they will outline the information that is detailed in their brochure and distribution plan.

Extensions

Prepare a presentation for classmates, or a local community club (Rotary Club) about your species at risk.

Prepare a short movie or slide show about why people should be protecting species at risk.



The Foothills Model Forest in central Alberta is one of 11 model forests in Canada, and each brings together individuals and organizations that share the common goal of sustainable forest management. The forests become hands-on laboratories where leading-edge management techniques are researched, developed, applied, and monitored; including the latest research and work being conducted on individual species at risk.

In 1999, the Foothills Model Forest in central Alberta launched the Grizzly Bear Research Program, a five-year, cooperative, international, multidisciplinary project to help conserve grizzly bears. By looking closely at bear populations, researchers can evaluate how they respond to human activities and habitat conditions.

Grizzly bears are considered an umbrella species, which means that they have large area requirements so if their habitat is maintained, the ecological requirements of other species can also be met. The Grizzly Bear Research Program is using global positioning system (GPS) collars to record the location of each bear at regular intervals every day. Early research results have found that the average size of a male grizzly bear's home range is 1000 square kilometres, with a female's home range about half that size.

In 2003, digital cameras were added to the collars so that researchers could view the world from the bear's perspective. The first recovery of digital images provided four days worth of information about grizzly bear movements and habits. The design of the cameras will be updated and tested again in 2004.

The research program will help to ensure that grizzly bears can continue to live in the foothills of the northern Rockies by gathering biological data to support current and ongoing wildlife management programs in this region. At present, the Foothills Model Forest Grizzly Bear Program holds the most comprehensive and extensive database on grizzly bear movements in North America.

For more information visit: www.fmf.ca

