

THE IMPORTANCE OF BIODIVERSITY: AN EXERCISE*

James Gibbs

This work is produced by OpenStax-CNX and licensed under the Creative Commons Attribution License 1.0[†]

What is the importance of biodiversity? There are no simple answers to this question. Biodiversity itself is a complex, perhaps amorphous concept, extending from genes to ecosystems and biomes, and to interactions and processes. Moreover, how does one define "important?" There are a myriad of ways in which we value biodiversity. Our value systems range from purely economic to ecological ones. Cultural values are also prominent but rarely universal. Values of biodiversity may also exist wholly outside the human context, as is the case of inherent values of species.

It is therefore easy to get overwhelmed by the question of why is biodiversity important. There are, however, ways to bring the question into focus. As in human life, sometimes how we value others comes most into focus when we are about to lose them from our lives. A friend moves to a new city or a grandparent dies. Their passage often provokes reflection upon what they meant to us and the ways in which they were important to us. In other words, we sometimes can most easily articulate the value of something to us when we are about to lose it.

Similarly, many wild species are about to depart from our lives, and their passage can force us to come to grips with whether their extinction and hence their existence has value to us or not. The World Conservation Union (IUCN) maintains a list of imperiled or extinct species that can serve as a useful point of discussion on why is biodiversity important. The list, known as the "IUCN Red List of Threatened Species", is being compiled for species all over the world. It is relatively easy to get a list of all the species known to be currently threatened with extinction in your country, to become familiar with some of these species, and then to ask, individually and as a group, is their fate important to us and how?

1 Obtaining the Red List of Threatened Species

1. The Red List of Threatened Species is constantly being updated and modified. For the most recent version, access the following Internet site: <http://www.redlist.org>¹ (Alternatively, if you do not have access to the Internet, your instructor will provide a list of species for your country.)
2. From the web page, select the "Search" option.
3. The new screen will display a series of options for searching the database. From the menu "Select one or more countries," choose your country.
4. Now choose "Search" and you will generate a list of species.
5. Then "Sort" them by Kingdom and inspect the list. These are the species that, without concerted conservation effort, are about to be lost from your country.

*Version 1.2: Jul 14, 2004 7:04 pm -0500

[†]<http://creativecommons.org/licenses/by/1.0>

¹<http://www.redlist.org/>

2 Classes of "importance"

There are a variety of reasons why not letting these species go extinct is important. (Note that some of these species may in fact already be extinct. – Examine the Red List category for each species.) Reasons why these species are important can be grouped into several categories. Here is a subset of some categories used to examine the value of biodiversity:

- **Direct Use Values** - Species provide various goods or products to humans, many of which play important roles in human economies. Examples include food, medicine, timber, fiber, *etc.*
- **Indirect Use Values** - Species provide services to humans as well as to other species. These include pollination, nutrient cycling, regulation of the atmosphere and climate. Some other indirect values include:
 - **Ecological Value** - All species are supported by the interactions among other species and ecosystems, each providing an ecological value to one another. Loss of species makes ecosystems less resilient and often less productive.
 - **Cultural and Spiritual Value** - The identity of human cultures around the world is attached to varying degrees to wild species. Wild species are often referred to in religious texts. Outside of formal religion, many people feel connected to species for reasons that can be hard to explain. Some may be inspired by a species' intrinsic beauty, revere it for its strength, or admire it for its cleverness. Whatever the case, cultural diversity is closely linked to wild species.

3 Evaluating why species are important

Using the list you generated consider: What does it matter if these species go extinct in your country? In other words, why are they important?

3.1 Indirect use value

Search through the list of imperiled species of your country and identify three species that provide a significant ecological value, function, or service. Describe their ecological value. Ecological values can often be the most elusive to identify so think hard about each species and how it fits into and contributes to the ecosystem where it lives. Does the species provide pollination services? Does it prey on pests? Does it play a role in nutrient and carbon cycles? Think broadly about ecosystem interactions and consider what role these species might play. What ecological loss would each species' extinction represent? Write down the species' name and your thoughts on its ecological role.

3.2 Direct use value

Now search through the species list and identify three imperiled species that provide significant value as a good or product. Describe that value. Does the species represent a source of food? Of fiber? Of materials? Of medicine? Is it traded? What loss would its extinction represent? Write down the species' name and your thoughts on its value as a good.

3.3 Other indirect values - Cultural and spiritual value

Now search through the species list and identify three imperiled species that have cultural value. Describe that value. Does the species play a role in myth or literature? Is it beautiful? Is it scary? Is it intriguing or curious? What loss would its extinction represent? Write down the species' name and your thoughts on its cultural significance to you.

4 Integration

As a class, bring together your lists of case species and associated values. Discuss as a group whether we as a society bear an obligation to act as responsible stewards of these species. Should we conserve them for the present or the future values (**potential value**) that they contribute to the human species? Take sides and explore all perspectives. One extreme position is that the fates of none of these imperiled species matter in the larger context of human suffering that is so widespread today. Another extreme is that we must save every species at any cost because they all have an inherent right to exist (**intrinsic value**). The bottom line is to consider whether we have an obligation to our children and their children to find a way to conserve these species (**bequest value**). What do you as an individual and your class as a group decide?