Free argumentative essay on why we must maintain biodiversity

Dear Pat,

I wanted to talk to you some more about how important biodiversity is in our lives. For example, with more genetic and population interactions we have more stable ecosystems. When we have monocultures like in farming districts the ecosystems are not stable and they are more susceptible to diseases. Biodiversity ensures a cleaner natural environment and natural barriers to floods and droughts. Animals and plant species need to interact to survive like the honey bee needs pollen from flowers to make honey. Biodiversity also protects the planet from absorbing too much heat from the sun like in tropical rainforests where many layers of plants and trees cause a canopy to protect the humidity on the ground. Biological diversity, I argue, gives us a better quality of life than if we let a variety of plant and animal species in the world degrade and become extinct.

Species was defined by Ernst Mary in 1942 as " Groups of actually or potentially interbreeding populations, which are reproductively, isolated from other such groups" (as cited in Futuyma page 450). His definition is commonly used when considering evolutionary concepts. A new definition is evolving though if you think that one is old fashioned. It's called the biological species concept (BSC) and includes more genetic and population interactions that from particular species.

Ecology is really just the scientific name for the study of our home. Humans are part of the ecology of earth so we have a responsibility to keep our house in good order. By supporting and encouraging biodiversity we are taking care of our families and communities because a balanced ecosystem

means a healthy environment. Regions with biodiversity are able to have clean water, natural protection from floods and droughts plus more regular seasonal changes (CI Biod).

We help species continue to live in their ecosystem niches undisturbed when they are protected from pollution or destruction. When the ecosystems are in working order we have beautiful areas of nature and there are practical, not only aesthetic pluses. That's why it is important to pay attention and make sure ecosystems are diverse and healthy. For example if there is a problem with the " structural fit between flowers and pollinators" the effectiveness of pollination means the plant species will decline and the birds and insects that pollinate the plants will then decline (Futuyma page 459).

Genetic mismatch between two parents can cause a decline in a species population, too (Futuyma page 460). The lower the population size in a species the closer it is to extinction especially if more stressors are added.

Populations contain a large variety of species and the species members have characteristics that vary between individuals. These differences help produce healthy offspring. Wayne and Morin explain that the goal of " conservation genetics is to directly assess variation in fitness related genes and those influenced primarily by genetic drift" using molecular DNA techniques for assessment which are good for understanding population dynamics (pages 89, 95). This is an example of the most recent scientific technologies being used.

Noss has suggested important indicators for assessing diversity at the different levels of organization within ecosystems; species numbers as indicators do not work well, so Noss suggests other ways such as identifying " hot spots" (page 356). Hot spots are where people have negatively impacted ecosystems and species are dangerously close to the point of extinction.

Conservation International has lists and maps of hot spots on each continent of the world. They are regions that are considered urgent due to the plant and animal species diversity against the proportional strength of the threat, like in the Amazon Basin. There are hot spots in the USA, too; for example, both the California floristic province and the Madrean Pine-Oak woodlands in southern USA (CI webpage Biod).

Identifying hot spots is one of the top four implementation steps suggested by Noss (a) policy makers need to define what they want to assess and maintain (such as no more loss of wetlands or old forest), (b) find and organize all the available data then map, and then (c) determine the baseline characteristics of the plant ecosystems so they know how many and then map the stressors, and fourth is (d) identify the high risk areas using the data and information from the first three steps (page 363).

There are many landscape types defined for setting geographical boundaries of biodiversity populations and their study. Landscapes can be from generally large regions to smaller area. Different landscape types can be forest, steppe, marine, freshwater or even one coral reef; wherever the

biodiversity includes genetic variation of the population's species. (Wayne page 93)

A lot of tension and even fights can start in communities over biodiversity. Finding " win-win" decisions between conservation groups and the development community have been difficult and can be contentious. At the same time, development that ignores the benefits that humans derive from ecosystems and natural resources will ultimately prove unsustainable. The challenge for the conservation and development community is to engage in a social process that allows for compromise and the explicit acknowledgement of risks and costs, while at the defining clearly those things that are not going to be traded off. McShane et al. page 970-2)

Payment for environmental services (PES) is a strategy initiated to pay for monitoring the species indicators desired which can be really costly due to computational and remote sensing costs for example. It can be accomplished with thorough, planning and making smart choices for which species indicators to be used (Sommerville et al. page 2832).

Large numbers of genetic diversity is necessary for healthy species' populations so there will be fewer mutations and disease. With smaller differences in species and less variety the more susceptible they are to extinction.

Ecosystems provide a variety of diverse plant and animal species that interact with each other to provide a stable environment. It's the way the populations can thrive because with stability they are able to meet the needs

of their species and continue to produce new generations. Aquatic plants filter water and plankton is the basis of our food chain so although these are both seemingly simple, maybe unimportant species, they are very important to humans being able to survive. The aquatic plants, the water and the plankton are part of the systems that regulate the earth and our ability to grow food. Without biodiversity natural cycles like the water cycle, the carbon cycle and the nutrient cycle do not work properly. Those are the cycles that protect us from climate shifts like global warming.

During the water cycle plants go through the natural process of transpiration. If they don't then clouds don't fill with water. Then there are no water droplets in the clouds to fall as rain. Instead the water will run off the ground causing erosion and run into the rivers causing floods.

An example is in the Brazilian rain forest. When the water cycle is disrupted because the plant species no longer form a protective canopy over the forest then the ground dries up from the sun's heat.

There is also the incredible beauty of nature around us. Bird species from a crow to a peacock there are thousands of bird species that keep ecosystems stable.

Antarctica is a place of incredible beauty yet it is melting as the atmosphere at the surface of the earth becomes warmer. Climate change is caused by the disruption of the sea currents that drive our weather. This is related to the loss of rainforests which causes more heat to be absorbed by the earth.

In order for the interrelated processes of the whole earth to work correctly biodiversity is a necessity.

I hope this helps you understand that scientists are working with business and development communities to come up with good solutions. This could be a way to create jobs.

Talk to you soon.

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