FAQ's

Discuss the balance of nature biodiversity brings?

Biodiversity', or biological diversity, refers to the variety of plants, animals and microorganisms that exist, the genes they contain and the ecosystems they live in.

Living in the lowland tropics we are blessed with abundant biodiversity. Tropical areas are known to have more species per unit area than temperate areas and biodiversity decreases with increasing altitudes. Consider, for example, the mixture of species in our forests compared with temperate forests which tend to be dominated by one species, and compare our Main Ridge with, as an extreme, the snow swept Alps.

The status of our biodiversity in Tobago, as elsewhere, has always been dynamic. Over millions of years, under natural conditions, some species have increased in variety or numbers and others have been reduced or lost. Some people wonder why we should be worried about conserving biodiversity now, in particular, when the world has gone on more or less as it is for so long. But natural habitats everywhere are being assaulted as never before and as habitats are lost we are also losing various types of plants and animals. No one would have thought, even a few years ago, that the common house sparrow of Britain could be endangered, but now it is. With the rapid changes we are seeing in Tobago, there are concerns that man-made changes to our environment are leading to too many of our species being lost and our biodiversity becoming seriously depleted.

One of the reasons biodiversity is important is because it helps to keep the environment in a natural balance. An ecosystem which is species-rich is more resilient and adaptable to external stress than one in which the range of species is limited. In a system where species are limited, the loss or temporary reduction of any one could disrupt a complex food chain with serious effects on other species in that same system. Once biodiversity is sufficient, if one

nutrient cycling path is affected another pathway can function and the ecosystem - and the biological species it supports - can survive.

What are the different threats to biodiversity?

1. Human Activities and Loss of Habitat:

Human activities are causing a loss of biological diversity among animals and plants globally estimated at 50 to 100 times the average rate of species loss in the absence of human activities. Two most popular species in rich biomes are tropical forests and coral reefs.

Tropical forests are under threat largely from conversion to other land-uses, while coral reefs are experiencing increasing levels of over exploitation and pollution. If current rate of loss of tropical forests continues for the next 30 years (about 1 percent per year), the projected number of species that the remaining forests could support would be reduced by 5 to 10 percent relative to the forest in the absence of human disturbance.

The rate of decline would represent 1000 to 10,000 times the expected rate of extinction without deforestation by humans. Some studies suggest that, globally, as many as one half of all mammal and bird species may become extinct within 200 to 300 years.

Biodiversity loss can result from a number of activities, including:

(a) Habitat conversion and destruction;

(b) Over-exploitation of species;

(c) Disconnected patches of original vegetation; and

(d) Air and water pollution.

Over the coming decades, human-inducted climate change increasingly become another major factor in

reducing biological/biodiversity. These pressures on biodiversity are, to a large extent, driven by economic development and related demands including the increasing demand for biological resources.

Activities that reduce biodiversity, jeopardize economic development and human health through losses of useful materials, genetic stocks, and the services of intact ecosystems. Material losses include food, wood, and medicines, as well as resources important for recreation and tourism. Losing genetic diversity, like losing species diversity, makes it even more likely that further environmental disturbance will result in serious reductions in goods and services that ecosystems can provide.

Decreased biodiversity also interferes with essential ecological services such as pollination, maintenance of soil fertility, flood controls, water purification, assimilation of wastes and the cycling of carbon and other nutrients.

2. Deforestation:

Forest ecosystems contain as much as 80 percent of the world's terrestrial biodiversity and provide wood fiber and biomass energy as well as critical components of the global cycles of water, energy and nutrient. Forest ecosystems are being cleared and degraded in many parts of the world.

Current projections suggest that demand for wood will roughly double over the next 50 years, which will make increasing use of sustainable forest practices more difficult. In addition to threats to biodiversity and potential shortages in the supply of forest products, the degradation of forests represents an enormous potential source of green house gas emissions.

Forest ecosystems contain about three times the amount of carbon currently present in the atmosphere and about one-third of this carbon is stored above ground in trees and other vegetation and two-third is stored in the soil.

When forests are cleared or burned, much of this carbon is released into the atmosphere. According to current estimates, tropical deforestation and burning account for about one quarter of carbon emissions into the atmosphere from human activities.

3. Desertification:

Desertification and deforestation are the main causes of biodiversity loss. Both processes are decisively influenced by the extension of agriculture. The direct cost of deforestation is reflected in the loss of valuable plants and animal species. Desertification process is the result of poor land management which can be aggravated by climatic variations. Converting wild lands to agriculture often involves ploughing the soils which leads in temperate regions to an average decline in soil organic matter between 25 and 40 per cent over twenty five years.

Decreasing soil organic matter is always a clear indication of soil degradation, and often is accompanied by reductions in water infiltration, fertility, and ability to retain fertilizers. Ploughing also exposes soils to wind and water erosion, resulting in large-scale pollution of freshwater resources.

4. Marine Environment:

Oceans play a vital role in the global environment. Covering 70 per cent of the earth's surface, they influence global climate, food production and economic activities. Despite these roles, coastal and marine environment are being rapidly degraded in many parts of the globe.

In coastal areas, where human activities are concentrated, pollution, over-exploitation of resources, development of critical habitats such as wetlands, and mangroves, and water-flow from poor land-use practices have led to drastic reductions in near shore fisheries production and aquatic biodiversity.

5. Increasing Wildlife Trade:

According to Nick Barnes, "Trade is another cause of biodiversity depletion that gives rise to conflict between North and South." Global trade in wildlife is estimated to be over US $ 20 billion annually. Global trade includes at least 40,000 primates, ivory from at least 90,000 African elephants, 1 million orchids, 4 million live birds, 10 million reptile skins, 15 million furs and over 350 million tropical fish.

6. Climate Change:

As climate warms, species will migrate towards higher latitudes and altitudes in both hemisphere. The increase in the amount of CO_2 in the air affects the physiological functioning of plant and species composition. Moreover, aquatic ecosystems, particularly coral reefs, mangrove swamps, and coastal wetlands, are vulnerable to changes in climate.

In principle, coral reefs, the most biologically diverse marine systems, are potentially vulnerable to changes in both sea level and ocean temperature. While most coral systems should be able to grow at a sufficient pace to survive a 15 to 95 centimeter sea-level rise over the next century, a sustained increase of several degrees centigrade would threaten the long-term viability of many of these systems.

Discuss the conflict between man and wildlife.

Human–wildlife conflict refers to the interaction between wild animals and people and the resultant negative impact on people or their resources, or wild animals or their habitat. It occurs when growing human populations overlap with established wildlife territory, creating reduction of resources or life to some people and/or wild animals. The conflict takes many forms ranging from loss of life or injury to humans, and animals both wild and domesticated, to competition for scarce resources to loss and degradation of habitat.

Conflict management strategies earlier comprised lethal control, translocation, regulation of population size and preservation of endangered species. Recent management approaches attempt to use scientific research for better management outcomes, such as behaviour modification and reducing interaction. As human-wildlife conflicts inflict direct, indirect and opportunity costs, the mitigation of human-wildlife conflict is an important issue in the management of biodiversity and protected areas.

As human populations expand into wild animal habitats, natural wildlife territory is displaced. Reduction in the availability of natural prey/food sources leads to wild animals seeking alternate sources. Alternately, new resources created by humans draw wildlife resulting in conflict. The population density of wildlife and humans increase with overlaps in geographical areas used increasing their interaction thus resulting in increased physical conflict. Byproducts of human existence offer un-natural opportunity for wildlife in the form of food and sheltersed interference and potentially destructive threat for both man and animals. Competition for food resources also occurs when humans attempt to harvest natural resources such as fish and grassland pasture.

What is the importance of biodiversity?

Biodiversity has an intrinsic value that is worth protecting regardless of its value to humans. This argument focuses on the conservation of all species, even if they are ecologically equivalent species.

Biodiversity performs a number of ecological services for humankind that have economic, aesthetic or recreational value. This argument focuses on conserving ecologically nonequivalent species since ecologically equivalent ones are redundant in terms of services rendered

Both points of view (intrinsic and anthropocentric) need not be contradictory, as they serve the same ultimate purpose. Yet they often are considered incompatible

because they stem from two very different philosophies: one which views nature as innately valuable and one that regards it as economically valuable.

The value of biological diversity's components

Generally, benefits arising from the conservation of components of biological diversity can be considered in three groups: ecosystem services, biological resources and social benefits. Some examples of these benefits follow.

Ecosystem services

Protection of water resources

Natural vegetation cover in water catchments helps to maintain hydrological cycles, regulating and stabilising water runoff, and acting as a buffer against extreme events such as flood and drought. Vegetation removal results in siltation of catchment waterways, loss of water yield and quality, and degradation of aquatic habitat, among other things. Vegetation also helps to regulate underground water tables, preventing dryland salinity which affects vast areas of Australia's agricultural lands, at great cost to the community. Wetlands and forests act as water purifying systems, while mangroves trap silt, reducing impacts on marine ecosystems.