

***A Study on the Need and Significance of Rain
Harvesting In India***

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ABSTRACT

Biodiversity is the enriched variety of living things which have been formed during a wide time span so that they can live in the specific habitats. This biodiversity also helps in enhancing the beauty of ecosystem which is very natural. Also, biodiversity is needed to maintain the level of stability in the ecosystem.

From past few years, this level of stability of biodiversity tends to reduce due to the higher interference of the human. All the external factors from cutting down of the forests to the contamination of the water and killing of the birds and animals are leading to the loss of biodiversity in huge manner. All the living organisms from plant and animals to natural resources build a solid ecosystem, therefore, any damage to one of these components can lead to the destruction of the ecosystem. The current

paper highlights the biodiversity of the ecosystem and various factors that are harming it.

KEYWORDS:

Biodiversity, Ecosystem, Stability

INTRODUCTION

There are a number of factors which are causing damage to the biodiversity. Some of these factors are direct and some are indirect factors. The direct factors which harm the ecosystem include the usage of fertilizers, insecticides and increasing level of hunting the animals.

In an ecosystem, the biotic factors are mainly divided into producers, consumers and decomposers. The ratio between these factors needed to be maintained in order to maintain the proper functioning of the ecosystem.

For example, if the hunting of the tiger takes place on the large scale then in the forest, the population of the other animals like deer, rabbit and dogs etc would be increased and this would certainly imbalance the ratio of the ecosystem.

Here, the indirect factors harming the biodiversity of the ecosystem include the increasing level of industrialization and population. As a result of these indirect drivers, large amount of forests are cutting down which are harming the balance of bio-diversity of ecosystem.

Here, indirect factors also comprised of the side-effects of the industrialization as a result of which in some places, the news of occurring acid rain is heard. This acid rain is composed of harmful chemicals which destroy the plants and animals and thus, leading to the loss in biodiversity.

Other factor harming the biodiversity is the construction of dams. It is true that dams are very beneficial as a large quantity of electricity is generated through these dams. But, in the scenario of the ecosystem, these dams are harming the biodiversity as due to the construction of the dams, the flow of the water is paused which results into the loss in the number of fishes and other aquatic organisms.

Change in the climate is also leading to the loss in the biodiversity as in some regions, the weather conditions are such that the problem of lack of water is observed and due to the absence of proper amount of water, the living organisms in these places tend to migrate or die which also influences the chain of ecosystem.

In some cases, it is also observed that the whole species of some animals, birds and plants have been exhausted due to some internal and external factors. The continuous running of the human towards the development and more development is causing the loss of biodiversity and the balance of our ecosystem is shaking.

According to a research report, if this process of unbalancing the ecosystem is not stopped or minimized then after few decades, it would be difficult for the living things to survive on this planet as in that case, the whole ecosystem would be destroyed. Hence, every human being needs to be aware about the importance of our ecosystem and its biodiversity and should try to maintain its ratio.

A STUDY ON THE NEED AND SIGNIFICANCE OF RAIN HARVESTING IN INDIA

Biodiversity describes the variety of species that make up an ecosystem. An ecosystem is the combination of the living and nonliving things in a location. For an ecosystem to function, it depends on a rich variety of organisms, interacting with each other to maintain a balance in that particular ecosystem. Some factors can affect this biodiversity and thus the sustainability of an ecosystem.

Species play essential roles in ecosystems, so local and global species losses could threaten the stability of the ecosystem services on which humans depend. For example, plant species harness the energy of the sun to fix carbon through photosynthesis, and this essential biological process provides the base of the food chain for myriad animal consumers. At the ecosystem level, the total growth of all plant species is termed primary production and communities composed of different numbers and combinations of plant species can have very different rates

of primary production. This fundamental metric of ecosystem function has relevance for global food supply and for rates of climate change because primary production reflects the rate at which carbon dioxide (a greenhouse gas) is removed from the atmosphere.

Stability can be defined at the ecosystem level — for example, a rancher might be interested in the ability of a grassland ecosystem to maintain primary production for cattle forage across several years that may vary in their average temperature and precipitation. Biologically diverse communities are also more likely to contain species that confer resilience to that ecosystem because as a community accumulates species, there is a higher chance of any one of them having traits that enable them to adapt to a changing environment.

Humans are altering the composition of biological communities through a variety of activities that increase rates of species invasions and species extinctions, at all scales, from local to global. These changes in components of the Earth's biodiversity cause concern for ethical and aesthetic reasons, but they also have a strong potential to alter ecosystem properties and the goods and services they provide to humanity.

Ecological experiments, observations, and theoretical developments show that ecosystem properties depend greatly on biodiversity in terms of the

functional characteristics of organisms present in the ecosystem and the distribution and abundance of those organisms over space and time. Species effects act in concert with the effects of climate, resource availability, and disturbance regimes in influencing ecosystem properties. Human activities can modify all of the above factors; here we focus on modification of these biotic controls.

The scientific community has come to a broad consensus on many aspects of the relationship between biodiversity and ecosystem functioning, including many points relevant to management of ecosystems. Further progress will require integration of knowledge about biotic and abiotic controls on ecosystem properties, how ecological communities are structured, and the forces driving species extinctions and invasions. To strengthen links to policy and management, we also need to integrate our ecological knowledge with understanding of the social and economic constraints of potential management practices. Understanding this complexity, while taking strong steps to minimize current losses of species, is necessary for responsible management of Earth's ecosystems and the diverse biota they contain.

Habitat loss and fragmentation due to development, ranching, agriculture and pollution has a huge impact on biodiversity as human populations continue to grow. Deforestation of tropical rainforests has

had perhaps the most dramatic effect on biodiversity, both directly in the loss of species in these incredibly diverse ecosystems and indirectly through the increased threat of global warming.

Tropical rainforests hold at least 50 percent of the world's species, and they are also known as the "lungs of the earth" for their role in producing oxygen and absorbing carbon dioxide. Today, less than half of the world's tropical rainforests remain from what existed a few thousand years ago, and that destruction continues at a rate of about 80,000 acres per day.

DISCUSSION

More than 85 percent of all natural habitat has disappeared since the mid-Holocene, and more than 96 percent of native tallgrass prairie and 50 percent of wetlands in the United States have been destroyed since the arrival of Europeans. In addition, habitat fragmentation, the division of ecosystems and populations of species into smaller, isolated, sometimes unsustainable parcels, often causes loss of biodiversity by increasing vulnerability of some populations to disease and other stressors, leaving habitats too small for some species to survive. Pollutants such as acid rain, air pollution, fertilizers, herbicides and pesticides alter and destroy habitats and their species in numerous ways as well.

Socio-cultural change typically occurs slowly, on a time scale of decades, while economic forces tend to occur more rapidly. Because of the variability in ecosystems, their services, and human well-being in space and time, there may be mismatches or lags between the scale of the driver and the scale of its effects on ecosystem services

Natural sources of inertia correspond to the time scales inherent to natural systems; for example, recovery of a population cannot proceed more quickly than the average turnover or generation time, and established recovery will often take several generations. On top of this is anthropogenic inertia resulting from the time scales inherent in human institutions for decision-making and implementation. For most systems, these two sources of inertia will lead to delays of years, and more often decades, in slowing and reversing a declining biodiversity trend. This analysis assumes that the drivers of change could indeed be halted or reversed in the near term. Yet currently there is little evidence that any of the direct or indirect drivers are slowing or that any are well controlled at the large to global scale.

In the relatively well studied case of species extinctions, habitat loss is known to be a driver with particularly long lag times. In studies of tropical forest bird species the time from habitat fragmentation to species extinction has been estimated to have a half-life of decades to hundreds

of years. Overall, these results suggest that about half of the species losses may occur over a period of 100 to 1,000 years. Therefore, humans have the opportunity to deploy active habitat restoration practices that may rescue some of the species that otherwise would have been in a trajectory toward extinction. Notwithstanding this, habitat restoration measures will not be likely to save the most sensitive species, which will become extinct soon after habitat loss.

CONCLUSION

Evidence from multiple ecosystems at a variety of temporal and spatial scales, suggests that biological diversity acts to stabilize ecosystem functioning in the face of environmental fluctuation. Variation among species in their response to such fluctuation is an essential requirement for ecosystem stability, as is the presence of species that can compensate for the function of species that are lost. While much of the evidence presented here has focused on the consequences of changes in species diversity on primary production in natural ecosystems, recent research has found similar relationships between species diversity and ecosystem productivity in human-managed ecosystems.

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