

# Noise pollution and biodiversity

## Editorial

For decades, biodiversity has suffered massive losses worldwide. Species are disappearing resulting in collapsing of populations. The native species are changing at an alarming rate and communities are being displaced by alien species which land up being invasive. All these activities are a result of human activities, and urbanization is one of the major reasons for biodiversity loss. Similarly Noise pollution is a key factor in destruction of Biodiversity. But what exactly is noise pollution? Noise is sound that exceeds the tolerance limit of a listener. Noise pollution may be perceived differently by different persons, e.g. loud music played during festivals is entertaining for some people but is absolutely irritating to some others, especially old or unwell. As sound or light waves pass through a medium, some of the waves collide with the molecules within the medium and is given off as heat. Typically the more alike the molecules of a medium are the less will it be absorbed by the medium. Various man-made sounds are generated in cities, by Urban noise pollution and Industrial noise pollution. The other sources are transport or vehicular noise, social noise (60-80dB) and ocean noise. These can be further classified on the basis of the sound range, e.g. Road Noise(70-85 dB), Rail Noise(50-60 dB), Aircraft noise(150-200 dB) etc. These lead in disturbing the circadian rhythm of plants. In the present times anthropogenic noise is not restricted to the cities but goes beyond it. All human activities resulted by tourism and ecotourism cause noise and these sounds can reach wild, uninhabited place. Many areas studied have observed noise levels that exceed road, rail and air traffic thresholds set out by the authorities. (e.g. MPCB in Maharashtra).<sup>1-5</sup>

Noise responses depend on the species, and yet its negative effects, for terrestrial animals, may begin to appear as low as 40 dB. The intensity of sounds and also the frequency of the wave are important. Nature on its own is not quiet and noisy as many animals, birds and fishes (e.g. Whales) use sound signals to communicate with their mate for the purpose of mating and reproduction. Noise pollution can change animal behaviour and even affect their physiology. And due to human noise interference there is reduced reproductive success, higher mortality and intensified migrations among many animal species. Such hindrances strongly affect biodiversity both within the population and within the ecosystems themselves.<sup>6-10</sup>

Trees have been studied as possible tools for reducing noise. Plants absorb, diffract and reflect sound, the balance varies with the frequency at which the sound is generated. Tree canopy plays a vital role in absorption of sound. Studies have been conducted to determine which tree canopy shapes are best suited for abating noise. The observations state triangular or conical tree canopy is the best suited, e.g. *Polyalthia longifolia*. Other studies also show sound absorption capacity of plants at different frequencies. It is observed that as the number of leaves increases there is a decrease in the rate of transmission, thus proving that denser a canopy more is the noise abatement. It is seen that *Syzgium cumuni*, *Ficus bengalensis* and *Ficus hispida* continue to show lower absorption coefficient values even with more number of leaves. Both the studies are further used to recommend the correct tree species to be planted on the road to reduce the impact of noise.<sup>11-15</sup>

Further work needs to be done in the use of plants as noise barriers in the outdoors (highways, roads etc.) outdoors and as noise absorbers

Volume 4 Issue 4 - 2020

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**Received:** July 25, 2020 | **Published:** July 29, 2020

in indoor areas (hospitals, hotel corridors, office spaces, lobbies etc.). It is only ideal that we make changes in the human behavioral pattern and try and reduce noise. On the roads, we can reduce vehicular noise by having stands like “No Unnecessary Honking”. Make strict regulations for defaulters and that they should be heavily fined. An awareness program should be initiated for younger generation so that they can spread the message across to the older generation. A strictly NO Noise policy should be applied in case of ecotourism.

## Acknowledgments

None.

## Conflicts of interest

The author declares there are no conflicts of interest.

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