

---

# IMPACT OF NOISE POLLUTION ON HUMANS AND ANIMAL'S LIFE

**Manashree Mane**

*Assistant professor, Department of Forensic Science,  
School of Sciences, B-II, Jain (Deemed to be University), Bangalore-560027, India.  
Email Id: m.manashree@jainuniversity.ac.in.*

## ***Abstract***

*Human actions generate acoustic noise, emanate artificial light and emit chemical substances. All of these pollutants are known to affect animals. Most studies on anthropogenic pollution address the impact of pollutants in unimodal sensory domains. High levels of anthropogenic noise, for example, have been shown to interfere with acoustic signals and cues. However, animals rely on multiple senses, and pollutants often co-occur. Thus, a full ecological assessment of the impact of anthropogenic activities requires a multimodal approach. We describe how sensory pollutants can co-occur and how covariance among pollutants may differ from natural situations. We review how animals combine information that arrives at their sensory systems through different modalities and outline how sensory conditions can interfere with multimodal perception. We realize that such an approach is often time and energy consuming, but we think this is the only way to fully understand the multimodal impact of sensory pollution on animal performance and perception.*

**Keywords:** *Animals, Humans, Hearing Problems, Noise Pollution, Reproduction Problems.*

---

## **I. INTRODUCTION**

Anthropogenic activities are an increasing number of affecting the welfare and reproductive success of unfastened-ranging animals. People emit chemical and bodily stimuli into the environment which might be obtained through a range of sensory modalities. Those anthropogenic stimuli can decrease animal survival and reproductive success and might in the long run alter populations and ecological groups [1]. To apprehend and mitigate the impact of these stimuli, it is critical to examine the mechanisms underlying the sensory reception of these pollution, termed sensory pollutants, high degrees of anthropogenic acoustic noise, for instance, can mask acoustic conversation. Chemical emission on the other hand can impair olfactory orientation. but, anthropogenic sports frequently produce stimuli in multiple

modalities simultaneously, just like the joint emission of acoustic and chemical pollution by way of automobile visitors [2].

Moreover, notion itself is multimodal, and animals every now and then respond in a complicated way to the combination of cues from distinct modalities. Subsequently, sensory pollution can affect an animal's behaviour as well as its endocrinology. These responses are acknowledged to feed lower back into perceptual and cognitive strategies, which in addition complicate predictions of the potential effect of anthropogenic activities on animal behaviour and reproductive fulfillment [3]. We therefore propose an included technique to completely recognize the multimodal nature of sensory pollution. This method lets us deal with how pollution can disturb animals and interfere with the processing of vital signals and cues, how pollution can have an effect on methods across one of a kind modality, and how the aggregate of pollution from exclusive modalities might also affect animal performances. whether and the way animals are suffering from sensory pollution depends on overlap in time and space between stimuli exposure and behavioral pastime [4].

We are able to first deal with how anthropogenic pollutants covary in time and area and how this compares to natural variation in environmental sensory conditions. Subsequently, we are able to talk how multimodal signals and cues are produced, what type of statistics they contain and how animals perceptually process applicable and beside the point environmental statistics. Finally, we are able to describe the ways wherein covariance in anthropogenic sensory conditions can intrude with the processing of indicators and cues, how pollution disturbs animals by affecting endocrinology and the way animals respond through adjusting their behaviour. We will end our assessment by using outlining how we assume multimodal sensory pollutants ought to be addressed and list a number of the maximum critical splendid issues.

## II. DISCUSSION

### Effects on Noise Pollution on Human Health:

#### 1. Noise pollution – The second-largest Environmental Cause to Health Problems

According to a World Health Organization (WHO) finding, noise is the second largest environmental cause of health problems, just after the impact of air pollution (particulate matter). As per the current data, it is estimated that environmental noise contributes to 48,000 new cases of ischemic heart disease a year, as well as 12,000 premature deaths. In addition, we estimate that 22 million people suffer chronic high annoyance, and 6.5 million people suffer chronic high sleep disturbance. As a result of aircraft noise, we estimate that 12,500 school children suffer from reading impairment in school [5].

#### 2. Hearing Problems:

Hearing is one of the five senses that human beings have. As such, it is an essential part of the life of any person. But as much as the ear serves the purpose of receiving sound waves, it can also do so to a certain limit. When it gets to the point termed as noise, it means it is undesirable because it interferes with one's hearing capacity. This is the reason people cover

their years when there is really loud noise. Such loud noise can cause hearing impairment, which can even result in permanent hearing loss. Hearing loss due to noise pollution is attributed to prolonged exposure of noise levels above 85 decibels [6].

### **3. Tinnitus:**

Tinnitus is defined as the sensation of sound in the absence of an external sound source. Tinnitus caused by excessive noise exposure has long been described; 50% to 90% of patients with chronic noise trauma report tinnitus. In some people, tinnitus can cause sleep disturbance, cognitive effects, anxiety, psychological distress, depression, communication problems, frustration, irritability, tension, inability to work, reduced efficiency and restricted participation in social life [7].

### **4. Difficulty in Sleeping:**

Noise can deter sleep because of its psychological effect. Having noise around can distort peaceful sleep as it causes stress. Moreover, being in a noisy place means there is almost no chance of having any sleep. Inadequacy of sleep, in turn, interrupts the normal functioning of the body, leading to discomfort, fatigue, and general moodiness.

### **5. Reduced Cognitive Functioning:**

The ear is connected to the brain, which coordinates the body's stimulus responses. For this reason, all the sound waves that hit the ear are sent to the brain for interpretation. This means too much noise also gets to the brain, and according to scientific reports, such kind of noise dulls the brain and contributes to a lower response rate by the brain. Due to this, cognitive functioning reduces, and so does the ability to solve problems normally. Individuals who live in areas with too much noise, for instance, adjacent to busy highways, railway lines, airports or near loud night clubs, tend to have lower cognitive power compared to those who live in quiet environments.

### **6. Cardiovascular Problems:**

Noise 'excites' the heart. Too much noise means the heart is also disturbed and ends up beating faster, increasing blood pressure. In loud noise, stress hormones such as adrenaline and cortisol are also released. Therefore, blood pressure will definitely increase in noisy environments, thus prompting faster flow of blood, which in turn leads to the secretion of catecholamine, a hormone that further magnifies the number of times the heart pumps blood. As long as there is no harm in this, regular exposure will keep the body getting higher impulses leading to increased blood pressure. If blood pressure keeps rising, it may open up chances for heart-related diseases such as high blood pressure and stroke. Other cardiovascular diseases include hypertension and arteriosclerosis, which are caused by the dilation of the pupil and constriction of blood vessels [8].

## **7. Emotion and Behavioral Change:**

This is different from cognitive thinking. Too much noise means disturbance of peace, which may lead to annoyance or anger. People in this state tend to have constant headaches, which may even intensify if the noise is continuous. This may lead to amplified stress levels, and thus, emotions take over, and violence may ensue. This type of behavior is reported to be due to anxiety. With such behavior, it becomes hard to concentrate on work and achieve set goals owing to reduced work efficiency.

## **8. Reproduction Problems:**

Varying studies have been conducted to estimate the effect of noise pollution on reproduction in human beings, and surprisingly, most of these studies have posited that pregnant women exposed to noise pollution during the course of their expectancy tend to give birth to children with less body weight. The stress levels experienced by the expectant mother equally disturbs the unborn child [9].

## **9. Trouble Communicating:**

High decibel noise can create inconvenience and may not allow two people to communicate clearly. This may lead to misunderstanding, and one may get difficult understanding the other person. Constant sharp noise can cause severe headaches and disturb the emotional balance.

## **Effects of Noise Pollution on Animals:**

### **1. Reduction in Feeding Patterns**

Some birds and animals like bats, whales and dolphins use their sharp hearing abilities – known as echolocation for movements, foraging, and avoiding prey. Noise pollution has negated this since the noise monopolizes all the sounds present. As a result, there is increased migration by animals from their natural habitats in search of quieter places where they can feed comfortably. Some animal species have slowly become extinct due to this. They migrate to other ecosystems that are not suitable for them and end up dying.

### **2. Hearing Problems:**

Dolphins and whales are frequent visitors to the shallow waters of large oceans. But because of the continuous loud noise caused by drilling machines in the oceans, some of these animal's hearing capabilities have been severely impacted, with some having a permanent hearing impairment.

### **3. Hinders Communication:**

Noise has the greatest impact on males with the most attractively colored resonators. For example, exposure to unwanted sounds and increasing levels of stress and immunosuppression can cause aberrations in the coloration of vocal sacs, a flexible membrane that enhances sounds, in male tree frogs. This, in turn, affects sexual selection in these animals. Disturbances in reproduction and selection of a partner lead to significant disorders in the population in general.

#### **4. Reproduction Problems:**

Animals use unique voices to know the locations of mates and stay away from danger. Birds also use low pitched sounds in order to attract mates. Some of the sounds made have been said to be too low, only audible to the animals that can pick up the sound at that wavelength but inaudible to the human ear. A noisy environment would prevent this, leading to the near-extinction of various species of birds and animals as it makes it difficult for them to mate and breed. Without breeding, it means no new offspring.

#### **5. Death:**

Bigger animals are able to survive in noisy areas. The case is different for smaller marine organisms, such as cephalopods – one of the many species of shellfish. These marine fish are heavily affected by the noise coming from moving vessels. The slow movement of large ships over areas where they call habitat can lead to their death. During seismic surveys, compressed air ‘bullets’ are sent deep into the ocean at high speed to search for oil deposits at the bottom of the oceans, resulting in enormous noise in the aquatic environment. Within an hour of a single shot, the amount of zooplankton, organisms at the very base of the oceanic food chain, decreases by an average of 64% in this area. It disturbs the whole ocean’s trophic network. The noisy underwater turbines and submarines also emit very high levels of noise decibels that end up disrupting and even destroying marine life.

#### **6. Reduction in Production:**

Noise deters the productivity of animals both in the wild and domesticated. Cows produce less milk if there is any noise around them during milking. They get agitated and tend to withdraw the milk due to fear and discomfort. Chickens are also adversely affected by noise. There is a drastic drop in the production of eggs for layers in noisy environments.

#### **7. Behavioral Change:**

Like human beings, wild animals also experience a change in behavior depending on the level of peace or noise present. The agitation caused by noise influences heightened aggression levels in all animals, and interestingly, irritation has even been reported for birds. Noise makes them unable to communicate, which may change their behavior into aspects such as cannibalism. Beetles, as another example, are so disturbed by the noise that they end up killing each other.

#### **8. Adaptation:**

Whereas some of the animals cannot make it in a noisy environment, the rest either die or bear a tough skin through to the end. It is up to the animals to survive in order to ensure the continuation of their species. As such, animals are slowly adapting to life in urban areas. Instead of the usual calling sounds between females and males, animals are using higher pitches to surpass the noise levels.

### 9. Slow Reaction Time:

Hermit crabs, tortoises and turtles are some of the animals that withdraw to their shells when trouble strikes. The presence of boats or human activity quickly warrants trouble leading to their withdrawal. Noise pollution for long periods of time has distorted this pattern, especially in crabs. Their reaction time to danger has slowed, which puts them at a disadvantage when faced by predators.

### 10. Disturbs Echolocation in Sea Animals:

The marine mammals, Cetaceans (including dolphins), rely on echolocation to communicate, navigate and find partners. They are particularly vulnerable to intensified noise. The excessive noise interfering with echolocation, therefore, disturbs many of their key cognitive behaviors and functions.

## III. CONCLUSION

The environment is filled with stimuli differing in physical forms, and animals have evolved a variety of sensory systems to make sense of this multimodal world. Likewise, pollution is not restricted to a particular modality. We argue that we need an integrated multimodal approach to appreciate the full ecological impact of human activities on animal performance and perception. We have outlined how anthropogenic stimuli from multiple modalities can co-occur in time and space, and how, across time and space, we need a detailed assessment of multimodal covariance levels to assess potential impact. We have described unimodal, cross-modal and multimodal impacts of sensory pollutants on animal behaviour and physiology, and argue that additive effects can become increasingly complex. We describe sensory disturbance and interference, using examples from a wide range of taxa and sensory domains and think that these concepts are widely applicable to other cases. Recent years have seen a wide body of literature addressing the importance of multimodality in understanding the sensory ecology of animal behaviour. We now add sensory pollution to the concept of multimodality and, in doing so, invoke a number of interesting, outstanding issues that we think should receive considerable attention in the years to come.

## IV. REFERENCES

- [1] H. Kaur, M. Bala, and G. Bansal, "Reproductive drugs and environmental contamination: quantum, impact assessment and control strategies," *Environmental Science and Pollution Research*. 2018, doi: 10.1007/s11356-018-2754-z.
- [2] Minnesota Pollution Control Agency, "Phosphorus: Sources, Forms, Impact on Water Quality," Minnesota Pollut. Control Agency, 2007.
- [3] D. Swarup and R. C. Patra, "Environmental pollution and its impact on domestic animals and wildlife," *Indian Journal of Animal Sciences*. 2005.
- [4] S. G. Uzogara, "The impact of genetic modification of human foods in the 21st century: A review," *Biotechnol. Adv.*, 2000, doi: 10.1016/S0734-9750(00)00033-1.
- [5] J. Mann and J. Teilmann, "Environmental impact of wind energy," *Environmental Research Letters*. 2013, doi: 10.1088/1748-9326/8/3/035001.



- [6] A. Meillère, F. Brischoux, C. Ribout, and F. Angelier, “Traffic noise exposure affects telomere length in nestling house sparrows,” *Biol. Lett.*, 2015, doi: 10.1098/rsbl.2015.0559.
- [7] K. Maduna and V. Tomašić, “Air pollution engineering,” *Phys. Sci. Rev.*, 2017, doi: 10.1515/psr-2016-0122.
- [8] H. Middel and F. Verones, “Making marine noise pollution impacts heard: The case of cetaceans in the North Sea within life cycle impact assessment,” *Sustain.*, 2017, doi: 10.3390/su9071138.
- [9] D. Wasley, “Phosphorus: Sources, Forms, Impact on Water Quality,” 2007.