

## Effects of Noise on Animals



In general, a noise impact to wildlife can be determined by the degree to which the noise disrupts a functioning ecosystem. Noise has the potential to affect wildlife in a variety of ways, varying between different types of animals. Research shows that the degree of reaction to noise often varies with age, sex, season, and situation, previous exposure to noise (habituation), noise level, and frequency spectrum.

Potential noise effects on wildlife include; auditory damage, physiological changes, and behavioural alterations. These effects are further characterized into primary and secondary effects. Primary effects are direct physical effects to the animal. Secondary effects are indirect changes which occur between the animal and its environment. The following table and text describe these effects in more detail

<b>Auditory</b>	<b>Hearing Loss</b>	<b>Change in Predator-Prey relationships</b>
	<b>Threshold Shift</b>	<b>Mating Interference</b>
<b>Physiological</b>	<b>Stress</b>	<b>Reduction in Functioning</b>
	<b>Metabolic Change</b>	<b>Reduced Reproductive Capacity</b>
	<b>Hormonal Change</b>	<b>Weakened Immune System</b>
<b>Behavioural</b>	<b>Signal Masking</b>	<b>Reduction in Functioning</b>
	<b>Avoidance Behaviour</b>	<b>Change in Predator-Prey relationships</b>
		<b>Population Reduction</b>
		<b>Migration and Loss of Habitat</b>
	<b>Mating Interference</b>	

**Auditory Effects** - Auditory effects are associated with very high noise levels (often in excess of 90 dB (A)) which typically only exist in laboratory settings. These effects would involve hearing loss or threshold shifts which are a reduced sensitivity to sound similar to a partial hearing loss. Threshold shifts have the potential to interfere with communication and reduce an animal's functioning ability.

**Physiological Effects** - Physiological effects, such as metabolic and hormonal changes, are often associated with stress. Stress in wildlife in their natural setting is typically a difficult response to quantify. For wildlife, stress reactions are part of survival and a routine occurrence. Stress reactions involve what is commonly referred to as the "fight or flight" response. When this reaction is inappropriate, such as fleeing from a non-threatening noise, impacts begin to occur. Inappropriate reactions unnecessarily deplete an animal's energy resources which can increase susceptibility to predators, disease, and starvation.

**Behavioural Effects** - Changes in normal behavioural patterns are the most apparent effects of noise on wildlife. When noise becomes an objectionable intrusion on wildlife habitats, these changes include alterations in habitat locations and migration patterns, and abnormal behaviour that can cause difficulty in mating and survival.

### Summary

Noise has the greatest effect on wildlife which relies heavily on auditory signals for survival. The frequency content of noise can be a factor for wildlife that uses specific signals for establishing mating or territory. Increases in background sound levels can interfere or mask communication signals used in mating or survival, which consequently could influence mating activity, population distributions and detection of predators or prey. Noises that cause wildlife to startle or flee have the potential to deplete the animal's resources resulting in diminished performance and potential harm or injury.

It is important to note that numerous wildlife habitat areas exist in high-noise environments such as airport runway areas and military installations. These areas often become wildlife habitats because human use is limited and/or prohibited. For animals that migrate into these areas, the noise exposure may be less significant than the benefit of privacy and habitat these areas provide.