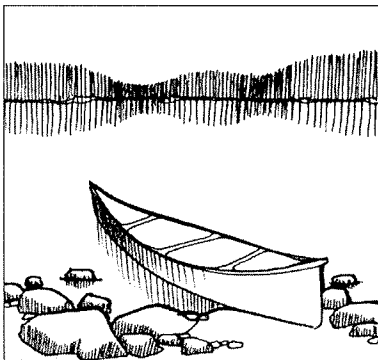


## Noise Around the Lake

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Some of the most enjoyable aspects of cottage country are associated with sound, whether it be the haunting cry of the loon or the gentle lapping of waves onto the shore. Quiet mornings spent on the dock or a night searching for stars are treasured memories that stay with us during the cold winter months.



However, as cottage-country population increases these moments might become rare as noise levels also increase.

Noise is defined as unwanted sound. If we enjoy cottage country for the sounds of nature, then surely the addition of our human sounds are pollution of the air waves! Fortunately, we can easily remedy this kind of

pollution with no lasting harmful effects to the environment. All it takes is a little understanding of sound and its properties.

The physics of sound is a complex issue that is too lengthy to describe within the scope of this article. However the most important aspect is how sound behaves at night and along the water during different conditions. In very general terms, sound waves are pulled in the direction of fastest travel velocity. Sound also travels faster in warm air. On a warm summer day at the lake sound waves from cottage activities travel in a more upward direction toward warm air and not as much sound pressure reaches our ears at the shore. At dusk the water surface cools producing a warm air layer between the water and the sky (thermal inversion). Those same sound waves follow the warm air again; sound pressure is concentrated along the surface of the lake and we can hear even the quiet conversation in a passing canoe. Normally sound pressure (as measured by a sound level metre)

dissipates at the rate of six decibels (dB) every time the distance doubles. This rate of loss decreases during temperature gradient conditions at night, especially when the temperature variant is high during dusk. Loons and other animals use this time period to communicate over great distances because of this property of sound. Other contributing effects such as reflective rocky shorelines, wind speed, and direction can affect noise transmissions as well. These vectors all combine at times, which compounds the problem. Some websites that describe this phenomenon in more detail are <<[www.mnresponsiblerec.org/previoussite/resources/sound.htm](http://www.mnresponsiblerec.org/previoussite/resources/sound.htm)> and <<[www.kettering.edu/~drussell/Demos/refract/refract.html](http://www.kettering.edu/~drussell/Demos/refract/refract.html)>.

Just like our friends in the animal kingdom, we can use sound to our advantage. Many people can sleep well with continuous noise such as waves crashing on the beach or rain on the roof whereas impulsive sound has an awakening effect. When multiple sound sources occur the dominant sound drowns out the quiet sound further away. Sleeping at night during a neighbour's party can be difficult. The simplest solution would be to turn on your fan during the neighbour's festivities and position it close to your ears. Don't let the fan noise bother you or it won't work. If the fan noise is 10 dB above the impulsive distributing noise it won't be heard; however, there is, however no substitute for common courtesy. If you are the noisy neighbour planning a loud event, it would be effective to communicate with your neighbours in advance. Mention that there may be excessive noise for a period in the evening so your neighbour can prepare.

Continuous noise from motorized vehicles, boats, ATVs, and construction is on the increase in cottage country and is difficult to regulate. The Canadian government has established noise bylaws that are constantly under review. The guidelines differ for day and night. Regulations for impulsive noise and continuous noise are different for urban areas than they are in rural communities. Airports, roads, factories, and other commercial establishments have strict noise guidelines enforced by the Ministry of the Environment. Rural area levels may not be as strictly defined; this includes cottage country. Noise complaints in rural areas tend to be subjective. Expensive advanced measurement instrumentation is used by certified acoustic consultants who have the expertise, experience, and understanding of noise ordinance bylaws to measure noise exceeding ministry guidelines. Some of these measurements include

- Community Noise Equivalent Level (CNEL, Lden),
- Composite Noise Rating (CNR),
- Day-Night Average Sound Level (DNL, Ldn),
- Hourly Average Sound Level (1HL, L1h),

- Perceived Noise Level (PNL),
- Single Event Noise Exposure Level (SENEL, LAX),
- Sound Exposure Level (SEL, LET),
- Sound Pressure Level (SPL, Lp),
- Energy Average (Leq),
- Sound Power Level (PWL, Lw), and
- Sound Transmission Class (STC).

Ministry guidelines can be reviewed at [www.ene.gov.on.ca/envision/gp/3517e.htm](http://www.ene.gov.on.ca/envision/gp/3517e.htm).

The Ontario Ministry of Environment covers noise under the Environmental Protection Act. Relevant guidelines can be found at [www.ene.gov.on.ca/en/publications/forms/index.php#Noise](http://www.ene.gov.on.ca/en/publications/forms/index.php#Noise), [www.ene.gov.on.ca/envision/gp/3372e.pdf](http://www.ene.gov.on.ca/envision/gp/3372e.pdf), and [www.ene.gov.on.ca/envision/gp/3405e.pdf](http://www.ene.gov.on.ca/envision/gp/3405e.pdf).

The Ministry categorizes noise as a contaminant form of air pollution. In severe cases of noise complaints where acoustic consultants and lawyers are involved and the expense is high, we may wish to consider the alternatives. The more we understand about the noise we make, the better neighbours we can be.