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Recently I received an e-mail with an attached article on noise pollution and its many effects. My correspondent commented that she had run across articles about possible health problems, including tinnitus, associated with wind turbines and wind farms. "Some of them," she wrote, "are scary and really make you think twice about the safety of this alternate energy source."

My curiosity aroused, I downloaded the article on noise pollution entitled, interestingly, "Noise leads birds to unfaithfulness," authored by Anne Outwater, a columnist for the *Tanzania Standard*.¹

Noise effects on humans are well known, and Outwater's listing includes hearing loss, tinnitus, insomnia, hypertension, stress, and coronary artery disease. Less known are the effects of noise on animals; Outwater gives us two striking examples:

- ". beached whales are responding to the loud sound of military sonar; they are trying to get away from or they are disoriented by the severe noise. When submarine detectors are on, whales' songs become longer--they are speaking louder in responses to the noise. Their songs are their language, and they may be warning other whales or searching for food--these tasks of daily living become masked by human introduced noises in the ocean."
- "On land, birds have been found to sing louder, and less melodiously, when they live in cities. This means that mating songs and danger warnings if unheard by their fellows go unheeded. It decreases the usable habitat. In the case of Zebra Finches, and probably many other species, it is found that they become less faithful to their mates when exposed to traffic noise."

Wind Turbines

One noise source may produce up to 20 percent of the nation's electricity by 2030. The source? Wind turbines. Even now, thousands of wind turbines crank out power throughout the country. These massive windmills, up to 80 feet tall, capture the energy in wind and convert it into electricity for residential and commercial use.

According to environmentalist blogger Michelle Bennett, "Wind turbines are a fast efficient way to produce renewable energy. They're good for the environment, the power grid and local communities. But some residents who live closest to the turbines complain about the noise, and limited data suggests it might be more than a nuisance."²

The blade tips of a wind turbine can spin at speeds of up to 180 miles per hour in high winds. This rapid spinning produces noise and vibration that contribute to health complaints known collectively as Wind Turbine Syndrome. The syndrome includes headaches, sleep problems, night terrors or learning disabilities in children, tinnitus, irritability, anxiety, concentration and memory problems, disequilibrium, dizziness, and nausea.

Audible sounds from wind turbines have been described by nearby residents as "humming, whooshing, swishing, rumbling of an endless train, thumping, a distant pile driver." Most concerning are the production of infrasounds, which are below 20 Hz and generally inaudible to the human ear but at intense levels are linked to nausea, imbalance, impaired equilibrium, immobilization, and disorientation.

Most of the information on the purported health effects of wind turbines are anecdotal and/or based on small sample sizes. One larger 2007 questionnaire study carried out by Swedish researchers included 754 subjects living in seven areas in Sweden across dissimilar terrain and different degrees of urbanization.³

Researchers found that the odds of being annoyed by wind turbine noise increased with increasing SPLs [sound pressure levels], rural areas and hilly or rocky terrains. Annoyance was associated with both objective and subjective factors of wind turbine visibility and was further associated with lowered sleep quality and negative emotions. They conclude, "There is a need to take the unique environment into account when planning a new wind farm so that adverse health effects are avoided. The influence of area-related factors should also be considered in future community noise research."

Further evidence-based research is needed to confirm health problems associated with wind turbines and to devise effective buffer-zone regulations and sound-cancelling technologies. Until then, I say NIMBY!

References

1. Outwater, A. (2009). Noise leads birds to unfaithfulness. *Tanzania Standard*. Accessed online at <http://dailynews.habarileo.co.tz/magazine/?id=9811>
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3. Pederson, E., Pearson Wayne K. (2007). Wind turbine noise, annoyance and self-reported health and well-being in different living environments. *Occupational and Environmental Medicine*, 64(7): 480-6.

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