

April 11, 2021

Maine Legislative Joint DMR and DIFW Committees

Re. Rules LD114 and LD89

Dear Committee Members:

My name is Eileen Peterson. I am writing to thank you for your consideration of this important topic. I want to express my opposition to LD 114 and my support for LD 89. I believe that LD89 will offer greater potential for a balance between the interests of shellfish harvesters, coastal residents and coastal wildlife. I believe that that the daytime limit of 80dBA and night time limit of 65dBA are attainable by airboats; although louder than most noise ordinances, LD89 offers a reasonable compromise.

I am a practicing audiologist with 45+ years of professional experience in the study of audition, sound, noise, and remediation of hearing loss. I have resided in Freeport since 1984. I spoke regarding my concerns for airboat noise at the public hearing in Augusta in February, 2020, wrote to the committee in December, 2020.

“Noise” is any unwanted or disturbing sound that interferes with normal activities (ex. sleeping, conversing) and disrupts or diminishes quality of life. Noise is an environmental stressor similar to heat and cold; loud noise can be frightening and can cause stress-related illness in people and in animals. Low frequency noise produces greater annoyance potential for humans. Irritable behavior in wild animals leading to alterations in food intake, social interactions and parenting which can lead to population decline has been noted in response to man-made noise. Environmental noise pollution is a form of air pollution and a threat to the health and well-being of all those who are subjected to it. The levels of noise from airboats in our region over recent summers is a significant form of noise pollution; all known and potential effects of airboat noise on humans and wildlife in the coastal region are of concern, Manmade noise in the ocean as a pollutant has gained research ground in recent years with adverse impact on whales, seals, and a variety of fish documented. Marine mammals’ hearing plays a key role in communication, foraging, social interaction and safety. We know that fish and some invertebrate species detect sound using particle motion in water and/or in mud; the low frequency components of airboat noise might negatively impact the very species that are being harvested. That our entire marine ecosystem may be negatively impacted by airboat noise should be great concern when considering legislation to govern noise levels.

In this process, you will be addressing and making rulings that apply to airboat noise, a sound that you may have never personally experienced. I suggest that if you were you to stand on-shore and experience this sound, you would agree that it is excessively loud, both startling and disturbing to your very core of your physical being. Imagine a Boeing 737 or a DC9 aircraft approaching from about a mile overhead, descending for a landing and you standing there without ear protection. My preschool aged grandchildren hear the boats coming at about 2 miles away and cover their ears with fear. They perceive this noise as much louder than a lawnmower which is also too loud.

One osprey nest near us has been abandoned over these summers, and I believe if this excessive noise continues, we will find that frightened shorebirds will either leave the area to escape the

noise or leave their nests with their young vulnerable to attack. We must give consideration to all shorebirds, the variety of owls, hawks and all avian life in our area who are subjected to this noise.

The impact of noise vibration on sediment-dwelling invertebrates has received relatively little research, but some suggest low frequency noise/vibration negatively impacts these key coastal species. For example, oysters, although they do not “hear”, rely on vibrations and respond to low frequencies (10-1000Hz) below the frequency range of the dBA measurements being used for airboat noise measurement. The sound level readings I have recorded in both the dBA and dBC scales suggest a significant low frequency component to airboat noise that may impact these vibration sensitive creatures. Pacific oysters have been studied; they register movement and vibration via their statocyst and thereby “know” when tidal waters bring food, when to spawn, and when to close against predators. Noise can confuse the oyster’s soundscape such that they may mistake airboat noise for tides or thunderstorms and open up or spawn at the wrong time. Frequencies below 1000Hz are created by airboat noise as evidenced by my comparing dBA and dBC readings (See “c” below). Since oysters use the vibrations of low frequency sound for survival, the airboat noise may interfere with their natural survival sense. It may be that other invertebrates (clams, scallops, mussels) will also be negatively impacted by the vibrations in the water and mud produced by the airboat. Understanding the relationship with the world of sound, especially how shellfish interact with it, is clearly under-evaluated but it poses a fascinating challenge as we consider noise effects on invertebrates, a major component of Maine’s biodiversity. I believe that traditional harvesters should be aware of the potential negative impact of airboat noise on shellfish.

We do not see or taste environmental noise pollution, but it is no less significant than air and water pollution. We have a responsibility to protect all of Maine’s citizens and our wildlife with the laws enacted. While I fully support, indeed cherish Maine’s traditional soundscape that includes harvesting boats such as lobster boats and of course the sounds of the natural world, I have very real concerns about the noise that booms from airboats. From a functional hearing perspective, the decision to exclude airboats from existing decibel level noise rules for boats really cannot be defended; the impact of noise generated on the listener, human or wildlife, is the same regardless of the type of boat or motor generating the noise. There are reasons that environmental noise limits are set; noise ordinances attempt to control sound so that residents have protection and some choice with regards to the nature of their acoustical environment. While I believe that airboats should not fall outside of all other noise pollution standards, in the interest of compromise, I support LD89. Humans too often respond to crisis after we have created the problem. Maine could be a leader here with consideration of limits that will protect all from this new source of noise pollution in supporting LD89 as a workable compromise.

Thank you for your concern and good work, and for considering my comments.

Sincerely,
Eileen Peterson
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(Please see additional comment on page 3)

Additional comment regarding sound measurement and impact of noise exposure from an Audiologists perspective:

- a. Sound measurement taken at or near the ear of the individuals exposed, in this case on shore, should be considered as a standard.
- b. Airboat noise levels measured over the summers of 2019 and 2020 demonstrated extreme examples of noise pollution, an alarming and negative change from traditional sounds generated by traditional skiffs used for clamming.
- c. Sound Pressure Level measurements are used in the fields of communication, electronics and industries that have equipment that generate noise. The A and C filters are sensitive to portions of the frequency range. The dBA scale mimics the properties of human hearing focusing on the mid-range frequencies, filtering out the contribution of frequencies below 1000Hz; it is used for OSHA's safety guidelines for humans. The dBC scale adds additional low frequencies to the measurement and is the preferred measurement tool for very loud sound and when low frequencies are present. As an audiologist and given the annoyance factor and apparent volume of the airboat noise, I chose to record both dBA and dBC measurements from shore.
 - i. From the Wolfe Neck shoreline, I have measured traditional harvester skiffs operating about 400 ft away at levels averaging between 43-51dBA, with one peaking at 67dBA. On the same day with comparable environmental/surface water conditions and distance to the boat, I measured an airboat at 103.7dBA at the shoreline.
 - ii. Comparing dBA to dBC on the same day with equal distances from the source(airboat) to shore, I have measured on average 6-9 dB higher using the dBC filter. This can only be due to a contribution of the frequencies below 1000Hz; the lower frequencies longer wavelengths travel more readily through air, water, and mud producing the vibrations oysters may misinterpret.
- d. Consideration should be given to the measurement of a broader frequency range to include the low frequency components clearly present in airboat noise as noted by the comparison of dBA and dBC readings. Low frequencies with their longer wavelengths, are felt, contribute to annoyance, fatigue and decreased speech perception, and travel readily underwater. Frequencies below 1000Hz are not included in the dBA measurements. A-weighted levels underestimate the effects of low frequency noise.
- e. Exposure to this hazardous noise level may damage hearing acuity. It will disrupt auditory access to speech and important sounds throughout the duration of the exposure. Diminished enjoyment of one's property is a reality. Other documented adverse effects of high-level noise (sleep disruption, headaches, fatigue, lack of concentration, annoyance) are real.