

Abstract

Noise from military aircraft over the Olympic Peninsula (Washington, USA), has increased in recent years with changes in operations from nearby facilities. Further increases in training activities are proposed, but lack of any data that describe current noise levels has hindered assessment of impacts on humans and wildlife. Over a one-year period, we monitored three primary and two supplemental sites to document current noise contributions of military aircraft to the soundscape.

We found that currently, 88% of audible air traffic is military. Flight training activities were concentrated during weekdays and in daytime hours, with hourly percent time audible averaging 14 to 42%. The duration of time that military aircraft were audible in any hour was correlated across sites up to 51 km apart, and the site outside the operations area experienced substantial noise, signifying a noise footprint extending well beyond the operations area. Maximum loudness of flyover events exceeded 82 dBA (A-weighted decibel level), and a median increase of 3 to 4 dBA (i.e., a doubling of existing acoustic energy) from ambient periods was typical in most sites and seasons. Comparison of spectral power densities indicates that military aircraft largely impact frequencies below 1.2 kHz, averaging a 20 dB increase (i.e., quadrupling of loudness) in this frequency range compared with ambient samples. Our results demonstrate that changes in military operations will play a dominant role in dictating the future soundscape of the Olympic Peninsula, and offer an empirical basis for inquiry into how the proposed increases will impact people and wildlife in this region.

Keywords: soundscapes, passive acoustic monitoring, noise pollution, wilderness, national parks

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