

# Navy Growler jet noise over Washington state's Whidbey Island could impact 74,000 people's health

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Bob Wilbur and Giordano Jacuzzi, co-authors of the study, watch a Growler jet land on Whidbey Island. Credit: Kiyomi Taguchi/UW News

Bob Wilbur thought he'd found a retirement home that would be a place of peace. Nestled against Admiralty Bay on the western edge of Whidbey Island, the three-story house is surrounded by trees and

shoreline. It offers the kind of quiet that only an island can provide. Except when the Growlers fly.

As often as four days a week, Boeing EA-18G Growler electronic attack aircraft based at the nearby Naval Air Station Whidbey Island fly loops overhead as pilots practice touch-and-go landings. The noise is immense, around the level of a loud rock concert.

"It interrupts your day," Wilbur said. "You're unable to have a pleasant evening at home. You can't communicate. You constantly try to organize your day around being gone when the jets are flying."

[New research](#) from the University of Washington shows that the noise isn't just disruptive—it presents a substantial risk to public health. Published in the *Journal of Exposure Science and Environmental Epidemiology*, an analysis of the Navy's own acoustic monitoring data found that more than 74,000 people are exposed to noise levels associated with [adverse health effects](#).

"Military aircraft noise is substantially more intense and disturbing than commercial jet noise," said lead author Giordano Jacuzzi, a graduate student in the UW College of the Environment. "Noise exposure has many downstream effects beyond just annoyance and stress—high levels of sleep disturbance, hearing impairment, increased risk of cardiovascular disease—these have real impacts on human health and quality of life. We also found that several schools in the area are exposed to levels that have been shown to put children at risk of delayed learning."

Guided by conversations with [community members](#) and local [advocacy groups](#), researchers analyzed four weeks' worth of acoustic and flight operations data collected by the Navy in 2020 and 2021, in addition to prior-year data collected by a private acoustics company and the

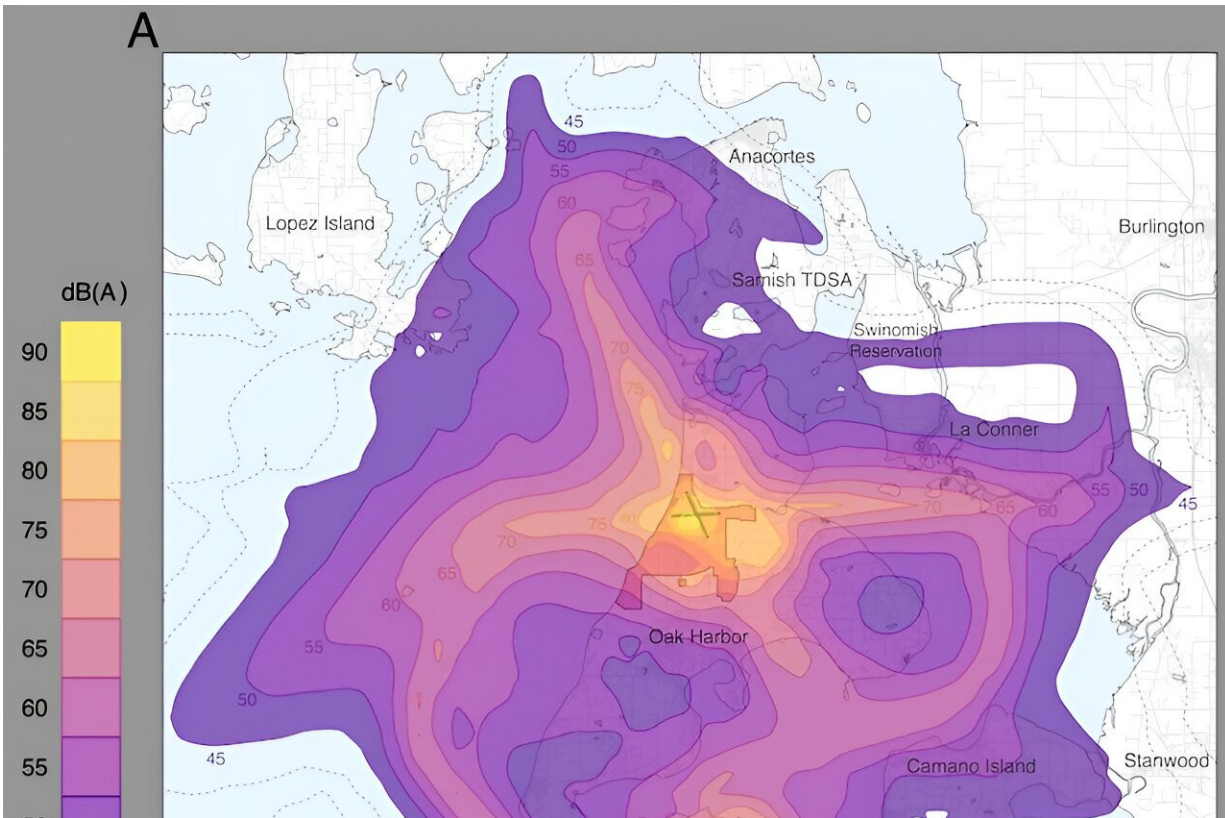
National Park Service. Researchers then mapped [noise exposure](#) across the region to estimate how much noise specific communities were exposed to in an average year.

Researchers estimated that two-thirds of Island County residents, including everyone in the cities of Oak Harbor and Coupeville, were exposed to potentially harmful levels of noise, as was 85% of the population of the Swinomish Indian Reservation.

In total, an estimated 74,316 people were exposed to average noise levels that posed a risk of annoyance, 41,089 of whom were exposed to nighttime noise levels associated with adverse effects on sleep. Another 8,059 people—most of whom lived within fairly close proximity to aircraft landing strips—were exposed to noise levels that can pose a risk of hearing impairment over time.

"Our bodies produce a lot of stress hormone response to noise in general, it doesn't matter what kind of noise it is. But particularly if it's this repeated acute noise, you might expect that stress hormone response to be exacerbated," said co-author Edmund Seto, a UW professor of environmental and occupational health sciences.

"What was really interesting was that we're reaching noise exposure levels that are actually harmful for hearing. Usually I only think of hearing in the context of working in factories or other really, really loud occupational settings. But here, we're reaching those levels for the community."



This map shows the simulated noise exposure associated with adverse health effects. Contours are shown in 5 decibel increments, beginning at 45 decibels day-night average sound level. Credit: *Journal of Exposure Science & Environmental Epidemiology* (2024). DOI: 10.1038/s41370-024-00670-1

Taken as a whole, the potential harms can be quite serious, Seto said. "Imagine people trying to sleep, or children in school trying to understand their teachers and you've got these jets flying."

Every monitoring station on Whidbey Island measured noise events in excess of 100 decibels when jets were flying. In some instances, noise levels were "off the charts"—exceeding the limits of models used to predict the health effects of noise exposure around the world.

"We found it striking that Growler noise exceeds the scientific community's current understanding of the potential health outcomes," said co-author Julian Olden, a UW professor of aquatic and fishery sciences. "For this reason, our estimates of health impacts are conservative."

The noise has been the subject of community disputes and legal controversy since 2013, when the U.S. Navy moved more Growler jets onto Whidbey Island and increased the number of flights to more than 110,000 per year. Bob Wilbur is a member and the current chair of Citizens of Ebey's Reserve, a community group that has sued the Navy over the jet noise and increased flight operations. The group also helped facilitate the UW study, and Wilbur is a co-author.

Like other military aircraft, the Growlers' noise differs significantly from commercial jets—louder and deeper, the kind of sound that people feel before they hear.

"It's the intensity, the intermittent nature of the noise, and the low-frequency energy specifically," Jacuzzi said. "Those three things are very different than what you experience from normal commercial flights, which are predictable and high in altitude. When Growlers fly over a home, they emit a rumbling noise that penetrates windows and shakes walls."

While commercial jet noise has been the subject of extensive study, research into military aircraft noise is relatively rare. Previous UW-led research found that military flights were the [largest cause of noise pollution on the Olympic Peninsula](#). While discussing that study, Whidbey residents complained that the noise disturbed their sleep and interfered with students' schoolwork, which prompted this new line of inquiry. While conducting this study, researchers worked closely with community members and advocacy groups and held multiple webinars to

share results and shape future work.

"Our research was motivated by the growing chorus of complaints by Washingtonians across multiple counties," Olden said. "We believe the science speaks for itself. It's no longer a question of whether noise impacts people, but how, where and how much these effects are experienced."

Other authors are Lauren Kuehne of Omfishient Consulting, and Anne Harvey and Christine Hurley of Sound Defense Alliance.

**More information:** Giordano Jacuzzi et al, Population health implications of exposure to pervasive military aircraft noise pollution, *Journal of Exposure Science & Environmental Epidemiology* (2024). [DOI: 10.1038/s41370-024-00670-1](https://doi.org/10.1038/s41370-024-00670-1)

Provided by University of Washington

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