

The sound of injustice: Inequitable urban noise impacts people, wildlife

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Noise is an unseen pollutant with very real health impacts. Like many other forms of pollution, because of systemic injustice, it affects some people more than others. It also affects wildlife.

In a study titled "[Inequalities in noise will affect urban wildlife](#)," published in *Nature Ecology & Evolution*, Colorado State University acoustic ecologists found that redlined, or marginalized, communities have more and louder urban [noise](#), which has been linked to negative consequences for people and [wildlife](#).

Ecological degradation exacerbates injustices against those living in formerly redlined areas because people benefit from nature and wildlife, said Sara Bombaci, an author of the study and an assistant professor in CSU's Department of Fish, Wildlife and Conservation Biology. Now illegal, redlining was the discriminatory practice of denying loans or services to those living in non-white neighborhoods.

"We need to be thinking more about how these systemic injustices and problems are manifesting to shape ecology and evolution," Bombaci said.

Bombaci and her research group examined urban noise distribution across historical racial divisions in 83 U.S. cities and evaluated hundreds of studies on the impacts of noise on wildlife. The team originally wanted to analyze ecological data on noise impacts on wildlife, instead of reviewing literature, but data in redlined communities are underrepresented, reflecting historical biases.

The study is the first to examine noise inequity in redlined communities. Results show that louder noise levels more commonly correspond with redlined [urban areas](#) and have detrimental effects on urban ecosystems proportional to their volume.

Redline noise

Starting in 1933, the Home Owners' Loan Corporation assigned grades to neighborhoods based on race and wealth. Grade A neighborhoods

were wealthier and whiter, while red lines were drawn around grade D neighborhoods where people from various racial and ethnic backgrounds lived. Redlining was outlawed in 1968, but decades of divestment in these neighborhoods caused enduring disparities.

The study found that grade D neighborhoods experience 17% higher maximum noise levels than grade A neighborhoods, and grades C and D neighborhoods more frequently have maximum noise levels above the level known to cause hearing loss, physical pain and stress in humans.

"This is directly linked to structural racism," Bombaci said. "There's a clear signal that ties directly to whether these communities were redlined."

Some of the human health effects from [noise pollution](#) include hearing loss, [stress, insomnia, hypertension and increased risk of heart disease and stroke](#). Persistent loud noise stresses wildlife too. It can alter animal behavior, including communication, community structure, distribution, fitness, foraging, mating, movement and reproduction. Noise can make some species more vulnerable to predators and cause wildlife to avoid certain areas.

Righting past wrongs

Many cities, like Denver, are working toward equitable planning to improve access to parks and green space in underserved communities. Bombaci said noise should be considered in those plans.

"If we're adding green space without mitigating impacts of noise, we might not be fully recognizing the benefits of these green spaces," she said.

Wildlife might not bounce back in urban [green space](#) if noise pollution

remains a problem, but planning and noise mitigation can help, Bombaci said, and conservation funding and urban planning can benefit both people and wildlife.

More information: Inequalities in noise will affect urban wildlife, *Nature Ecology & Evolution* (2023). [DOI: 10.1038/s41559-023-02257-9](https://doi.org/10.1038/s41559-023-02257-9). www.nature.com/articles/s41559-023-02257-9

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