

Summary Write-Up on Noise Pollution Impact on Northern Spotted Owls in Oregon

As a “threatened” species, the risk posed by noise pollution to Northern Spotted Owls is significant and is included under the Endangered Species Act’s definition of “harm”, which states that harm to a species involves an act “which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering” (Fisheries, n.d.). The effects of noise on Northern Spotted Owls include:

- Flushing from a nest during reproductive periods, potentially leading to egg failure or decreased survival.
- Adults abandoning or delaying feeding dependent young, leading to malnutrition and decreased survival.
- Reduced ability to find prey and decreased hunting successes.
- Changes in daily activities, such as spending less time hunting prey. (*Northern Spotted Owl* | *National Wildlife Federation*, n.d.)

These disruptions to the owls’ behaviors can lead to decreased reproduction and worse survival outcomes. According to a 2020 study conducted by the Arcata, California Fish & Wildlife Office estimating the effects of both noise and visual disturbances experienced by Northern Spotted Owls in Northwestern California, the estimated distance that sound from roads and highways can reach northern spotted owls varies. The study noted that, in forests with natural ambient noise levels, sound from roads (suitable for 2 passenger vehicles), labeled as "Moderate", likely reaches 50 meters away from the source. Sound from highways (within the "High" sound category), however, can reach 150 meters from the source (United States Department of the Interior et al., 2020).

To construct maps that account for this impact on the Northern Spotted Owl in Mt. Hood Forest, I used three combined factors within the available data to visually represent areas of the forest with ideal owl habitat: elevation (20–2000 meters), forest type (Douglas Fir), and proximity to roads (noise disturbance). Based on my research on noise disturbance to owls, I created road noise buffers that extended 50 meters from regular roads and 150 meters from highways. The bright red color highlights these buffer areas, separating them from ideal habitat (bright green) and suitable habitat (green) to display where noise pollution reduces habitat quality. To determine the most ideal habitats, I created a bright green polygon that encompasses areas with suitable elevation and forest type, and little to no road or highway presence. Despite the noise reach data, it’s ultimately more beneficial to create an increased buffer between roads and habitat than estimated sound reach because visual disturbance can impact owls in the same ways as noise does (United States Department of the Interior et al., 2020), and further separating owl habitat from any kind of disturbance would reduce risks associated with road presence. Based on this data and my identified ideal habitats, it may be best for the National Forest to

prohibit any road development in these zones going forward, ensuring the areas are protected for the Northern Spotted Owl's species development.

Word Count: 450

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