

The Application of Traffic Noise Modeling to Define Road Ecological Effect Zone in Natural Habitats of Lorestan Province

H. Madadi^{1,3*}, H. Moradi¹, A. R. Soffianian¹ and A. Salman Mahiny²

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Abstract

Noise pollution of roads can propagate within a broader extent than the road only. This spatial space is called "road ecological effect zone" which is known as the natural areas exposed by 40 dB or greater noise level in both sides of the road. In this study, using Calculation of Road Traffic Noise (CRTN) model, the propagation range of noise from Lorestan road network was simulated. Then, the natural habitats of oak forests, scattered woodlands, and grassland affected by the zone were analyzed. The results showed that the road ecological effect zone is between 50 to 2000 meter based on 40 dB noise level. Besides, the habitats within Khorramabad, Poldokhtar, and Karkheh watersheds are receiving the most effects from the road networks. In addition, in the studied area, 6.2% of oak forests, 8.4% of scattered woodlands, and 12.1% of grasslands are within the road ecological effect zone. Moreover, 7.4% of the protected areas in Lorestan province are under effects of road traffic noise, where Chahaeshakh no-hunting zone with 42.6%, Poldokhtar wetlands with 28.6%, and Azna-Doroud wildlife refuge with 13% effect are the most affected areas.

Keywords: Road network, Noise impact zone, CRTN, Protected areas, Lorestan.

1. Dept. of Environ., Faculty of Natur. Resour., Isf. Univ. of Technol., Isfahan, Iran.

2. Dept. of Environ., Gorgan Univ. of Agric. Sci. and Natur. Resour., Gorgan, Iran.

3. Dept. of Environ., Faculty of Natur. Resour., Behbahan Khatam Alanbia Univ. of Technol., Behbahan, Iran.

*: Corresponding Author, Email: hossein.madadi@gmail.com