
Emerging Soundscape Characteristic Patterns Across a Gradient of Land Use Intensity

Jenet Dooley*¹ and Mark Brown¹

¹University of Florida (UF) – Gainesville, FL 32611, Florida, United States

Abstract

Noise from energy intensive processes is not confined; it spreads outward, introducing noise disturbance into neighboring landscapes. The Landscape Development Intensity Index (LDI) uses the non-renewable energy use of surrounding land uses to predict the ecological condition of a specific point or area. Although the impacts of noise pollution were not considered in the development of the LDI, it is based on the influence of other forms of pollution that radiate from areas of intense human development. This study looked at study areas (n=50) encircled by various land use types and intensities in North Central Florida. The LDI was used to characterize surrounding land use of each area. Soundscape metrics including Acoustic Complexity Index, Entropy, average power of ecologically significant frequency bands, among others were used in this study to describe morning sound recordings. A new metric, adapted from rhythm analysis in music theory, was used to describe the similarity and periodicity of sound events in the soundscapes. Periodicity at a shorter time scale than diurnal is a characteristic of soundscapes that has not been adequately explored. This study defines patterns between landscapes and soundscapes. Preliminary results indicate that areas with high surrounding land use intensity have frequency spectrums that are concentrated (low entropy) in lower frequencies. Including the LDI index in the descriptions of study areas allows surrounding land use to be thought of as a source of energy flux to a study system and looks at the effects it has on soundscapes. This work also contributes to the formation of a predictive tool that can make assumptions about soundscapes remotely through geographic information system analysis.

Keywords: Landscape Intensity, Soundscape metrics, Soundscape Description, Geographic Information Systems, Periodicity

*Speaker