Studying the spatiotemporal dynamics of the soundscape in a protected area in Greece; a mixed-methods approach

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Abstract

Ecology and nature conservation are starting to view sound as an intrinsic component of the landscape. A novel sub-discipline of ecology, soundscape ecology, attempts to study soundscape/landscape links in order to better understand and manage the natural environment. Drawing on the theoretical and practical work on soundscape ecology, we studied a rural soundscape of a protected area in Greece, asking: a) how is the soundscape transformed through space and time and b) which are the drivers of this transformation c) how is the soundscape related to the landscape?
Our study area was Mandraki village on the shores of Kerkini Reservoir in North Greece. We employed a mixed-methods approach that combines quantitative sound-pressure measurements; qualitative recording of sound-categories by human observers; sound mapping; and interviews with local residents to provide a holistic view of the soundscape/landscape nexus. Our observations were repeated on a seasonal basis.

Overall, we discovered that the sounscape's temporal and spatial variation in Mandraki is dominated by human made sounds. Also, while the soundscape is related to land use type, it is not determined by it. The qualitative part of our methodology allowed us to infer that anthropogenic sound mainly comes from trucks carrying goods across countries, helping us to grasp how the soundscape can be shaped not only by local but also national all the way to global drivers.
The soundscape is a complex "entity", presenting significant temporal and spatial variation. Temporal variation is mainly seasonal and daily, relating both to biological and human rhythms of activities, while spatial variation mainly reflects land-uses in the landscape. Space and time are closely interrelated in the soundscape/landscape nexus, requiring a close investigation of processes to: a) understand the latter's dynamics and b) avoid simplistic reductions e.g. from land-use to sound-category.

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