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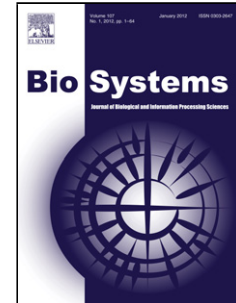
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1 **The acoustic communities: Definition, description and ecological role**

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10 **Abstract**

11 An acoustic community is defined as an aggregation of species that produces sound by using  
12 internal or extra-body sound-producing tools. Such communities occur in aquatic (freshwater and  
13 marine) and terrestrial environments. An acoustic community is the biophonic component of a  
14 soundtope and is characterized by its acoustic signature, which results from the distribution of  
15 sonic information associated with signal amplitude and frequency. Distinct acoustic communities  
16 can be described according to habitat, the frequency range of the acoustic signals, and the time of  
17 day or the season. Near and far fields can be identified empirically, thus the acoustic community  
18 can be used as a proxy for biodiversity richness.

19

20 The importance of ecoacoustic research is rapidly growing due to the increasing awareness of the  
21 intrusion of anthropogenic sounds (technophonies) into natural and human-modified ecosystems  
22 and the urgent need to adopt more efficient predictive tools to compensate for the effects of  
23 climate change. The concept of an acoustic community provides an operational scale for a non-  
24 intrusive biodiversity survey and analysis that can be carried out using new passive audio  
25 recording technology, coupled with methods of vast data processing and storage.

26

27 **Key words:** acoustic community, acoustic signature, ecoacoustics, sonotope, soundscape,  
28 soundtope

29

30 **Introduction**

31 In the past few years, there has been growing interest in the use of environmental sounds to  
32 investigate ecological complexity. Some empirical evidence suggests that biological and non-  
33 biological sounds can be used to examine and interpret various dynamic ecological processes  
34 (Towsey et al. 2014a) and, as a result, new perspectives in theoretical and applied ecology have

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