Analysis of massive acoustic sampling
(in ecology)

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Illustration: an autonomous audio recorder settled in the tropical forest of French Guiana with one microphone at human breast height and a second microphone ready to be sent up to the tree canopy.

Some manufactured and natural systems produce vibrations that need to be detected, monitored and possibly controlled. These vibrations, propagated through a gas, liquid or solid medium, can be recorded continuously or at a specific sampling rate with autonomous digital sensors. Such uninvasive monitoring is, for instance, currently in development in biodiversity conservation and ecology to track animals that use sound to communicate. This acoustic sampling can be processed at different scales, from individual to community, and in different habitats, from deep see to tree canopy. Unattended recording systems generate massive datasets that have to be managed, paramatrized and compared with batch processing. The R software offers a free tool that can potentially handle all these digital processes steps in a single platform. We will show how we used R and developed R rools for biodiversity acoustic assessment and soundscape ecology.