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# Using citizen data to assess ecological continuities

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## Abstract

Habitat fragmentation is one of the major causes of biodiversity loss. To combat the negative effects of habitat fragmentation, France has a policy to implement ecological networks at different scales in land planning documents. So far, these ecological networks have mainly been defined using land cover data as data on actual movement of species or even on species presence are scarce. Data collected by local naturalists could be a mean to inform the design of these networks.

The aim of this study is to exploit data from a citizen science program to improve knowledge of the influence of landscape structure on amphibian distribution and assess amphibians as suitable indicators of ecological quality in mosaic farming landscapes and ecological continuities. Amphibians are multi-habitat species with restricted dispersal ability with, nevertheless, a life cycle involving annual migrations to and from aquatic habitats such as ponds and wooded habitats.

Six hundred ninety aquatic sites spread across the Pays-de-la-Loire region were monitored at least one year between 2013 and 2018. Our analysis is based upon 230 ponds sampled twice a year and where no fish were caught. This data set was completed in 2018 by adding 45 new ponds selected along gradients of hedgerow and ponds density. The results show that despite many classical biases related to data from citizen sciences, these data are nonetheless informative when sorted according to relevance and completed by strategic additional sampling.

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