Can haphazard sampling still be justified?

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Keywords: monitoring of biodiversity, spatial ecology, survey design and analysis.

Abstract: In field studies, ecologists have historically tended to choose the locations of sampling units haphazardly, rather than randomly. Unfortunately, this approach cannot provide formal statistical inference from the sample to the population without additional, largely untestable, assumptions. I argue that two recent technological advances largely remove the need for haphazard sampling in many situations. Some examples will be shown to demonstrate that even complicated designs can be implemented easily using software widely used among ecologists. More rigorous, randomised sampling designs would strengthen the validity of the conclusions drawn from ecological studies, to the benefit of the discipline as a whole.