

How many lichens can you find? - Accounting for imperfect detection in a standardized survey

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While imperfect detection has been thoroughly studied in animal and plant surveys, there are only few studies quantifying detection probability in lichens. Here, we explore detectabilities in a standardized lichen survey of 826 sampling plots across Switzerland. These data provide the statistical base for population size estimates on which the national Red List assessment will rely. Failing to account for detection probability in this survey can therefore have significant consequences for the conservation status of lichens. Across 373 corticolous (tree-inhabiting) species we found an average detection probability of 52 %, with conspicuous lichens showing greater probabilities of detection (61 %) than inconspicuous lichens (43 %). Previous experience of an observer with a species also significantly increased detection probability. There were, however, differences between observers that could not be attributed to experience. We illustrate a simple way to include these three influences in a model to correct estimates of species occurrence with detection errors. Our study confirms the findings from other organisms that detection probability is often far from perfect, even when standardization of sampling reduced detection errors. The conservation relevance of this (and similar) surveys makes it particularly important to account for such detection errors.