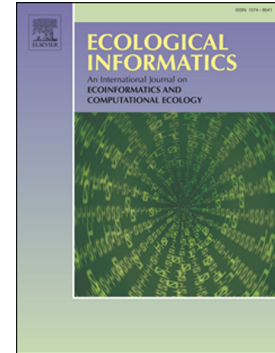


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Logistic regression for clustered data from environmental monitoring programs

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Highlights

- We simulated occurrence of hair lichens on *Picea abies* under complex sampling designs
- We compared standard, cluster-specific and population averaged logistic regression
- Ignoring the complex sampling design may lead to notably biased parameter estimators
- We provide guidelines for when and how to take the sampling design into account
- We recommend to compare unweighted and weighted logistic regression models

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