

## Reducing uncertainty about uncertainty

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What does uncertainty mean? As statisticians we use this term regularly, but to a biologist it can be rather unsettling to hear there is “uncertainty” in the results from their study.

One way to explain uncertainty, so there is no uncertainty about what it is, is to illustrate (by way of simulation) where it has come from. We discuss three case studies where we have used a simulation approach to illustrate the pathways and accumulation of uncertainty. We discuss uncertainty in penguin counts, in river bird surveys and in forest biodiversity sampling.

The end result of illustrating the final level of uncertainty to field-biologists has always the same, with the biologist saying “I wish I hadn’t asked”! Once they have dealt with that reaction, the exercises have been useful to help scope where future survey designs can be modified to reduce uncertainty.