

### 3. BIRD MONITORING – SOME THINGS TO CONSIDER

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I will briefly discuss 5 aspects of the design of wildlife monitoring programs that, in my opinion, should be carefully considered prior to initiation of the program. These are: objectives, estimation vs. hypothesis testing, assumptions and biases, detection probability, and sample size considerations. 1) Objectives should be both specific and useful; that is, they should be focused enough such that a monitoring can be designed with a reasonable chance of achieving the objective and neither already known nor unknowable. 2) In most cases estimation of population change or size, including variance estimates, is more useful than hypothesis tests of whether change occurred. 3) All data gathering and analyses in wildlife studies require assumptions; these, and any possible biases resulting from their violation, should be clearly enumerated *a priori*. Using (or not using) probability based sampling greatly affects the assumptions that are needed in monitoring programs. 4) Estimating detectability (i.e., the probability of detecting an animal (or species), given that it is present at a sample location) is important, though often difficult. Detection probability should be estimated as part of monitoring if at all possible. Assumptions associated with estimating detectability are always weaker than assumptions required if detectability is not estimated. 5) Considerations for determining the appropriate sample size include the target population, the desired precision of estimates, and the availability of 'pilot' data.

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