Power vs. sample size curves for hotspot/coldspot tests of occurrence probability.

**Figure B1.** Power vs. sample size curves for hotspot/coldspot tests of occurrence probability (i.e., case 2 described in section 1.2). Curves are presented based on the binomial distribution, assuming that the probability of occurrence remains constant for a given species in a given place over the study period, and that the statistical test used is Fisher’s Two-Proportion Exact Test (one-tailed, $\alpha=0.05$). Points show where tests were evaluated; curves are linearly interpolated in between points. Each panel shows curves for a different value of the reference (e.g., regional) prevalence. Each color represents a different multiplicative effect size. For example, the red curve in the lower left panel is for the test of the alternative hypothesis (Ha): probability of occurrence $= 0.6$ versus the null hypothesis (Ho): probability of occurrence $= 0.2$, i.e. a 300% higher prevalence than the reference value. [Page 2]

**Figure B2.** Relationship of sampling effort to expected number of presences observed for different prevalence values. Curves show number of surveys (y axis) need to have a specified probability (color), of observing at least k presences (x axis) under a binomial distribution $\text{Binomial}(N,p)$, where $N$ is the total number of surveys and $p$ is the species’ prevalence (probability of occurrence). For example, the red curve in the lower left panel shows that when a species’ prevalence is 33%, one would have to conduct 44 surveys to have a 95% chance of observing 10 presences. Analysis assumes surveys are independent and prevalences do not change over the time period studied. Each panel shows curves for a different value of prevalence. [Page 3]

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(Binomial Distribution, Fisher’s Two-Proportion Exact Test; one-tailed, α=0.05)

Figure B1.
Number of surveys $N$ needed to detect at least $k$ presences

Prevalence = 0.01

Prevalence = 0.02

Prevalence = 0.05

Prevalence = 0.1

Prevalence = 0.2

Prevalence = 0.33

Figure B2.