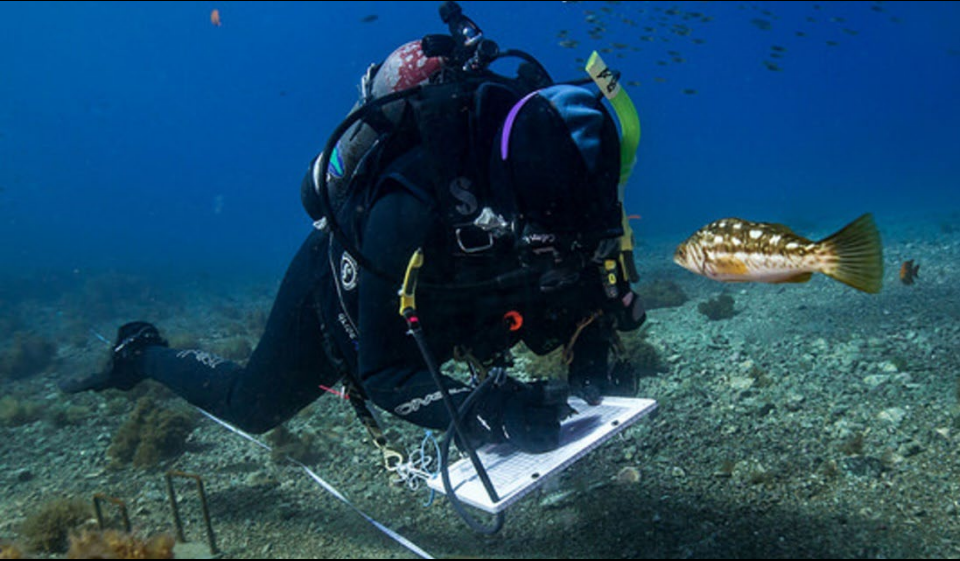


COMPARING THE EFFICIENCY OF BIODIVERSITY MONITORING PROGRAMS

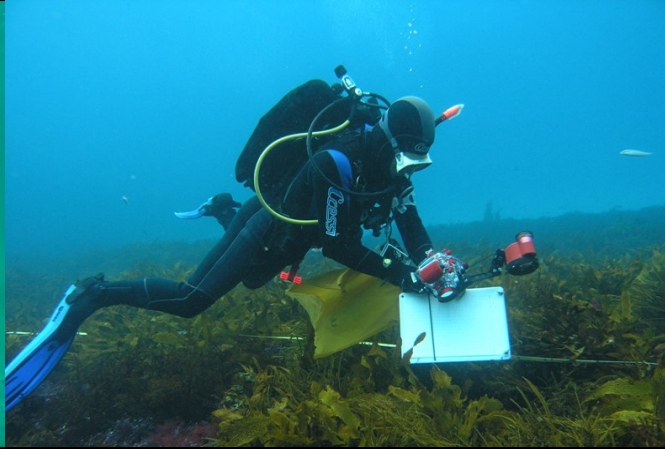


Gema Hernan
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Ecology & Evolution



Biodiversity monitoring crucial tool to
measure ecosystem health





Sampling method constrained by the species, system and **costs**





Citizen Science performed by volunteers allows lower costs and better spatial and temporal sampling





But...miss rare and cryptic species

Use restricted species list to improve consistency

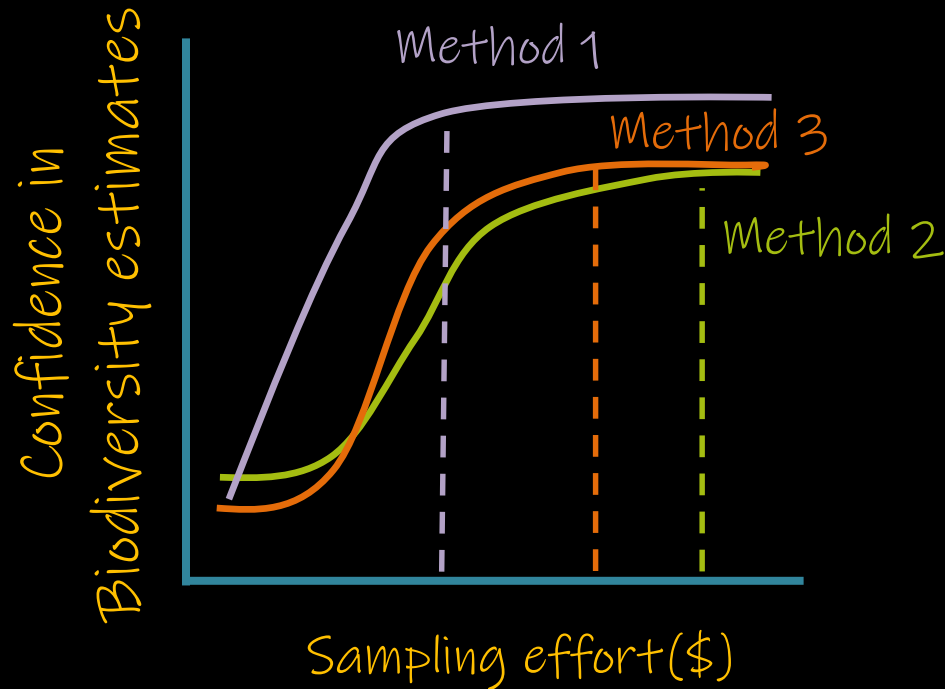




Method to compare efficiency of biodiversity sampling methods

KEY QUESTIONS

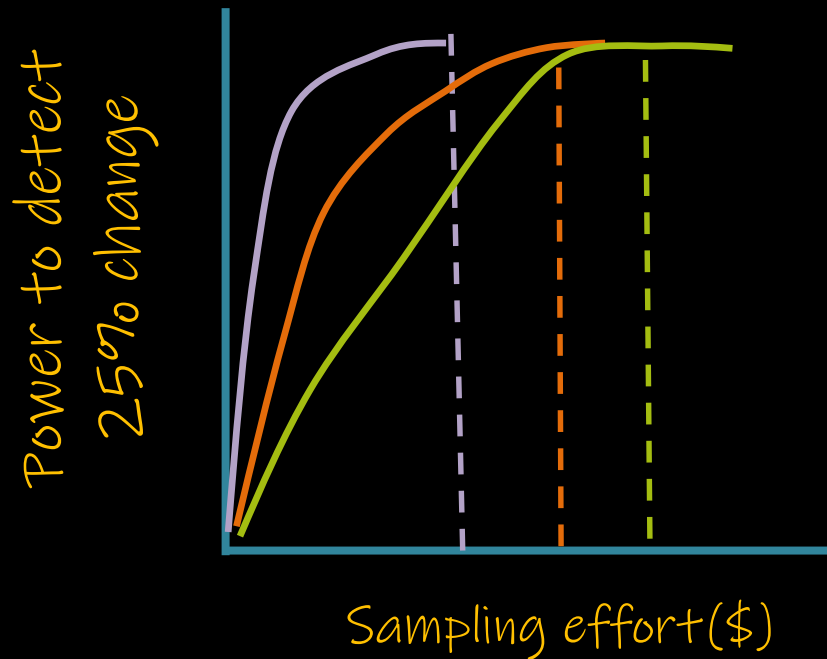
What method should we use for a given taxonomic group and how much should we sample?



Maximize **biodiversity information** and **confidence** while minimizing **sampling effort**

KEY QUESTIONS

How much should we sample if we want to detect a 25% change in the community?



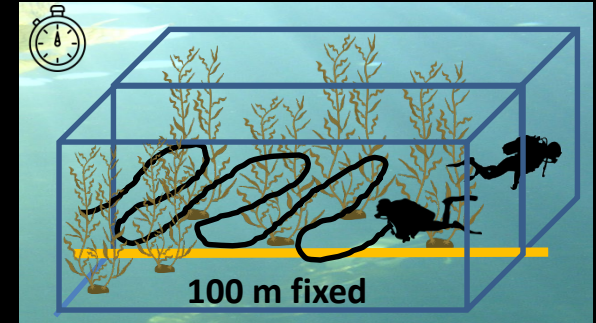
Maximize **sensitivity** while minimizing **sampling effort**

Comparison of three fish sampling methodologies from three monitoring programs

Professional Roving diver

3-4 counts

72 species
Permanent big area



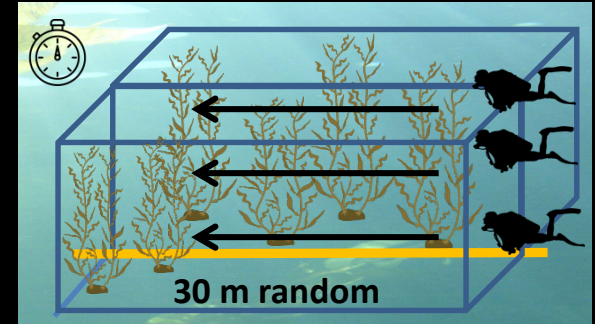
Comparison of three fish sampling methodologies from three monitoring programs

Professional transect

8 transects

72 species

Random area



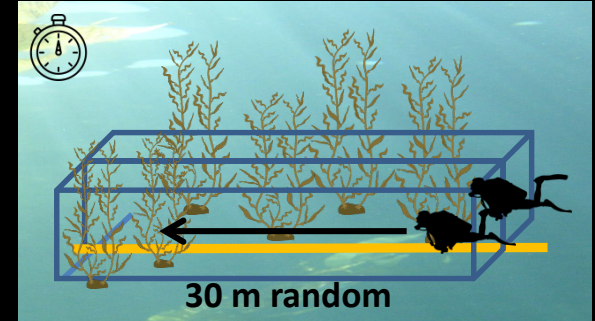
Comparison of three fish sampling methodologies from three monitoring programs

Citizen Science transect

18 transects

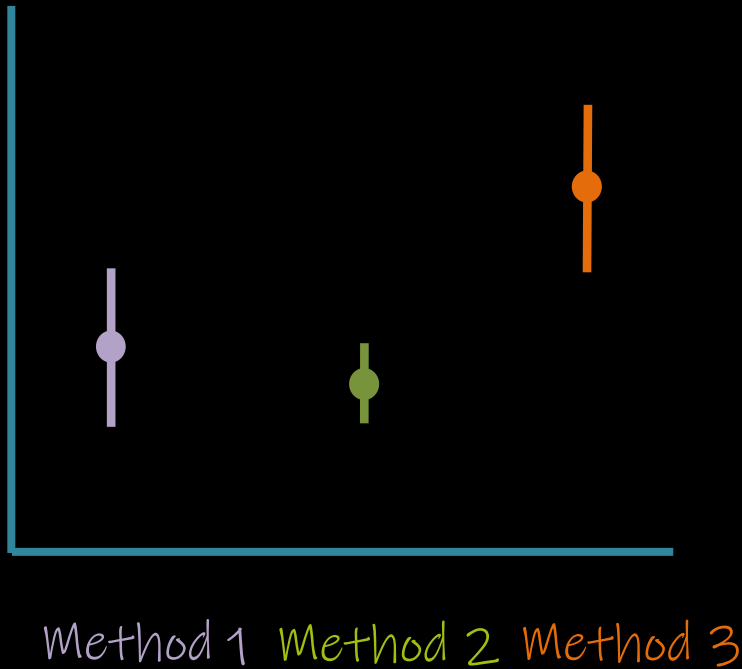
33 species

Random area



METHODOLOGY

Species Richness =
number of species

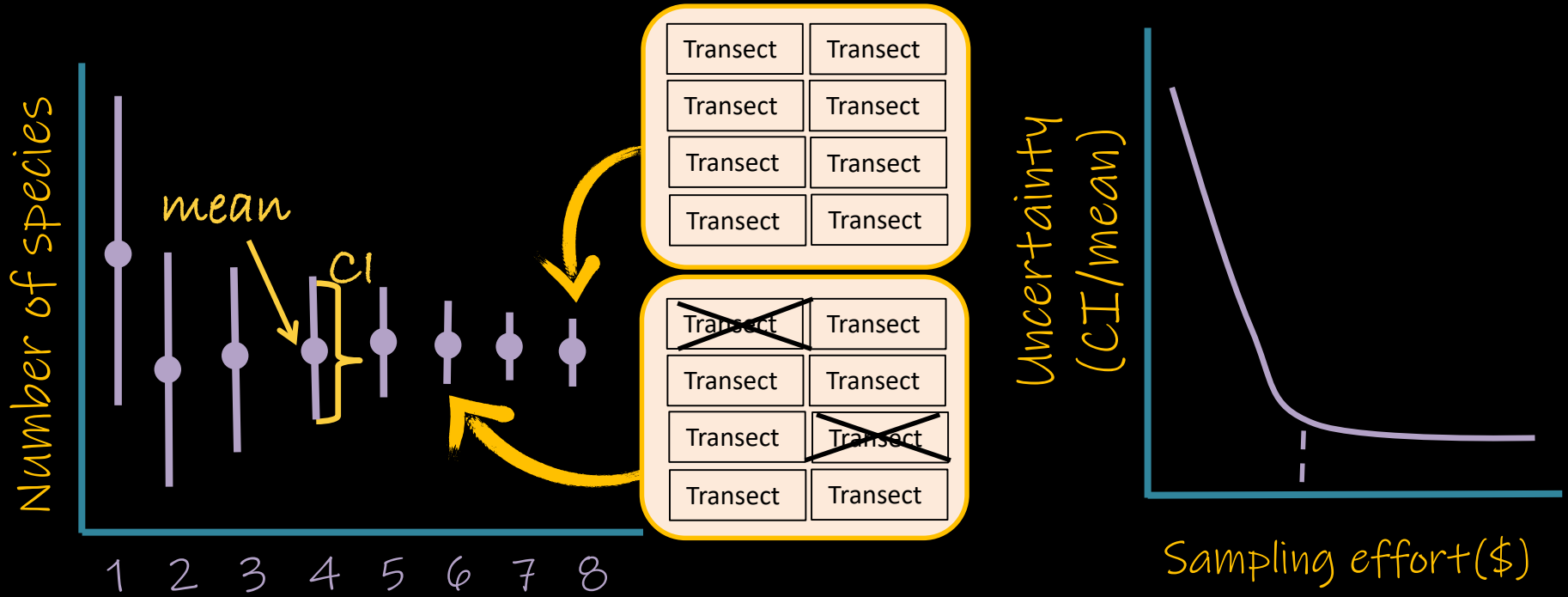


1) All fish observed in a sampling event

2) Calculate mean biodiversity and Confidence interval

METHODOLOGY

How much should we sample?



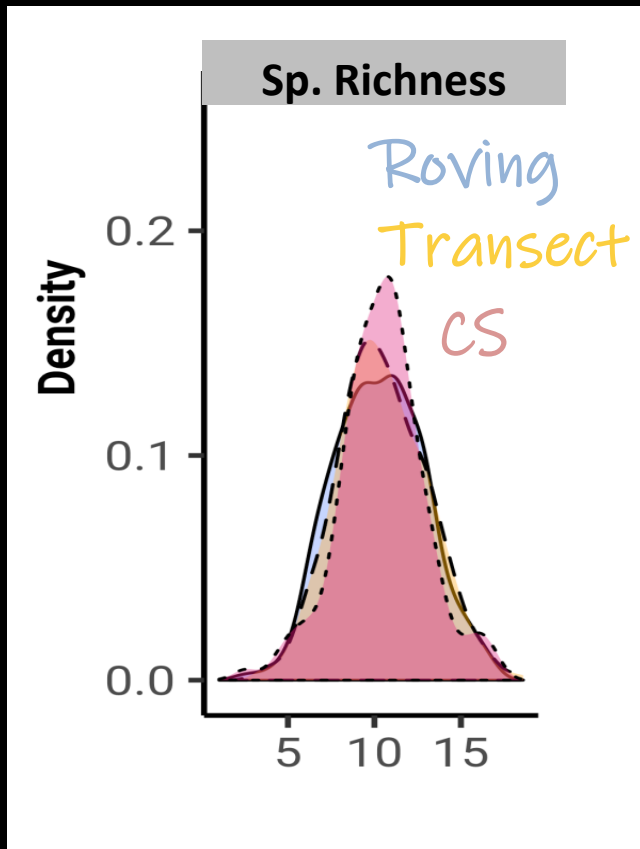
Subsample of replicates

Calculate mean and CI by sampling effort

Confidence-effort curves

RESULTS

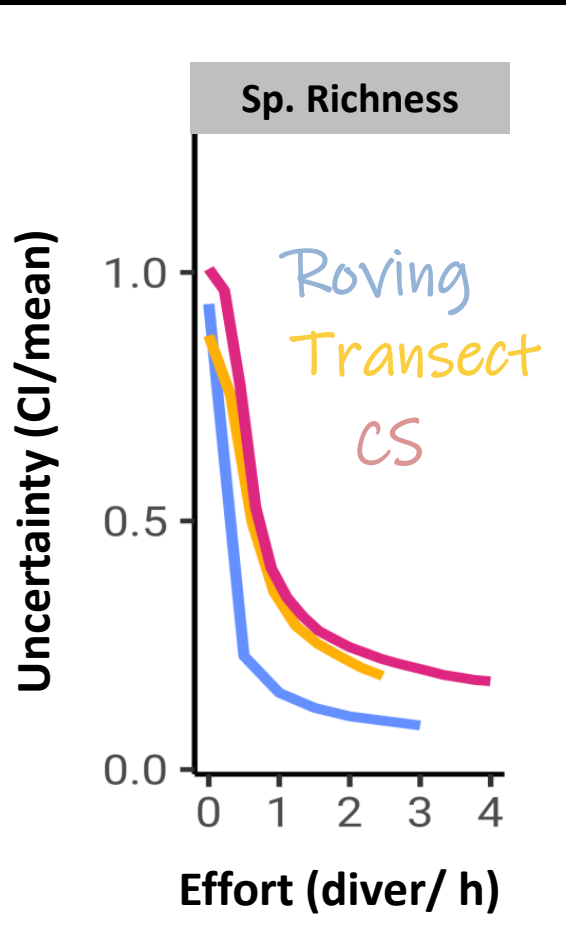
What method should we use for a given taxonomic group?



Similar number of species
but CS smaller species list

Good representation of
the fish assemblage

How much should we sample if we want to have reliable estimates and detect change?

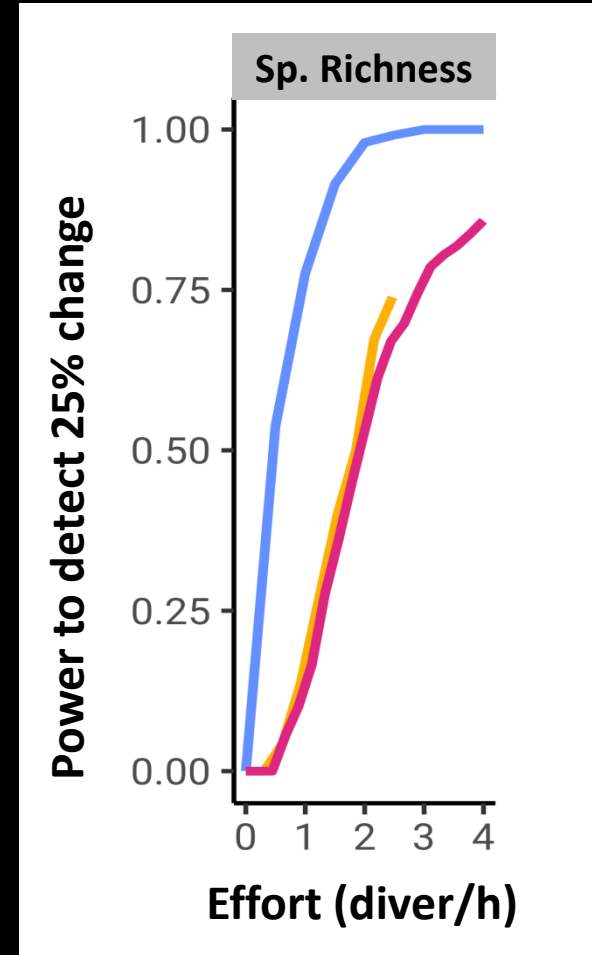


Roving lower uncertainty
higher sensitivity

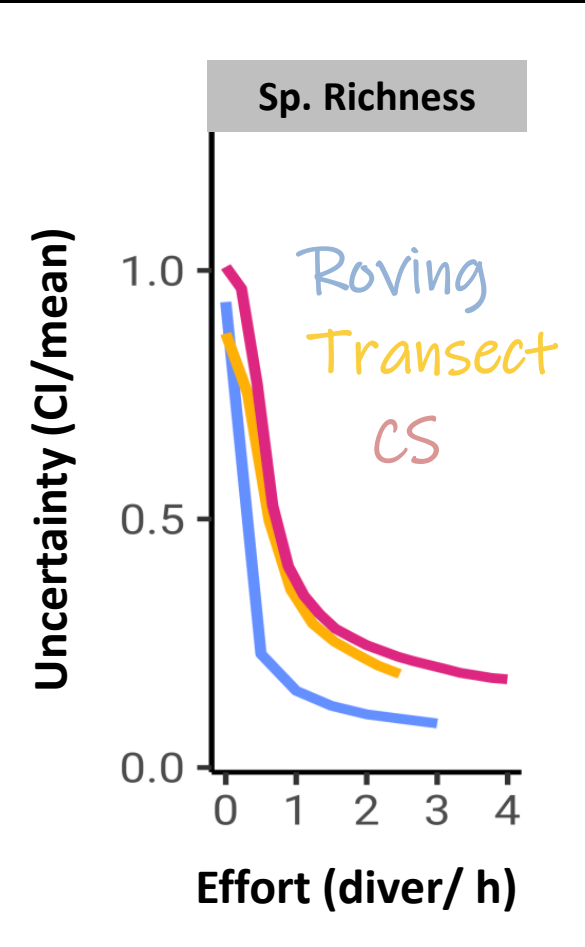
PERMANENT AREA

Transect methods very similar

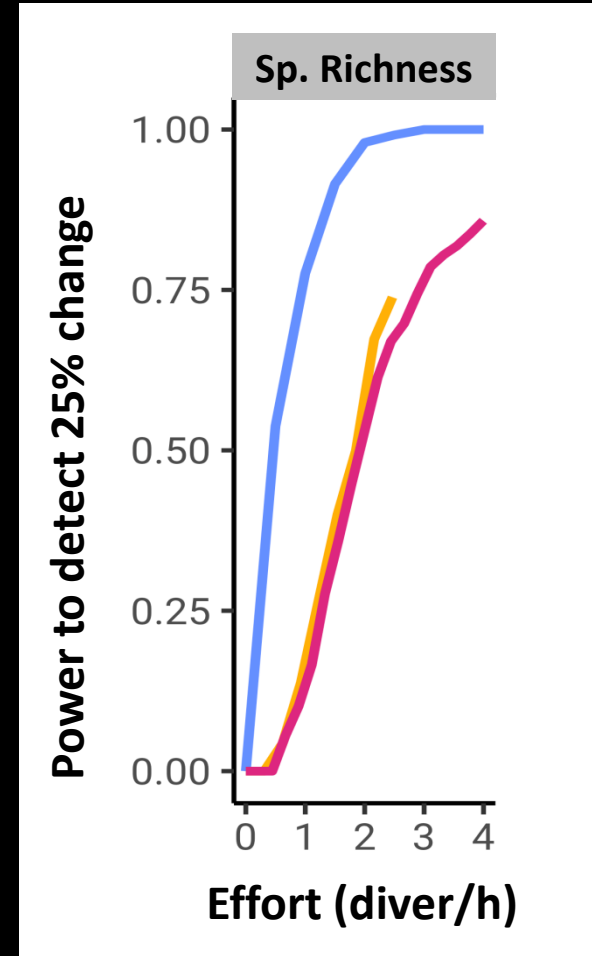
RANDOM AREA
Different habitats
Community structure



How much should we sample if we want to have reliable estimates?



RANDOM AREA
Different habitats



This method can help managers in the design of biodiversity monitoring *Thanks* programs and in having more reliable information to guide their planning

