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Estimating Fish Population Abundance
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1. Population differentiation
2. Sample methods
a. Counts
i. Total census
ii. Partial count and extrapolate to entire area
b. Indices
c. Mark-recapture
3. Sample design

Sampling design and methods used are highly reliant on objectives and area.
Management goal to accurately estimate population status and trends.
$>$ accurate
$>$ repeatable
> cost effective

Population differentiation: Defining the fish population unit.

Life history strategy:
Migratory
Diadromous (anadromous, catadromous) Freshwater Marine
Resident
Habitat type
Lakes (Ocean)
River/stream reaches Both
-Relatively easy to sample.
migratory species - they come to you
lake - closed population
>More difficult
resident stream species



## Sample Methods - Counts

Partial counts - more common, especially for resident.
Divide stream into sections.
Select sites to sample, count fish, measure area, calculate density. Extrapolate to whole area.



## Simple Random Sampling (SRS).

Simplest to design.

## Every potential sample location has equal chance to be selected

Divide stream into segments, arrange on list, and select locations randomly.

- Works best if habitat is relatively uniform throughout study area.
- Access may be a problem.



