

# Swept area survey game



**RV I.C.Fish**



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# The survey game – how it works

Three surveys, 1 each year

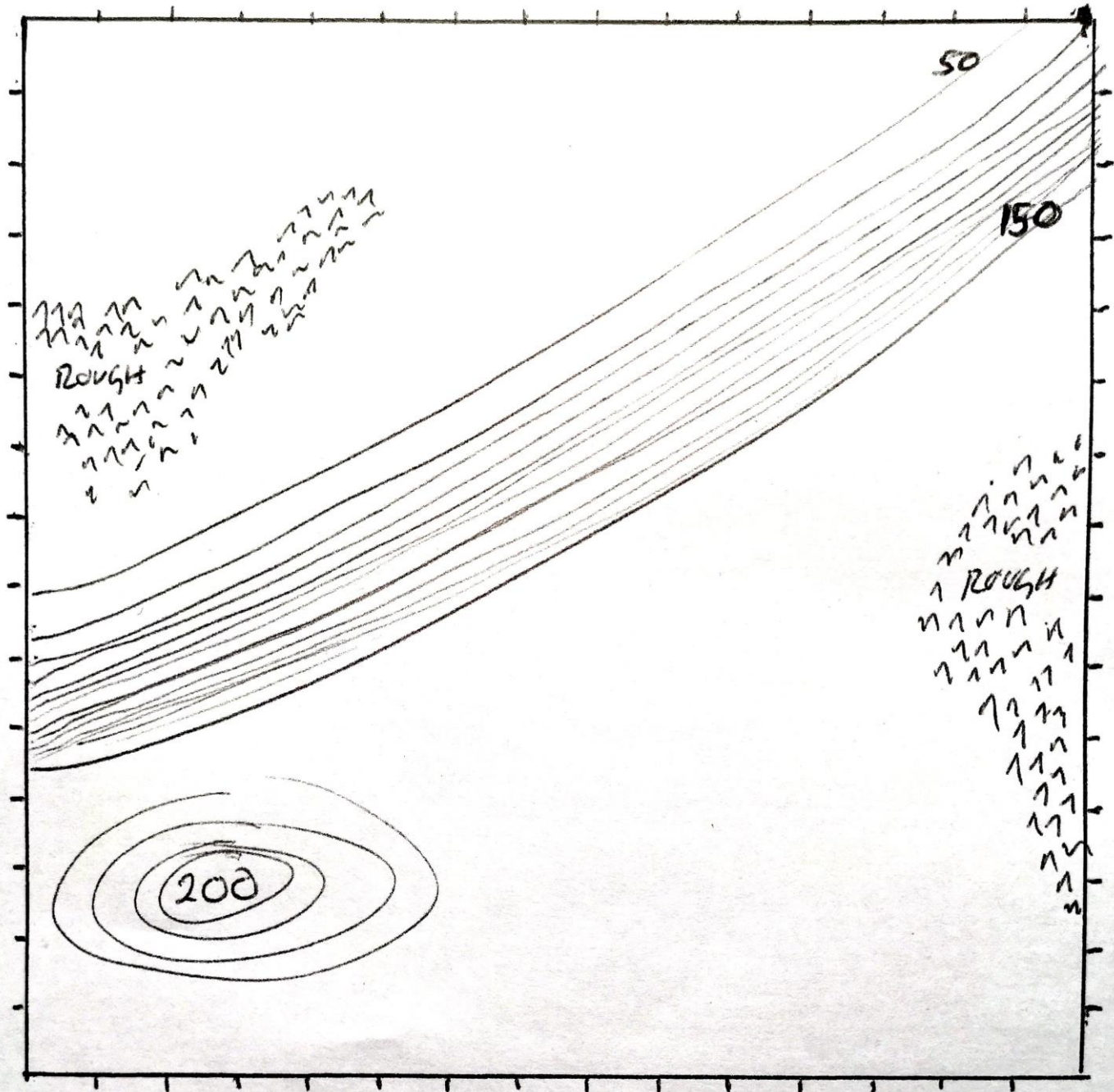
Design the survey – choosing where and how many sample hauls to take

You record the survey catches

Estimate how many fish in the sea

See how it went and do another survey the next 2 years

We compare approaches and results !



↑N 300x300 Km

## Swept area surveys: Tools

1. Density of the population in an area (the numbers per unit area). Often referred to as the Catch per unit effort (CPUE)

$$\text{Density}(CPUE) = \frac{\text{Survey catch}}{\text{Area swept by trawl}}$$

2. Total abundance of species in the area

$$\text{Abundance} = \text{Density} \times \text{Survey area}$$

*Use the spreadsheet to design your survey and calculate the abundance*

# Fisheries independent

## *Swept area surveys: Methods*

- Design – ways to divide up the sampling of the survey area efficiently and to get the best estimate even when unexpected things happen.
- Sampling protocols – reproducible so comparisons can be made
- Sampling the catch - biological information
- Raising the sub-sample to the sample catch
- Raising the survey catch to the total area

