

Chapter 8 – Hands wet: counting the fish*

QUESTIONS ASKED

- How do biologists count organisms in the field?
- How do they design their sampling?
- How can one scale or extrapolate observations to other areas?

BACKGROUND INFORMATION

- UCSC: [scientific diving – sampling methods](#)
- Fisheries Research Australia: [Tagging fish](#)
- NOAA: [Alaska Fisheries Science Center Longline Survey](#)
- Ben Donnelly: [Whale Aerial Survey](#)



COVERAGE

- Sampling design: quadrats and distance sampling. Estimates and variance.
- Transects, tagging and depletion methods.
- Research cruises: echo-integration and swept-area surveys

INFORMATION AND SOFTWARE

The Chapter 8 of FISH IT deals with the field methods normally used by biologists to estimate the numbers of fish or sessile organisms in the sea, or on land. There is a great diversity of methods, but they rely on a few basic principles. A good knowledge of sampling design is required if any survey is going to be representative and unbiased. Surveys are normally very costly, and improvement of design increases precision for the same, or lower, cost. Some of these methods can be utilized onboard commercial boats; others are more suitably performed in research vessels. Some exercises deal with scaling of estimates in oceans and lakes. Sample estimates from echo-integration and swept-area surveys are dealt with in a practical lab during the cruise: for sampling strategy consult Galluci et al. (1995) and course manuals.

- [Ch8a Sampling design scaling JdS.xlsx](#)

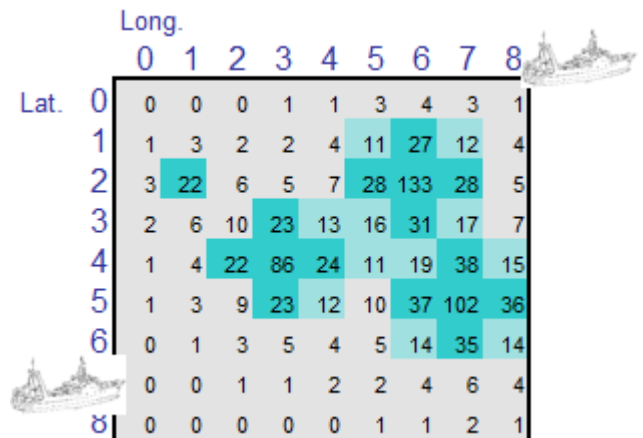


* Santos, J. 2015. FISH IT 1.0 – Student Manual: A Training System for Aquatic Resource Managers. *Septentrio Educational* 2015(3). DOI: <http://dx.doi.org/10.7557/se.2015.3> . This work is licensed under a [Creative Commons Attribution 4.0 International License](#).

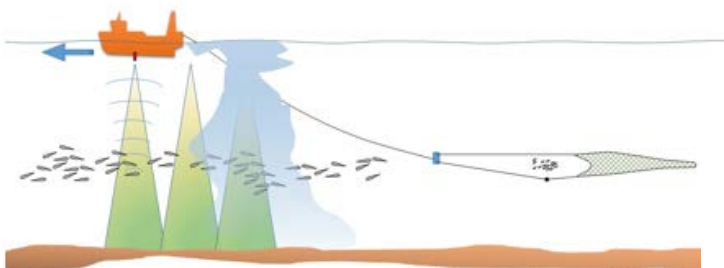
FISH IT 1.0 – student manual

- [Ch8b Direct counting \(general\) JdS](#)
- Ch8c Echo-integration and demersal survey (practicals Tromsø) JdS.xlsx

SNAPSHOTS

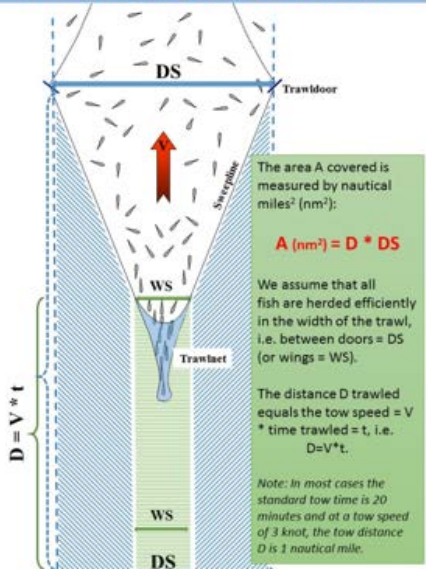


The echo integration method and sampling with pelagic trawl



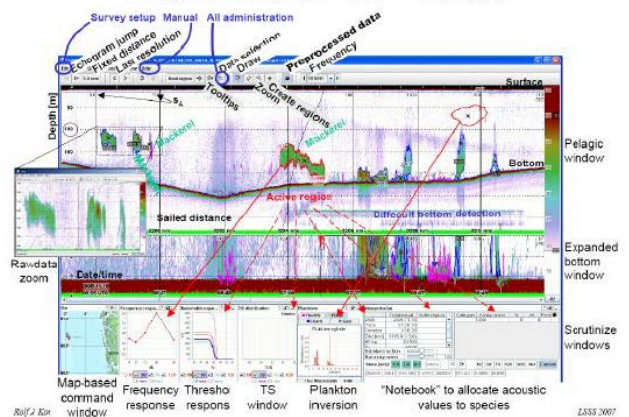
Roger Larsen 2015

Bottom trawl survey og swept area method



Roger Larsen 2015

Main view of LSSS



RB Larsen, NFH-UiTø

Right triangle sighting model

