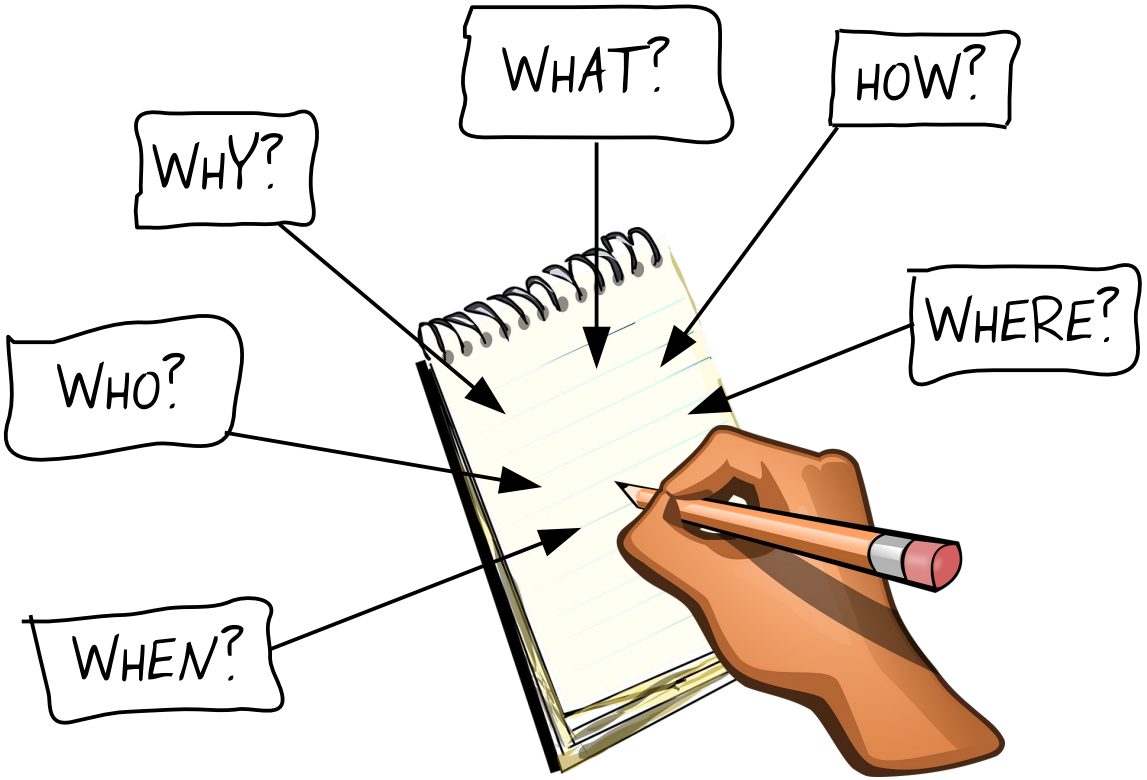
Data acquisition
and impacts on data quality

Sarah Faulwetter

A Practical introduction to acquisition, validation, quality control and access to (biodiversity) data

Vlissingen, Netherlands, 14.06.2015

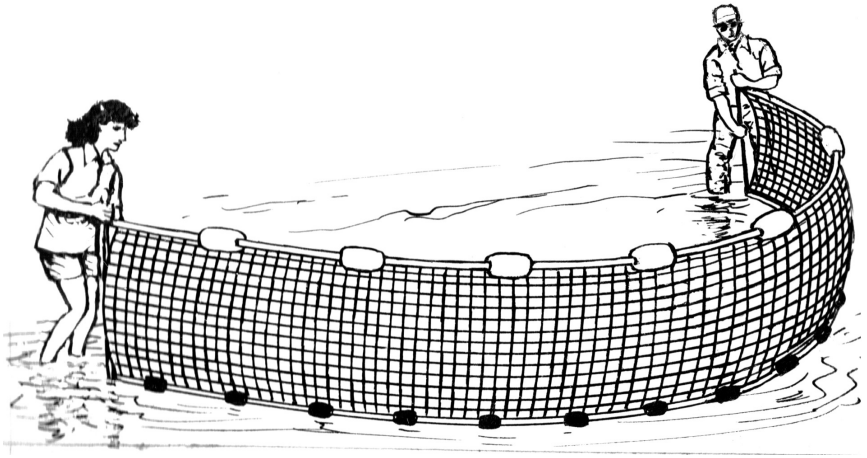
Make a plan



Make a plan

Make a sampling plan

Make a data management plan



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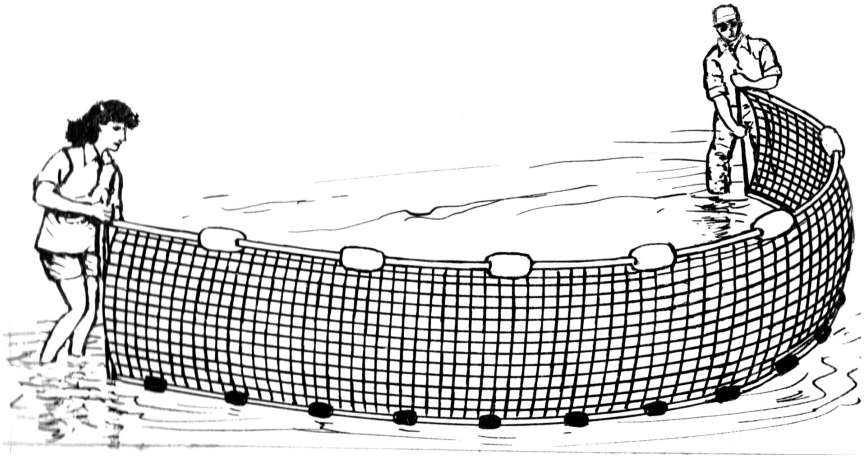
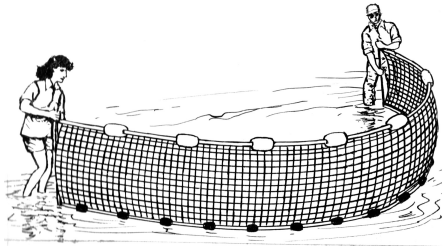
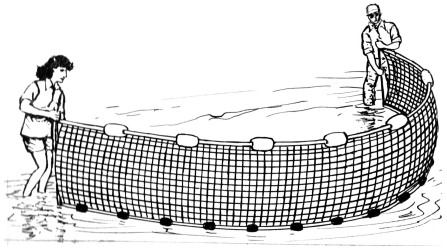




WHY?



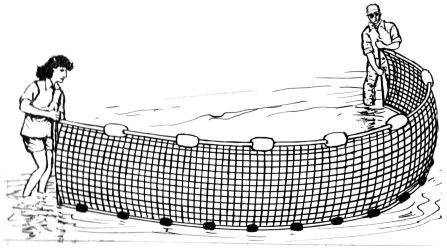
WHY?

Aim of the study?

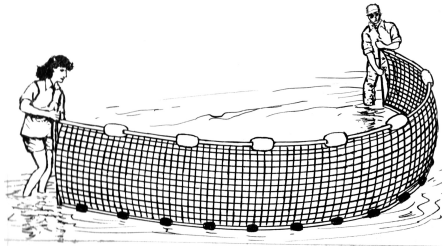
Planned analyses?

Data isolated or to be integrated?

Interoperability?

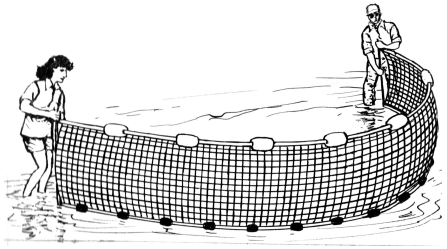


HOW ?



protocol &
templates

standards,
abbreviations,
units &
codes



Standardize workflow
Don't forget steps
Recap what has been done

HOW ?

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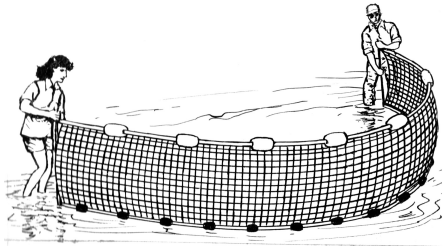

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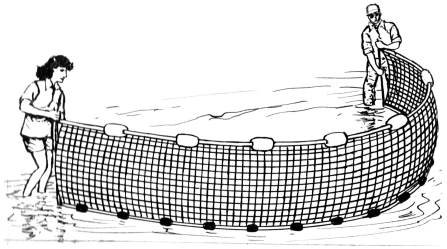

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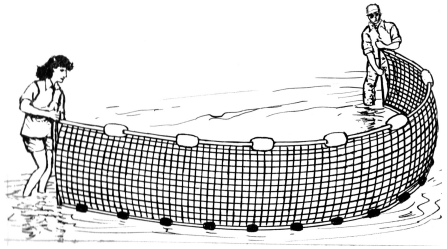
WHAT?

metadata



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who, when, how, why, where
problems, notes, remarks
everything that affects data quality

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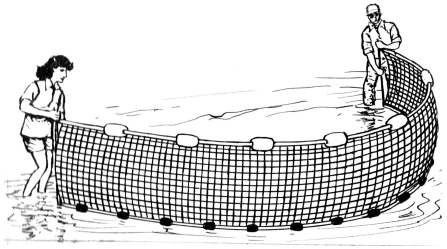

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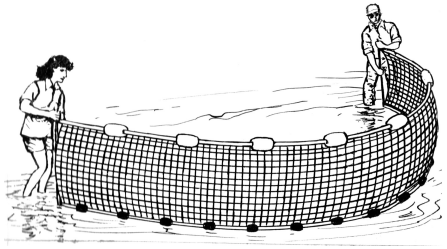

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one-time or
continuous?

WHEN?

data entry &
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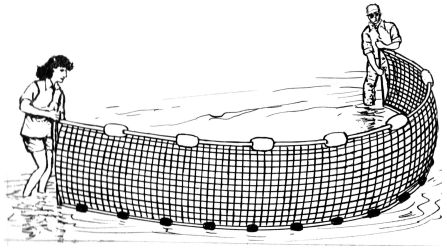

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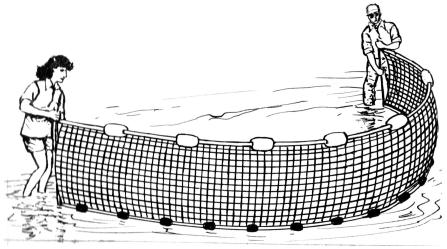

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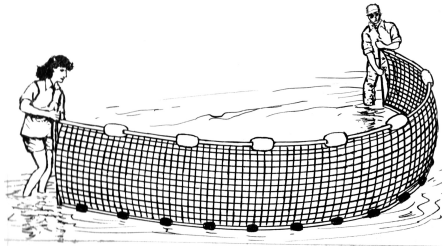

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Fix time points for tasks!

one-time or continuous?

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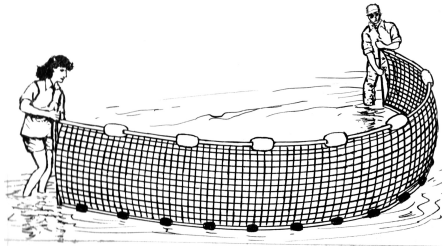
which factors influence data quality?

PLAN FOR PROBLEMS

completeness, consistency, validity, accuracy



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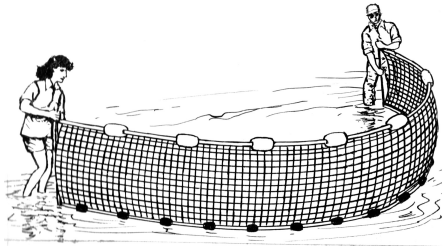
Can problems be prevented / migitated?
If not, document them!

PROBLEMS

which factors influence data quality?

completeness, consistency, validity, accuracy



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which factors
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completeness,
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Aim: data re-usable
by a third person

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Documentation!

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Good documentation = at dataset level AND record level

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Documentation!

- keep raw data and metadata
- take generous notes & remarks
- note deviations from protocol
- note type of instruments / calibrations
- record literature used (e.g. keys)
- record persons involved with each step
- record data conversions, modifications, validations...
- record why certain steps were taken

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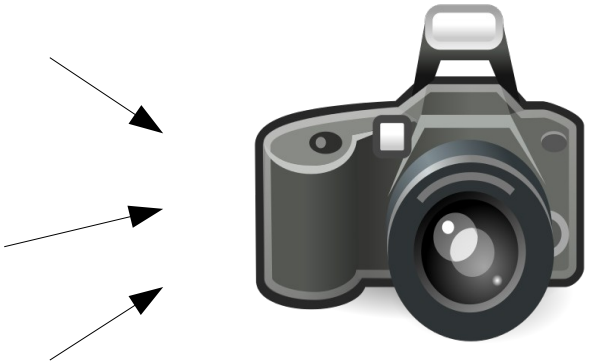
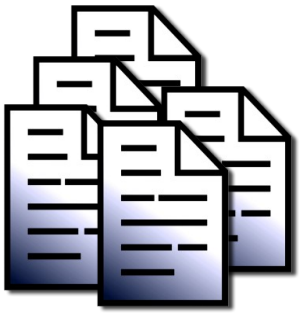


Some more thoughts on the data management plan



data format

Data acquisition

manual

automatic

Data acquisition

manual

automatic

Minimize number of interactions (recordings)

Ideal: double entry & cross check

Data entry interface

Data acquisition

manual

automatic

Minimize number of interactions (recordings)

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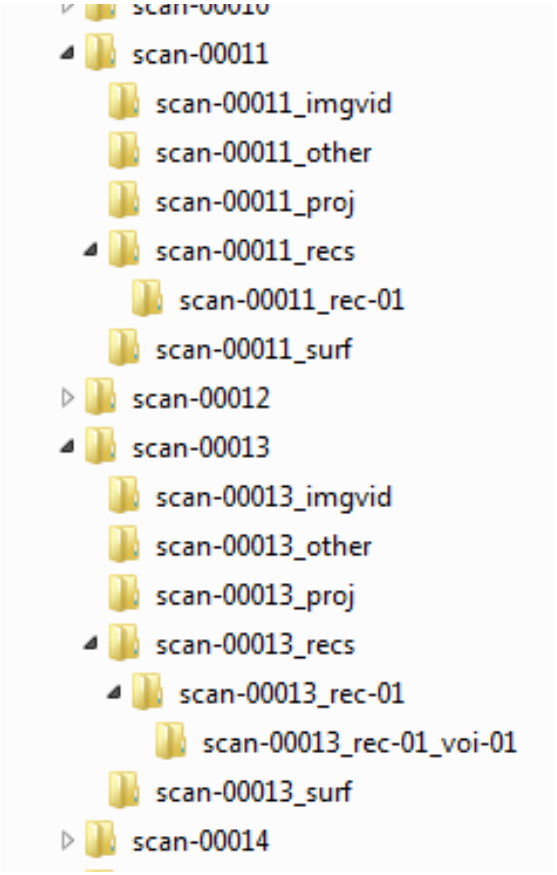
Data entry interface

Recordings correct?

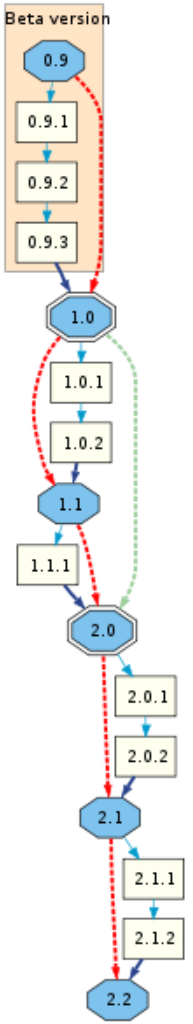
Units included?

Calibration and metadata noted?

File management plan



logical file names
and directory structure



versioning

backup plan

source of versioning image: AzaToth (Wikipedia)

Data management plan created

Consistent codes and labels chosen

Metadata recorded

Data organized logically and consistently

Files named and organized logically

Files in common format (e.g. csv)

Backups made regularly