Collaborative management and community based monitoring

CASE: Collaboration in fishery science

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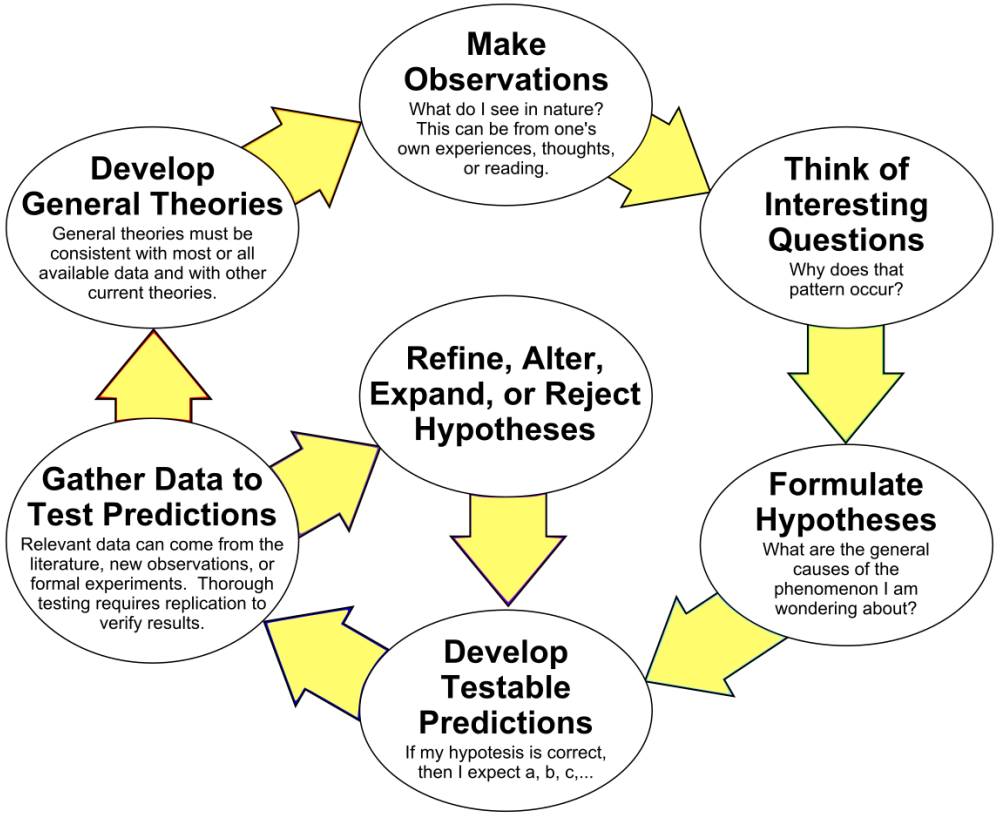
The premise of our work

- According to the Law of Greenland Parliament nr. 6 8th of June 1994 about the Greenland Institute of Natural Resources, the institute is obliged to:
  - provide the **scientific basis** for an assessment of sustainable use of the living resources in and around Greenland as well as protecting the environment and securing the biological diversity.
  - advise the Greenlandic Government in the work of the Institute.
  - publish results of its research.

Scientific approach



https://mr.wikipedia.org

- One approach for collection of data and knowledge.
- This is the condition we are obliged to work under.

Scientific approach

- Objective – Empirical and Systematic.
- Reproducible – Generally applicable.
- Peer reviewed – Externally evaluated.

Types of scientific advice

A) TAC (total allowable catch) advice.
- Advice per stock (large spatial area)

B) Specific management advice (when, how and what to fish).
- More specific advice – if data is available

C) Research projects.

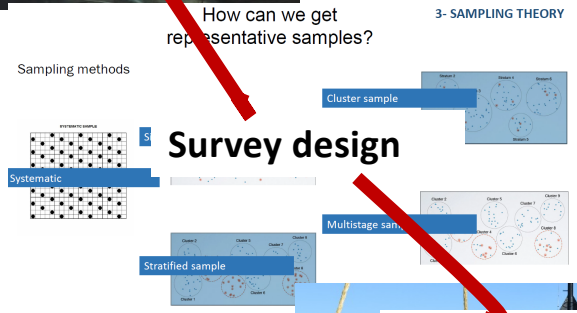
The approach to collaboration is different in the three types of advice.

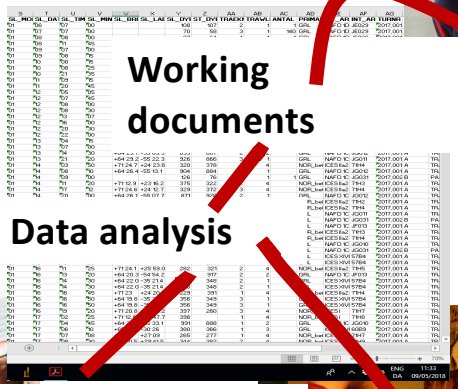
A) TAC advice (total allowable catch)

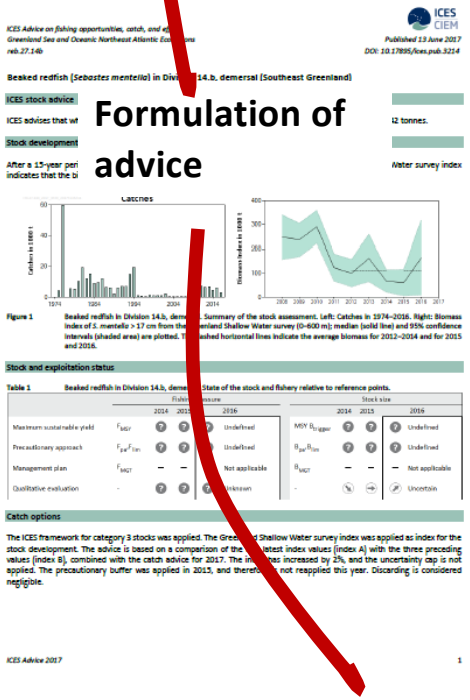
- Biological advice on exploitation
  - Aim: give advice on long term exploitation of fish stocks.
- One advice per stock (e.g. Atlantic cod = 3 stocks in Greenland).
- Advise is typically given every year.

From fish in the sea to advice on TAC

How can we get representative samples?







A) TAC advice (total allowable catch)

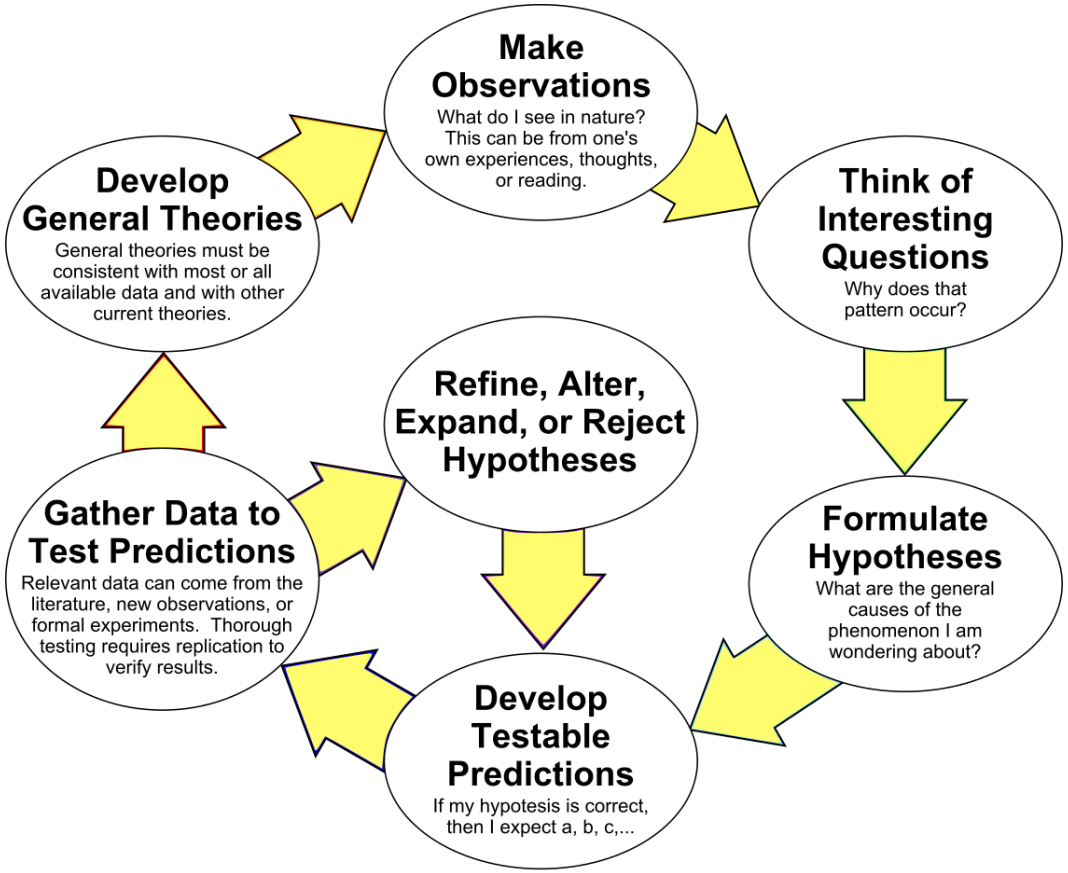
- **Input data and information**
  - Logbook data and sales slips (fishery dependent data).
    - Inshore cod fishery 40.000 data points.
  - Length measurements from trawlers and factories.
    - Inshore cod fishery 5 tons pr area 1-2 times pr. year.
  - Survey data (fishery independent data).
    - Inshore cod fishery 3-4 areas of 50-60 stations pr. year.
  - Qualitative information from stakeholders.

- **Collaboration approach**
  - Systematic collection of data generated from the fishery (logbooks, length measurements, otoliths etc.) – indirect involvement.
  - Irregularities are discussed with the fishery (organizations/companies).

A) TAC advice (total allowable catch)

Involvement

- All data on fishing behaviour, landings, timing etc. is reported by the fishermen and used in the advice – indirect involvement.
- Dialog with organisations regarding irregularities og changes.



Involvement

- Survey design – planning of stations.

A) TAC advice (total allowable catch)

- Evaluation of collaboration

Benefits

- Discussion of results qualify our interpretation.
- Discussion of results helps recognition of the advice.

Challenges

- Difficult to communicate the process towards the advice.
- Difficult to communicate the weight of fishery dependent “knowledge” (data from the fishery).
- The recognition of the advice is at times low.

B) Specific management advice (when, how and what to fish)

- **Input data and information**
  - Logbook data and sales slips (fishery dependent data).
  - Length measurements from trawlers and factories.
  - Experimental fisheries.
  - Survey data (fishery independent data).
  - Qualitative information from stakeholders.
  - Research project results.

- **Collaboration approach**
  - Mostly desk work.
  - Discussions with organizations/companies – e.g. planning of experimental fishery.
  - Experimental fisheries – contact between GINR and vessels.

Not so interesting in this course

C) Research projects

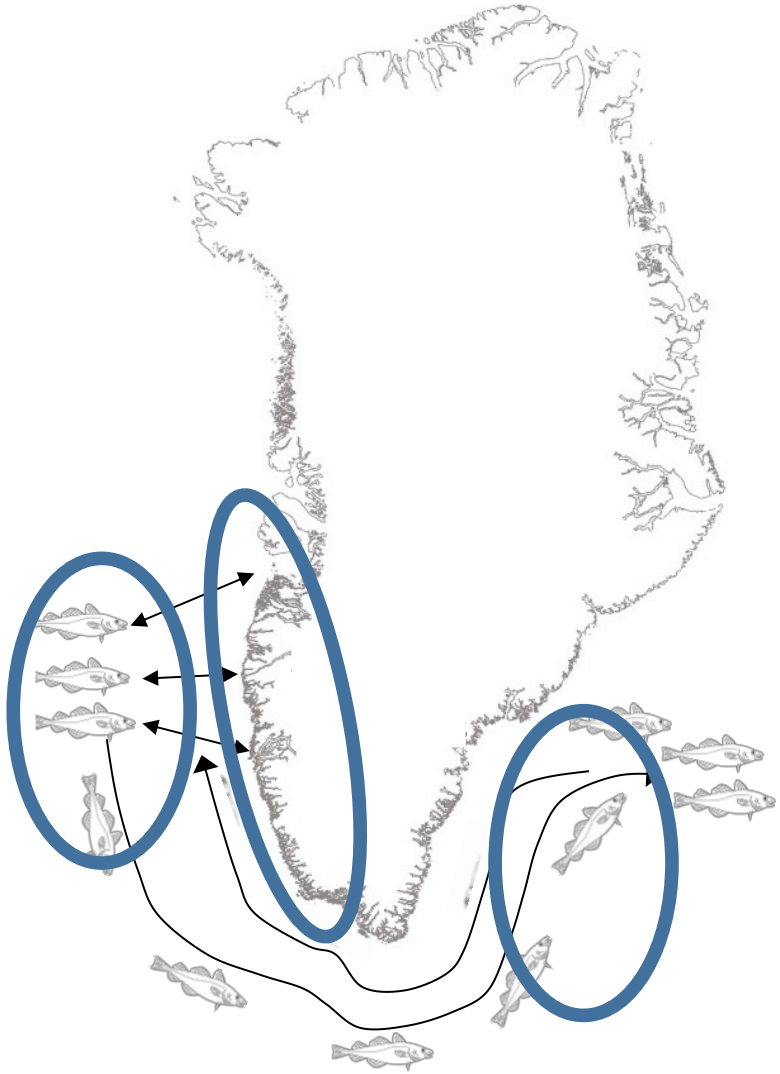
- Two cases:

    1) Proportions in the inshore fishery for cod (PIFT)

    2) Bycatch in the lumpfish fishery

Case 1) PIFT

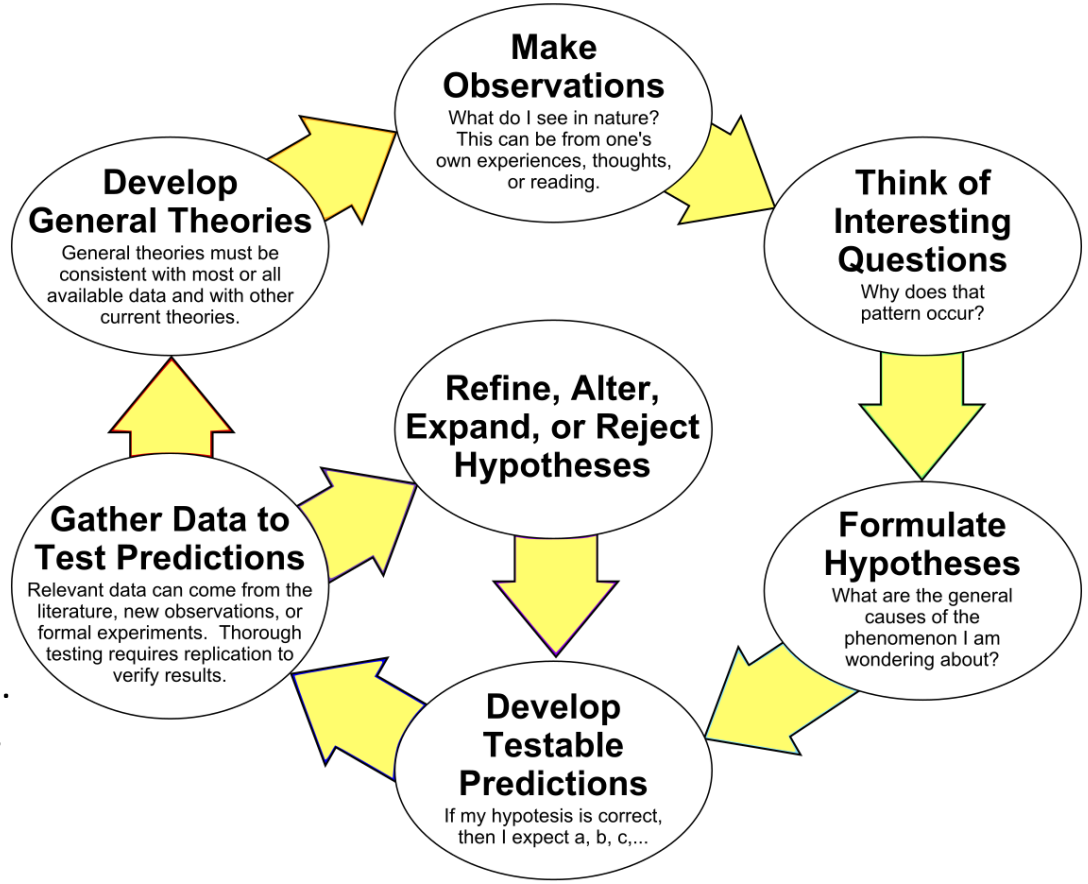
- Proportions in the inshore fishery for cod
  - Aim: to quantify the proportion of different stocks of cod caught in the inshore fishery.
  - Data:
    - Qualitative interviews – changes through the year.
    - DNA samples from catch through a whole year – stock affiliation.
    - Otoliths and stomachs – shape analysis and change in food source.



Case 1) PIFT

Involvement

Presenting and discussion of results.



Involvement

Continuous dialog:

- Qualitative interviews.
- Collection of samples.

Involvement

Dialog meeting before project start:

- Discussions and ideas.
- Participation.
- Collection of samples (knowledge and fish).

Case 1) PIFT

Evaluation of collaboration

Benefits

- Great atmosphere around the project.
- Many interested fishermen.
- Interview gave detailed info about the fjord, the fish and time scales.
- Great collaboration with the factories.

Challenges

- Very difficult to keep up contact and participation through out the project.
- Parts of the project was closed due to lack of participation.
- For the interview approach a trained person is needed (planning and interviewing).

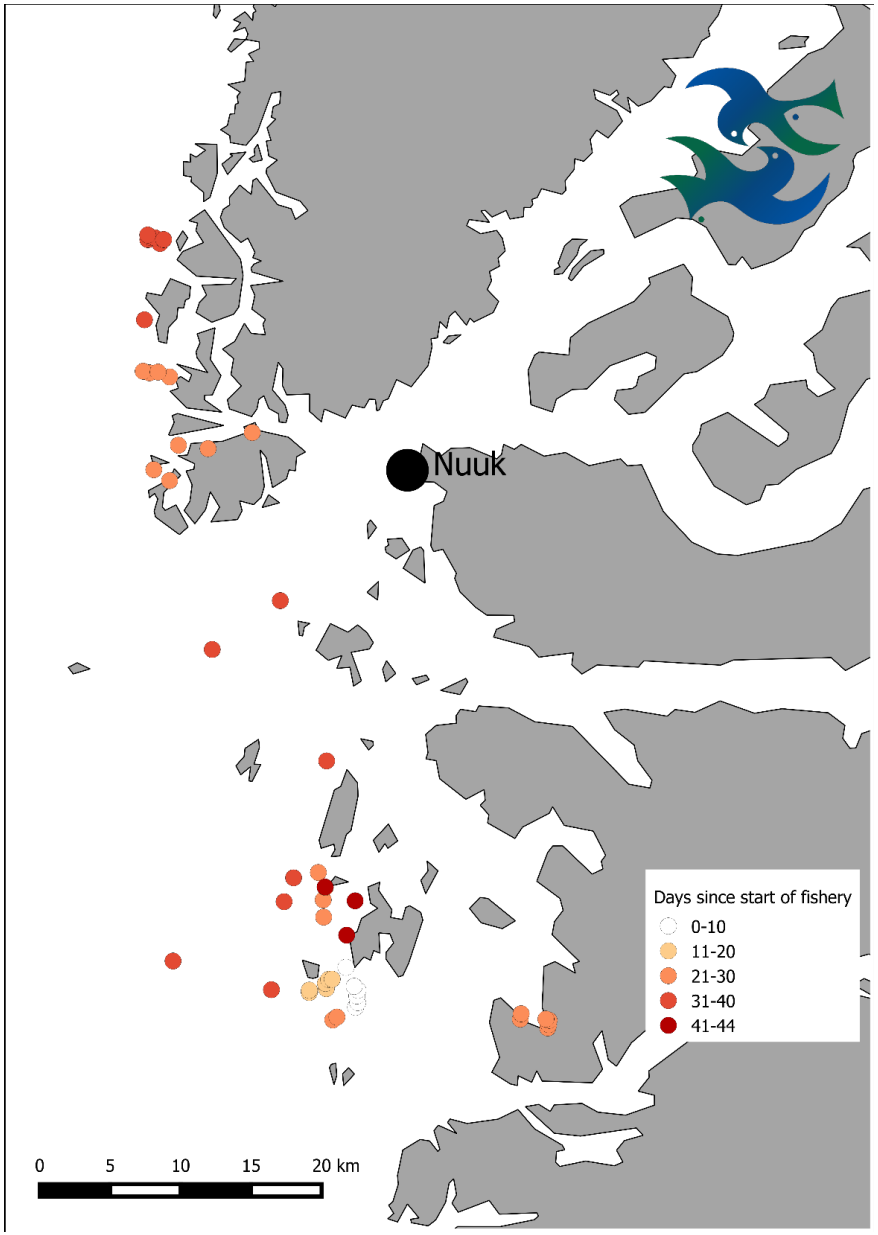
Case 3) Bycatch in Lumpfish fishery

- Aim: To document catch and bycatch in the lumpfish fishery in the Nuuk area to obtain accurate estimates.

- Background: The official reporting systems are in place, and fishermen are obligated to report all catch. However, the system is new and with little control effort, the actual level of bycatch is uncertain.

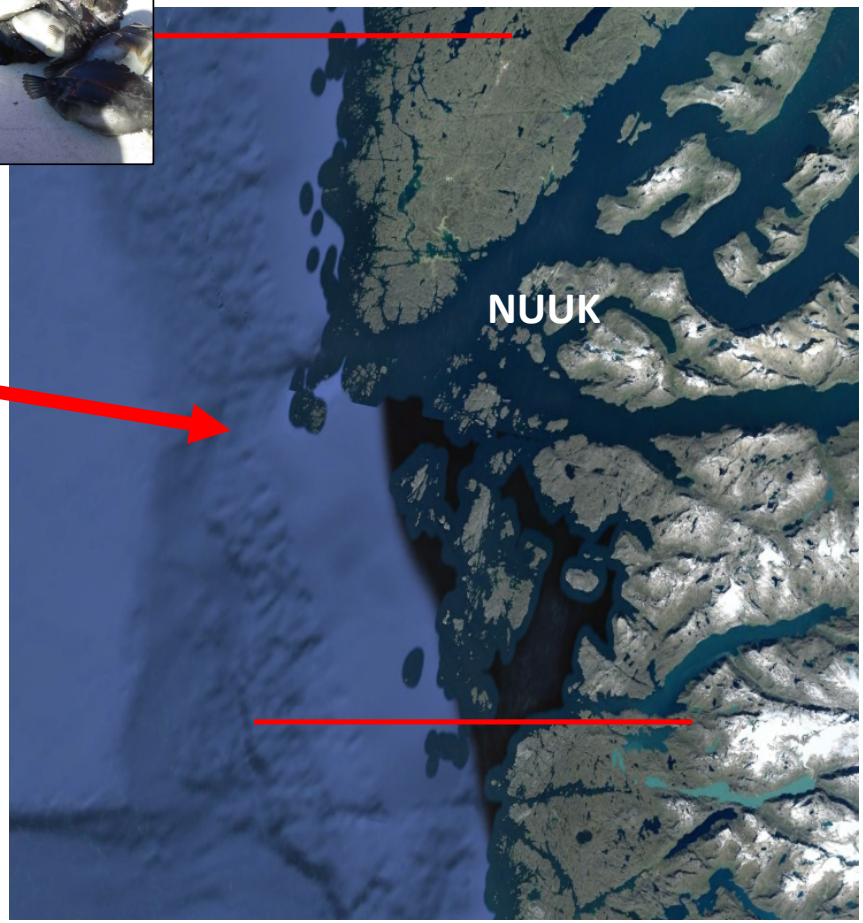
Data collection

- April 12 – May 23 .
- Nine days.
- Five different fishermen.
- Sampling was planned to cover the primary fishery areas i Nuuk.



Results

- Sampled 11 km net.
- Initial perception was that bycatch was minimal.
- Actual total bycatch extrapolated to the whole area:
  - 2200 eider duck
  - 200 Long-tailed duck
  - 1.4 ton cod
  - 0.7 ton spotted wolffish
  - 0.9 tons Greenland cod
  - No bycatch of mammals or other species.

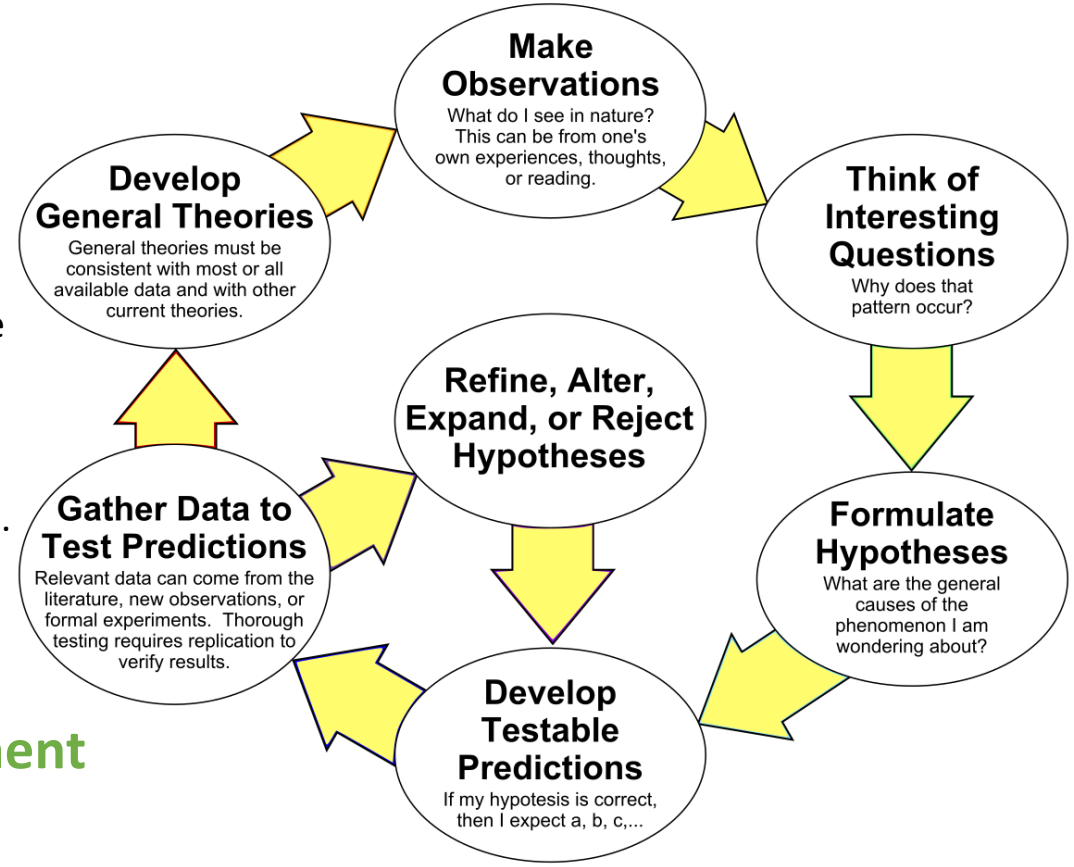


Case 3) Bycatch in Lumpfish fishery

Involvement

- Close dialog during the fishery.
- Informal interview to obtain supportive data.
- Discussion regarding results.

Involvement



Involvement

- Dialog with fishery organisations.
- Discussions regarding practical approach.
- Contact information on relevant participants.

Case 3) Bycatch in Lumpfish fishery

- Evaluation of collaboration

Benefits

- Good atmosphere around the project.
- Positive atmosphere during data collection – Many great details.
- Getting wiser together.
- Better acceptance of results.

Challenges

- Time consuming compared to the amount of data that could be collected through a reporting system.

Summing up

- ‘True’ collaboration takes time and skills are not a prerequisite for being a biologist.

- We have a high demand for quantitative data – we need efficient data collection methods.

- The indirect collaboration (fishery dependent data) do not always get the attention it deserves.

Final point

- Watch out not to generalize the collaboration approach – experiences are different with different tasks.
- The definition of when the collaboration is a success is most often missing in the debate regarding collaboration.
- The aim of the collaboration needs to be defined, before it can be evaluated if it has been a success.
- Who is the target group – a fisherman is not just a fisherman:
  - One man company – trawler – dinghy - family company - early career/close to pension fishermen → different target group different needs.


Questions?