Chapter 1

Planning for Sampling

1.1 Planning

- **Essential for management and research success**

Planning helps

- Decide goals
- Establish objectives

Overlooked in planning

- Logistics e.g.
  - Travel
  - Equipment
  - Supplies etc.

Justification for sampling

- Has to be given before sampling done
- Address problem that cannot be solved with available information
- Clientele made to realize problem

Fishery management has five fundamental steps

- Definition of goals
- Selection of objectives
- Identification of questions to ask
- Implementation of actions
- Evaluation of actions

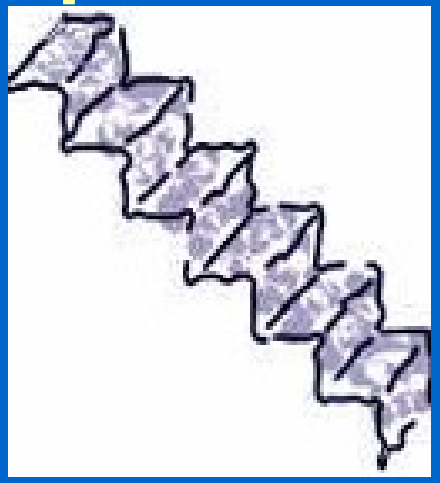
Factors influencing management process

- Internal-views within agency

- External-views of other groups

Top-Down planning

- Tasks accomplished logically and explicitly



- Objective met only if questions answered
- Process follows successive levels

Sampling done

- To get judgement of an entire situation
- Evaluate important interrelationships
- Done by various people; students, researchers, faculty etc.

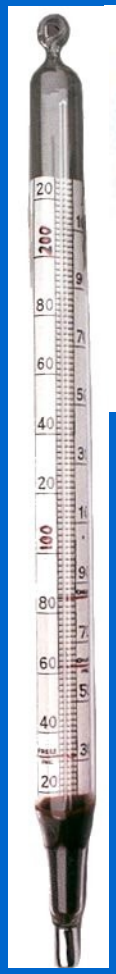
1.2 Steps in conducting an investigation

- First step in investigation is review of previous work

Two types of reviews are

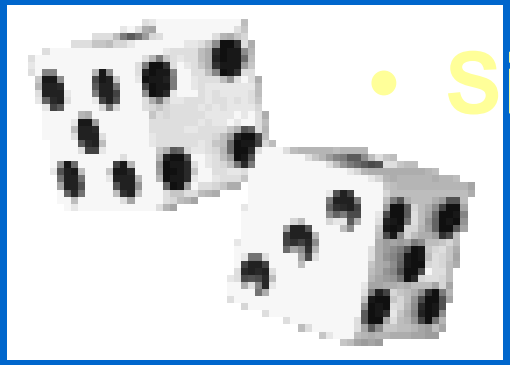
- Published literature
- Historic sampling data
  - Both can be attained through information superhighway

Aspects of environment to be assessed



- **Biological** - type and amount of aquatic plant growth
- **Chemical** - nutrients
- **Physical** - temperature and basin morphometry

Sample according to a sampling design



- Simple random

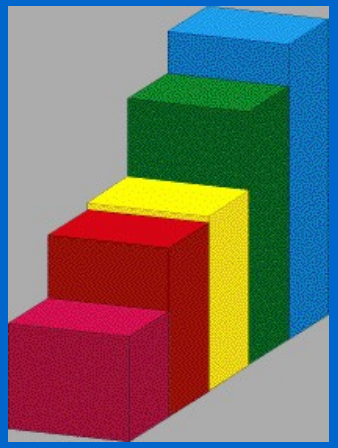
- Stratified random
- Clustered
- Systematic

Estimate landing by

- Creel survey
- Port survey

Information attained from sampling include

- Number of fish per unit of operation
- Fish length
- Weight length
- Scales/bony structures
- Aquatic invertebrates



Information attained is next analyzed

- Requires

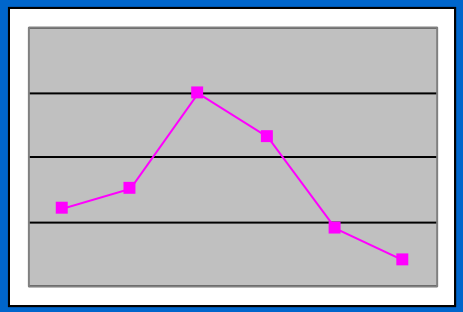
– Training

– Experience

– Statistical Background (Excel, PPT, SAS)

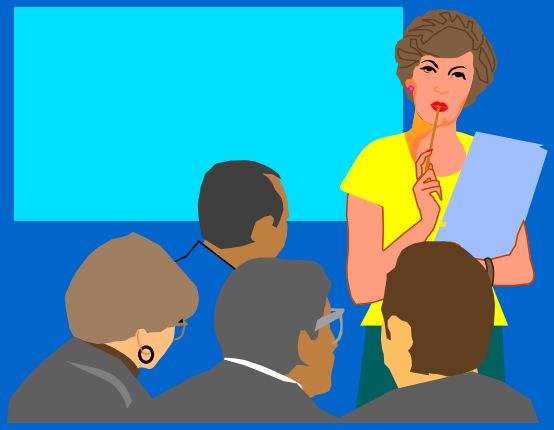
Analysis techniques involve

- Recruitment estimation
- Growth 
- Mortality rates
- Population size and age structure
- Population density and biomass



Communicate results

- Essential
  - Writing skills
  - Speaking skills
  - Presentation skills (PPT, graphics)

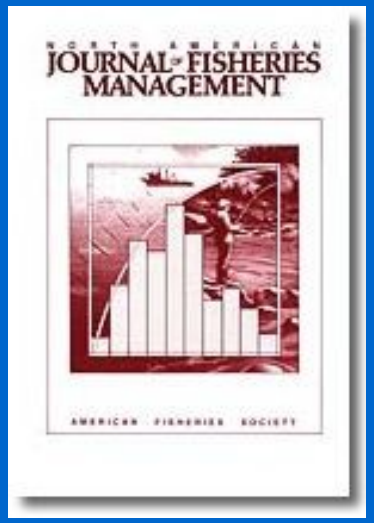


Presentation

- Completed technical report (gray literature)
- Manuscript development (peer reviewed literataure)

Information transmitted

- Newspaper
- Press releases
- Conservation magazine coverage



1.3 Sampling considerations

- **Altering sampling designs**
  - **Vehicle/equipment breakdown**

  - **Weather**

  - **Sick staff**

Options

- Specific sampling unit omitted
- Addition of randomly selected site
- Replacement time/site

Rules

BACKUP PLAN

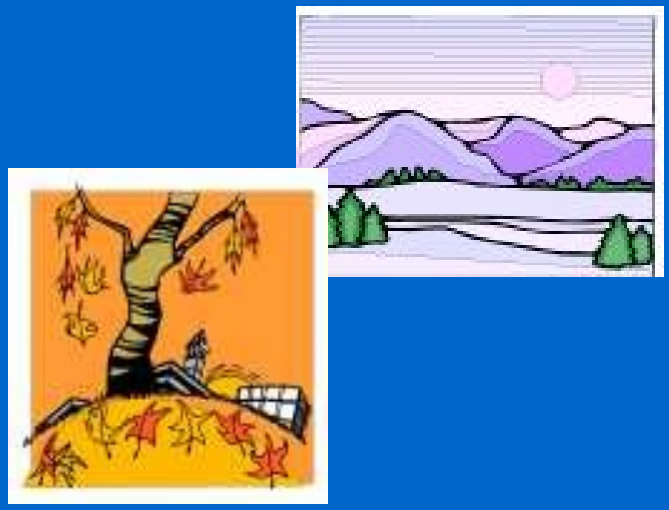
Electroshocking ⟶ Seining

- Explicit written plan for problems developed before sampling
- Deviations described in writing
  - Why
  - How
  - Differences between original and alternative

Standardized sampling because of fish biases to:

- Gear

- Season



- Location

Logistics of sampling - List all needs

- Double up on breakables

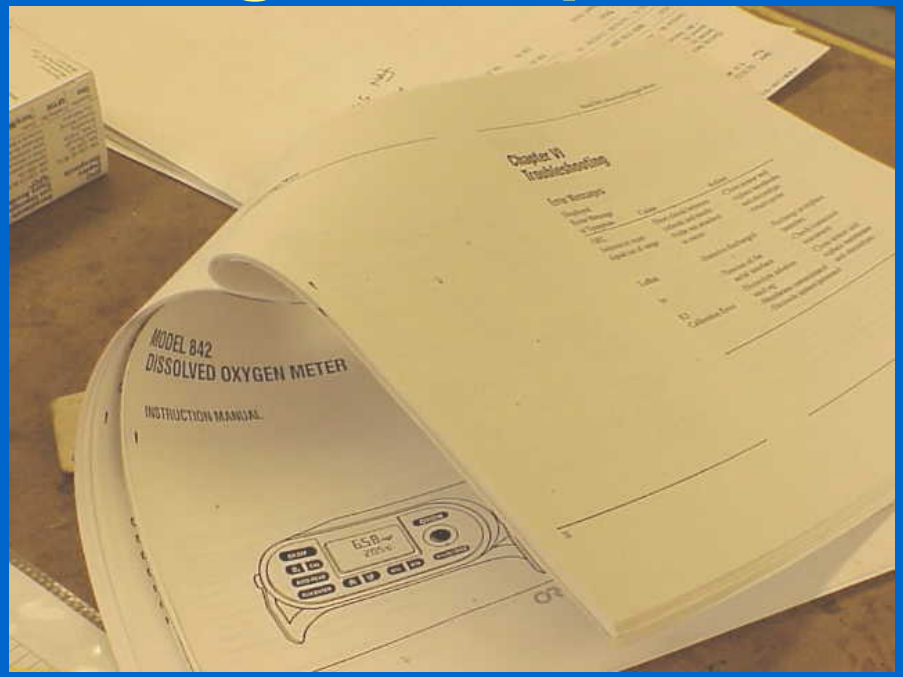
- Assign equipment to people

Collect equipment

- Test batteries
- Start motors
- Stretch nets
- Calibrate meters
- Preventative maintenance
- Repair

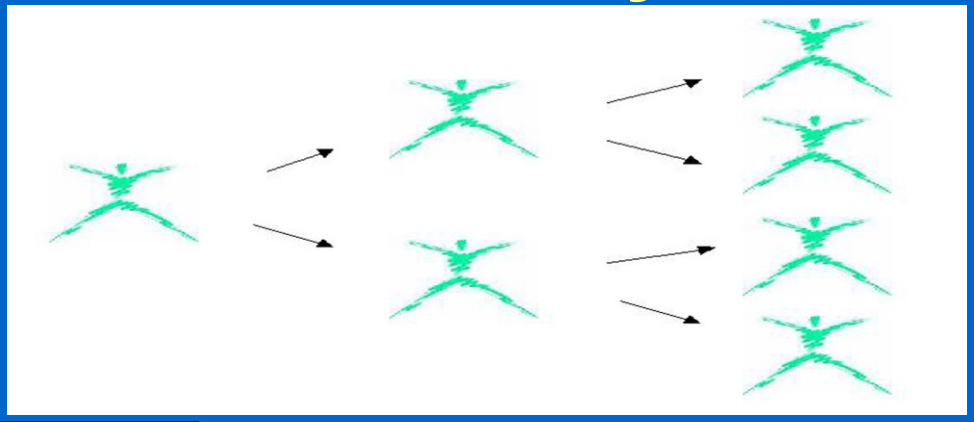
Prepare for emergencies

- Carry supplies and tools
- Operating and repair manuals

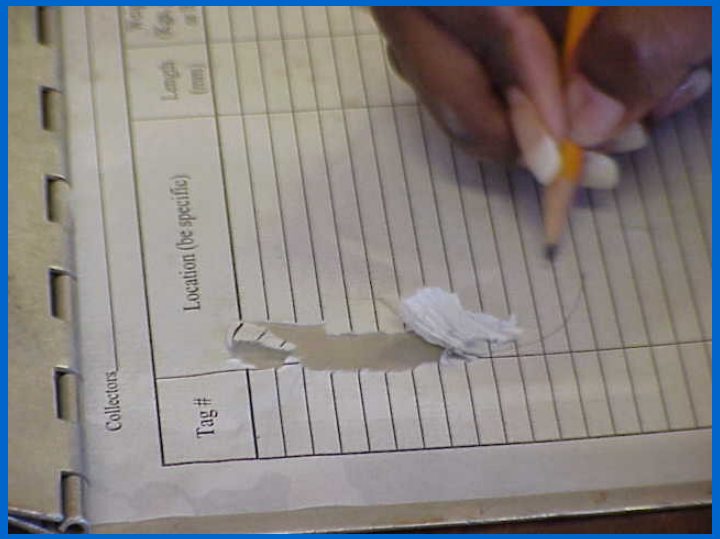


Crew

- Sufficient
- Organized/assign duties
- Hierarchy



Data

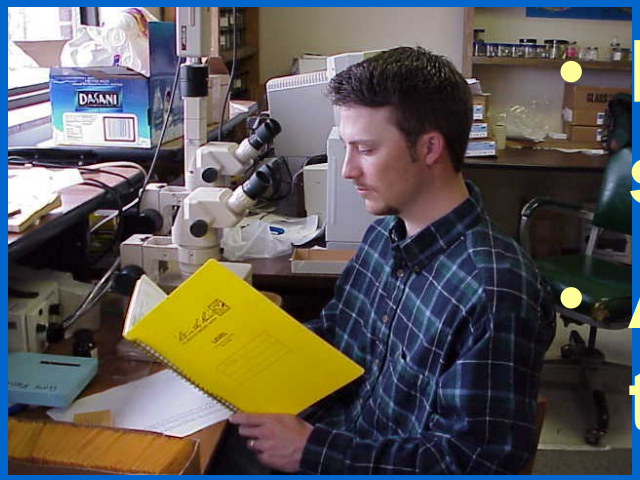


- One person to record
- Suitable paper used

- Indelible ink or waterproof paper
- Copies made

Leader

- No specific job assignment
- Ensure smooth sampling
- Assign/explain tasks
- Assist when/if needed



Inform before sampling

- Law enforcement officials
- State fishery agencies
- Nearby universities
- Fishery groups

1.4 Ethics

- Set of moral principles or values
  - (See Box 1.4)

Thou Shall....