"Salmon Monitoring Advisor" web site

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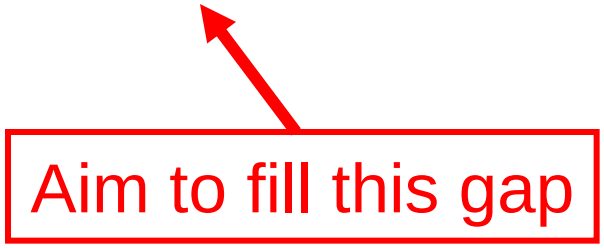
Outline

1. Motivation
2. Monitoring group's goals and objectives
3. Hierarchical knowledge base
4. Benefits

1. Motivation

- Need reliable data on status of salmon populations
- But large number of ...
  - Sampling designs
  - Field protocols
  - Indicators of fish and habitat
  - Monitoring and management objectives
- No comprehensive, rigorous, accessible framework



$$ from
Gordon and Betty
Moore Foundation

2008 -
2010

NCEAS
(U.S. National Center
for Ecological Analysis
and Synthesis)

Working groups on salmon and climate change

1. Salmon monitoring
- 14 experts
- Agencies + NGOs
- Alaska to California
- 275 person-years

2 ...

3 ...

4 ...

Broad goal

- Help users design **cost-effective monitoring programs to**:

1. Reliably estimate changes in salmon abundance, productivity, and diversity

2. Estimate relative contribution of climate vs. human factors to those changes --> mitigation actions

3. Facilitate sharing of data across large spatial areas (scale for climate-driven changes)

2. Specific objective

Create **knowledge base** about monitoring (**not data base**)

- Given some monitoring objective, what are:
  - Options for designs of monitoring programs?
  - Pros and cons of different designs?
  - How deal with constraints?

- Not prescriptive, but provides advice and guidelines to promote informed choices of monitoring designs

Methods

- Synthesized literature and experience
- Simulated performance of some designs
- Created a hierarchically accessible web site
- Had web site independently reviewed

Audiences

1. Scientists
2. Technical staff who conduct monitoring
3. Decision makers and funders of monitoring
4. Non-governmental salmon conservation groups

3. Highlights of web site

- Interactive, hierarchical knowledge base
- Systematic, structured framework
- Comprehensive 7-step integrated system for helping people to:
  - Articulate clear monitoring objectives
  - Design appropriate monitoring programs
  - Implement them
  - Analyze resulting data
  - Communicate results
- Examples and resources

Navigation

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- 3. Collect
- 4. Manage
- 5. Interpret
- 6. Report
- 7. Revise
- Resources

Salmon Monitoring Advisor

Beta

This site is currently undergoing testing. Some features may be broken and content is incomplete. Contact us with issues or questions.

Helping users to design and implement salmon monitoring programs

Overview

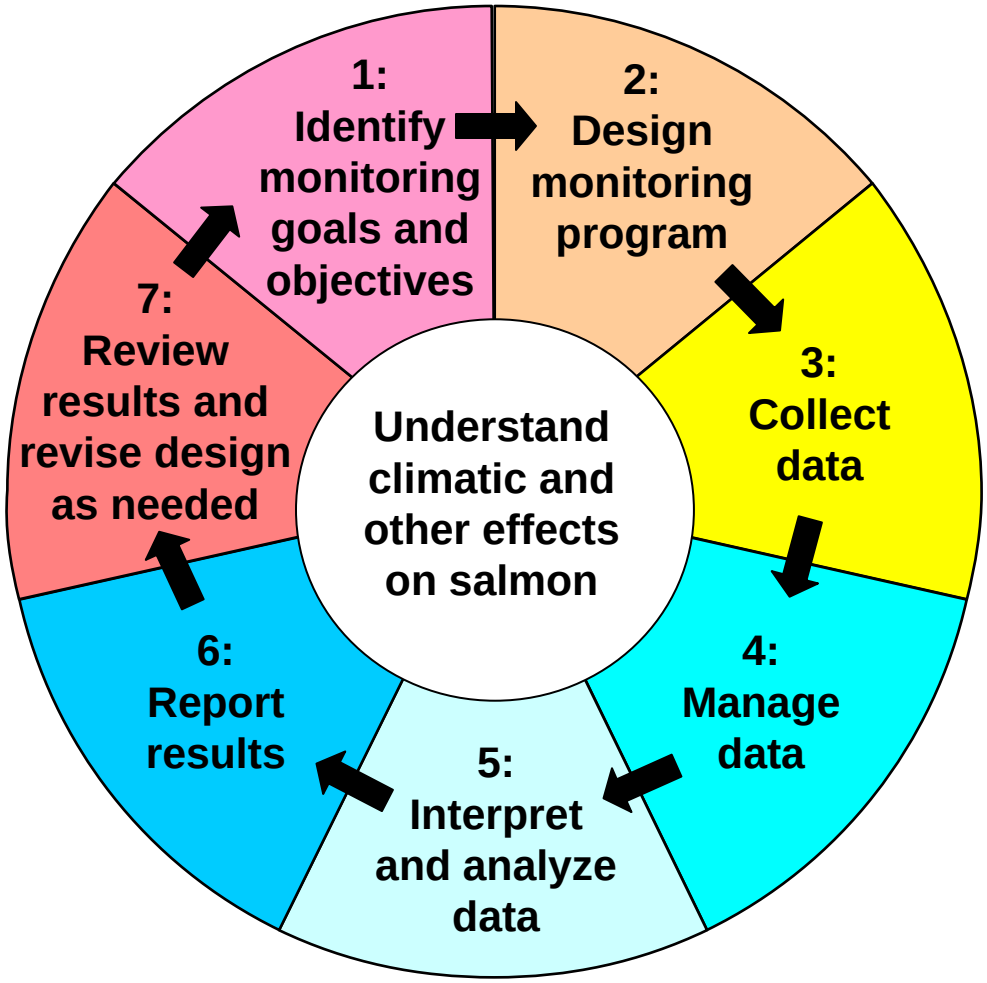
Designing monitoring programs for Pacific salmon is complicated. The number of technical references on sampling design, fish monitoring indicators, field protocols, and resource management goals can be overwhelming. To date, there is no comprehensive, technically rigorous framework to help practitioners, decision makers, and those who fund monitoring programs to deal with this complex array of information. Our goal is to fill this gap with a comprehensive design process that synthesizes a wide array of information into a web-accessible, systematic framework for designing monitoring programs.

Purposes

- We offer an **organized, carefully-structured procedure** to help users efficiently design and implement salmon monitoring programs that are reliable, informative, and cost-effective.
- The **"Salmon Monitoring Advisor" provides advice and guidelines to help users** systematically work through the numerous steps involved in designing,

Monitoring Wheel

"Salmon Monitoring Advisor"



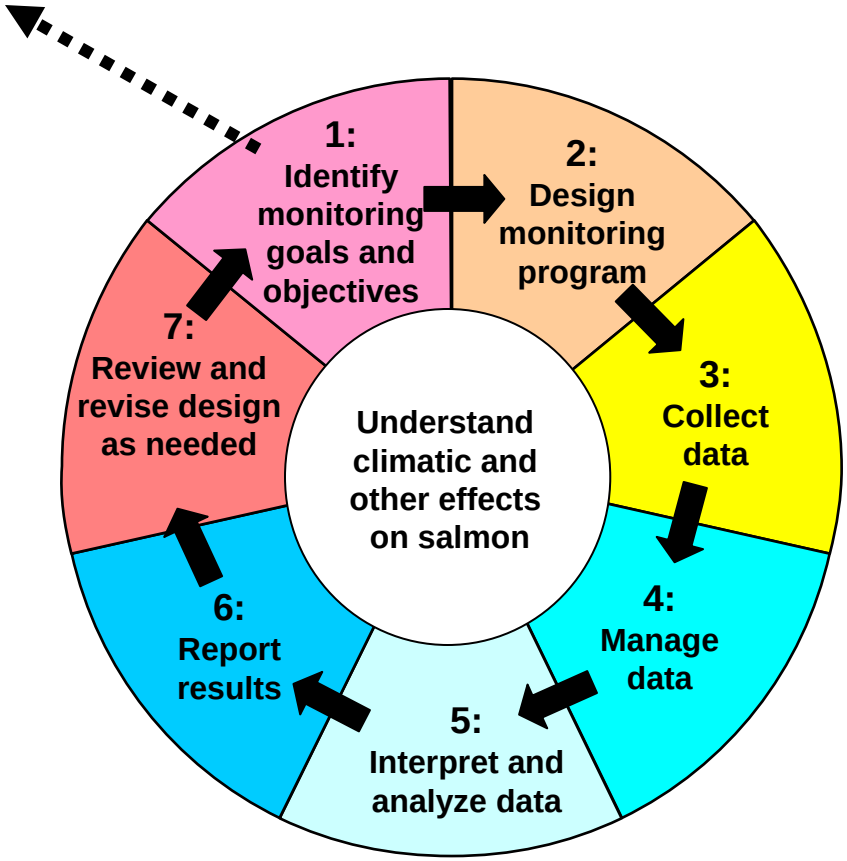
1. Goals and objectives

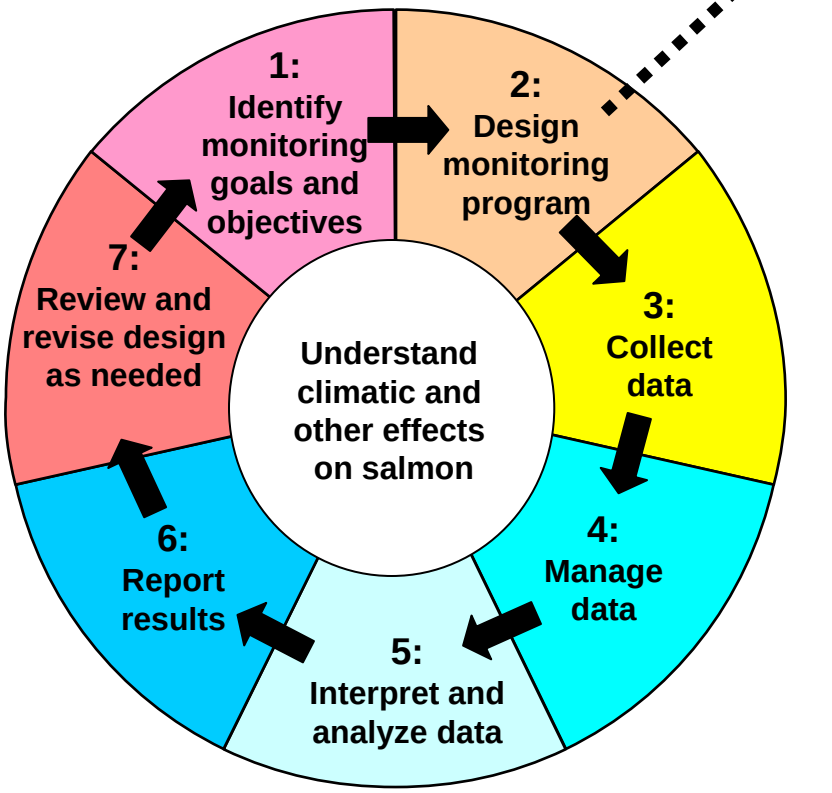
A. Type of questions (e.g., status + trend, or mechanism)

B. Type of indicators
- Abundance
- Productivity
- Diversity

C. Spatial and temporal requirements for the monitoring design

D. Constraints:
- Costs
- Desired precision of results





2. Design monitoring program

The STRIDe approach:

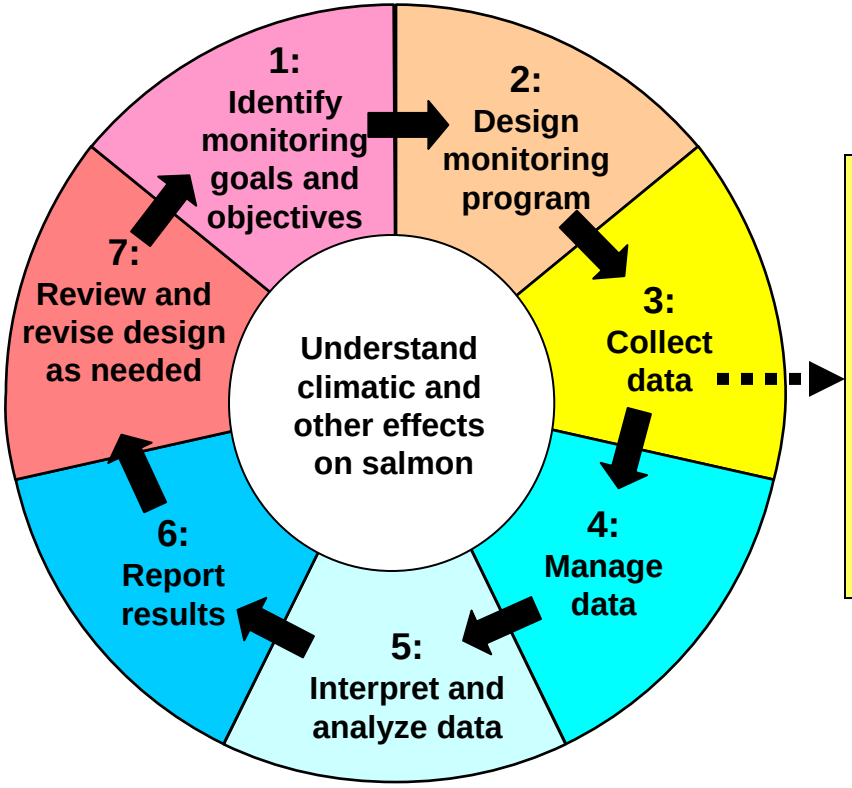
a. Spatial design (where)

b. Temporal design (when)

c. Response design (how)

d. Inference Design (estimates indicators from sampled data)

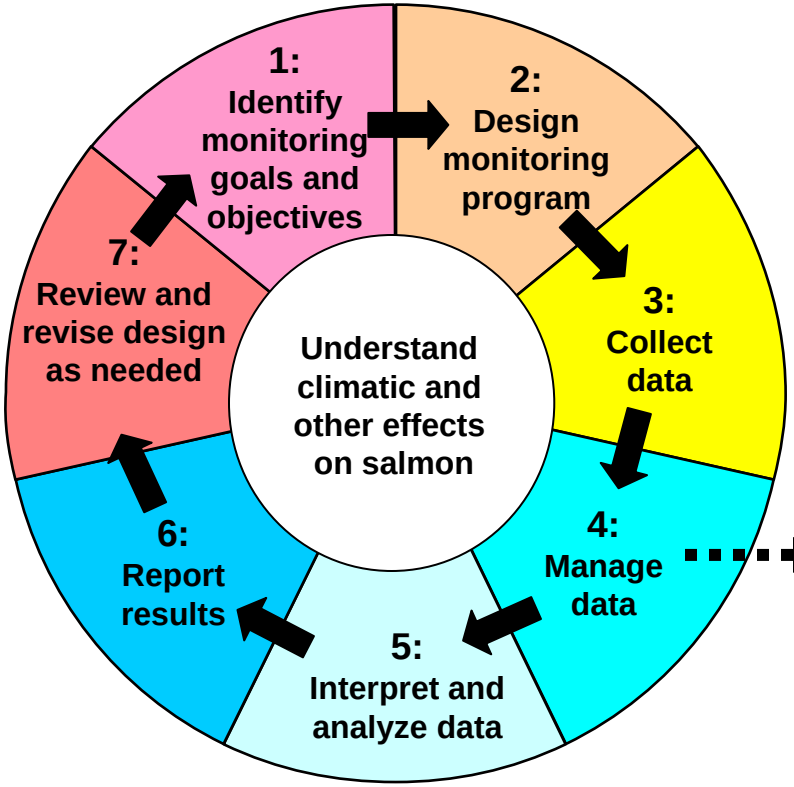
e. Options for each of these four elements are linked to:
- **Definition with a diagram**
- **Pros and cons**
- **Past examples**
- **Documents**



3. Data collection methods

A. "Salmonid Field Protocols Handbook" (2007)

B. QA/QC: Quality assurance/ Quality control



4. Data management methods

A. "Salmonid Field Protocols Handbook" (2007)

B. Documentation of data (metadata)

C. Database design/structure

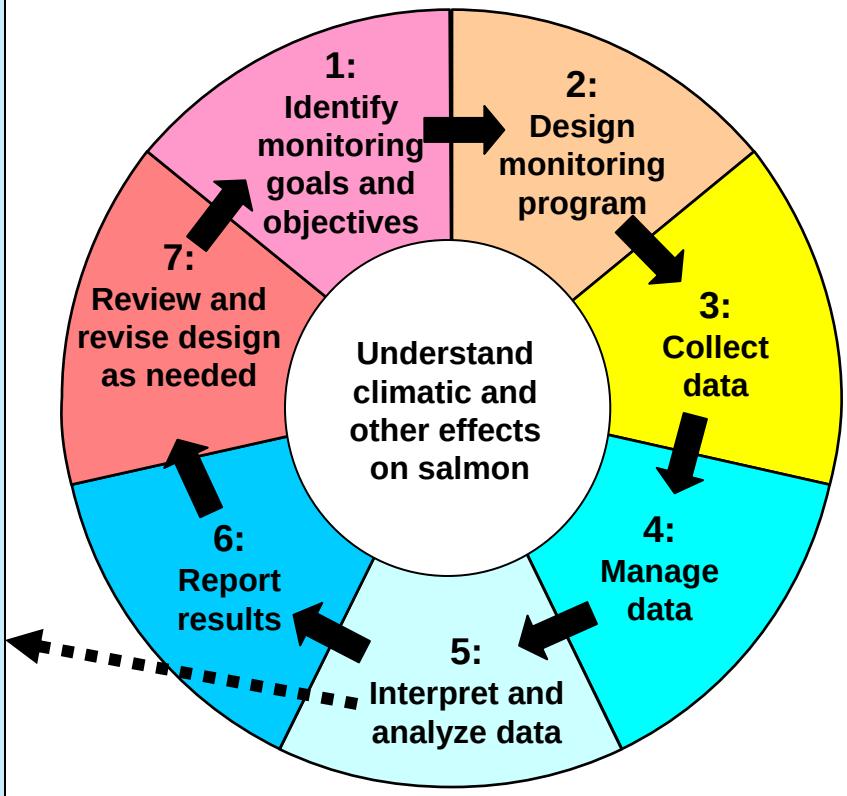
5. Interpret and analyze data

A. Inference and response designs

B. Optional statistical methods for analyzing data from the monitoring design

C. Simulations and operating models

- "What if ...?" simulations
- Compare sampling designs, parameter estimation
- Quantify trade-offs



6. Report results:

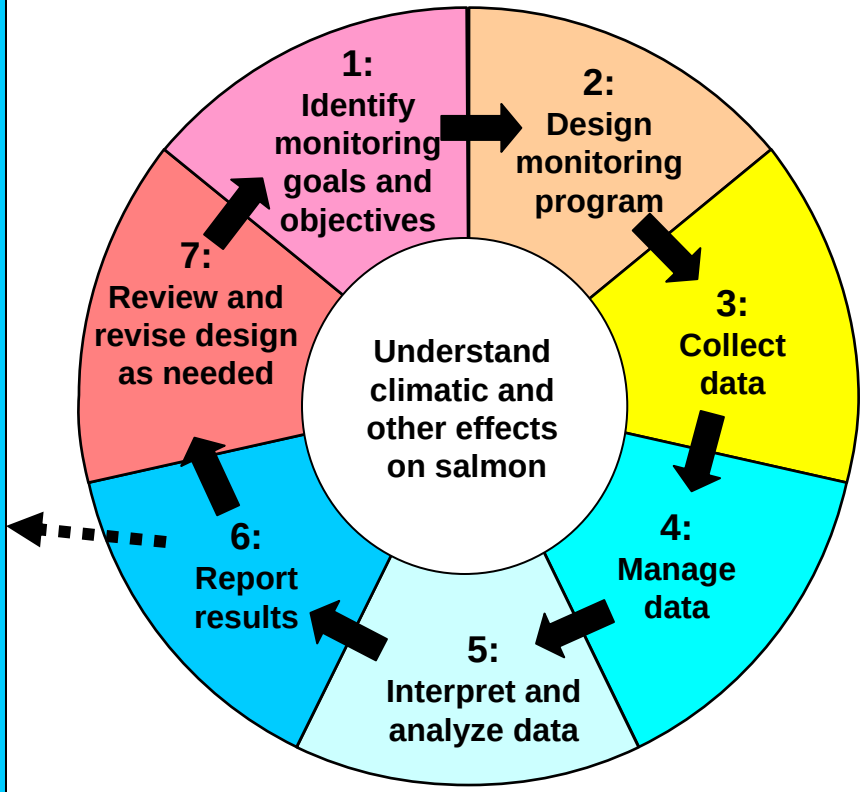
A. Managers/funders (agencies, NPAFC, ...)

B. Scientists

C. Technical staff who implement designs

D. Salmon conservation groups and other NGOs

- Tips on reaching these audiences



7. Review results and revise design as needed

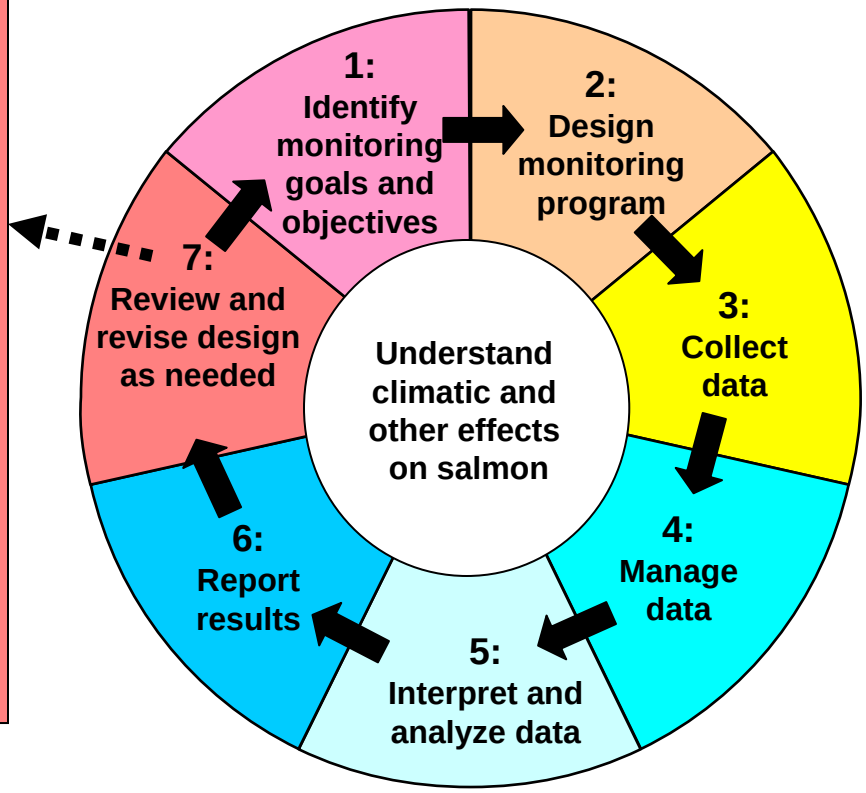
A. Meeting objectives?

B. New constraints emerge

C. Updated data (variances, trends, ...)

D. Revise at any step

E. Iterative process



4. Benefits

1. Make more informed and more cost-effective decisions about limited monitoring funds
2. Better understand causes of changes in salmon
3. Encourage agencies and funders to have staff use common framework
4. Facilitate sharing of data across large spatial areas (scale for climate-driven changes)

4. Benefits ...

5. Add credibility to proposals

6. Facilitate training

... 21 benefits

Future site at State of the Salmon program, Oregon