

• FACULTY OF NATURAL SCIENCES

Applying Adaptive Management

**Steps in the process towards
Adaptive Management**

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Applying adaptive management

A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. Active adaptive management includes a deliberate experiment for the purpose of learning.

Applying adaptive management

Learning; reducing key uncertainties

There is explicit acknowledgement of uncertainties and knowledge gaps about the response of the system to management actions. Reducing these uncertainties (i.e. learning) becomes one objective of management.

Applying adaptive management

Using what is learned to change policy and practice

Process in place to make certain that what is learned informs decisions (i.e. closing the loop). It is essential to have a good idea at project design stage of what policies and practices may change and what institutional mechanisms are in place to support that change.

Applying adaptive management

Focus is on improving management

AM integrates the worlds of science and management, ensuring applied science is well directed to key uncertainties and scientific advances are transferred to managers (i.e. this is where the learning is applied)

Applying adaptive management

Often called experimental management

AM is about thoughtfully applying management activities as experiments to see which are most effective in achieving desired goals

Applying adaptive management

It is formal, structured, systematic

AM is a deliberate process, not ad-hoc or simply reactionary. However, flexibility in the approach is important to allow the creativity that is crucial to dealing with uncertainty and change.

Applying adaptive management

Establish a Clear and Common Purpose

Iterate -
Use
Results to
Adapt and
Learn

Analyze
Data and
Communi-
cate
Results

Implement Your
Management and
Monitoring Plans

Develop a
Monitoring Plan to
Test Your
Assumptions

Develop a Management
Plan that Maximizes
Results and Learning



Design an
Explicit
Model of
Your
System

Applying adaptive management

Un-cycled aquarium

- No real biological filtration
- Mechanical filtration only to keep water clear
- Little or no medium for nitrogen fixing bacteria to live in.
- Ammonia levels will fluctuate
- Having plants will make only a little difference
- Need lots of water changes
- Or you need chemical filtration to remove ammonium
- High maintenance
- High monitoring costs
- Frequent interventions
- Low stability

STRESSED FISH

**Behaviour & Health
used to assess
conditions**

Applying adaptive management

Preparing a cycled aquarium

- Larger tanks 37 litter
- Filtration
 - Pump
 - Filters
 - Media
- Mechanical filtration to remove particulate matter
- Biological filtration – media for bacteria
- Chemical – help mechanical bacterial filtration
- Plants to absorb excess Nitrates
- Establish Nitrogen Cycle
 - Takes a few weeks
 - Use filter material from existing tank to “seed”
 - Fishless use ammonia to get the process started
 - Use hardy fish and slowly introduce new fish to your tank

LESS STRESS ON FISH

Once established need only monthly water changes of 25%