Successful Adaptive Management Techniques

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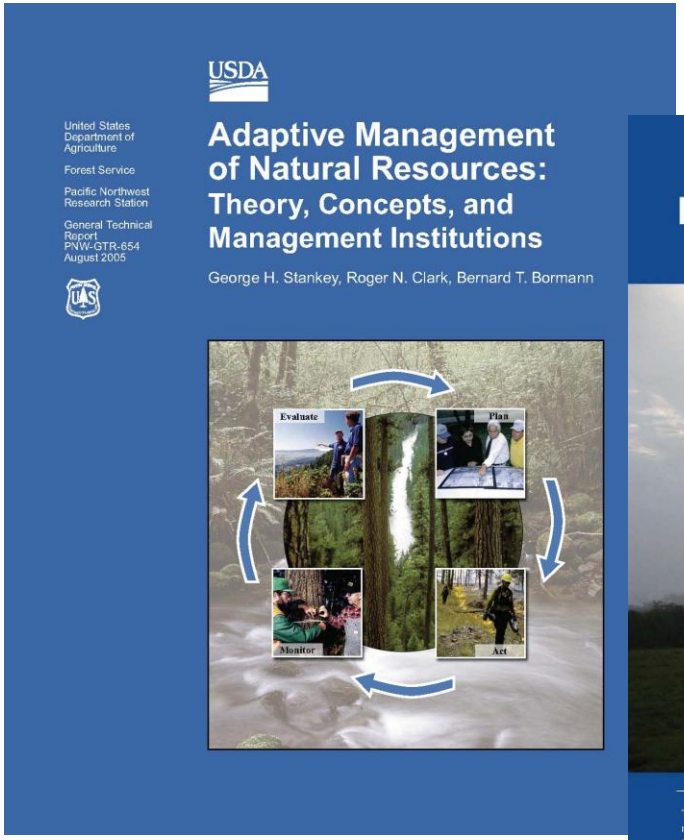
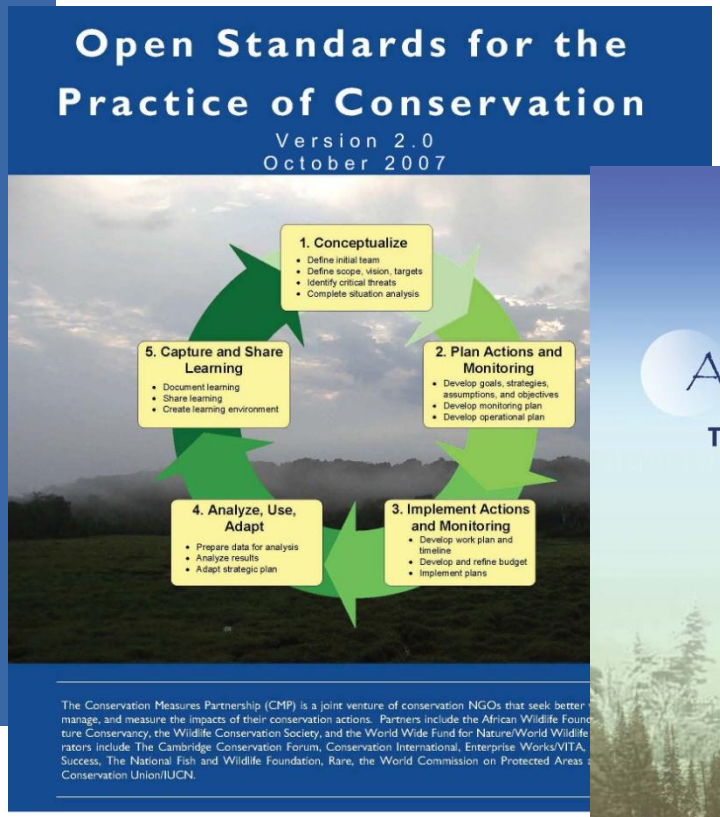
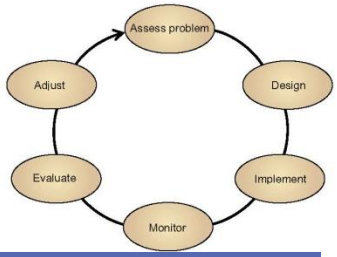
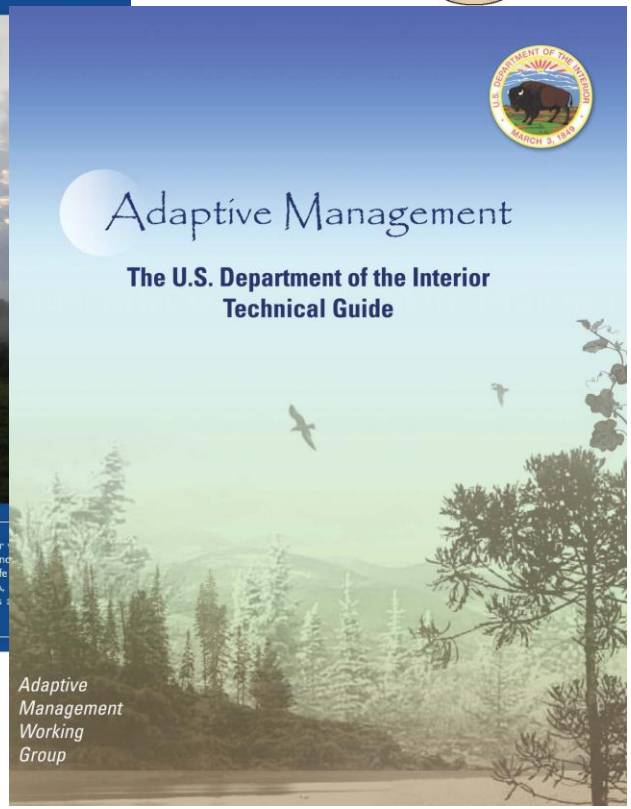
Adaptive Management is cliché









Adaptive Management is cool

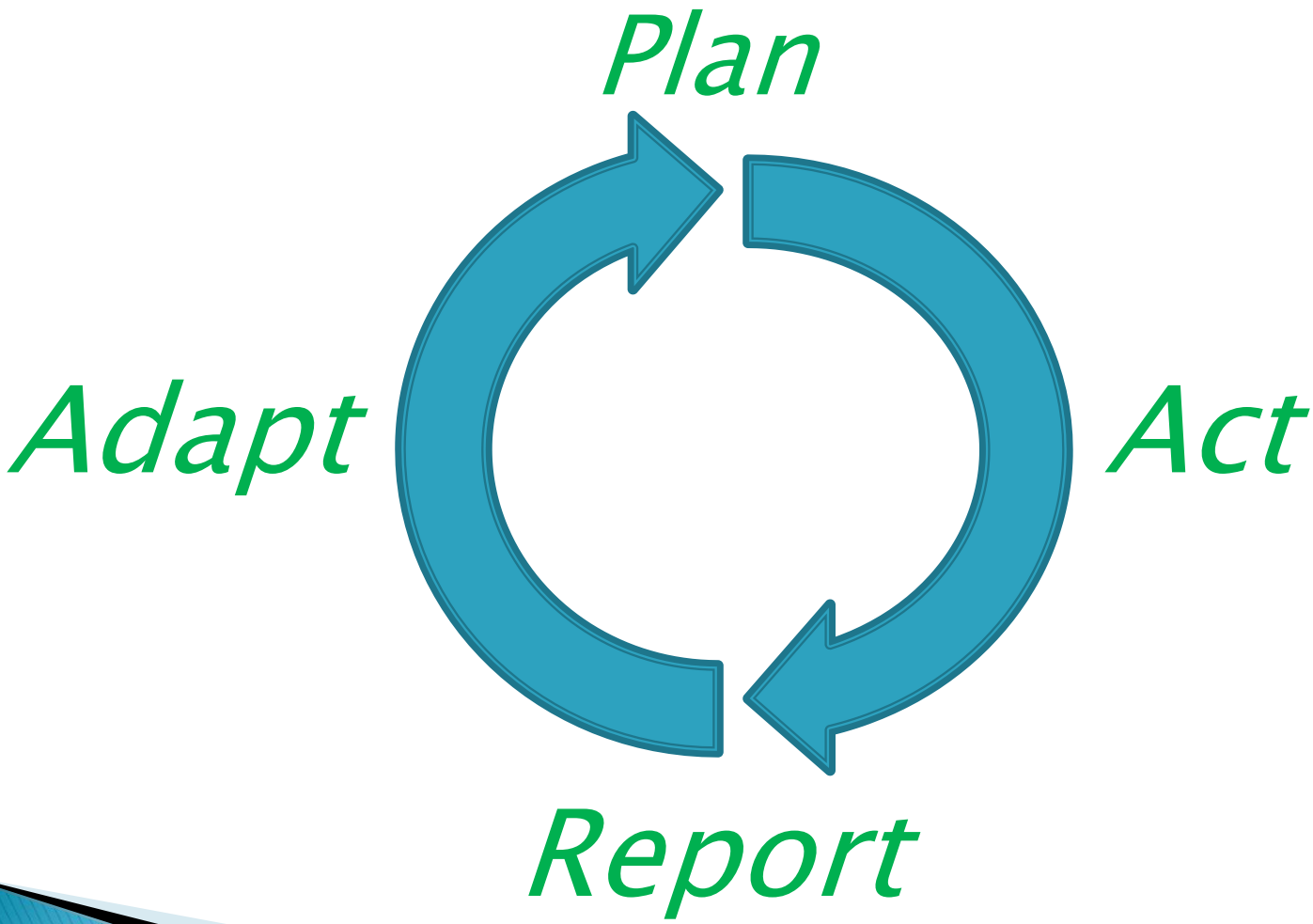
USDA publishes final rule to restore the nation's forests through science and collaboration

Secretary Vilsack announces publication of the final land management planning rule

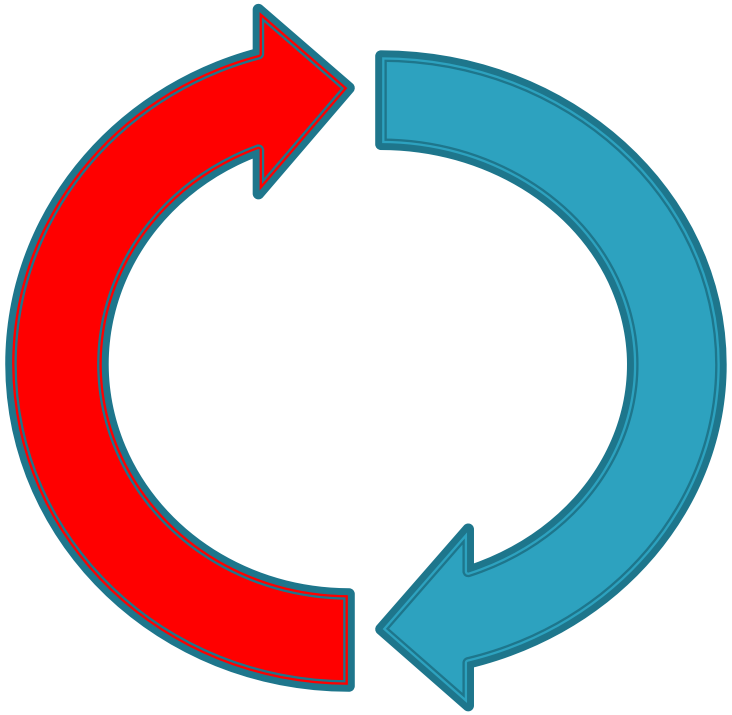
-- Release No. 1169 Contact: Press Office: (202) 205-1134 Twitter: @forestservice --

- WASHINGTON, March 23, 2012 —Agriculture Secretary Tom Vilsack today announced the U.S. Department of Agriculture's final Planning Rule for America's 193-million acre National Forest System that includes stronger protections for forests, water, and wildlife while supporting the economic vitality of rural communities."We are ready to start a new era of planning that takes less time, costs less money, and provides stronger protections for our lands and water", said U.S. Forest Service Chief Tom Tidwell. "This new rule will bring 21st century thinking to a process that is sorely needed to protect and preserve our 193 million acres of amazing forests and grasslands."
- Land management plans under the final rule will include:
  - Mandatory components to restore and maintain forests and grasslands.
  - Requirements to provide habitat for plant and animal diversity and species conservation. The requirements are intended to keep common native species common, contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and protect species of conservation concern.
  - Requirements to maintain or restore watersheds, water resources, water quality including clean drinking water, and the ecological integrity of riparian areas. Requirements for multiple uses, including outdoor recreation, range, timber, watershed, wildlife and fish.
  - Requirements to provide opportunities for sustainable recreation, and to take into account opportunities to connect people with nature.
  - Opportunities for public involvement and collaboration throughout all stages of the planning process. The final rule provides opportunities for Tribal consultation and coordination with state and local governments and other federal agencies, and includes requirements for outreach to traditionally underrepresented communities.
  - Requirements for the use of the best available scientific information to inform the planning process and documentation of how science was used in the plan.
  - A more efficient and adaptive process for land management planning, allowing the Forest Service to respond to changing conditions.

The Adaptive Management Cycle



Typical Organizational Score Card



PLAN (Act) (Report) (Adapt)

- INFORMATION GATHERING — VERY GOOD
- STAKEHOLDER INVOLVEMENT — VERY GOOD
- PROJECT PLANS / DESIGNS — GOOD
- PERMITS — GOOD

(Plan) ACT (Report) (Adapt)

CONTRACTING	VERY GOOD
IMPLEMENTING	VERY GOOD
COORDINATING	GOOD
INTEGRATING	FAIR

(Plan) (Act) REPORT (Adapt)

- MONITORING — GOOD
- EVALUATING — GOOD
- SYNTHESIZING — FAIR
- TRANSFERRING — FAIR

(Plan) (Act) (Report) ADAPT

- RE-EVALUATE THE PROBLEM, IN LIGHT OF THE NEW INFORMATION
- CONFIRM THE CONTEXT & ASSUMPTIONS
- IDENTIFY OPTIONS THAT FLOW FROM THE IMPROVED INFORMATION
- DECIDE IF ANY OPTION HAS SUFFICIENT VALUE TO MERIT PLANNING & IMPLEMENTING
- VERY GOOD WHEN REPORTING IS VERY GOOD, FAIR WHEN REPORTING IS ONLY FAIR !

The biggest bottleneck. . .

Adaptive Management efforts often fall short because:

We Plan well, and
We Act well, but
We Report poorly, and so
We Adapt poorly.

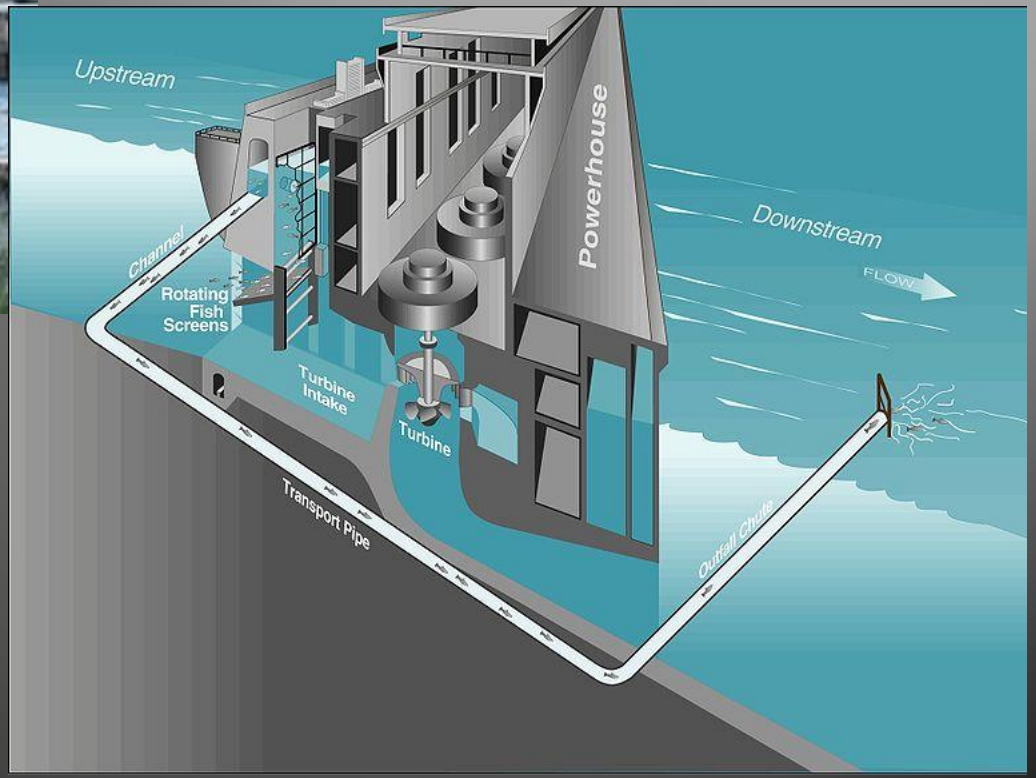
The biggest bottleneck is Reporting.

What could help?

CLARITY OF EXPRESSION

- *putting your mouth where your money is . . .*

Create Conceptual Models



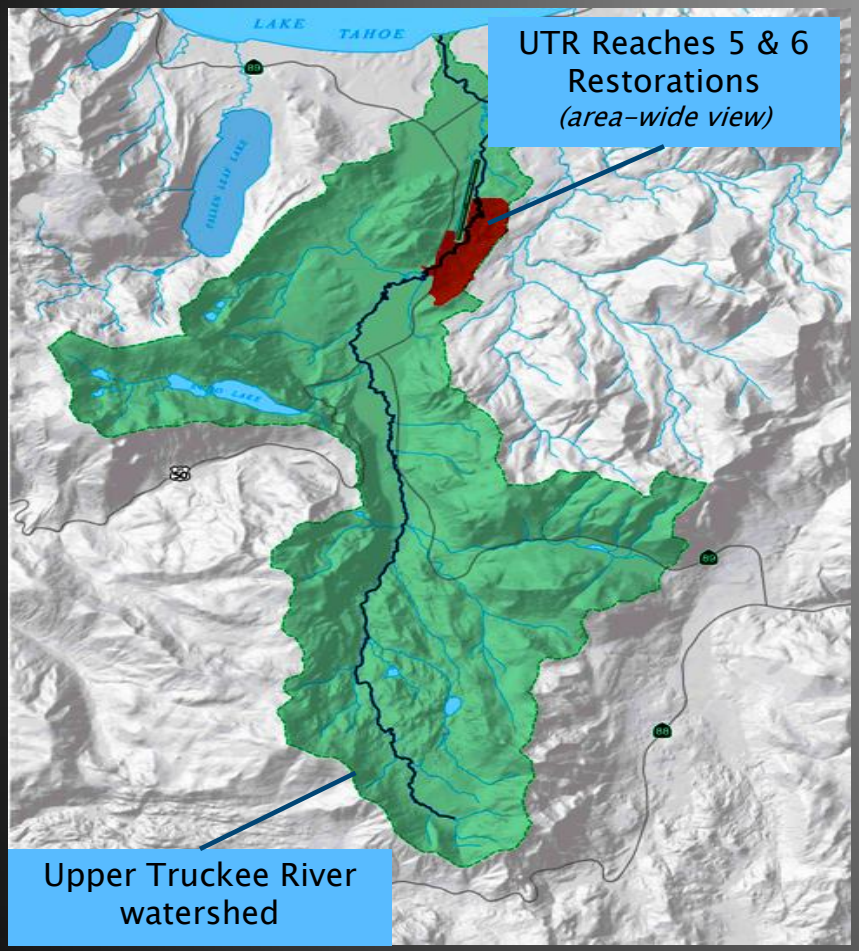
Test All Assumptions

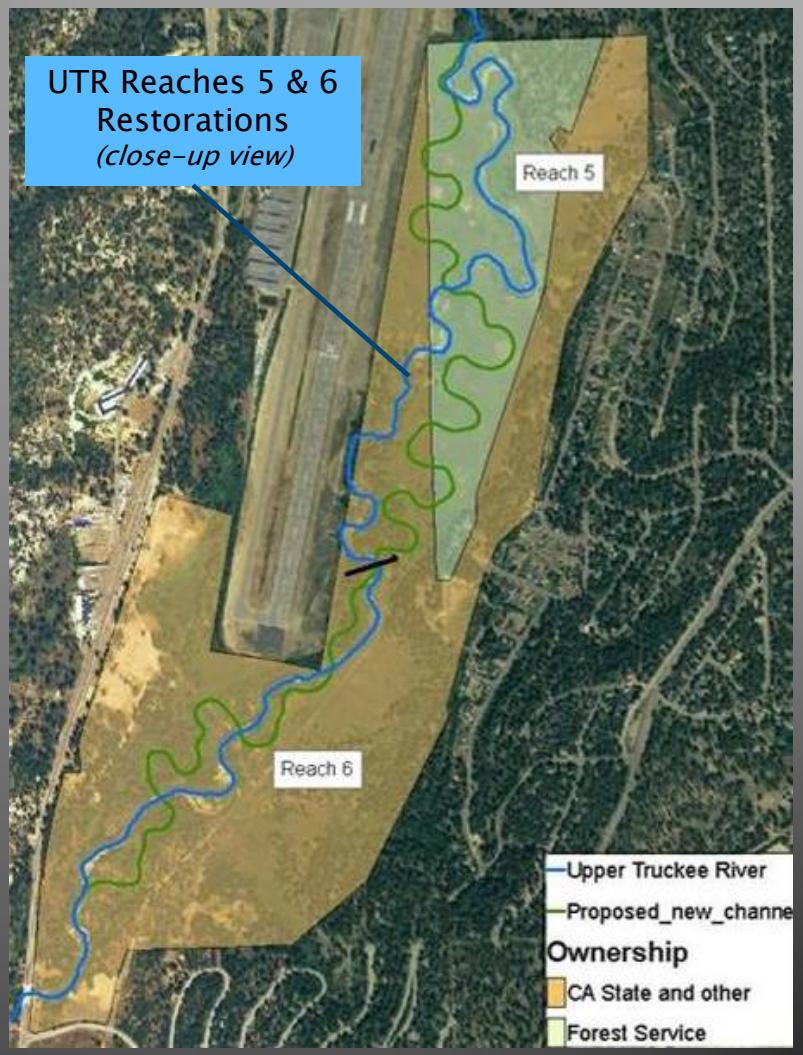
- The streamflow is five cfs, therefore a pump that can produce five cfs will be sufficient to dewater the stream.
- No, due to ground water seeping in from the stream banks and upwelling from below the streambed; more than five cfs pump capacity will be needed.

Avoid Logic Traps

- False Dilemma
  it's this one choice versus all others
- False Cause
  roosters don't bring up the sun, correlation is not causation
- Ad hominem
  attack the man, not the message
- Equivalence
  you said some things, I said some things, so it's tied
- Non-sequitur
  one thing is said to follow another, but it really doesn't (related to "straw man" arguments)

Make Clean Annotated Maps





Create Unbiased Graphics

- axis scales of like data should be directly (1:1) comparable
- plotting all points clutters, whereas simplification of the plot (a single broad band) clarifies the message
- may need to trade off exact size for position on maps
- flowcharts should be restrained and minimize crossed connections
- aspect and depth of field matter in 3-D

Qualify / Bound Results

- Space / distance: is it microscopic, macroscopic, or megascopic?
- Time: is it average behavior (*steady state*) or time-dependent (*transient*)?
- What is the scale the of real or potential impacts relative to benefits?
- Continuity – are there progressive or cyclical changes?

Eliminate Alternate Explanations

- The large scour of sediments from the streambed over time lowered it enough to drain the water in adjacent soils from a lower elevation, thus causing groundwater levels to drop.

- Possible increased water use from local wells was ruled out as a factor (none).

- Possible decreased recharge (snowpack) was also ruled out.

Layman-oriented Narratives

- Over-critical pressurization of the membrane at a point singularity will effectuate loss of containerization.
- This will modify the annual hydrograph by reducing bankfull flows, from a return interval of 5 years, to between1.5 and 2 years.

- It'll be like popping a balloon with a pin.
- It'll flood more often.

Summary

Adaptive Management efforts often fall short because:

- We Plan well, and
- We Act well, but
- We Report poorly, and so
- We Adapt poorly.

To best report on Adaptive Management efforts:

- Create and use simple conceptual models
- Test all assumptions
- Bound results in space and time
- Eliminate alternate explanations
- Create simple unbiased graphics
- Write narratives in layman terms