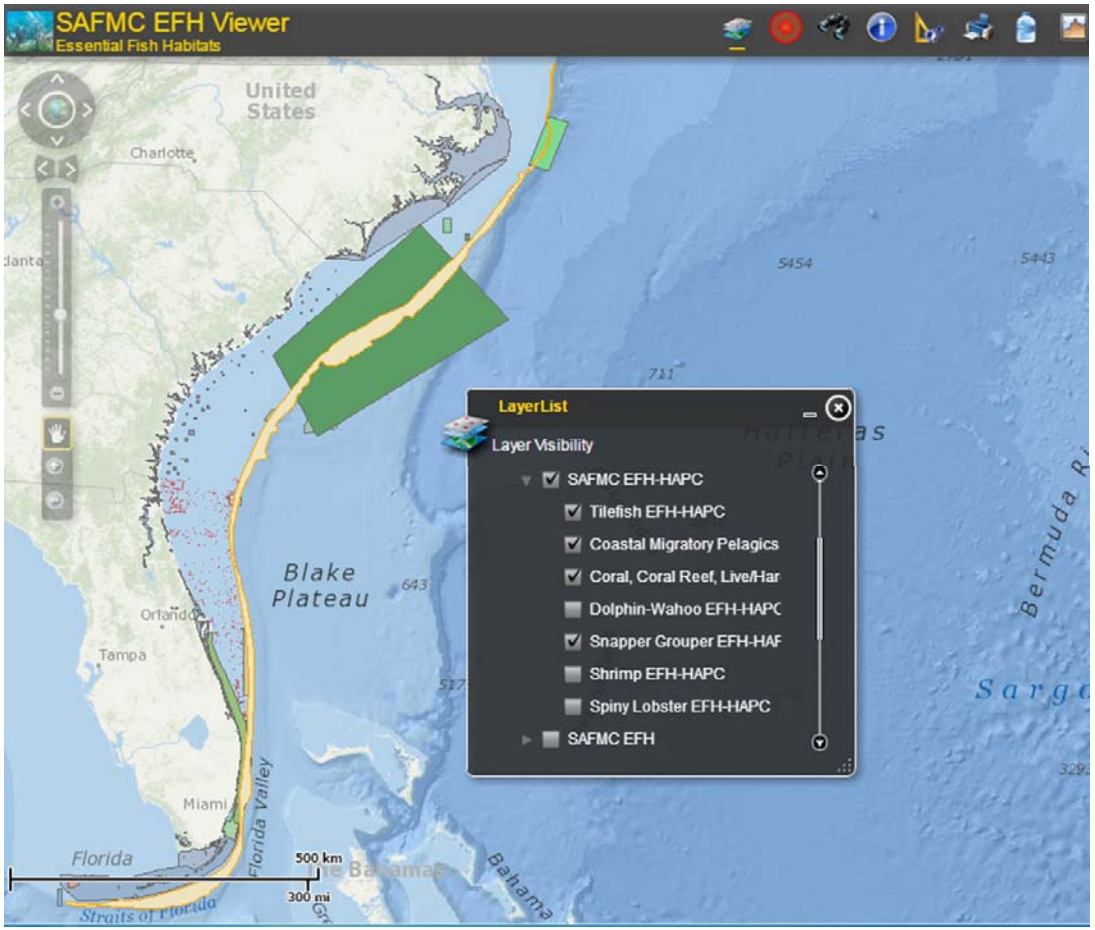
Ecosystem Based Management

- Place based
- Focused on sustaining valued ecosystem services by protecting ecosystem structure and function,
- Recognizes internal and external linkages of the whole system, and
- Specifically considers economic, social and institutional aspects of the system

“ecosystem-based”



is

a program

characteristic

NOT

a program

structure

Essential conditions if an ecosystem-based initiative is to succeed

United Nations Environment Program. 2006. *Ecosystem-based management: Markers for assessing progress.* 58pp. unep/gpa, The Hague

1. Unambiguous goals
2. Well-informed stakeholders
3. Delegation of authority and financial resources to sustain implementation
4. Capacity within implementing institutions

EBM - Stakeholder Collaboration

Optimistic model

- Trust transforms interests and leads to innovation
- Agreement on science basis leads to feasible, well-founded plan
- Involvement reduces challenges

Pessimistic model

- Consensus seeking leads to lowest common denominator
- Socio-economic interests dilute precaution
- Special interests resurface impeding implementation

Adapted from: Judith Layzer. 2008. Natural Experiments: Ecosystem-based management and the environment. The MIT Press. Cambridge, MA.

EBM - Adaptive Management

Optimistic model

- Emphasis on flexibility promotes ‘better-than-minimum’ performance
- Monitoring informs practice ensuring use of best available understanding

Pessimistic model

- Flexibility facilitates evasion by laggards
- Managers resist adjustments and development interests prevail

Adapted from: Judith Layzer. 2008. Natural Experiments: Ecosystem-based management and the envrionment. The MIT Press. Cambridge, MA.

essential elements of EBM

holistic vision / plan

comprehensive description of system, articulation of multiple management objectives

community

effective engagement of policy makers, managers, stakeholders, scientists

process

effective adaptive management

foundation

legal framework, management institutions, financial resources, effective communications

program framework

1. Articulate program goals
2. Develop system level model for goal attainment
3. Assess current management efforts – identify gaps
4. Develop management strategy
5. Develop monitoring program
6. Assess performance
7. Manage adaptively

program framework

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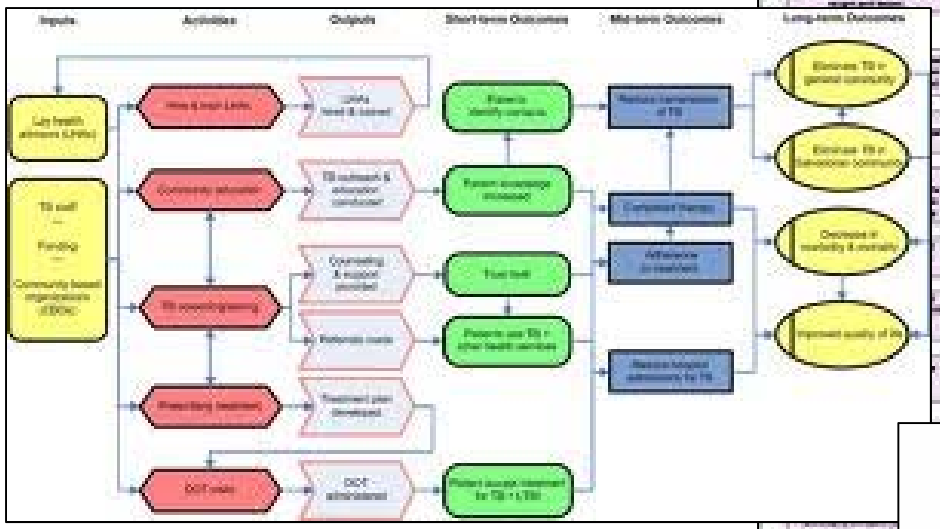
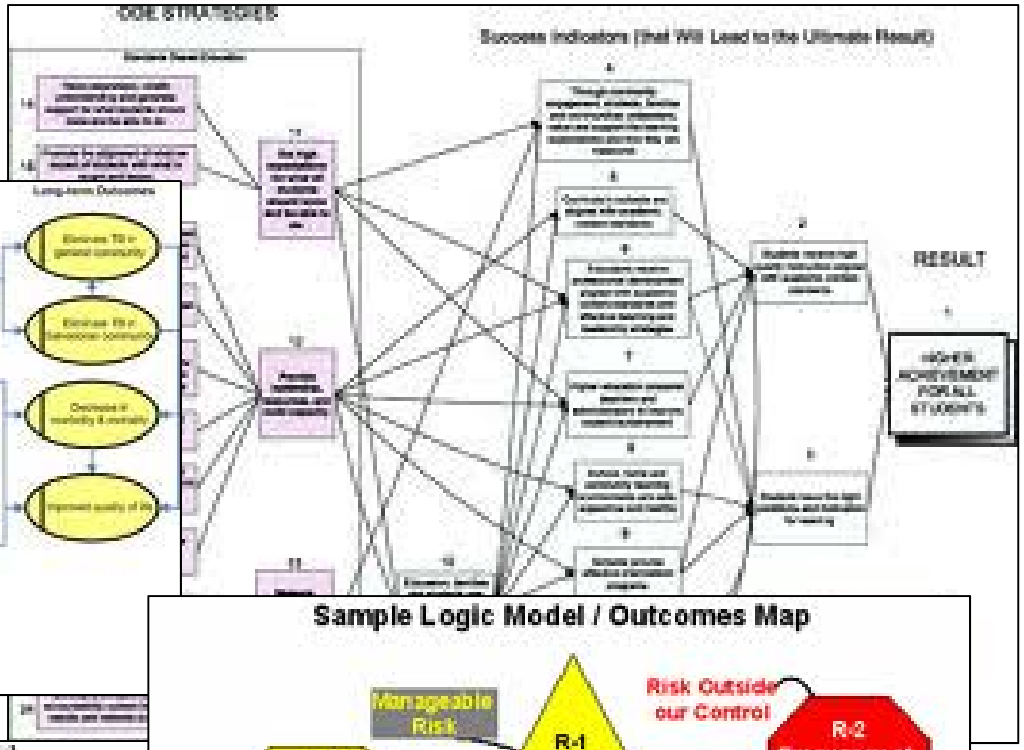
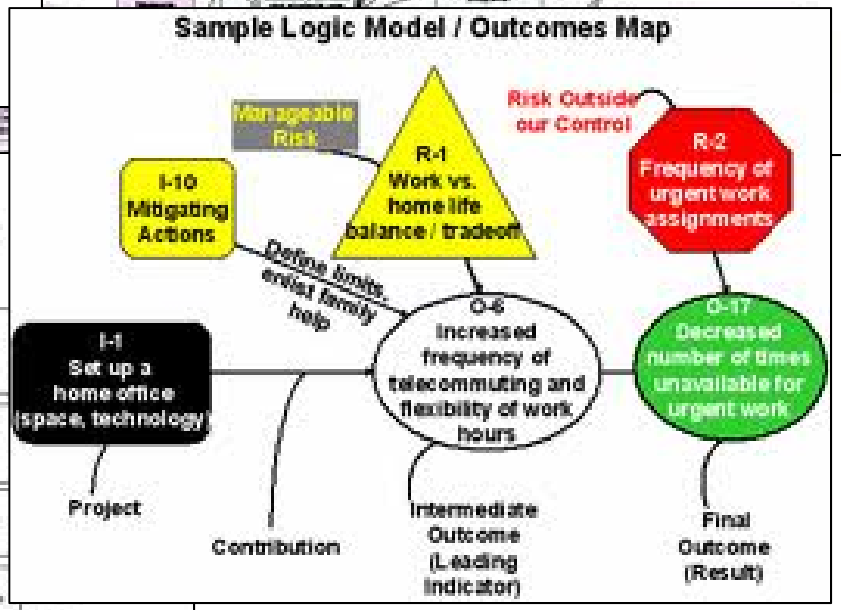
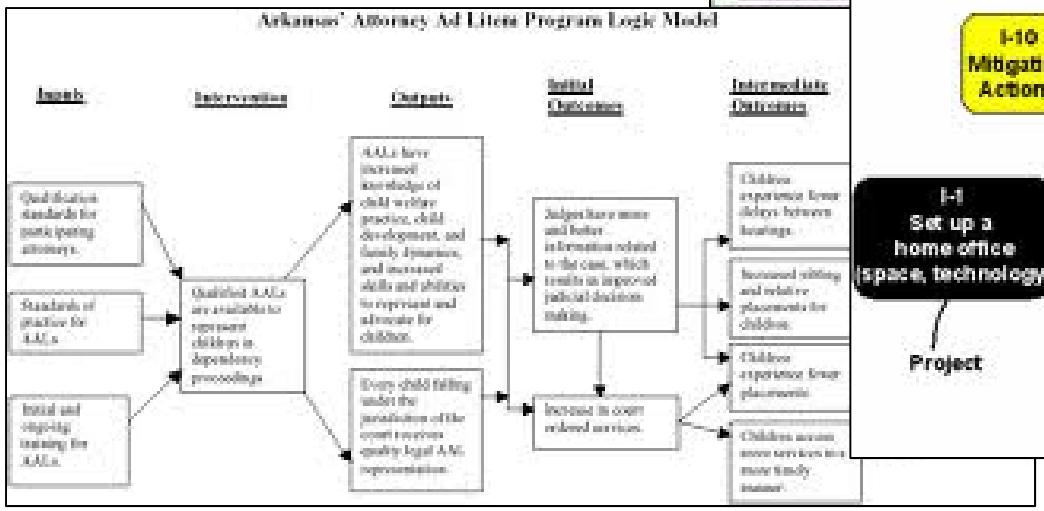
Logic models









program framework

1. Articulate program goals
2. Describe factors influencing goal attainment
3. Assess current management efforts – identify gaps
4. Develop management strategy
5. Develop monitoring program
6. Assess performance
7. Manage adaptively

Goal modeling

identification of factors potentially affecting attainment

biological factors

- fauna
- flora
- Microorganisms

physical factors

- structure
- hydrology
- temperature

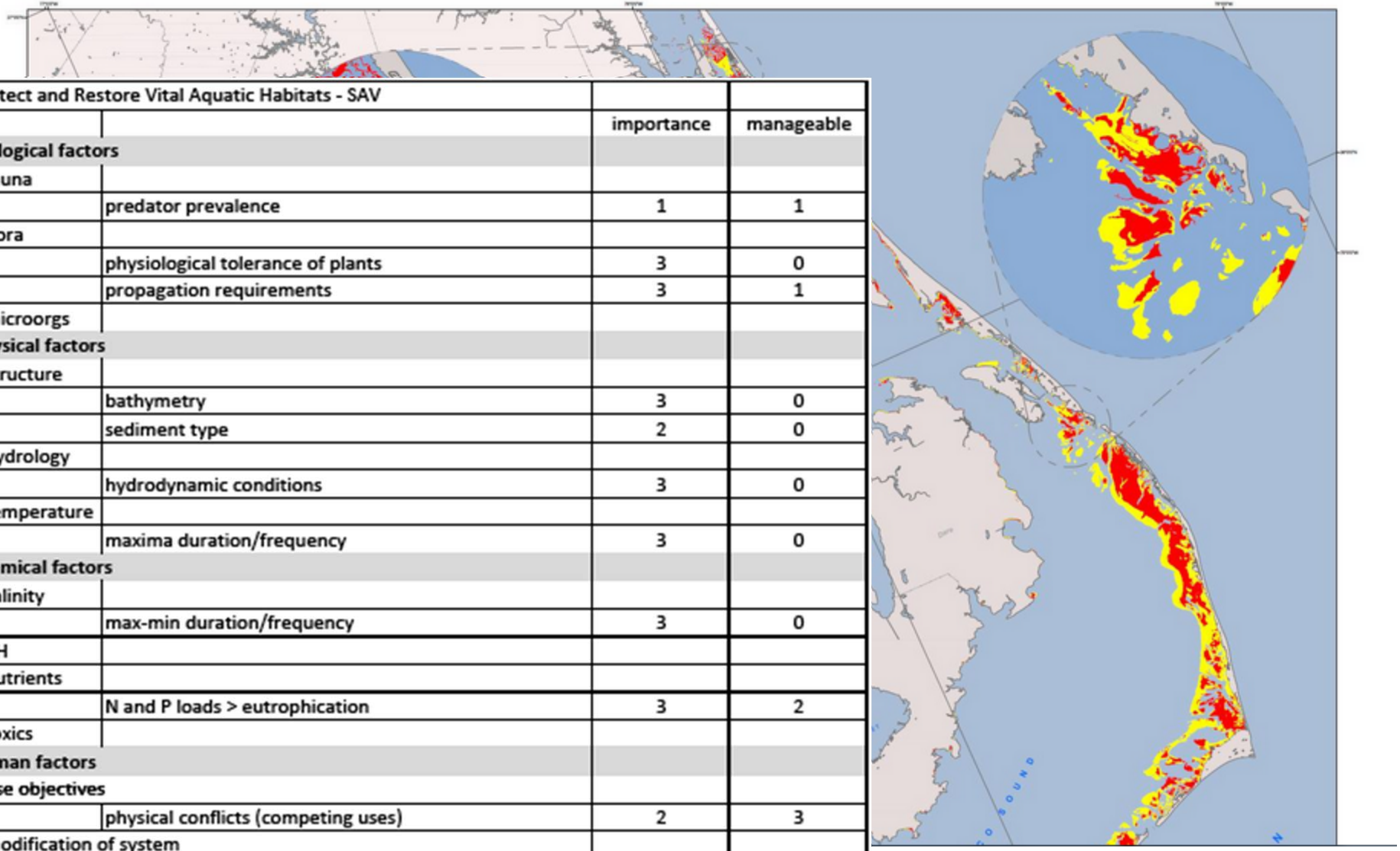
chemical factors

- salinity
- pH
- nutrients
- toxics

human factors

- use objectives
- modification of system
- knowledge

NORTH CAROLINA SUBMERGED AQUATIC VEGETATION



Protect and Restore Vital Aquatic Habitats - SAV			
		importance	manageable
biological factors			
fauna			
	predator prevalence	1	1
flora			
	physiological tolerance of plants	3	0
	propagation requirements	3	1
microorgs			
physical factors			
structure			
	bathymetry	3	0
	sediment type	2	0
hydrology			
	hydrodynamic conditions	3	0
temperature			
	maxima duration/frequency	3	0
chemical factors			
salinity			
	max-min duration/frequency	3	0
pH			
nutrients			
	N and P loads > eutrophication	3	2
toxics			
human factors			
use objectives			
	physical conflicts (competing uses)	2	3
modification of system			
	eutrophication	3	2
	suspended sediment loads	2	1
	altered bathymetry	1	3
	shading	1	3
knowledge			

program framework

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2. Develop system level model for goal attainment
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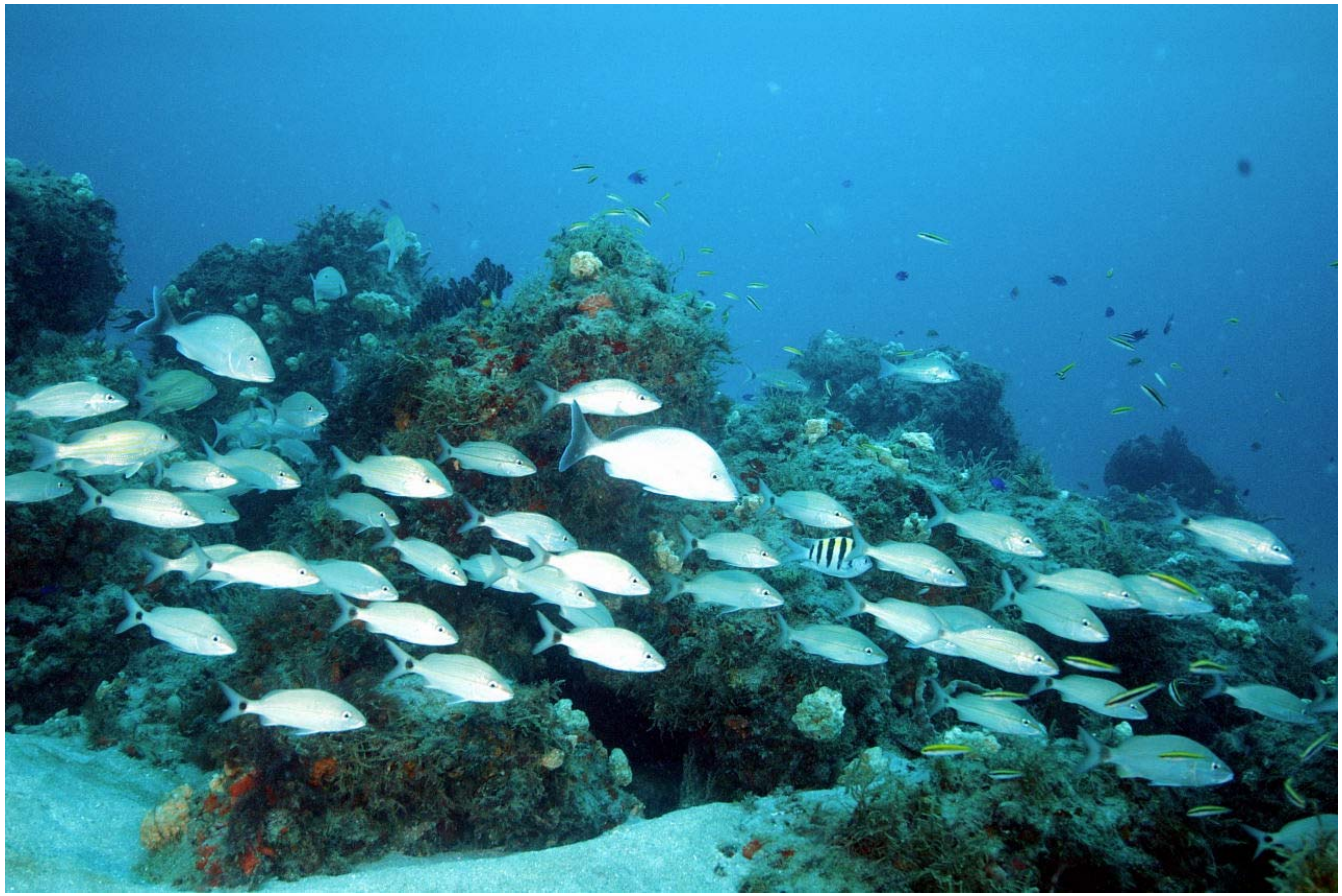
Comprehensive Ecosystem-Based Amendment 1

Coral Habitat Areas of Particular Concern (CHAPCs)

golden crab

royal red shrimp



program framework

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Develop monitoring program

1. accountability
   - actions undertaken
   - outcomes realized
2. assumptions
   - system drivers not managed
3. partnership performance
   - adaptive management implemented (really?)
   - external program coordination

http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/

program framework

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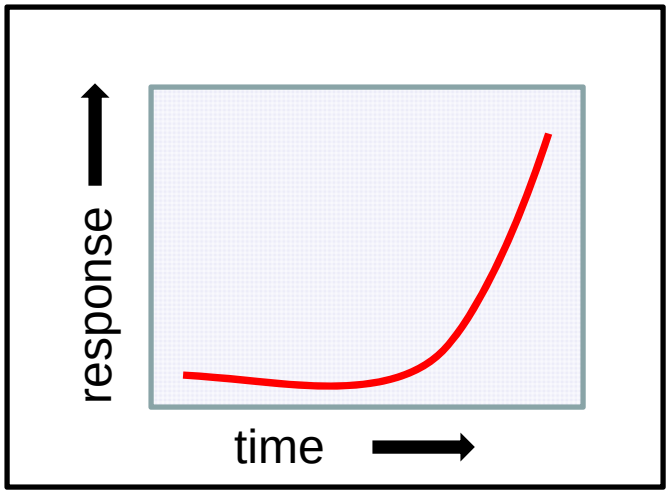
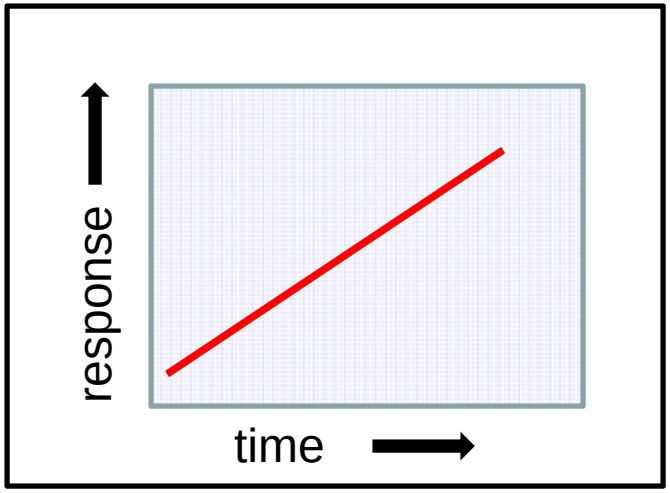
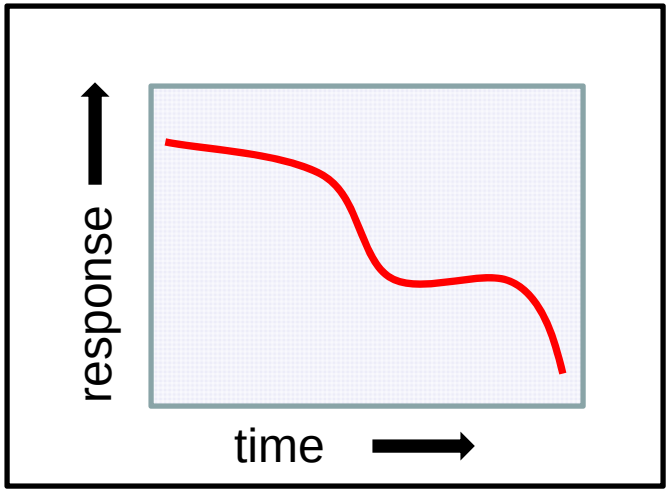
Establishing performance expectations

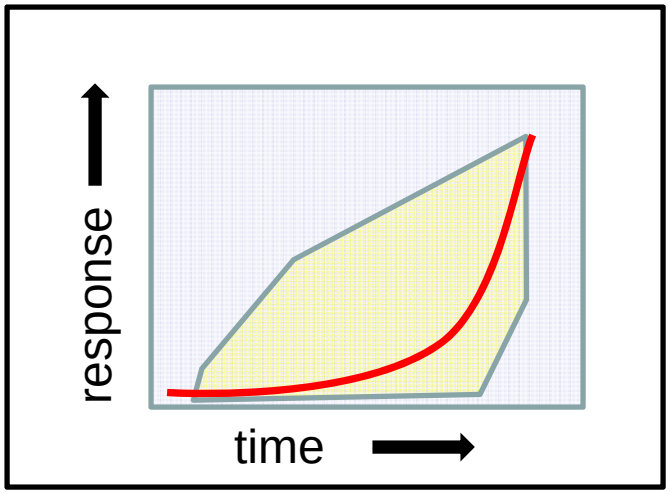


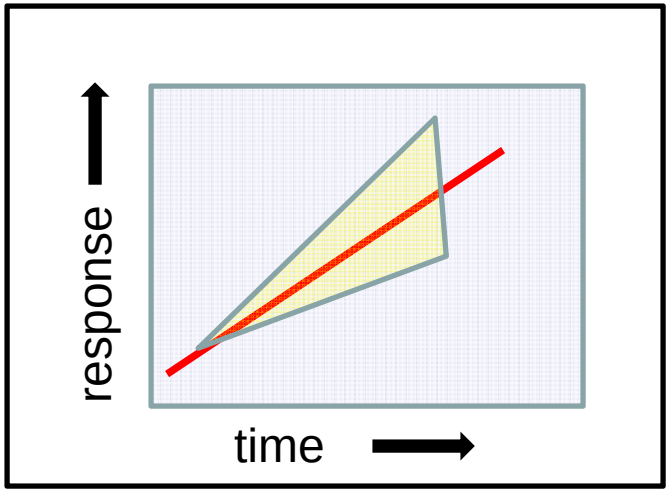


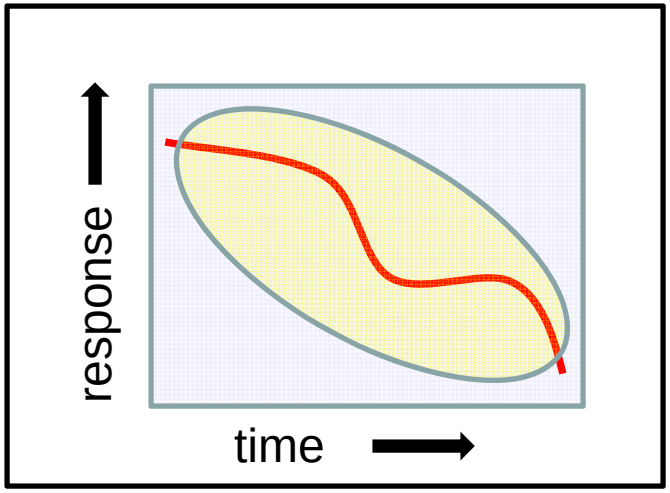


Establishing performance expectations

Identifying uncertainty







program framework

1. articulate program goals
2. refine system level model for goal attainment
3. re-assess current management efforts – identify gaps
4. revise management strategy
5. adjust monitoring program
6. assess performance
7. manage adaptively

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