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Learning & Adaptation in Waterfowl Management

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Objectives

- Cycles of learning in resource governance
- AHM experiences and lessons learned
- Selective pressures on AHMWG
- Approaches to uncertainty, actors, and organizational arrangements necessary to promote adaptation

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A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes

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ABSTRACT

Governance failures are at the origin of many resource management problems. In particular climate change and the concomitant increase of extreme weather events has exposed the inability of current governance regimes to deal with present and future challenges. Still our knowledge about resource governance regimes and how they change is quite limited. This paper develops a conceptual framework addressing the dynamics and adaptive capacity of resource governance regimes as multi-level learning processes. The influence of formal and informal institutions, the role of state and non-state actors, the nature of multi-level interactions and the relative importance of bureaucratic hierarchies, markets and networks are identified as major structural characteristics of governance regimes. Change is conceptualized as social and societal learning that proceeds in a stepwise fashion moving from single to double to triple loop learning. Informal networks are considered to play a crucial role in such learning processes. The framework supports flexible and context sensitive analysis without being case study specific.

First empirical evidence from water governance supports the assumptions made on the dynamics of governance regimes and the usefulness of the chosen approach. More complex and diverse governance regimes have a higher adaptive capacity. However, it is still an open question how to overcome the state of single-loop learning that seem to characterize many attempts to adapt to climate change. Only further development and application of shared conceptual frameworks taking into account the real complexity of governance regimes can generate the knowledge base needed to advance current understanding to a state that allows giving meaningful policy advice.

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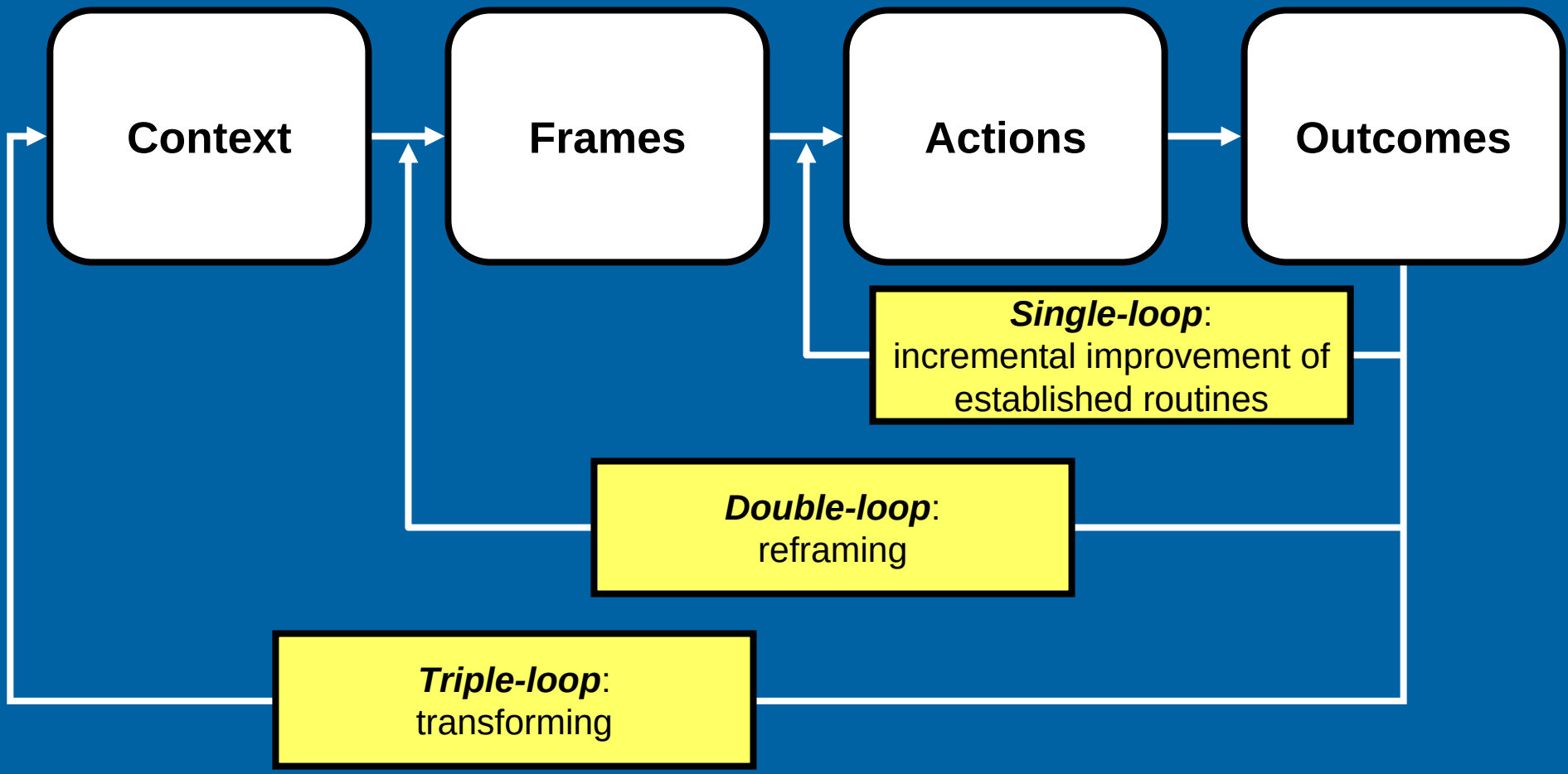
Cycles of learning



high uncertainty low

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Cycles of learning

- **Single-loop learning**
  Are we doing things right?

- **Double-loop learning**
  Are we doing the right things?

- **Triple-loop learning**
  Who has the right?

Characterization of learning cycles

	Single loop: *Are we doing things right?*		
Uncertainty			
Actors			
Institutions			
Governance			

Characterization of learning cycles

	Single loop: ***Are we doing things right?***		
Uncertainty	Reducing uncertainty		
Actors	Independent communities of practice		
Institutions	Not called into question		
Governance	No change in relative dominance		

Characterization of learning cycles

	Single loop: *Are we doing things right?*	Double loop: *Are we doing the right things?*	
Uncertainty	Reducing uncertainty	Managing uncertainty and risk	
Actors	Independent communities of practice	Cross-networking	
Institutions	Not called into question	Established routines called into question and/or reinterpreted	
Governance	No change in relative dominance	Emergence of bottom-up processes	

Characterization of learning cycles

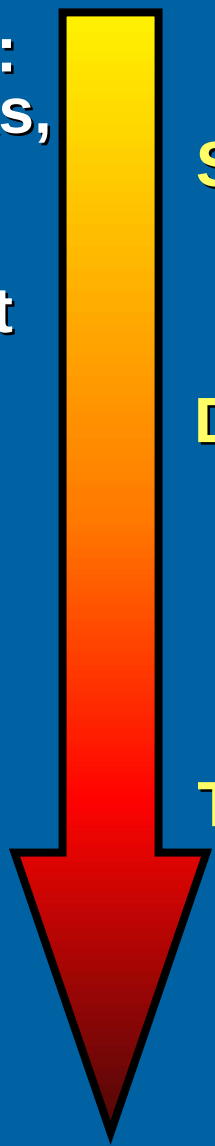
	Single loop: *Are we doing things right?*	Double loop: *Are we doing the right things?*	Triple loop: *Who has the right?*
Uncertainty	Reducing uncertainty	Managing uncertainty and risk	Decision-making under irreducible uncertainties
Actors	Independent communities of practice	Cross-networking	Changes in network boundaries and connections
Institutions	Not called into question	Established routines called into question and/or reinterpreted	Existing institutions change or new ones added
Governance	No change in relative dominance	Emergence of bottom-up processes	More diverse governance structures

Examples from waterfowl management

- **Single loop:** ***are we doing things right?***
  - Explicit accounting for sequential decision-making
  - Passive adaptive management – improving model-based predictions
- **Double loop:** ***are we doing the right things?***
  - Model adequacy (parametric and functional form)
  - Ideological debates about harvest-management objectives
  - Relationship between harvest and habitat mgmt goals
  - Multi-stock management
  - Effectiveness of waterfowl programs & institutions
- **Triple loop:** ***who has the right?***
  - Stakeholders – who are they? how will their interests be represented and served?
  - Relationship of waterfowl mgmt to broader conservation enterprise
  - The changing face of conservation (e.g., biodiversity, climate change)

Selective pressures

- Single-species harvest management: mallards, pintails, scaup, black ducks, wood ducks, mottled ducks
- Integration and coherence of harvest and habitat management
- Multi-stock harvest management
- Understanding stakeholders
- NAWMP Revision
- Climate change



Single loop

Double loop

Triple loop

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What, who, and how??? *Thursday 11am*

	Uncertainty	Actors	Institutions	Governance
Single-species				
Coherence				
Multiple stocks				
Stakeholders				
NAWMP Revision				
Climate change				

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Changes
NEXT EXIT