Responding to Climate Change Impacts in Forested Watershed Management

www.ForestAdaptation.org/water

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A changing climate will affect the condition and quality of forested watersheds.
Watershed (conceptual)

- Interactions can intensify change
- Effects are cumulative

- Roads
- Wetlands
- Crossings
- Riparian
- Forest health decline (stressed)
- Invasive species
- Riparian - pests
How do we respond to climate change?
Adaptation is the adjustment of systems in preparation or in response to climate change.

Adaptation actions are designed to specifically address climate change impacts and vulnerabilities in order to meet goals and objectives.
**Adaptation** is the adjustment of systems in preparation or in response to climate change.

Ecosystem-based adaptation activities that build on sustainable management, conservation, and restoration.
Adaptation is the adjustment of systems in preparation or in response to climate change.

- What do you value?
- How much risk are you willing to tolerate?
If you want a single “answer” for how to respond to climate change, it’s “It depends” It depends on where you are working and what you’re trying to achieve.
Adaptation Concepts

Manage for **Persistence**: Ecosystems are still recognizable as being the same system (character)

- **Resistance**
  - Reduce impacts/
  - Maintain current conditions

Manage for **Change**: Ecosystems have fundamentally changed to something different

- **Resilience**
  - Forward-looking/
  - Promote change
- **Transition (Response)**

Adaptation Concepts

**Resistance**
- Improve defenses of forest against change and disturbance
- Maintain relatively unchanged conditions

**Resilience**
- Accommodate some degree of change
- Return to prior reference condition following disturbance

**Transition**
- Intentionally facilitate change
- Enable ecosystem to respond to changing and new conditions

Watersheds + forests + climate change

Can land management enhance the ability of a system to cope with climate change and meet your goals and objectives?
Making a plan!
“Adaptation Planning”

When land managers explicitly identify an climate adaptation pathway to meet their landscape goals and objectives. (our philosophy)
A flexible workbook and menu to address diverse needs

- Designed for a variety of land owners with diverse goals
- Works at project-level
- Centers around manager’s expertise, and judgement
- Does not make recommendations

Adaptation Workbook: Decision-support tool

Provides “structured flexibility”

1. DEFINE, management objectives.
2. ASSESS climate impacts and vulnerabilities.
3. EVALUATE management objectives given vulnerabilities.
4. IDENTIFY adaptation approaches and tactics.
5. MONITOR and evaluate effectiveness actions.

Menu of Adaptation Strategies & Approaches

Vulnerability assessments, scientific literature, and other resources

www.nrs.fs.fed.us/pubs/52760
Adaptation Strategies for Natural Resource Management

Adaptation topics = a variety of perspectives

• Forests
• Urban forests
• Agriculture
• Forested watersheds
• Tribes & cultural resources
• Carbon management
• Non-forested Wetlands*
• Wildlife*
• Coastal habitats*, Grasslands*, Glacial Lakes,

*Resources in development

forestadaptation.org/strategies
Adaptation Strategies and Approaches: *Making Actions Intentional*

My goal is to ....
(Adaptation Concept and overall *Strategy*)

So I will ....
Take a specific *Approach*
and implement a custom *Tactic*

*Links the “why” to the “how” – sets context for responses to climate change*
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[forestadaptation.org/strategies]
Watershed Adaptation Strategies: Big ideas

- Sustain fundamental hydrologic processes
- Maintain and enhance water quality
- Maintain or restore forests and vegetative cover
- Facilitate forest ecosystem adjustments through species transitions
- Accommodate altered hydrologic processes
- Design and modify infrastructure to accommodate future conditions

A spectrum of options: Persistence, Change

Includes classic persistence approaches appropriate to managing ecosystems

... and choices grounded in change.

Many paths forward: Adaptation resources offer a suite of approaches to mix and match as appropriate to a planning effort.
Goal: Develop local examples of adaptation

+350 Real-world projects using the Adaptation Workbook

Forestadaptation.org/demos
Join us for a training! In-person or online

• Create custom adaptation plans using Adaptation Workbook
• Regional or topical focus

**In-person** - 1-2 day interactive workshop

**Online – Free**
• Distance learning course
• 8 weeks – 1 session/week
• Access to adaptation coaching

Upcoming Course: Winter 2020!

[forestadaptation.org/training](http://forestadaptation.org/training)
Key Question:
What actions can help to adapt to anticipated changes and meet your goals?
Next presentations – forest adaptation stories!

Christopher Riely
forestadaptation.org/providence

Brian Keevan
forestadaptation.org/quabbin

Robert Turner
forestadaptation.org/atlas
Closing Thoughts...

Uncertainty is the new certainty

Incorporate it, don’t succumb to decision paralysis

Same job, new challenges

Similar stressors, but new patterns and agents

Adapt based on values and risk tolerance

Think about place and objectives within the context of risk and values

Document rationale and intent

...then share your plan!

Thank you!

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It’s not like water falls from the sky.

Oh wait, it does. Help it get back into the ground.

https://ourwatershed.ca/resources/support/for-municipalities/