

Module 1: Climate Issues – Setting Your Course for Adaptation

1.1 Identify Assets & Impacts

Asset: Brook Trout and other coldwater fisheries

Location: Streams - Countywide

Possible climate impacts are: Changes in life history patterns, distribution, and a reduction in population from changes in water temperatures and stream flow

I think this is due to: Changes air temperature and rainfall patterns like flooding and drought and maybe rising temperatures and changing flow rates.

My Sector: wildlife shorelines & wetlands terrestrial habitats cultural resources public health & safety

infrastructure (i.d. type): _____ other: _____ Fisheries

Organizational Level: local regional state national

My Name: Doug Ditches

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Location:

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I think this is due to:

My Sector: wildlife shorelines & wetlands terrestrial habitats cultural resources public health & safety

infrastructure (i.d. type): _____ other: _____

Organizational Level: local regional state national

My Name:

Module 2: Climate Science – Comprehending Processes and Impacts

2.1 Climate Stressors:

Changes in precipitation patterns
Rising temperatures
Flooding
Water quality

2.2 Non-Climate Stressors:

Development
Overexploitation of resource
Agriculture practices

2.3 Compose Climate Issue Statement

Brook trout in streams throughout the county may experience changes in life history patterns, distribution, and a reduction in population due to changes in water temperatures and stream flow rates caused by changes in precipitation patterns, flooding and water quality.

In the next 3 months I need to find out more about...

Module 2: Climate Science – Comprehending Processes and Impacts

2.1 Climate Stressors:

2.2 Non-Climate Stressors:

2.3 Compose Climate Issue Statement

In the next 3 months I need to find out more about...

Module 3: Risk Assessment – Understanding Methods and Interpreting Results

Restate your climate issue statement: Brook trout in streams throughout the county may experience changes in life history patterns, distribution, and a reduction in population due to changes in water temperatures and stream flow rates caused by changes in precipitation patterns, flooding and water quality.

3.2. Characterize the Hazards	3.3. Rank Hazard Frequency (HML)	3.4. Rank Hazard Magnitude (HML)	3.5. Rank Climate Change Effect on Hazard (HML)	3.6. Overall Hazard Ranking 3+4+5 (HML)
<ul style="list-style-type: none"> 1. Increase in water temperature – from increase in air temperature, effects from surface water runoff and groundwater recharge resulting from changes in precipitation. 2. Increase in stream flow – from more frequent or intense precipitation events (decline in early life stages and recruitment) 	<p>M</p> <p>L</p>	<p>H</p> <p>H</p>	<p>H</p> <p>M</p>	<p>H</p> <p>M</p>

Module 3 – Risk Assessment (cont.)

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Hazard (From 2)	3.7. Rank Exposure (HML)	3.8. Rank Sensitivity (HML)	3.9. Potential Impact 7 + 8 (HML)	Asset:	
				3.10 Adaptive Capacity Elements (HML)	3.11. Rank Adaptive Capacity (HML)
1. Water Temperature	H+	H+	H+	<ul style="list-style-type: none"> Mobility – have limited ability to relocate to more optimal conditions Fisheries management plans & regulations 	L
2. Increase stream flow	L	M		<ul style="list-style-type: none"> Fish hatcheries and re-stocking programs Stream restoration programs 	M

Module 3 – Risk Assessment (cont.)				
Asset:				
Hazard (From 2)	Overall Vulnerability (from 3.12) (HML)	3.13. Overall Risk 3.6 + 3.12 (HML)	3.14 Potential Impacts	3.15. Areas and Degree of Uncertainty
1. Water Temperature	H+	H+	1. Higher stream temperatures over long periods will cause cold species to disappear 2. Higher stream flow from more frequent and intense rain events result in trout fry being swept away. Overall, changes/declines in early life stages and recruitment	Moderate uncertainty about temperature thresholds for trout High uncertainty in precipitation models
2. Increase stream flow	M	M		
Your Asset:				
In the next 3 months I want to know more about....				

Module 3: Risk Assessment – Understanding Methods and Interpreting Results				
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					3.12. OVERALL Vulnerability 10-11 (HML)

Module 3 – Risk Assessment (cont.)				
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Your Asset:				In the next 3 months I want to know more about....

Module 4: Adaptation Planning – Identifying and Assessing Adaptation Measures						
Restate your climate issue statement: Brook trout in streams throughout the county may experience changes in life history patterns, distribution, and a reduction in population due to changes in water temperatures and stream flow rates caused by changes in precipitation patterns, flooding and water quality.						
4.1 Goal Setting:			Ensure a healthy and viable population of Brook trout for generations to come.			
4.2 SMART Objective(s)			<ul style="list-style-type: none"> ● Maintain a 100-foot riparian buffer around all Class I and Class II trout streams in the county over the next 40 years ● Restore 50% of the degraded coldwater streams in the county by 2025 			
4.3 Identify Potential Adaptation Measures			<table border="1"> <tr> <td>1) Impose angling restrictions during summer months</td> <td>2) Plant warm-season grasses along stream corridors and highly erodible cropland</td> <td>3) Remove beaver dams as part of a stream restoration program</td> </tr> </table>	1) Impose angling restrictions during summer months	2) Plant warm-season grasses along stream corridors and highly erodible cropland	3) Remove beaver dams as part of a stream restoration program
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4.4 Conduct Multi-Criteria Analysis and Record Overall Rating for Each Measure			<table border="1"> <tr> <td>1) M</td> <td>2) H</td> <td>3) L</td> </tr> </table>	1) M	2) H	3) L
1) M	2) H	3) L				
4.5 Select Adaptation Measure			Plant warm-season grasses along stream corridors and highly erodible cropland			
In the next 3 months I need to find out more about...			<ol style="list-style-type: none"> 1. Find out what the extent of highly erodible cropland is in the county 2. Look for any programs to help with funding 3. Conduct further research on the question marks I had in my multi-criteria analysis 			

Module 4: Adaptation Planning – Identifying and Assessing Adaptation Measures	
Restate your climate issue statement:	
4.1 Goal Setting:	
4.2 SMART Objective(s)	
4.3 Identify Potential Adaptation Measures	
4.4 Conduct Multi-Criteria Analysis and Record Overall Rating for Each Measure	
4.5 Select Adaptation Measure	
In the next 3 months I need to find out more about....	

Module 5: Communication – Applying Communication Research to be Effective	
5.1 Restate – Climate Adaptation Goal Statement	Ensure a healthy and viable population of Brook trout for generations to come.
5.2 Restate – Climate Adaptation Measures	Warm-season grasses should be planted along stream corridors and highly erodible cropland. This potentially lowers levels of surface runoff, reduces erosion, improves water quality, and increases groundwater infiltration.
5.3 Target Population: Land owners	5.4 Message content bullets: <ul style="list-style-type: none"> * importance of trout to local and state economies * integral part of state's natural legacy, culture and identity * Opportunities to qualify for USDA conservation program eligibility
Describe Relevant Target Population Characteristics	
5.5 Target population's current stage of change "I might change" – needs information on what they can do to change and why	5.6 Next stage is: "I am changing" 5.7 Where do you want them to be? "I have changed"
5.8 Other Considerations Very concerned about the cost associated with a program like this	
5.9 Frames – Perspective(s) of Message Local - economy, culture and identity	
5.10 Emotional Level Add small amount of emotional appeal	
Message Controls	
5.11 Terminology use Climate variability, not global warming or climate change.	
5.12 Images Brook trout, someone fly fishing, photos from last storm and amount of sediment runoff that occurred.	
5.13 Media Monthly town meeting with various members of the community.	
5.14 Messenger Henry Little, local fly fisher who has been an active member of the community for over 40 years.	

5.15 Draft Message

This area of the state is recognized for its abundance of coldwater streams, home to the native brook trout. Brook trout are avidly sought after for food and sport by anglers near and far, contributing significantly to the local and state economy. As you all know, I've grown up fishing in these streams. But now I fear that my grandchildren won't be afforded the same experience.

This resource is under considerable pressure to survive. Although a number of efforts to conserve these fish are already in effect, climate variations have the potential of significantly altering our streams so that they become uninhabitable to these native fish. We've already seen a glimpse of what the future might look like with the extreme storms of the last couple of years. If we don't begin to plan for these changes, we are facing detrimental impacts to something that has long been an integral part of our economy, culture and identity.

We have a few options to consider, but the one we are proposing today will help lower surface runoff and reduce erosion, increase groundwater infiltration, and ultimately improve water quality in our streams. This solution relies on a natural approach to dealing with the changing conditions ahead. Planting warm-season grasses on highly erodible cropland and along stream corridors is a win-win solution. We can help keep our coldwater streams a thriving habitat for brook trout, thus maintaining an important part of our local economy and all the while preventing damaging impacts on the land we own.

5.16 Opportunities to Deliver the Message(s) (Optional)

5.17 Immediate Next Steps – In the next 3 months I need to find out more about....

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5.16 Opportunities to Deliver the Message(s) (Optional)

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Module 6: Climate Governance – Finding Opportunities in the Enabling Environment	
Enabling Environment	Opportunities Related to your Asset, Sector & Adaptation Measure
6.1 Planning Frameworks	<p>A. Existing Plans - What existing plans are used to manage the asset?</p> <p>A) - Brook trout management plan - Regional water quality management plan</p> <p>B. Oversight - What agency, department, and/or organization is responsible for the development and implementation of that plan?</p> <p>B) - State Department of Natural Resources - Regional Planning Board</p> <p>C. Updates - Are there regular updates required for the plan? If so, what is the frequency of update?</p> <p>C) - No - Yes, every 5 years</p>

6.2 Policies, Laws & Regulations

A. **Management** - What existing policies, laws and/or regulations are used to manage the asset?

A) Fishing regulations

B. **Scale** – What scale are these applicable (international, federal, regional, state, local)?

B) State

C. **Mechanisms** - What is the mechanism for adoption (executive order, legislation, etc.)?

C) Legislation

6.3 Programs, Initiatives & Projects

- A. **Piggybacking** – Are there existing programs, initiatives and/or projects that are or could be complementary or reinforcing of the adaptation goals and objectives?

A) - Stocking and hatchery-reared trout programs

- Stream habitat protection and restoration programs

- A. Existing - What are the funding mechanisms in place for: managing the asset, for planning efforts, or for any programs and initiatives listed above?

A) USDA CRP funds

- B. New - Are there new funding opportunities becoming available that could be used for adaptation?

B) Not sure?

6.4 Funding Mechanisms

6.5 People

A. Managers - Identify the government agencies, private entities, and other parties engaged with managing the asset?

- A) - State Department of Natural Resource
 - US Fish and Wildlife Service
 - Trout Unlimited

B. Need to Have's – Thinking of your priority adaptation measure, identify parties or sectors that *should be engaged* for successful implementation.

C. Champions - Are there any champions or political leaders in your community for adaptation and/or for the asset itself?

D. Nice to Have's - Who might be available or able to provide additional human, technical or financial resources?

B) Land owners

- C) Henry Little - local fisherman

- D) State's Climate Commission

In the next 3 months I want to learn more about....

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Module 7: Adaptation Implementation – Acting Now for the Future

Part I - Integration

7.1 Windows of Opportunity

Think about what's on your desk and calendar *right now* - what are opportunities to integrate adaptation into your organizational and work-related decisions, actions, and conversations?

- Weekly staff meetings
- Stream restoration project proposal – submission due in two weeks for funding approval. Make sure the climate lens has been included in restoration goals and

Part II – Bundling

7.2 Finding Support & Creating Synergy

Be prepared to share your goal and priority measure with others to find opportunities to collaborate with others to achieve mutual objectives (aka *bundling*).

- 1) When directed, carry this job aid (and a pen) with you to discuss your actions with colleagues.
- 2) Use the **back of this page** for taking notes about resources, information, opportunities to support these actions and opportunities for collaboration.
- 3) **Listen** for bundling opportunities.
- 4) After the speed dating activity, you will have a chance to record those below.

Linda Johnson - Healthy Waters Coalition - manages restoration grants program. Potential opportunity for funding and collaboration.

Rob Smith - Land Trust Cooperative - similar adaptation measure, should set up a meeting to see if we can leverage our resources and work together.

Part III – Mainstreaming

7.3 Looking into the Future

How do you see adaptation being mainstreamed? What are opportunities to *modify* existing or *propose* new – policies, plans, programs, projects, partnerships, etc. in order to mainstream adaption? Record below.

- New monitoring program to determine the extent of climate impacts and changing conditions over time
- Modified stream restoration goals that incorporate climate impacts and accommodate for what will be the new extreme
- A coordinated approach to stream restoration involving numerous partners and organizations

Part IV – Committing to Action

7.4 Identify Highest Priority Next Steps.

Review all the “next steps” you recorded on your job aids and consider what you have learned during this module. Select the top three actions you plan to take in the next few months to advance climate adaptation efforts in your organization. Be prepared to share these with the group.

“I intend to...”

1.

2.

3.

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