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TU NLC Climate Change Work Group
November 2024

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Climate Change Modules Introduction
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Introduction

- NLC Climate Change Workgroup (CCWG) Mission
Empower TU members to become effective champions for TU climate change policy and initiatives, in their communities, regionally and nationally, through science-based education, communication, and advocacy.
- Workgroup Goal
To develop and implement climate change education and training programs and materials for climate change coordinators in collaboration with the TU Science Staff.
- Workgroup Action
To achieve that goal the CCWG developed modules that are guides to resources with climate change presentations, tools, tips, facts, and contacts that Climate Change Coordinators (CCC) may use to communicate about climate change science, adaptation, and advocacy.
 - [Module 1: Climate Change Coordinator Role](#)
 - [Module 2: Climate Change Science Resources and Examples](#)
 - [Module 3: Climate Change Adaptation Resources and Examples](#)
 - [Module 4: Climate Change Advocacy Resources and Examples](#)
 - [Module 5: Climate Change Educational Resources and Examples](#)

Note: Pages and documents at web addresses sometimes go missing. You may still be able to find them at the Internet Archive online at <https://archive.org/>, which you can use to search for an archived version of the page using the URL for the page you are trying to find.

Module 01: Climate Change Coordinator (CCC) Role
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Module 01: Climate Change Coordinator (CCC) Role

Our Purpose

The purpose of the **Climate Change Work Group (CCWG)** is to provide resources for understanding and addressing the effects of climate change on coldwater fisheries and reducing our emissions to slow the harmful impacts of climate change.

CCWG Goals

Empower TU members to become effective champions for TU climate change policy and initiatives, in their communities, regionally and nationally, through science-based adaptation projects, advocacy, and education.

Expand and energize our network of **Climate Change Coordinators (CCC)** at the council and chapter levels.

Support the **TU National** Policy objectives:

1. Conserve land and water to increase the natural storage of carbon
2. Mitigate the effects of a hotter, drier, more turbulent climate
3. Reduce the U.S. carbon footprint, including greenhouse gas emissions, and encourage renewable energy

Action Steps

CCWG is building a team of Climate Change Coordinators at TU chapters across the country committed to fostering awareness of climate change and addressing its impacts in their communities. The essential characteristics of Climate Change Coordinators are:

- Good communication skills
- A basic understanding of climate change science
- Familiarity with TU national climate change policies
- A commitment to addressing the causes and impacts of climate change
- Respect for others' views.

To empower our Climate Change Coordinators (CCC) we have created a comprehensive, accessible and evolving library of online communication resources. We expect that as a CCC, you will draw upon these five CCWG resource modules, each including tools, tips, facts, references, links, and contacts, to educate your fellow anglers and communities on an ongoing basis about the immediate and future threats of climate change.

We understand that each CCC will know their Council and Chapter members best, and based on that knowledge, will be able to determine the right mix of messaging to inspire them to take action on climate change.

As your Council/Chapter CCC, there are five general guidelines we'd like you to consider:

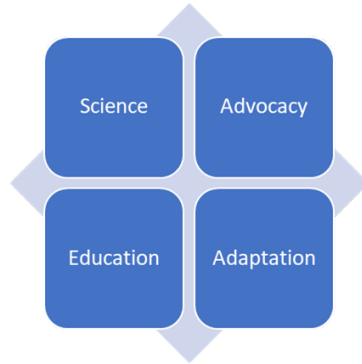
1. Get to know Climate Change Workgroup participants (we're here to help!)

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2. Participate in monthly Zoom meetings to hear the latest ideas and activities
3. Communicate your activities/share your experiences with to CCWG chairs
4. Connect with other Coordinators to share ideas and successes
5. Review Module content and help us keep it current & relevant

The Four Climate Change *Resource Content* Modules

The Climate Change Coordinator resource modules provide specific tools, tips, facts, references, links, and contacts, and were developed in close collaboration with the TU National staff.



Module 2 -Science: Raise awareness of the impacts of climate change on coldwater fisheries due to warming temperatures and the increasing damage from fires, floods and droughts caused by climate change.

- Access timely, science-based research, reports and knowledge
- Communicate a consistent TU science-based message to your chapters & councils about impacts and solutions
- Apply angler science techniques/ideas in your communities with partner organizations: monitoring stream temperature, flows, fish counts, macros and DNA sampling to document the impact of climate change

Module 3 - Adaptation: Adapt streams and rivers to lessen the adverse effects of climate change on fish habitat.

- Engage state and local chapter TU members and the public in science-based efforts to reduce the impact of climate change
- Bring science to bear on habitat projects to improve climate change resiliency
- Lead on-stream tours, fishing events, conversations re: impacts of higher stream temps, flooding, and drought on fish -- discuss solutions.
- Help incorporate adaptation, mitigation and resilience into chapter plans.

Module 4 - Advocacy: Prepare members and supporters to advocate for reducing emissions, as called for in the Trout Unlimited Policy on Climate Change and to advocate for other policies that protect trout.

- Share knowledge of the impact of emissions and highlight alternatives to help transition to low carbon energy sources

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- Partner with local environmental orgs to promote fish-friendly legislation
- Serve as a nonpartisan advocate for TU climate change policies by supporting and disseminating TU legislative initiatives
- Notify CCWG regarding local or state legislation that impacts coldwater fisheries

Module 5 - Education: Provide resources and examples of general curricula, programs, materials, and activities that can be used in formal and information educational settings.

- Engage with ongoing TU education/youth programs: StreamExplorer/Magazine, Headwaters Youth Program, Five Rivers, Youth Education Committee
- Share success stories/case studies from TU/partner orgs across the country
- Access third-party reports, analyses and learning tools e.g.: NASA, NY Times, NPR, Educational Resources for Wildlife and Climate Change

Guidance for Climate Change Coordinators – Applying Content from Modules

The following “bite sized pieces” provide guidance on specific ways you can share TU’s core messaging regarding climate change using the resources in the climate change modules. It is up to you to pick and choose from these ideas as to what will be most appropriate and effective for your local audiences.

1. Request a regular timeslot (5 – 10 min.) in your monthly chapter or quarterly council meeting.
2. Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.
3. Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.
4. Establish a dedicated section of your chapter/council website where you provide your webmaster with dependably fresh messaging and links.
5. Update your chapter/council Facebook/LinkedIn and other social media with TU prepared policy content such as the recent request to “Take Action” in support of the Farm Bill that is up for renewal this year in Congress as well as other measures that will have a massive impact on fisheries (provide link to sample).
6. Coordinate with your Conservation chair/other NLC Workgroup reps on their key initiatives.
7. Encourage chapter/council members to join organizations sharing TU’s goal of reducing emissions.
8. Encourage your chapter/council members to ask their members of Congress to support legislation that will lower emissions.
9. Take the lead on climate change mitigation and/or greenhouse gas reduction project in your region.
10. Be familiar with TU efforts to reduce the effects of climate change to assure you are an effective spokesperson for TU.
11. Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

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12. Partner with a local agency to co-sponsor a program of Adaptation and Resilience activities, invite a representative to present the plan at a monthly meeting, and advertise it in your newsletter and on social media.

TU is Working to help Trout, Salmon, and our communities weather climate change

*Climate change is not waiting for us in some distant day. It's here, now. For trout and salmon, the problem is clear enough at the most basic level. In the face of drought, floods, and wildfire, we have reason for hope. We can help make our fisheries and communities more resilient. In fact, we already are doing a great job helping trout adapt. **Helen Neville, TU Chief Scientist***

At TU, we're optimists. We know how to help trout and salmon, and our communities, weather climate change. This will help trout in the short term as we work on the source of the problem greenhouse gas emissions from burning fossil fuels.

Contacts:

Jeff Holzem - Jeff2002h@yahoo.com

Peter Gray - bccpigray@yahoo.com

**Module 02: Climate Change Science
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Module 02: Climate Change Science

Goal

The Science Module is intended to help CCCs raise awareness of the impacts of climate change on coldwater fisheries due to warming temperatures and the increasing damage from fires, floods and droughts caused by climate change.

Purpose

The Science Module provides an inventory of Climate Change resources on the TU website and CCWG Library and on other third-party climate change sites that you can draw upon for ideas and content in support of TU's Climate Change Policy and goals. This module is intended to help Climate Change Coordinators:

- Communicate a consistent TU science-based message at the chapter and council level to raise awareness of the causes and impacts of climate change; and
- Promote local community science such as monitoring stream temperature, flows, fish counts, and DNA sampling to document the impact of climate change.

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RESOURCE 05: TU PODCAST: WHAT CLIMATE CHANGE MEANS FOR TROUT AND SALMON

RESOURCE 06: En-ROADS – A GLOBAL CLIMATE SIMULATOR

RESOURCE 07: SCIENCE & INFORMATION FOR A CLIMATE-SMART NATION CLIMATE.GOV

RESOURCE 08: NOAA-CLIMATE VULNERABILITY ASSESSMENTS

RESOURCE 09: FISH AND CLIMATE CHANGE DATABASE (FICLI, USGS)

RESOURCE 10: SIXTH NATIONAL CLIMATE ASSESSMENT

RESOURCE 11: CLIMATE CHANGE SCIENCE BASICS (CITIZENS CLIMATE LOBBY)

RESOURCE 12: WHEN I TALK ABOUT CLIMATE CHANGE, I DON'T TALK ABOUT SCIENCE.

RESOURCE 13: TIPS ON HOW TO CONDUCT EFFECTIVE PUBLIC ENGAGEMENT

Module 02 Resources

The following are resources that you can draw upon and adapt for your own situation.

Please be clear that third party perspectives and opinions presented in these resources and examples may not be endorsed by TU.

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RESOURCE 01: TU’S POLICY POSITIONS ON CLIMATE CHANGE

Update your chapter/council Facebook/LinkedIn and other social media with TU prepared policy content

<https://www.tu.org/conservation/climate-change/policy-positions/>

TU’s Policy Positions on Climate Change

A fundamental shift

Avoiding the most severe potential impacts of climate change means dealing with the root cause — carbon emissions.

We need to reduce greenhouse gas emissions from existing energy production and make a fundamental shift toward renewable technologies.

At the same time, we should address the effects of climate change facing us today, and that requires federal and state funding that matches the scope of the problem.

Climate change adaptation protects people and communities from floods, wildfire, and drought while making trout and salmon fisheries more resilient. It also provides high-paying jobs in rural communities across America.

Emissions reductions

Congress should pass legislation that will use market mechanisms to substantially reduce carbon emissions to save our watersheds, valuable fisheries, and most importantly, our health. As one example, the Energy Innovation and Carbon Dividend Act is a bipartisan, market-based approach that would reduce U.S. emissions by at least 40 percent over 12 years.

Clean energy

A serious effort to reduce climate pollution should include investments in clean, fish and wildlife-friendly energy sources such as on- and offshore wind, solar, sustainable bioenergy, and geothermal. The Public Lands Renewable Energy Development Act would encourage sustainable energy production while also protecting and restoring fish and wildlife habitat and providing assistance to local governments.

Climate adaptation funding

To do more of the work that makes communities, and fish and wildlife, more resilient to climate change, we need funding for projects that provide multiple benefits. We can reconnect fragmented streams to reduce flooding in communities while also improving fish and wildlife habitat. We can improve irrigation infrastructure to save farmers money while keeping more water in the streams for trout and migrating salmon. We can restore streams to serve as wildfire breaks, store water for agricultural irrigation, and keep water colder for trout.

RESOURCE 02: TU FAQs

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues. One place to look for relevant information is the TU Climate Change Working Group FAQ at:

<https://www.tu.org/wp-content/uploads/2024/12/ccFAQNov2024>

From that FAQ:

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HOW DO SCIENTISTS MONITOR CLIMATE, AND WHAT EVIDENCE IS THERE THAT IT IS CHANGING?

Air temperatures around the globe are monitored by NASA's Goddard Institute for Space Studies, NOAA and others. Global temperatures have increased steadily since the beginning of the industrial revolution. The longest continually running data set is maintained by NASA and dates back to 1880. According to the NASA data, which is consistent with NOAA and other records, 17 of the 18 warmest years in the 136-year record have occurred since 2001. 2023 was the hottest year on record, which broke the previous record high annual temperature average established just a few years earlier. 2024 is on a path to be even hotter. All ten of the ten hottest years on record have occurred in the past decade. The average global air temperature is about 1.1°C or about 1.9°F warmer as compared to the baseline from 1951-1980 average. Data from NASA's Goddard Institute for Space Studies mostly found at <https://www.nasa.gov/news-release/nasa-analysis-confirms-2023-as-warmest-year-on-record/>.

DO 97% OF SCIENTISTS REALLY BELIEVE THAT CLIMATE CHANGE IS HUMAN CAUSED?

A 2009 Earth and Space Science News study showed 97.5% of climate scientists actively studying climate change believe that it is human caused. Slightly less than 90% of climatologists not currently active in climate change research believe that humans are causing climate change. A 2021 Cornell study showed 99.9% of peer reviewed scientific papers agree climate change is primarily human caused.

WHAT EVIDENCE IS THERE FOR INCREASED RAINFALL INTENSITY AND FLOODING DUE TO CLIMATE CHANGE?

In October of 2024, Hurricane Helene dumped as much as 18 inches of rain in North Carolina, a once in a 1000 year flood. Per the Yale Climate Change Communication "In July 2023, a major heat wave covered much of the US. More than 85% of Americans experienced temperatures above 90 degrees Fahrenheit, with millions of people across the southern US experiencing temperatures over 100 degrees. Scientists say these high temperatures were made at least 5 times more likely by climate change.

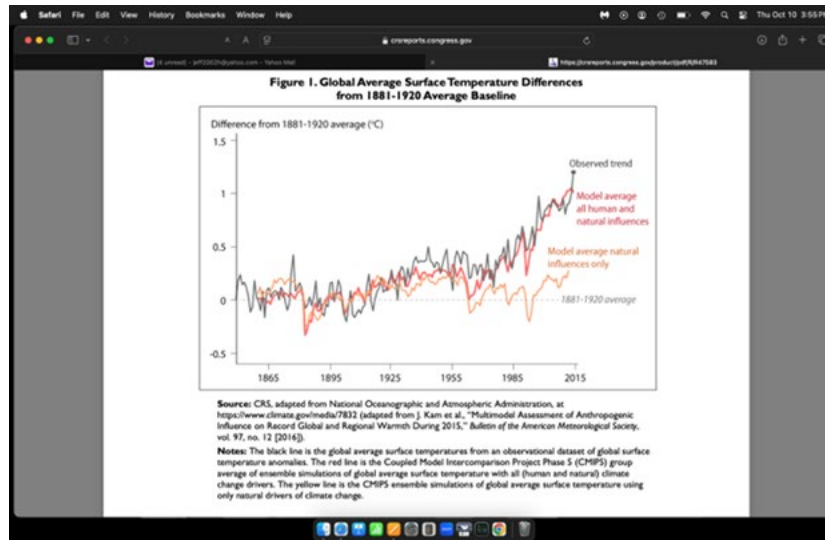
Extreme precipitation and flood events have increased across much the U.S. in the last 50 years, particularly during Northeast summers, according to one study by more than 20 U.S. climate scientists.

In the early 2000s, a new field of climate-science research emerged, exploring the human fingerprint on extreme weather, such as floods, heatwaves, droughts and storms. Scientists have published more than 400 peer-reviewed studies by August 2022, looking at weather extremes around the world. There is mounting evidence that human activity is raising the risk of extreme weather linked to heat.

[It produced a Carbon Brief showing these findings:](#)

- 71% of the 504 extreme weather events and trends included in the map were found to be made more likely or more severe by human-caused climate change.
- Of the 152 extreme heat events that have been assessed by scientists, 93% found that climate change made the event or trend more likely or more severe.
- For the 126 rainfall or flooding events studied, 56% found human activity had made the event more likely or more severe. For the 81 drought events studied, it's 68%.

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WHAT IS CAUSING THE INCREASE IN AIR TEMPERATURE?

Sunlight passes through the atmosphere and warms the Earth’s surface. Heat is then radiated upward from the Earth’s surface. Because the sun is very hot its radiation is of short wavelength. The radiation from the cooler earth is longer wavelength. Greenhouse gasses are transparent to short wavelength radiation but trap much of the longer wavelength radiation in their atmospheric blanket. Greenhouse gas molecules consist primarily of water vapor (H₂O) and carbon dioxide (CO₂) but also methane (CH₄) and nitrous oxide (N₂O). Increasing amounts of greenhouse gases, especially CO₂ and CH₄, are produced by the burning of fossil fuels and oil and gas production. These additional molecules then act like a thicker blanket that traps more of the sun’s heat energy underneath it. The longest record of direct measurements of CO₂ has been conducted at the Mauna Loa Observatory in Hawaii. These measurements began in March 1958 by Scientists at Scripps Institution and show the dramatic increase in CO₂ concentration from less than 320 ppm in the late 1950s to a peak of 422.03 .ppm in September, 2024. NASA has directly measured the energy output of the sun since 1978 and detected a very slight drop in solar irradiance. So, changes in solar output do not appear to be responsible for the observed changes in temperature.

CAN INDIVIDUAL EXTREME WEATHER EVENTS BE ATTRIBUTED TO CLIMATE CHANGE?

Generally speaking, weather refers to the daily conditions of heat, dryness, rain, wind or other events like tornados, whereas climate is the longer-term pattern and trend of weather conditions. Thus, a single high intensity summer rainfall event or a single warm winter day does not by itself signify that the climate is changing, but the increasing frequency of such extreme events over time is evidence of climate change. The connection between longer-term climate change and extreme weather has been an increasing area of scientific study over the past decade. The Intergovernmental Panel on Climate Change, IPCC, stated: “It has been clear for decades that the Earth’s climate is changing, and the role of human influence on the climate system is undisputed,” The new report reflects major advances in the science of attribution – understanding the role of climate change in intensifying specific weather and climate events such as extreme heat waves and heavy rainfall events.

As just one example, attribution science estimated that the drenching rain experienced in 2017 with Hurricane Harvey was 3 times more likely with the influence of climate change than without it (an

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accompanying interpretation is that the precipitation was about 15% more intensive than it would have been without climate change). It is also estimated that 30-50% of the properties that flooded during Harvey would not have flooded without climate change. The analysis showed that extreme rainfall events along the Gulf Coast are were on the rise, as Hurricanes Helene and Milton confirmed.

RESOURCE 03: CLIMATE CHANGE & TROUT: IMPACTS, OPINIONS & WAYS YOU CAN HELP

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts. The TU Climate Change Working Group has a number of Powerpoint slide presentations indexed on this site with a document listing them all at:

https://www.tu.org/wp-content/uploads/2024/12/Climate_Change_Slide_Sets.pdf

One of these has been recently prepared and updated by Helen Neville. TU Senior Scientist to assist with this :

https://www.tu.org/wp-content/uploads/2024/12/Neville-Climate_Change_and_Trout.pptx

Roadmap

- Impacts of climate change, broad overview
- What scientists, the general public and TU members think
- How TU helps and can help more – pairing science with actions
- What you can do

There is also a set specifically on the role of greenhouse gasses in producing climate change produced for TU at: https://www.tu.org/wp-content/uploads/2024/12/van_Roojen-How_Trace_Gasses_Can_Change_Climate.pptx

RESOURCE 04: TROUT AND CLIMATE CHANGE

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts. An earlier slide set similar to the one above is at:

https://www.tu.org/wp-content/uploads/2024/12/Harris-Trout_and_Climate_Change.pptx

Larry Harris – Trout and Climate Change Narration: Adaptation and Resilience

Presentation Goals

- To define climate change and its effect on trout
- To present relevant graphs and data which illustrate the indicators of climate change
- To encourage members and chapters towards efforts to increase stream resiliency to climate change

You can find a recording of this slide set with narration at:

https://drive.google.com/file/d/1tdjKUL8Rbza8ZjPrepyqv-lb5DKkm_Pv/view

It can be played with PowerPoint.

RESOURCE 05: TU PODCAST: WHAT CLIMATE CHANGE MEANS FOR TROUT AND SALMON

Request a regular timeslot (5 – 10 minutes) in your monthly chapter business meeting or quarterly council meeting.

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Establish a dedicated section of your chapter/council website where you provide your webmaster with dependably fresh messaging and links.

<https://www.tu.org/magazine/science/climate-change/podcast-what-climate-change-means-for-trout-and-salmon/>

On the Destination Angler podcast, TU senior scientist and water policy expert Helen Neville explains what's happening, and what TU is doing about it. The climate-related news over the past year has been alarming, but Helen Neville, senior scientist at Trout Unlimited, sees reasons for hope.

RESOURCE 06: En-ROADS – A GLOBAL CLIMATE SIMULATOR

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.

<https://en-roads.climateinteractive.org/scenario.html?v=24.9.0>

En-ROADS is a global climate simulator that allows users to explore the impact that dozens of policies—such as electrifying transport, pricing carbon, and improving agricultural practices—have on factors like energy prices, temperature, air quality, and sea level rise.

En-ROADS helps people make connections between things they care about and the possibilities available to help ensure a resilient future. Users can quickly see the long-term effects of the global climate policies and actions they imagine. The goal? To break through the noise and equip elected officials, business leaders, and others with the knowledge they need to implement equitable and high-leverage climate solutions. You can learn more about the [science behind the simulator here](#).

RESOURCE 07: SCIENCE & INFORMATION FOR A CLIMATE-SMART NATION (CLIMATE.GOV)

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

<https://www.climate.gov/>

- News & Features: Global climate report for February 2024.
- Global Climate Dashboard: Tracking climate change and natural variability over time.
- Maps & Data

RESOURCE 08: NOAA-CLIMATE VULNERABILITY ASSESSMENTS

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

Establish a dedicated section of your chapter/council website where you provide your webmaster with dependably fresh messaging and links.

<https://www.fisheries.noaa.gov/national/climate/climate-vulnerability-assessments>

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Quoting from the website:

Changing climate and ocean conditions are impacting the nation's valuable marine resources and the people, businesses and communities that depend on them. NOAA Fisheries is assessing the vulnerability of fish stocks, protected species (marine mammals, sea turtles) and fishing communities to better understand which species may be most vulnerable and how to respond.

Climate Vulnerability Assessments

NOAA Fisheries assesses the vulnerability of fish stocks, protected species (mammals, sea turtles), habitats and fishing communities to changing climate and ocean conditions, to better prepare the many diverse people and businesses that depend on them.

RESOURCE 09: FISH AND CLIMATE CHANGE DATABASE (FiCli, USGS)

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

Establish a dedicated section of your chapter/council website where you provide your webmaster with dependably fresh messaging and links.

<https://rconnect.usgs.gov/ficli/> (This site will allow you to produce a filtered report, but the process is a bit technical.)

Climate change is an important factor affecting fish globally. This site provides a comprehensive database of peer-reviewed literature available on how climate change has impacted and will continue to impact inland fisheries worldwide.

These studies have been compiled through an extensive, systematic primary literature review to identify English-language, peer-reviewed journal publications with projected and documented examples of climate change impacts on inland fishes globally. From this standardized database of existing literature, we can examine global patterns in climate change impacts on inland fish.

RESOURCE 10: SIXTH NATIONAL CLIMATE ASSESSMENT

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

Establish a dedicated section of your chapter/council website where you provide your webmaster with dependably fresh messaging and links.

<https://www.wri.org/insights/2023-ipcc-ar6-synthesis-report-climate-change-findings>

The Top Ten Findings of the Sixth National Climate Assessment. (March 2023)

1. Human-induced global warming of 1.1 degrees C has spurred changes to the Earth's climate that are unprecedented in recent human history.
2. Climate impacts on people and ecosystems are more widespread and severe than expected, and future risks will escalate rapidly with every fraction of a degree of warming.
3. Adaptation measures can effectively build resilience, but more finance is needed to scale solutions.

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4. Some climate impacts are already so severe they cannot be adapted to, leading to losses and damage.
5. Global GHG emissions peak before 2025 in 1.5 degrees C-aligned pathways. (The 1.5 target represents: one to stave off the worst impacts of climate change. At 2 degrees, we anticipate tipping points and cascading and unavoidable severe impacts to ecosystems and humans.)
6. The world must rapidly shift away from burning fossil fuels — the number one cause of the climate crisis.
7. We also need urgent, systemwide transformations to secure a net-zero, climate-resilient future.
8. Carbon removal is now essential to limit global temperature rise to 1.5 degrees C.
9. Climate finance for both mitigation and adaptation must increase dramatically this decade.
10. Climate change — as well as our collective efforts to adapt to and mitigate it — will exacerbate inequity should we fail to ensure a just transition.

Sixth Assessment Lead Author Report - It can be done. It must be done'

IPCC delivers definitive report on climate change, and where to now.

<https://theconversation.com/it-can-be-done-it-must-be-done-ipcc-delivers-definitive-report-on-climate-change-and-where-to-now-201763>

The Synthesis Report confirms both emissions and atmospheric concentrations of greenhouse gases are now at record highs. To keep warming within 2°C above pre-industrial levels, global greenhouse gas emissions must decline by around 21% by 2030 and around 35% by 2035. Keeping warming below 1.5°C requires even stronger emissions reduction.

World Resources Institute

<https://www.wri.org/?topic=climate>

WRI is a trusted partner for change. Using research-based approaches, we work globally and in focus countries to meet people's essential needs; to protect and restore nature; and to stabilize the climate and build more resilient communities. We aim to fundamentally transform the way the world produces food, uses energy and designs its cities to create a better future for all. We work across several topics affecting people, nature and the climate

RESOURCE 11: CLIMATE CHANGE SCIENCE BASICS

Establish a dedicated section of your chapter/council website where you provide your webmaster with dependably fresh messaging and links.

<https://community.citizensclimate.org/topics/climate-change-science/basics>

Citizens' Climate Lobby

Citizens' Climate Lobby's mission is to create the political will for a livable world, and they won't stop working until we have a healthy and stable climate. This training highlights their overall policy agenda and the four policies for which they advocate that are effective in reducing net emissions and building bridges both in Congress and in our communities.

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This training is a part of CCL's Core Volunteer Training, a set of twelve training courses created to offer a solid foundation to newer volunteers and help them achieve the larger goals for climate advocacy.

[Economics of Carbon Fee and Dividend](#)

[Communicating with Progressives](#)

[Communicating with Conservatives](#)

RESOURCE 12: WHEN I TALK ABOUT CLIMATE CHANGE, I DON'T TALK ABOUT SCIENCE.

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts. Yale Climate Communications allow you to query by state, county and congressional district to gauge public's climate concern, support for different policies and to generate a short PDF of outputs to take to meet with representatives.

Another sourced of talking points is <https://www.southernfriedscience.com/when-i-talk-about-climate-change-i-dont-talk-about-science/>

The term "Climate Change" is now loaded with so much political baggage that it becomes almost impossible to hold a discussion across political lines. In stakeholder interviews, people generally understand and acknowledge the impacts of climate change on local and regional scales, as long as you don't call it "Climate Change". This has been my experience working in rural coastal communities, which tend to be strongly conservative and intimately connected to the changing ocean.

Which is why, when I talk about Climate Change, I don't talk about science.

- When I talk about Climate Change, I talk about Fishing.
- When I talk about Climate Change, I talk about Flooding.
- When I talk about Climate Change, I talk about Farming.
- When I talk about Climate Change, I talk about Faith.
- When I talk about Climate Change, I talk about the Future.
- Data is the map, storytelling is the journey.

RESOURCE 13: TIPS ON HOW TO CONDUCT EFFECTIVE PUBLIC ENGAGEMENT

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

<https://climate.fisheries.org/best-practice-in-communication-climate-science-for-fisheries-professionals/>

Best Practices for Communicating Climate Science for Fisheries Professionals

Climate change has been documented for over 120 years with increasing scientific rigor, and its impacts are already observable in marine and freshwater fisheries. But after decades of communication to underscore the validity of these changes, and the urgency for action, a large component of the public and many elected officials deny the scientific consensus and reject the need for action.

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Therefore, we outline a more effective strategy to convey the climate message to stakeholders and inspire them to act.

Brief history

Why haven't we gained traction in our communication efforts?

How to conduct effective public engagement

The six principles of effective public engagement

- Be a confident communicator.
- Talk about the real world, not abstract ideas.
- Connect with what matters most to your audience.
- Tell a human story.
- Lead with what you know.
- Use effective visuals in your communication.

Putting it all together

There is no single approach that connects with every audience. It is useful to understand the background and attitudes within your audience, anticipate their response, and adapt your message accordingly. Connect with what they care about, demonstrate that you also care, then tell a story in which they can visualize themselves as the protagonist. Offer simple solutions by suggesting actions they can initiate to make a difference. Audience members can then envision themselves saving their beloved fisheries and becoming the hero of your story.

Module 03: Climate Change Adaptation

Goal

Adapt streams to lessen the adverse effects of climate change on fish habitat and to build resilience to future changes.

Purposes

The Adaptation Module provides a variety of Climate Change resources and examples are intended to help Climate Change Coordinators and others seek ways to involve their state and local chapter TU members and the public in science-based efforts to address the impact of climate change.

- Work with council and chapter leaders to incorporate climate change adaptation into council and chapter plans.
- Bring climate science to bear on habitat projects to make them resilient to climate change.
- Engage in streamside conversations about the climate change impacts of higher stream temperatures, flooding, and drought on fishing by organizing on-stream tours and fishing events that incorporate discussions of impacts and solutions.

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Module 03 Resources

The following are resources that you can draw upon and adapt for your own situation.

Please be clear that third party perspectives and opinions presented in these resources and examples may not be endorsed by TU.

RESOURCE 01: TU'S POLICY POSITIONS ON CLIMATE CHANGE

Update your chapter/council Facebook/LinkedIn and other social media with TU prepared policy content

<https://www.tu.org/conservation/climate-change/policy-positions/>

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TU's Policy Positions on Climate Change

A fundamental shift

Avoiding the most severe potential impacts of climate change means dealing with the root cause — carbon emissions.

We need to reduce greenhouse gas emissions from existing energy production and make a fundamental shift toward renewable technologies.

At the same time, we should address the effects of climate change facing us today, and that requires federal and state funding that matches the scope of the problem.

Climate change adaptation protects people and communities from flood, wildfire, and drought while making trout and salmon fisheries more resilient. It also provides high-paying jobs in rural communities across America.

Emissions reductions

Congress should pass legislation that will use market mechanisms to substantially reduce carbon emissions to save our watersheds, valuable fisheries, and most importantly, our health. As one example, the Energy Innovation and Carbon Dividend Act is a bipartisan, market-based approach that would reduce U.S. emissions by at least 40 percent over 12 years.

Clean energy

A serious effort to reduce climate pollution should include investments in clean, fish and wildlife-friendly energy sources such as on- and offshore wind, solar, sustainable bioenergy, and geothermal. The Public Lands Renewable Energy Development Act would encourage sustainable energy production while also protecting and restoring fish and wildlife habitat and providing assistance to local governments.

Climate adaptation funding

To do more of the work that makes communities, and fish and wildlife, more resilient to climate change, we need funding for projects that provide multiple benefits. We can reconnect fragmented streams to reduce flooding in communities while also improving fish and wildlife habitat. We can improve irrigation infrastructure to save farmers money while keeping more water in the streams for trout and migrating salmon. We can restore streams to serve as wildfire breaks, store water for agricultural irrigation, and keep water colder for trout.

RESOURCE 02: CLIMATE CHANGE & TROUT: IMPACTS, OPINIONS & WAYS YOU CAN HELP

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.

https://www.tu.org/wp-content/uploads/2024/12/Neville-Climate_Change_and_Trout.pptx

Roadmap

- Impacts of climate change, broad overview
- What scientists, the general public and TU members think
- How TU helps and can help more – pairing science with actions
- What you can do

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RESOURCE 03: MY HEALTHY STREAM – A HANDBOOK FOR STREAMSIDE OWNERS

Take the lead on climate change mitigation project in your region.

Be familiar with TU efforts to reduce the effects of climate change to assure you are an effective spokesperson for TU.

<https://www.tu.org/wp-content/uploads/2019/02/My-Healthy-Stream.pdf>

Co-authored by Jack Williams, then TU’s Chief Scientist, Mike Dombeck, former head of the USFS and Director of the BLM and Chris Wood, president and chief executive officer of Trout Unlimited

From the forward: Streams are the “life blood” of the land. They are “veins and arteries” that carry the substance—water—that all life depends on. The food we eat, our health, and our overall quality of life is inextricably linked to the quality and quantity of water flowing in our rivers and streams. From a tiny spring seep trickling into a small stream to large rivers, streams connect the mountains to the valleys, the headwaters to the oceans, and the people to the land. The health of our streams is a direct reflection of the health of the land.

Streams are constantly changing. They move across valleys, they erode banks and then carry these sediments many miles downstream. One minute streams are calm and gentle, but the next, they can become a force of nature driven over their banks by storms arising in distant headwaters. Managing your land in such a changeable environment can be a huge challenge.

Our goal in writing this book is to provide the basic principles and practices of good streamside management to landowners both rural and urban. This handbook is intended to help you be a good steward of your land. It is not meant to be an exhaustive treatise or technical guide but instead a starting point that provides landowners with the basic information needed to help maintain and improve the health of their streams and streamside riparian lands.

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RESOURCE 04: HIGHLIGHT YOUR COLLABORATIVE WORK OTHER LOCAL CONSERVATION ORGANIZATIONS, EXAMPLES OF LOCAL COLLABORATIVE CLIMATE CHANGE ADAPTATION EFFORTS

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

Announce upcoming Conservation Volunteer Opportunities at monthly meetings and advertise them in your newsletter and on social media.

Invite a representative to present the plan at a monthly meeting and advertise it in your newsletter and social media.

Create a spreadsheet of Volunteer Conservation Opportunities that are offered by your chapter and/or other conservation organizations in your area.

TVTU Volunteer Conservation Opportunities Spreadsheet

By reviewing local conservation organizations' websites and other information sources the Tualatin Valley Chapter has identified partners that offer Volunteer Conservation Opportunities in our region. These opportunities are then described at our monthly meetings, in our newsletter, and on our Facebook page.

Dates & Times	Location & Description of Activity	Organizations, Approval, Registration	Materials/Equipment	Other Info.
Saturday March 9, 2024, 9:00–12:00	Balm Grove Restoration Project Join us to lay down mulch at this unique location in the town of Gales Creek, 12 miles upstream from where Gales Creek joins the Tualatin River, near Forest Grove.	Tualatin Riverkeepers http://tualatinriverkeepers.org/events/balm-grove-restoration-project	Tualatin Riverkeepers is aiding in the site's success by mulching around the planted locations post-project. Please join us to ensure the success of this location!	Clean Water Services owns and stewards this land and facilitated the removal of the dam. Friends of Trees is restoring the site with at least one significant planting project.
Saturday March 16, 2024, 8:45 12:00	Woodhaven Natural Area planting (Sherwood, OR) Help needed to plant hundreds of native trees and shrubs at this wonderful natural area! No experience necessary! SW Woodhaven Dr & SW Fitch Dr, Sherwood, OR 97140	Friends of Trees, Clean Water Services, and the City of Sherwood https://www.tfafirms.com/	Please arrive by 8:45am to sign-in and be assigned a planting crew. The planting starts at 9:00am. We provide gloves, tools, and planting guidance, as well as breakfast snacks and coffee/tea/hot chocolate. Dress for the weather wearing sturdy shoes or boots.	Groups and individuals welcome. Under age 18? We request that youth 15 and under volunteer with a parent or guardian. Youth 16 and older can volunteer on their own and will need to hand us a youth waiver form signed by their parent/guardian. volunteer@friendsoftrees.org

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<p>Saturday March 30, 2024, 9:00AM - 12:00PM</p>	<p>Give recycled Christmas trees a new life as fish habitat. Join Friends of the Refuge and Trout Unlimited in placing Christmas trees donated by Cornell Farms in the National Wildlife Refuge's restored Chicken Creek!</p>	<p>Friends of TRNWR https://friendsoftualatinrefuge.org/event-5639124</p>	<p>Woody debris in streams provides food and shelter for salmon, lamprey, trout, and other native species. Trees also help diversify stream habitat, slow flows, and decrease water temperatures. No prior experience is necessary.</p>	<p>We will meet at the Refuge's Wayside/North entrance parking lot. Training, gear, tools, and snacks will be provided. This project will involve navigating uneven terrain, stooping, and lifting up to 15 lbs.</p>
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Highlight a Volunteer Conservation Opportunity with other local organizations in your newsletter Tualatin Valley Chapter Monthly Newsletter and Facebook page

Balm Grove Restoration Project
<http://tualatinriverkeepers.org/events/balm-grove-restoration-project>

(Link no longer works but information below is from when it did)

Saturday March 9, 2024, 9:00AM - 12:00PM

Balm Grove Planting Friends of Trees needs help to help plant native trees and shrubs following the removal of the Balm Grove Dam a few miles Northwest of Forest Grove.

Clean Water Services owns and stewards this land and facilitated the removal of the Balm Grove dam. Friends of Trees is restoring the site. Tualatin Riverkeepers is aiding in the site's success by mulching around the planted locations post-project.

Develop a calendar of climate change adaptation with another conservation organization

The Tualatin Valley Chapter supports the Tualatin River National Wildlife Refuge on a series of conservation events.

2024 Tualatin River National Wildlife Refuge Conservation Schedule

March/April – Habitat Restoration Plantings; Second Saturday @ Refuge and Wapito Lake And 2 other Saturdays

May, June, July – Pulling Invasives and Educational Events; Second Saturday and others

August/September – Second Saturday and 1 other Christmas Tree placement each month (50-75 per event)

Event	Date	Location	# Vol.
Mar. 2nd Sat	3/9/2024	TRNWR Main ¹	40
Amphibian Egg Mass Surveys	3/20-3/27	Various	10
March Tree Placing*	3/30/2024	Chicken Crk	25-50
Apr. WL Planting	Date TBD	WLNWR2	20
Apr.2nd Sat	4/13/2024	WLNWR2	30

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May 2nd Sat	5/11/2024	TBD	30
June 2nd Sat	6/8/2024	TBD	30
July 2nd Sat	7/13/2024	TBD	30
Aug. 2nd Sat	8/10/2024	Chicken Crk	25-50
Aug. Tree Placing	8/24/2024	Chicken Crk	25-50
Sept. 2nd Sat	9/14/2024	Chicken Crk	25-50

¹Planting on TRNWR

²Wapato Lake National Wildlife Refuge

Highlight your collaborative work with another local conservation organizations on social media.

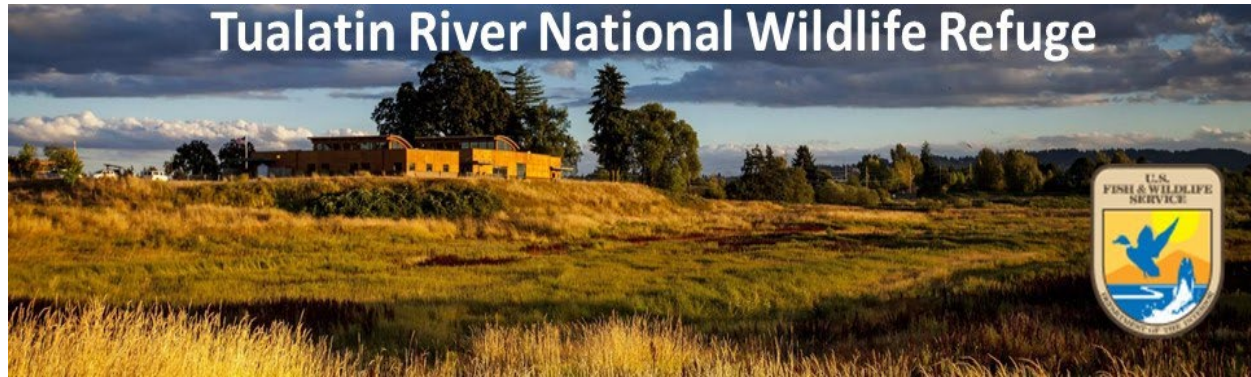


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Highlight your collaborative work with other local conservation organization at membership meetings and announce them in your newsletter.

Tualatin Valley Chapter Monthly Newsletter.



**MEETING SPEAKER
BELLA PADGETT
HABITAT RESTORATION SPECIALIST
FRIENDS OF THE REFUGE**

Bella will talk about the history of the Tualatin River National Wildlife Refuge and provide an overview of habitat restoration work past and future. And she will discuss our plans for a series of 2024 TVTU/TRNWR Volunteer Conservation Opportunities, not just for Christmas tree placement in Chicken Creek, but to support other Refuge restoration work, too!

RESOURCE 05: TROUT UNLIMITED EMBRACE A STREAM (EAS) GRANT PROGRAM

Take the lead on climate change mitigation project in your region.

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

www.tu.org/eas

Since 1975, TU's Embrace A Stream (EAS) grant program has awarded more than \$4.9 million in funding to over 1,150 local conservation, science and education projects.

Led by an all-volunteer committee of TU leaders like you, this is the best way for your chapter to develop the skills of writing grants while being supported throughout the process. Grants of up to \$10,000 are available and each year approximately \$100,000 in funding is available.

For chapters interested in an EAS grant, a special online training will be held March 14.

Dates and deadline to be aware of include:

- March 14: Online Training "How to Apply for an Embrace A Stream Grant"
- May 15: Deadline for chapters to advise local EAS rep on intent to apply
- June 15: Deadline to submit draft application to local EAS rep for review
- August 15: Deadline for submission of final grant application online
- Week of September 23: EAS Committee meeting and vote on grant awards

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RESOURCE 06: TU TRAINING: RUNNING A TREE PLANTING TO RESTORE RIVERS AND BUILD COMMUNITY

Take the lead on climate change mitigation project in your region.

RUNNING A TREE PLANTING TO RESTORE RIVERS AND BUILD COMMUNITY

By National Engagement Coordinator, Sean Sieler <sean.sieler@tu.org>

On April 22 through May 1, TU is celebrating Earth Day, Arbor Day and National Volunteer week the best way we know how, by hosting volunteer tree plantings across the country.

I am glad to help Chapters get their planting event set up with TU Events Center. Please reach out to doug.agee@tu.org and name a tree after me.

We'll do our part by launching a national marketing campaign around the events to help drive new and excited volunteers your way.

To help kick off the campaign, we're hosting a special training on how to plan a riparian tree planting and add it to the national TU tree planting calendar on Thursday, March 21st at 8 p.m. Eastern.

So start talking to your board members, connect with TU staff in your region, and consider partnering with neighboring chapters or other community groups to identify a potential tree planting in your home waters. If you've already got a planting planned, even better, simply learn how to add it to the calendar to benefit from the national marketing effort.

Register to join the training in the TU Events Center [here](#). After you purchase tickets you'll get instructions and a link to attend the event online.

Sean Sieler <sean.sieler@tu.org> joined the Volunteer Operations staff as our National Engagement Coordinator, a new role at TU. A recent graduate from the University of Montana who has worked for TU as an intern, in this role Sean will be working to grow our engagement practice by supporting TU councils, chapters and staff in running community-based programs.

Among his specific areas of focus will be:

- Supporting tree planting efforts aligned with our Plant for Our Future campaign with partners the Tractor Supply Company and the Arbor Day Foundation.
- Delivering best practice guides and resources on the most common engagement activities to help grow and improve our events and the "TU experience" of participants.
- Collect key data such as number of trees planted, pounds of trash collected, number of volunteers engaged, etc. in order to better tell the story of our collective impact.

In particular, he will be reaching out to the volunteers in the following roles:

- Advocacy Coordinator
- Conservation Coordinator
- Meeting Coordinator
- Membership Coordinator
- Women and Diversity Initiative Coordinator
- Youth Education Coordinator

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RESOURCE 07: TROUT UNLIMITED HEADWATERS YOUTH PROGRAM

Take the lead on climate change mitigation project in your region.

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/>

Headwaters Youth Program

We are building the next generation of river stewards and conservation-minded anglers

Explore Watersheds

Trout Unlimited coordinates community programs focused on teaching youth and young adults the science behind healthy watersheds.

- STREAM Girls: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/stream-girls/>
STREAM Girls is Trout Unlimited's watershed STEM program for girls that builds confidence and breaks down barriers in science and the outdoors. Through the eyes of a scientist, artist and angler, girls make a personal connection to their home waters.
- Trout in the Classroom: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/trout-in-the-classroom/>
Trout (or Salmon) in the Classroom (TIC or SIC) offers students of all ages a chance to raise Salmonids in a classroom setting and then release them into a nearby stream or river. Caring for the fish fosters a conservation ethic in the students, and the act of walking to a streambank and directly releasing the fingerlings into the water makes a concrete connection between caring for the fish and caring for the water.
- Save Our Streams Club from the TIA Alliance: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/sosclub/>
Save Our Streams (SOS) Clubs empower students to develop a mission-based monitoring project around the health of a community stream. With initial help from faculty, students explore water quality issues and stream ecology in the field
- Adopt-a-Trout: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/adopt-a-trout/>
Adopt-a-trout is an opportunity for students to participate in hands-on, real-life fisheries science. The program begins with a field day of fish tagging and related curriculum on-site with local students. For this reason, the program can foster diverse partnerships that include state and federal agencies, non-profits, K-12 schools, colleges and universities, corporations and tech industry companies.

Explore Fishing

Trout Unlimited volunteers and staff offer a spectrum of fishing education opportunities for young people of all ages. From kids fishing days in communities to fly fishing camps, there are many ways to learn and get involved!

- Scouts BSA Fly Fishing Merit Badge
- TU Summer on the Fly
- Youth Fishing & Conservation Camps
- TU Teens

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- TU Teen Summit
- TU Costa 5 Rivers College Clubs

Stream Explorers and TU Teens

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/stream-explorers-and-tu-teens/>

Stream Explorers and TU Teens encompass TU’s two levels of youth memberships. But they also are the names for a wide range of activities and programs for young people of these ages: Stream Explorers that are elementary-aged; TU Teens includes experiences in middle and high schools; and TU’s regional Camps & Academies offer transformative experiences for young people from late-elementary through high school. Check out www.tu.org/camps to see if there’s a camp near you.

The Headwaters Pacific Northwest Program

Just over 10 years ago we launched a new Deschutes Education program along the wild and scenic Crooked River in Oregon, with student field trips connected to our conservation goals and projects.

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/headwaters-pnw-program/>

RESOURCE 08: TROUT UNLIMITED PRIORITY WATERS: GET YOUR HANDS DIRTY

Take the lead on climate change mitigation project in your region.

Leverage TU resources to amplify the TU mission and messaging.

<https://www.tu.org/priority-waters-get-your-hands-dirty/>

Get Your Hands Dirty

The Trout Unlimited Priority Waters initiative is all about pulling together to care for and recover America’s trout and salmon watersheds. Our vision: volunteers and staff working hand-in-hand with partners and allies in their communities to protect, reconnect and restore more than 200 Priority Waters from Alaska to North Carolina, from California to Maine.

We invite you to join us in the joyful work of conservation: collecting data that propels recovery projects, planting trees that sustain restoration into the long term, joining your community in shared efforts to build a future of clean water and healthy fisheries.

Science

TU’s work is propelled by the best available science. Our Community Science initiative combines the expertise and knowledge of our professional staff with the passion, skills and energy of our volunteers to monitor water quality, assess stream health and habitat, and map spawning sites.

How to get involved:

- WATCH: How volunteer data drives conservation
- READ: About the TU science team
- DOWNLOAD: Guides and smartphone apps to bring the power of TU science to your community
- CONNECT: With your local TU chapter or state-specific staff to participate in or help design a community science effort
- SIGN UP: For newsletters sharing ways you can rise to the moment.

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- BROWSE: the TU Events Page to find community science volunteer opportunities near you.

Restoration

The promise of Priority Waters is the marriage of our network of professional field staff with the army of grassroots supporters and volunteers who care deeply about these waters. No other conservation nonprofit can match TU's ground game when it comes to mobilizing the latest restoration techniques and the people to embed that work in the community.

How to get involved:

- WATCH: State of TU 2023 to see the scale, impact and stories behind our restoration
- READ: About how we work at a landscape scale
- CONNECT: With your local TU chapter or state-specific staff to participate in or help design a restoration effort on your local priority water
- SIGN UP: Take our volunteer survey and let us know how and where you'd like to help
- BROWSE: The TU Events Page to find hands-on restoration opportunities near you.

Community

Our Priority Waters initiative helps direct and focus the entire TU community in a strategic way. By aligning our efforts and pushing forward a shared vision we can move mountains. Our community-based programs offer easy ways for your community to connect to the larger mission of TU.

How to get involved:

- WATCH: "We Are TU," an inspiring look at communities caring for and recovering clean water and healthy fisheries
- READ: Our online Tacklebox for resources and guides to building and growing your conservation community
- CONNECT: With your local TU chapter or state-specific staff.
- SIGN UP: Take our volunteer survey and let us know how and where you'd like to help.
- BROWSE: The TU Events Page to find opportunities to connect with the TU community near you.

Advocacy

With 350,000 members and supporters, Trout Unlimited can speak with a loud voice. Stand up for protections for Priority Waters. Make noise in support of bold steps to recover healthy fisheries and clean water. Be an advocate for the places you live, love and fish.

How to get involved:

- WATCH: "It's time for bold action," TU's film about salmon recovery on the Snake River dams.
- READ: About how you can help push for abandoned mine cleanups polluting trout streams across the country.
- CONNECT: With your local TU chapter or state-specific staff.
- SIGN UP: Take our volunteer survey and let us know how and where you'd like to help.
- BROWSE: TU's advocacy center to see how else you can help.

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News about Priority Waters

RESOURCE 09: TIPS ON HOW TO CONDUCT EFFECTIVE PUBLIC ENGAGEMENT

Prepare a short, impactful presentation for each opportunity using content provided by TU National, CCWG or your own research efforts.

Create a regular/recurring Climate Change update for your chapter/council newsletters where you repurpose presentation content and provide additional informational links on key issues.

<https://climate.fisheries.org/best-practice-in-communication-climate-science-for-fisheries-professionals/>

Best Practices for Communicating Climate Science for Fisheries Professionals

Climate change has been documented for over 120 years with increasing scientific rigor, and its impacts are already observable in marine and freshwater fisheries. But after decades of communication to underscore the validity of these changes, and the urgency for action, a large component of the public and many elected officials deny the scientific consensus and reject the need for action. Therefore, we outline a more effective strategy to convey the climate message to stakeholders and inspire them to act.

Brief history

Why haven't we gained traction in our communication efforts?

How to conduct effective public engagement

The six principles of effective public engagement.

- Be a confident communicator.
- Talk about the real world, not abstract ideas.
- Connect with what matters most to your audience.
- Tell a human story.
- Lead with what you know.
- Use effective visuals in your communication.

Putting it all together

There is no single approach that connects with every audience. You must first understand the background and attitudes within your audience, anticipate their response, and adapt your message accordingly. Connect with what they care about, demonstrate that you also care, then tell a story in which they can visualize themselves as the protagonist. Offer simple solutions by suggesting actions they can initiate to make a difference. Audience members can then envision themselves saving their beloved fishery and becoming the hero of your story.

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Module 04: Climate Change Advocacy

Goal

Support TU's Climate Policy Priorities

- Reduce the U.S. greenhouse gas footprint and encourage renewable energy building on the 2022 Inflation Reduction Act.
- Conserve land, forests and water to increase the natural storage of carbon. An added benefit is providing habitat to enhance the survival of fish, animals, and plants.
- Blunt the effects of a hotter, drier, more turbulent climate with projects like planting trees

Purposes

- Educate our communities about the threats.
- Press local, state, and federal decision-makers for action on greenhouse gas emission reductions, investments, and land and water conservation.
- Work with TU staff and volunteers to address greenhouse gas emissions and the impacts of climate change in your local communities and at the regional, state and national levels.

Note: As a 501(c)(3) organization TU may engage in some lobbying but not too much. "In general, no organization may qualify for section 501(c)(3) status if a substantial part of its activities is attempting to influence legislation (commonly known as lobbying). A 501(c)(3) organization may engage in some lobbying, but too much lobbying activity risks loss of tax-exempt status . . . Organizations may, however, involve themselves in issues of public policy without the activity being considered as lobbying. For example, organizations may conduct educational meetings, prepare and distribute educational materials, or otherwise consider public policy issues in an educational manner without jeopardizing their tax-exempt status." – from IRS website at <https://www.irs.gov/charities-non-profits/lobbying>

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Module 04 Resources

The following are resources and examples that you can draw upon and adapt for your own situation.

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Please be clear that third party perspectives and opinions presented in these resources and examples may not be endorsed specifically by TU.

RESOURCE 01: TU NATIONAL GOVERNMENT AFFAIRS OFFICE

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://www.tu.org/magazine/category/conservation/government-affairs/>

Lindsay Slater Lindsay.Slater@tu.org; Vice President, Government Affairs

Lindsay joined Trout Unlimited as a new vice president for government affairs after a distinguished career as chief of staff for U.S. Rep. Mike Simpson (R-ID). Slater was instrumental in the Columbia Basin Initiative proposing to remove four dams on the Snake River and restore wild salmon and steelhead populations. He has also worked on numerous pieces of bipartisan conservation and wilderness legislation, such as the Great American Outdoors Act.

What Government Affairs does related to climate change:

- Work to support laws, regulations and policies that lower emissions and help with adaptation, mitigation, and resilience.
- Work to defend existing climate friendly policies in the Inflation Reduction Act, the Farm Bill, EPA regs and so on.
- Issues Action Alerts for TU members to educate and encourage them to contact their representative and government agencies when climate-relevant issues arise.



Support TU's Climate Policy Priorities

1.

Reduce the U.S. carbon footprint and encourage renewable energy

The 2022 climate law was a start, but we need more action by Congress and the administration to reduce our carbon emissions and to encourage renewable energy. For example, enacting legislation like the bipartisan, market-based Energy Innovation and Carbon Dividend Act would cut the U.S. carbon footprint by at least 40 percent over 12 years.

2.

Conserve land and water to increase the natural storage of carbon

We need to conserve natural resources through programs like the America the Beautiful initiative, also known as 30x30, which aims to increase the amount of carbon stored naturally by conserving 30 percent of the nation's lands and waters by 2030, including those places that are most likely to weather climate change.

3.

Mitigate the effects of a hotter, drier, more turbulent climate

We need more significant investments in projects that provide multiple benefits for communities and fish. With more resources, we can take to scale adaptation and mitigation work we are doing to prepare for a hotter, drier, and more turbulent future.

TELL CONGRESS TO TAKE ACTION ON CLIMATE

From: <https://www.tu.org/conservation/conservation-areas/climate-change/>

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RESOURCE 02: CITIZENS' CLIMATE LOBBY (CCL)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

- <https://community.citizensclimate.org/topics/ccl-policy-agenda>

Citizens' Climate Lobby

“Citizens' Climate Lobby's mission is to create the political will for a livable world, and we won't stop working until we have a healthy and stable climate. This training highlights our overall policy agenda and the four policies for which we advocate that are effective in reducing net emissions and building bridges both in Congress and in our communities.”

CCL's Policy Agenda

- [Carbon Fee and Dividend, Energy Innovation Act](#)
- [Understanding Carbon Pricing Policies](#)
- [Healthy Forests](#)
- [Building Electrification and Energy](#)
- [Clean Energy Permitting Reform](#)

CCL's Trainings

- [Additional Climate Change Science](#)
- [Local Climate Change Impacts](#)
- [How to Create a Clean and Stable Electric Grid](#)
- [Economics of Carbon Fee and Dividend](#)
- [Communicating with Progressives](#)
- [Communicating with Conservatives](#)
- [Climate Change Science Basics](#)
- [Lobbying 201](#)
- [CCL Media Basics](#)
- [Social Media Tips](#)

RESOURCE 03: STATE SPECIFIC RESOURCES FOR WILDLIFE AND CLIMATE CHANGE

Leverage additional outside resources that reinforce or amplify the TU mission and messaging. You can use this directory from Project Wild to find them:

<https://padlet.com/projectwild/state-resources-for-wildlife-and-climate-change-7xra92ku3t8g>

Current States and Topics include:

- Connecticut-Climate Preparedness, Action, Adaptation and Mitigation Plans
- Delaware-Climate Preparedness, Action, Adaptation and Mitigation Plans
- Florida- Educational Materials and Activity Guides

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- Maryland-State Impact Reports
- North Carolina-Educational Materials and Activity Guides
- Ohio-Educational Materials and Activity Guides; Climate Preparedness, Action, Adaptation and Mitigation Plans
- Pennsylvania-Climate Preparedness, Action, Adaptation and Mitigation Plans
- Wisconsin-Educational Materials and Activity Guides

RESOURCE 04: EXAMPLES OF COLLABORATION ON CLIMATE CHANGE ISSUES

Take the lead on climate change mitigation project in your region.

Concentrate on TU efforts to reduce the effects of climate change to assure you are an effective spokesperson for TU.

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

Identify people willing to engage with state and national legislators and local officials on climate related laws and policies.

Local Advocacy Example

The Washington County Land Use and Transportation (LUT) program approved an application from a local golf course to deposit dredged materials from a 100-year-old irrigation pond onto a wetland that is adjacent to Fanno Creek, a major tributary of the Tualatin River, even though it clearly would result in the destruction of the wetland area and negatively affect the water quality in Fanno Creek. The Tualatin Valley TU chapter wrote in opposition to this decision. (see attached).

These comments addressed both: Community Development Codes (CDC) #421 (Flood Plain & Drainage Hazard Area Development) and #422 (Significant Natural Resources).

By law, an application also was sent to U.S. Army Corps of Engineers, Regulatory Branch, and Oregon Department of Environmental Quality. Comments were submitted by TVTU regarding the joint application (see attached).

SUBJECT: Comments on Portland Golf Club application for Department of the Army permit (U.S. Army Corps of Engineers No: NWP-2023-24; 30-Day Notice Issue Date: March 14, 2023) (Oregon Department of State Lands No: APP0063610) (collectively, the “Notices”)

On behalf of the TVTU Board of Directors, the TVTU President submitted an extensive set of comments to the Oregon Department of State Lands in opposition to this application. The issue is still unresolved since the joint application has been sent back for revisions twice.

Throughout this process the president worked closely with a local conservation organization: Neighbors for Wetland Preservation <savewetland@gmail.com; <https://savewetland.org/>>.

Local / State Advocacy Example

An example of how local municipalities were supported by collaboration of TU and local advocacy groups to implement state mandates for making local sewage and stormwater infrastructure resilient to high water events intensified by climate change.

In mid-April, the Ernest Schwiebert Chapter of TU re-posted our local partner The Watershed Institute's Facebook post requesting our Governor to stop delaying on follow-up to his commitment to publish a set of rules developed to address climate change impacts related to flooding.

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Our chapter collaborates with this partner in many other ways such as providing a popular "learn to fly cast" program at their annual Trenton River Days event and fly tying and casting for attendees at their annual World Water Day Celebration. We also participate in their spring stream clean-ups and put our stream clean-ups and other events on their online calendar.

State/National Advocacy Example

The effort to have the Owyhee Canyonland designated a National Monument was led by Sophia Kaelke, TU Oregon Engagement Manager.

This spring, our campaign is focused on two outreach efforts: (1) obtaining letters of support for an Owyhee Canyonlands National Monument from businesses and organizations and (2) our petition drive for individual supporters. We are almost ready to launch our petition and at that time, I will be reaching out again to ask for your help in sharing the petition.

Right now, my ask is that each chapter and the council complete a letter of support for the monument. I've attached a letter template that should make it easy for you as chapter and council leaders to add in your specific information. I've also attached an internal messaging document for the campaign if you'd like to pull from it for your letter.

Letters were composed to:

President Joe Biden
1600 Pennsylvania Avenue NW
Washington, D.C. 20500

The Honorable Ron Wyden
221 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable Jeff Merkley
531 Hart Senate Office Building
Washington, D.C. 20510

March 6, 2024

Dear President Biden, Senator Wyden, and Senator Merkley,

On behalf of the Tualatin Valley of Trout Unlimited I am writing to express our full support for the designation of the Owyhee Canyonlands National Monument. Our chapter/council represents over 600 members of Trout Unlimited in the Portland Oregon metropolitan area. The Tualatin Vally chapter is dedicated to conserving, protecting, and restoring our country's coldwater fisheries and their watersheds...

Regional/National Advocacy Examples

TU Snake River Dams Congressional Briefing on Snake River Dam Removal
<https://vimeo.com/919657957>

TU and the American Fisheries Society have created a video to share with members of Congress and their staff.

Patagonia
<https://www.patagonia.com/actionworks/about/>

For almost 40 years, Patagonia has supported grassroots activists working to find solutions to the environmental crisis. But in this time of unprecedented threats, it's often hard to know the best way to

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get involved. That's why we're connecting individuals with environmental organizations, to take action on the most pressing issues facing the world today.

Dam Removal Is a Climate Solution

<https://www.patagonia.com/actionworks/campaigns/remove-the-snake-river-dams/>

In the Pacific Northwest, four methane-emitting dams are damaging key ecosystems along the Snake River that local communities depend on. Removing these dams can help bring back life to the Snake, repair our climate and honor Indigenous rights in the process.

Klamath River: Undamed

https://www.youtube.com/watch?reload=9&v=PoZKMTqK8u4&embeds_referring_euri=https%3A%2F%2Fwww.patagonia.com%2F&source_ve_path=NzY3NTg&feature=emb_yt_watermark

Dams have blocked the Klamath River since 1925. Now, they're coming down thanks to the efforts of tribal nations, local communities, conservation organizations and everyday activists. Our new film follows Yurok tribal attorney Amy Bowers Cordalis's journey to help free the Klamath. "It's not a test," she says of the largest dam-removal project in US history. "It will work."

RESOURCE 05: BEST PRACTICES FOR COMMUNICATING CLIMATE SCIENCE (AMERICAN FISHERIES SOCIETY - AFS)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://climate.fisheries.org/>

Why Climate Change Matters

We are connected to fish through our recreational activities and the food we eat, but a rapidly changing climate is threatening the balance of nature. This website serves as a hub for resources to educate fisheries stakeholder on how climate change is affecting fish and their habitats.

Best Practices for Communicating Climate Science for Fisheries Professionals

<https://climate.fisheries.org/best-practice-in-communication-climate-science-for-fisheries-professionals/>

This whitepaper was prepared by the Climate Change Outreach Committee of the American Fisheries Society to provide guidance for fisheries professionals in the communication of climate change to the public. It represents a distillation of various publications on the topic, with references.

Summary

Climate change has been documented for over 120 years with increasing scientific rigor, and its impacts are already observable in marine and freshwater fisheries. But after decades of communication to underscore the validity of these changes, and the urgency for action, a large component of the public and many elected officials deny the scientific consensus and reject the need for action. Therefore, we outline a more effective strategy to convey the climate message to stakeholders and inspire them to act.

Brief history

Why haven't we gained traction in our communication efforts?

How to conduct effective public engagement

The six principles of effective public engagement:

- Be a confident communicator.
- Talk about the real world, not abstract ideas.

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- Connect with what matters most to your audience.
- Tell a human story.
- Lead with what you know.
- Use effective visuals in your communication.

Putting it all together

There is no single approach that connects with every audience. You must first understand the background and attitudes within your audience, anticipate their response, and adapt your message accordingly. Connect with what they care about, demonstrate that you also care, then tell a story in which they can visualize themselves as the protagonist. Offer simple solutions by suggesting actions they can initiate to make a difference. Audience members can then envision themselves saving their beloved fishery and becoming the hero of your story.

RESOURCE 06: VIDEOS ON COMMUNICATING CLIMATE (AFS)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://climate.fisheries.org/videos-on-communicating-climate/>

American Fisheries Society Virtual Opening Plenary Session of the 2020 AFS Annual Meeting, September 14, 2020.

ADAPTATION IS NECESSARY, BUT NOT SUFFICIENT: WHY IT IS CRITICAL (AND FEASIBLE) TO STOP CLIMATE CHANGE AS FAST AS POSSIBLE, Jonathon Overpeck, Dean of the School of Environment and Sustainability University of Michigan (~00:16 – 00:44)

INTEGRATING SCIENCE, POLICY AND MANAGEMENT, Tom Frazer, Ph.D., Director, School of Natural Resources and Environment, University of Florida (~00:44 – 01:04)

CLIMATE CHANGE IN THE AMERICAN MIND, Anthony Leiserowitz, Director, Yale Program on Climate Change Communication (~01:04 – 01:39)

RESOURCE 07: FISHTALES – PITCHING YOUR STORY TO THE MEDIA

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://vimeo.com/486476347/13d38741a6>

Media and communications expert Marcy McGinnis (~10:00-51:00, followed by Q&A). American Fisheries Society September 16, 2020, Virtual Annual Meeting Plenary Session on PITCHING YOUR STORY TO THE MEDIA.

Module 05: Climate Change Educational Resources

The Educational Resources Module is intended to help CCCs raise awareness of the impacts of climate change on coldwater fisheries due to warming temperatures and the increasing damage from fires, floods and droughts caused by climate change.

Purpose

The Education Module provides an inventory of Climate Change resources on the TU website and CCWG Library and on other third-party climate change sites that you can draw upon for ideas and content in support of TU's Climate Change Policy and goals. This module is intended to help Climate Change Coordinators:

Communicate a consistent TU science-based message at the chapter and council level to raise awareness of the causes and impacts of climate change; and

Promote local angler science such as monitoring stream temperature, flows, fish counts, and DNA sampling to document the impact of climate change.

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IDEAS FOR TEACHING ABOUT CLIMATE CHANGE WITH THE NEW YORK TIMES

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Module 05 Resources

The following are resources that you can draw upon and adapt for your own situation.

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Please be clear that third party perspectives and opinions presented in these resources may not be endorsed specifically by TU.

RESOURCE 01: TROUT UNLIMITED HEADWATERS YOUTH PROGRAM

Take the lead on climate change mitigation project in your region.

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/>

Trout Unlimited's Headwaters Youth Program consists of comprehensive guides and resources to trout and salmon conservation for America's young people.

Headwaters Youth Program

We are building the next generation of river stewards and conservation-minded anglers

Explore Watersheds

Trout Unlimited coordinates community programs focused on teaching youth and young adults the science behind healthy watersheds.

- STREAM Girls: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/stream-girls/>
STREAM Girls is Trout Unlimited's watershed STEM program for girls that builds confidence and breaks down barriers in science and the outdoors. Through the eyes of a scientist, artist and angler, girls make a personal connection to their home waters.
- Trout in the Classroom: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/trout-in-the-classroom/>
Trout (or Salmon) in the Classroom (TIC or SIC) offers students of all ages a chance to raise Salmonids in a classroom setting and then release them into a nearby stream or river. Caring for the fish fosters a conservation ethic in the students, and the act of walking to a streambank and directly releasing the fingerlings into the water makes a concrete connection between caring for the fish and caring for the water.
- Save Our Streams Club from the TIA Alliance: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/sosclub/>
Save Our Streams (SOS) Clubs empower students to develop a mission-based monitoring project around the health of a community stream. With initial help from faculty, students explore water quality issues and stream ecology in the field
- Adopt-a-Trout: <https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/adopt-a-trout/>
Adopt-a-trout is an opportunity for students to participate in hands-on, real-life fisheries science. The program begins with a field day of fish tagging and related curriculum on-site with local students. For this reason, the program can foster diverse partnerships that include state and federal agencies, non-profits, K-12 schools, colleges and universities, corporations and tech industry companies.

Explore Fishing

Trout Unlimited volunteers and staff offer a spectrum of fishing education opportunities for young people of all ages. From kids fishing days in communities to fly fishing camps, there are many ways to learn and get involved!

- Scouts BSA Fly Fishing Merit Badge

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- TU Summer on the Fly
- Youth Fishing & Conservation Camps
- TU Teens
- TU Teen Summit
- TU Costa 5 Rivers College Clubs

Stream Explorers and TU Teens

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/stream-explorers-and-tu-teens/>

Stream Explorers and TU Teens encompass TU's two levels of youth memberships. But they also are the names for a wide range of activities and programs for young people of these ages: Stream Explorers that are elementary-aged; TU Teens includes experiences in middle and high schools; and TU's regional Camps & Academies offer transformative experiences for young people from late-elementary through high school. Check out www.tu.org/camps to see if there's a camp near you.

The Headwaters Pacific Northwest Program

Just over 10 years ago we launched a new Deschutes Education program along the wild and scenic Crooked River in Oregon, with student field trips connected to our conservation goals and projects.

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/explore-watersheds/headwaters-pnw-program/>

RESOURCE 02: TU STREAM EXPLORER MAGAZINE

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://www.tu.org/conservation/outreach-education/headwaters-youth-program/support-us/streamexplorers/>

Stream Explorers is a four-page magazine that arrives four times per year for Trout Unlimited's youth members ages 12 and under.

Each issue focuses on one important trout or salmon topic, and includes articles, illustrations, and activities. Stream Explorers is great for independent readers, as well as for children still reading with their grown-ups. Many teachers and educators also love Stream *Explorers* for their classrooms and field programs.

<https://tu.ticketprinting.com/all-products/tags/stream-explorers/>

RESOURCE 03: TROUT UNLIMITED YOUTH EDUCATION COMMITTEE

Take the lead on climate change mitigation project in your region.

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://www.tu.org/get-involved/volunteer-tacklebox/chapter-leader-resources/chapter-committee-resources/youth-education-committee-resources/>

By interacting with youth, not only will your committee introduce young people to the conservation science behind trout and salmon, but the joy of angling for wild fish in the waters where they belong. As your committee determines your plans moving forward, review the program opportunities below to help meet your strategic plan goals.

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RESOURCE 04: RESOURCES FOR TEACHERS AND EDUCATORS (CLACKAMAS RIVER WATER PROVIDERS)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

<https://www.clackamasproviders.org/teacher-resources/>

The Clackamas River Water Providers have a number of free water and water conservation resources available to schools and teachers within the CRWP service area. This includes in-person **classroom activities and presentations**, a full library of water videos and books for all grade levels on everything from the water cycle, properties of water, and how drinking water is made available for teachers to borrow. You can also take advantage of our vast collection of well-known water and environmental manuals as well as indoor home water audit kits.

Middle and High School Educators, The CRWP has taken part in and supported many studies in the Clackamas River basin. You and your students might find these reports useful as study material and information for reports. All of these reports and studies are available under the **Resource and Documents** page located on our website.

All of these resources and programs are offered at no cost to our schools and teachers, and some of the presentations include curriculum packets and promotional items, such as shower timers, and brochures for students to share with their families.

To see the list of schools these resources are available to **click here** or for more information contact our Public Outreach and Education Coordinator at christine@clackamasproviders.org.

RESOURCE 05: WEST VIRGINIA CLIMATE CHANGE PROFESSIONAL DEVELOPMENT (BY WEST VIRGINIANS FOR WEST VIRGINIANS)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

West Virginia Climate Change Professional Development

<https://sites.google.com/view/wvclimatechangeepd/home>

There are many educational resources for teachers on the google site <https://sites.google.com/view/wvclimatechangeepd/home>, or West Virginia Climate Change Professional Development.

Incorporating climate change education at all levels of learning is vital for fostering a knowledgeable, proactive, and responsible society. It ensures that individuals are equipped to tackle one of the most pressing challenges of our time, both now and in the future. Here are several key reasons:

1. Informed Decision-Making

Understanding climate change equips individuals with the knowledge needed to make informed decisions in their personal lives, such as energy consumption, transportation choices, and dietary habits, which can collectively have a significant impact on reducing greenhouse gas emissions.

2. Scientific Literacy

Climate change education fosters scientific literacy, helping people understand the underlying principles of climate science, the evidence supporting climate change, and the mechanisms driving it. This understanding is crucial for evaluating the validity of information and discerning between scientific facts and misinformation.

3. Future Preparedness

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Educating about climate change prepares individuals and communities to adapt to its impacts. This includes understanding the risks and developing strategies for resilience in areas such as agriculture, infrastructure, health, and disaster management.

4. Behavioral Change

Knowledge about the causes and consequences of climate change can motivate behavioral changes that contribute to mitigation efforts. For example, people may be more likely to support and engage in sustainable practices, such as recycling, using renewable energy, and conserving water.

5. Policy Support

An informed public is more likely to support and advocate for policies that address climate change. This includes supporting legislation aimed at reducing carbon emissions, investing in renewable energy, and protecting natural ecosystems.

6. Global Responsibility

Climate change is a global issue that requires collective action. Teaching about climate change fosters a sense of global citizenship and responsibility, encouraging individuals to think beyond their immediate surroundings and consider the broader impacts of their actions.

7. Economic Implications

Understanding climate change also includes recognizing its economic implications. This includes the costs associated with extreme weather events, the economic benefits of transitioning to a green economy, and the potential for job creation in renewable energy sectors.

8. Intergenerational Equity

Education about climate change emphasizes the importance of intergenerational equity, ensuring that current generations take responsibility for reducing their environmental impact to protect the planet for future generations.

9. Empowerment

Teaching about climate change empowers individuals to take action, whether through community initiatives, political activism, or lifestyle changes. It encourages a proactive rather than reactive approach to addressing environmental challenges.

RESOURCE 06: WHY (AND HOW) ASTRONOMERS SHOULD TEACH CLIMATE CHANGE

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

- <https://aas.org/posts/news/2021/03/why-and-how-astronomers-should-teach-climate-change>

Why astronomers?

Should we be teaching about climate change? Or should we leave it to the "experts"?

- The science is woven into the topics we teach.
- The astronomer's perspective is important.
- Astronomers are highly trusted.
- Astronomers reach a lot of people.

RESOURCE 07: TEACHING CLIMATE CHANGE: CLIMATE CHANGE SCIENCE AND STORYTELLING (CHESAPEAKE EXPLORATION)

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Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

- <https://cbexapp.noaa.gov/>

This is an online learning platform hosted by the NOAA Chesapeake Bay Office.

This site provides educators with access to courses that will advance their knowledge about Meaningful Watershed Educational Experiences, science topics, teaching and resources.

The courses are free and self-paced, meaning you can work on them at your own speed. Many courses have continuing professional development credits approved for some states.

Course categories

- Analyzing and Interpreting Data (1)
- Meaningful Watershed Educational Experience (4)
- Moderated Courses
- Archived Moderated Courses (8)
- Current Moderated Courses
- Science Teaching and Learning (2)

RESOURCE 08: 8 WAYS TO TEACH CLIMATE CHANGE IN ALMOST ANY CLASSROOM (NPR)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

- <https://www.npr.org/2019/04/25/716359470/eight-ways-to-teach-climate-change-in-almost-any-classroom>

How to broach the subject with students, no matter what subject you teach.

The following topics are covered on this site.

- Do a lab.
- Show a movie.
- Assign a novel.
- Do citizen science.
- Assign a research project, multimedia presentation or speech.
- Do a service project.

Dozens more resources for climate education.

- Alliance for Climate Education: <https://acespace.org/>
- American Reading Company: <https://americanreading.com/arc-core/>
- Biointeractive Classroom Resources: <https://www.biointeractive.org/classroom-resources?search=&f%5B0%5D=topics%3A73>
- CLEAN (Climate Literacy and Energy Awareness Network): https://cleanet.org/clean/educational_resources/index.html
- Global Oneness Project: <https://www.globalonenessproject.org/library/collections/climate-change>

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- Google: <https://yourplanyourplanet.sustainability.google/>
- The Morningside Center for Teaching Social Responsibility: <https://www.morningsidecenter.org/sites/default/files/2019-04/EarthDay2019TeachableMomentLessons.pdf>
- The National Center for Science Education: <https://ncse.ngo/supporting-teachers>
- The National Science Teachers Association: <https://www.nsta.org/topics/climate-change>
- The Paleontological Research Institution: <https://climate.earthathome.org/teacher-friendly-guide/>
- Ripple Effect: <https://rippleeffectnola.com/resources/>
- Ten Strands: <https://tenstrands.org/>
- Think Earth: <https://thinkearth.org/curriculum/>
- The Zinn Education Project: <https://www.zinnedproject.org/campaigns/teach-climate-justice>

RESOURCE 09: RESOURCES FOR TEACHING ABOUT CLIMATE CHANGE WITH THE NEW YORK TIMES

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

- <https://www.nytimes.com/2021/11/04/learning/lesson-plans/resources-for-teaching-about-climate-change-with-the-new-york-times.html>

Dozens of resources to help students understand why our planet is warming and what we can do to stop it.

Ideas for Teaching About Climate Change With The New York Times

Over the years, we've created dozens of resources to help young people learn about climate change with New York Times articles, interactive quizzes, graphs, films and more. To mark this moment, we're collecting 60 of them, along with selected recent Times reporting and Opinion pieces on the topic, all in one place.

To get you started, we've highlighted several of those resources and offered ideas for how you can use them in your classroom. Whether it's a short video about a teenage climate activist, a math problem about electric vehicles, or a writing prompt about their diet's carbon footprint, we hope these activities can get your students thinking and talking about climate change and inspire them to make a difference.

Resources for Teaching About Climate Change From The Learning Network and The New York Times

Here is a collection of selected Learning Network and New York Times resources for teaching and learning about climate change. From The Learning Network, there are lesson plans, writing prompts, films, graphs and more. And from NYTimes.com, there are related question and answer guides, as well as recent reporting and Opinion essays.

- Lesson Plans
- Writing Prompts
- Films
- Graphs
- Other
- Explainers

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- Selected Recent Reporting
- Selected Recent Opinion

RESOURCE 10: FOR EDUCATORS – CLIMATE CHANGE: VITAL SIGNS OF THE PLANET (NASA)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

- <https://climate.nasa.gov/for-educators/>

This reviewed collection of NASA Earth and space science resources is for educators of all levels: K-12, higher education and informal science education. These organizations provide reviewed listings of the best available student and educators resources related to global climate change, including NASA products.

NASA's Climate Kids

<https://climatekids.nasa.gov/>

NASA's Climate Kids website brings climate science to life with fun games, interactive features and exciting articles

Climate Change Lessons: JPL Education

<http://www.jpl.nasa.gov/edu/teach/tag/search/Climate+Change>

This collection of climate change lessons and activities for grades K-12 is aligned with Next Generation Science and Common Core Math Standards and incorporates NASA missions and science along with current events and research.

NASA Wavelength

<https://science.nasa.gov/learners/wavelength>, Document at this URL missing, but archived at <http://web.archive.org/web/20201101021400/https://science.nasa.gov/learners/wavelength>

This reviewed collection of NASA Earth and space science resources is for educators of all levels: K-12, higher education and informal science education. Find climate resources in the collection at the following link, which can be filtered by audience, topic, instructional strategy and more.

NASA's Goddard Institute for Space Studies: STEM Educator Resources

<https://www.giss.nasa.gov/edu/res/>

This page contains high school and undergraduate instructional modules (PDFs and YouTube videos) developed as part of NASA GISS's Climate Change Research Initiative.

NOAA: Teaching Climate

<http://www.climate.gov/teaching>

This website contains reviewed resources for teaching about climate and energy.

Climate Literacy & Energy Awareness Network

<http://www.cleanet.org/>

The CLEAN project, a part of the National Science Digital Library, provides a reviewed collection of resources to aid students' understanding of the core ideas in climate and energy science, coupled with the tools to enable an online community to share and discuss teaching about climate and energy science.

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Living Landscapes Climate Science Project

<https://www.nasa.gov/education/maianse>

Funded by NASA, the Living Landscapes Climate Science Project is a comprehensive set of culture-based climate science educational resources for native communities. Learn more about NASA's role in developing the curriculum.

U.S. Department of Energy Education Resources

<https://www.energy.gov/eere/education/education-resources>

The D.O.E. provides a collection of energy fundamentals videos, K-12 education resources, Spanish content, and more.

Earth Science Week: Education Resources

<https://www.earthsciweek.org/educational-resources>

Whether you're an educator or a student, take advantage of a wealth of instructional and learning tools, from free online resources to posters, disks, and lesson plans.

RESOURCE 11: PROJECT WILD: TEACH WILD. LEARN WILD. BE WILD (EDUCATIONAL RESOURCES FOR WILDLIFE AND CLIMATE CHANGE)

Leverage additional outside resources that reinforce or amplify the TU mission and messaging.

Partner with a local agency to cosponsor a program of Adaptation and Resilience activities, invite a representative to present the plan at a monthly meeting, and advertise it in your newsletter and on social media.

PROJECT WILD: Teach WILD. Learn WILD. Be WILD.

<https://www.fishwildlife.org/projectwild>

A wild curriculum!

Project WILD's mission is to provide wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. All curriculum materials are backed by sound educational practices and theory, and represent the work of many professionals within the fields of education and natural resource management from across the country.

Project WET, Project WILD, and Project Learning Tree curricula (An expanded index of activities in the for teaching about climate change)

<https://padlet.com/projectwild/national-resources-for-wildlife-and-climate-change-38cu2a3nfsjcfkei/wish/2072094683>

A Note to Educators

Climate change is a complex topic that can be intimidating to teach. However, understanding climate, including the ways it is changing and how that impacts the environment, is crucial to making informed decisions and building resilience. Environmental education is not isolated to water, forests or animals. It connects everything.

The resources listed in this document are meant to help you teach about climate change in a holistic way. They will provide your students with engaging educational experiences that will help them understand climate resilience for communities and the environment.

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As leaders in environmental education, Project Learning Tree, Project WET, and Project WILD provide hands-on activities that match each of our respective area of expertise. Each lesson is a stand-alone activity and can be taught modularly. We encourage you to form a lesson plan that fits in with your teaching plans, using lessons from all three of our organizations to teach about the impacts of climate change on water, forests and animals. We hope these lessons will inspire you and your students to develop innovative solutions to address challenges that are arising as a result of climate change.

Project WILD Resource: Effective Climate Change Education (pdf)

<https://padlet.com/projectwild/national-resources-for-wildlife-and-climate-change-38cu2a3nfsjcfkei/wish/1954306708>

Climate change education offers students an opportunity to use systems thinking to build ecological knowledge, explore values, respect other cultures, and develop skills to engage in personal actions toward a sustainable future. Discussions of the causes of recent climatic changes, however, have generated emotional and political debates, to the point where some educators may avoid the topic for fear of bringing advocacy or politics into the classroom.

Discussion of the effects of a changing climate on populations of fish, wildlife, and marine species and their habitats can potentially avoid the politically fraught discussion of cause and instead shift the focus of the conversation to concrete conservation and adaptation actions that can be taken by all responsible stewards of our natural resources.

Project Wild: Climate & Wildlife

<https://www.fishwildlife.org/afwa-inspires/project-wild/wildlife-climate>

Teaching about climate change is a challenge. Project WILD materials and training can help!

Formal and nonformal educators can now receive professional development training that focuses specifically on integrating topics on Climate Adaptation into their curriculum. As part of the training, educators will receive the 64-page booklet titled Climate & Wildlife: An Activity Module for Grades 6-12 Educators.

This resource features a collection of eight activities from Project WILD publications that connect closely to the National Fish, Wildlife, and Plants Climate Adaptation Strategy.

RESOURCE 12: CUSTOMIZABLE SLIDE SETS THAT CAN BE FREELY USED AND MODIFIED FOR PRESENTATIONS (CCWG)

Use these PowerPoint slides as you wish in designing your own presentations to reinforce the TU Climate-related mission and messaging.

Various climate topics are covered in each set, but they are available under creative commons license for you to use and modify to fit your purposes.

A PDF with short summaries and links to them can be found at:

https://www.tu.org/wp-content/uploads/2024/12/Climate_Change_Slide_Sets.pdf

- We expect to add more sets on different climate-related topics and covering different region-specific aspects of climate change work.