Nor' East Chapter

May 2023 Newsletter

May 1st Meeting

Brenda Sears will present to us live.

A 'Road Trip of Sorts' Introducing the Rangeley, Kennebago and Magalloway Rivers and Kennebago Headwaters Project

This evening's presentation will be road trip that will follow Route 16 in Maine from Oquossoc to Wilson's Mills, and will include valuable information on access points. In addition, Brenda will touch upon TU and the Rangeley Lakes Heritage Trust's current Kennebago Headwaters Project

Here is a summary of the Headwaters Project provided by Brenda and others. I am not sure of the author to give them appropriate credit. I have edited it so that it reads from the third person. My apologies to the author. I thought the message was more important than the kudos.

Here is a summary of the Kennebago Headwaters Project, especially the river restoration work by the partnership of TU and the Rangeley Lakes Heritage Trusty. They are also working on a forest management plan as they look to restore and enhance both the woods and waters of this region.

The partners are entering the final phase of their effort to acquire land within the project area and are under contract to buy the 5,000-acre Tract 1 parcel with a closing date of June 30th, 2023. They anticipate closing on the easement they will hold on the Logans and North Shore tracts on the same date.

This project is a pioneering effort to conserve and restore fish and wildlife habitat of national and global importance. Land conservation projects typically include protection against development, but that is just a starting point for this project. They intend to bring the lands and waters back to a condition approximating that of the pre-settlement forest—the forest in which its fish and wildlife evolved.

Meeting
May 1
6:00 PM

Speaker at 7PM

Bucket Raffle 8 PM

At the Ipswich River Watershed HQ
143 County Road
Ipswich

Meeting is In Person

Contact Info:

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Newsletter submissions: Jim MacDougall, info@tunoreast.org

Though much of the Kennebago seems to be unspoiled wilderness, there is a long history of manipulation of the watershed's natural systems to accommodate industrial forest operations, e.g., the log drives of yesteryear. Unlike the pre-settlement forest, which was comprised of mostly old growth stands (150+ years old), today's industrial forest is young and has undergone repeated harvests on short cutting rotations. The Kennebago River and its tributaries show signs of boulder removal, channelizing, loss of structure due to previous log-driving, and the absence of large wood inputs (from trees naturally falling into the water). They are acting now in response to the impacts of these interventions. Stream crossing are another potential hazard to a healthy aquatic ecosystem. A network of roads intersects the watershed and culverts pose barriers to native fish species and macroinvertebrates. Moreover, there are clear signs that an entire half mile-long segment of the river's mainstem was redirected and relocated to accommodate the construction of a road in days' past.

Land conservation and watershed restoration strategies are synergistic, but operate on different time scales. They need to use both long and short-term strategies to achieve our restoration goals. Riparian buffers (forests along the water), for example, will eventually result in large wood inputs, but as they wait decades for that to occur, manual "chop-and-drop" wood additions can accelerate recovery and bolster climate resilience. Replacing road crossings is often the only solution for recovery of fish passage on any meaningful time scale. To put this project on a scientifically sound foundation they have commissioned John Field of Field Geology to conduct a full geomorphological assessment of the watershed this year (2023).

For brook trout and other native fish and wildlife species, stream connectivity is critical. This is especially so for brook trout in complex systems like the upper Kennebago. Recent research, such as the brook trout study conducted by Dianne Timmons (NH Fisheries Biologist), shows that brook trout use both stream and lake habitats in different phases of their life histories and travel farther than previously known. Road crossings that involve undersized, perched, and culverts in poor condition fragment critical brook trout habitat. Extreme weather events such as the July 3, 2018, micro-burst that produced 6" + of rain on the upper Kennebago watershed are occurring with increased frequency, and compound fish passage problems related to stream crossings. In the face of this climate-driven trend most existing road crossings are barriers to fish passage.

They are conducting instream channel restoration projects where feasible. As noted above, restoration of natural stream channels in a watershed the size of the upper Kennebago primarily involves cutting and dropping large wood into smaller streams (generally of 20' bankful or less). In limited situations re-engineering of larger stream channels may be feasible. Potentially relocating a segment of the mainstem river to its natural channel and restoring ecological function. They've only began instream work last summer (2022), but you should have seen the spawning trout that congregated last fall in the sections of Otter Brook where they had placed large wood!

Most of our restoration effort is focused on the 10,300-acre Kennebago Headwaters project area, up to the Stetsontown/Seven Ponds township line. Of the river/stream segments outside the project area, those that are north of (and upstream of) the township line are important to the river system's connectivity and, properly designed, have the potential to deliver significant benefits for the downstream fishery within the Kennebago Headwaters project area. Stream crossing work

upstream of the township line could comprise as many as four crossings (out of an overall project total of 16 crossings).

They have four scheduled stream crossing replacement projects for the 2023 season.

They anticipate having a least another eight stream crossing projects for 2024 and an additional four projects for 2025. 2024 and 2025 projects may include as many as four road crossing replacement projects on the upstream land.

Working with Trout Unlimited, they have identified several wood-addition projects in key tributaries within the project area. Those include an additional 1+ mile of Otter Brook, 1+ mile of Wiggle Brook, and 1+ mile of Bear Brook, with a wood loading rate of about 200 pieces every stream-mile. They will collaborate with TU to identify, assess, and seek applicable permits for additional rounds of wood-addition projects to be completed in 2024 and 2025.

They're working with John Field of Field Geology to address the need for in-channel restoration work on the mainstem of the upper Kennebago, including the ½ mile stream segment that has been moved and other stream segments that show signs of straightening and boulder removal.

They hope the above summary of their restoration work and plan is informative and useful. Please let them know if you want to visit the project area and see first-hand how the restoration work is proceeding. Also, please let me know you might be interested in supporting this phase of the project.

Thank you again for your support of this important project!

Little Kennebago Tributaries In-Stream Habitat Plan

Rangely Lakes Heritage Trust – Rangeley, ME

Review Completed by: Erin Rodgers
Minor Catchments: Bear Brook, Wiggle Brook, Otter Brook, Norton Brook, and Black Brook/Big Sag Brook
Major Catchment: Androscoggin River

Project Summary

In 2022, Trout Unlimited (TU) began stream habitat restoration work in the Kennebago and Little Kennebago Lake drainages in the Rangeley region of Maine. Working with the Rangeley Lakes Heritage Trust and neighboring property owners, the TU field team implemented a total of 0.75mi of instream habitat on Otter Brook and Norton Brook. The team also assessed 5.5mi of streams for future instream habitat restoration suitability. This report will document the methods used in TU's habitat restoration work, the habitat work implemented in summer 2022, the results of additional stream assessments, and a proposed plan for future work in partnership with RLHT.

ArcOnline Web Map: https://trout.maps.arcgis.com/apps/instant/attachmentviewer/index.html?appid=42670d9165d9422fbed328823f75b352

Project Area Maps

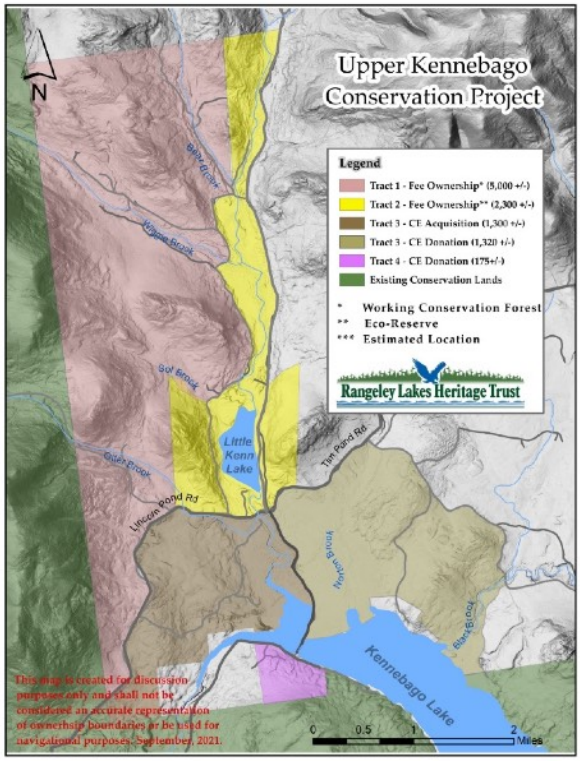

Figure 1: Rangeley Lakes Heritage Trust map of current and proposed conservation lands in the Upper Kennebago watershed.

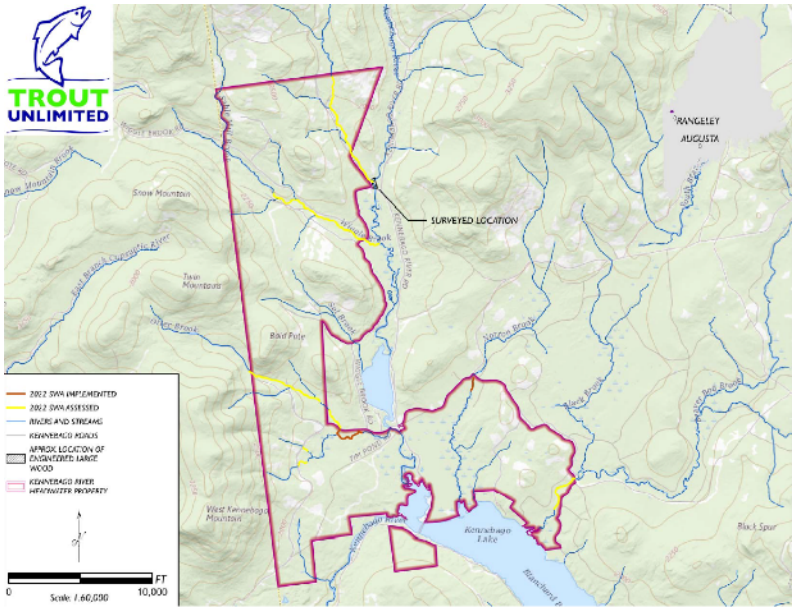

Figure 2: Map of implemented and assessed stream miles completed in September 2022 in the Upper Kennebago watershed.

Methods & Strategies

During a project, Trout Unlimited employs a field team of two (2) seasonal crew members, including one or two trained sawyers, and a full-time field technician. The team utilizes a variety of hand tools including chainsaws, rock bars, and a grip-hoist for the implementation of strategic wood additions. A gas-powered post driver is also used when building beaver dam analogs (BDAs) or post-assisted log jams (PALs).

Strategic Wood Additions

To construct large woody structures, trees within the riparian area are felled by team sawyers directly into the stream channel. After trees are felled, crew members use a Tractel TU-17 grip-hoist or other hand tools to move and maneuver trees into position within the stream channel. This is done both to locate as much of the tree in the bankfull channel as possible and to secure the wood and prevent mobilization during high flow events. Large wood is installed at approximately 75-100' intervals, using 3-5 pieces of wood per installation, achieving roughly 170-210 pieces of large wood per stream mile. This stocking rate is based on a USFS study of natural old-growth riparian forest recruitment (Nislow, 2010) and is consistent with state and federal agency recommendations across New England. Standing dead trees and cavity trees are avoided since they can be vital wildlife trees. We aim to use a diversity of tree sizes and species, cutting from both banks to minimize opening the canopy surrounding the channel.

While monitoring installations over the past years, we have noted that it is particularly important for the large woody material to be placed at various levels within the bankfull channel, engaging stream flows at all stages from low flows through flood stage. Depending on the forested landscape, it can even be further beneficial to have large wood spanning over the top of banks and on the active floodplain. The current practice involves a mix of keyed-in pieces of large wood, interspersed with additional smaller pieces of wood that have a higher chance of mobilization, as well as 'strainer' trees that intentionally span the channel banks in locations that should catch any large pieces moving during higher flows.

Low-Tech Processed Based Restoration

Process Based Restoration (PBR) is a set of methods used in stream restoration that target the restoration of functional stream processes through different structures made of small and medium-sized wood pieces, not just large woody material (Wheaton, et al., 2019). Most notably this includes beaver dam analogs (BDAs) and post-assisted log jams (PALs). BDAs can either use logs cut to fit the stream channel or use small posts driven vertically into the channel bed

Figure 3: 2-4” diameter posts are driven crisscrossed over the felled tree to secure the tree in place in high stream flows or ice flows. This is an example from a project in the Nulhegan Basin, Vermont.

and woven with small branches or saplings; in each method the BDA is then packed with fine vegetative matter, like grasses and leaves, and mud. PALs use vertically driven posts to secure medium and large wood in stream channels that either lack other large in-stream or bank structure to stabilize the log, or to secure the logs in a particular orientation to the stream flow to achieve specific flow characteristics (see Figure 3).

PALs can be particularly useful in streams that have become overwidened. Both BDAs and PALs are often considered to be more temporary that SWA (described above), unless they become covered over by aggraded sediment. PBR methods have been used more extensively in the Pacific Northwest and are not common in New England states yet; other PALs installed in coastal Maine streams have had a lower success/stability rate, possibly due to increased stream ice during New England winters compared to western states. However, it is clear that success and stability of these structures increases with the more structures that are placed contiguously in a stream reach: a 2mi stream reach with consistent PBR or SWA structures retains for large wood structures than a 500’ reach of PBR or SWA.

The project goal across the Kennebago headwaters is to enhance aquatic habitat for eastern brook trout and other native fish species by increasing the hydraulic complexity, habitat diversity, and stream cover. Increasing the amount of complex woody structures in the stream channel can mitigate stream flow velocity, improve sediment transport and sorting, and create more dynamic channel morphology which creates greater habitat diversity. The lack of large instream wood resulting from historic land use changes has resulted in higher stream flow, which moves sediment and other habitat-forming structures out of the system and can erode the streambed and banks. This leads to channel incision, interrupts floodplain connectivity, and makes poor habitat conditions.

Added SWA and PAL structures are not intended to act as impervious/non-porous barriers. Wood is added to the stream channel with the intention of allowing for the full passage of instream flows and aquatic organisms around and through the structures. As these structures develop over time, they will retain sediment and organic matter which may create step/pool hydraulics. This will encourage the formation of upstream pools and downstream riffle reaches, both of which are important for different trout life stages and needs.

Engineered Large Wood

Mainstem rivers, such as the Kennebago River, are subject to the same historic influences as the surrounding tributaries. However, because of the size of potential high flows and winter ice SWA and other PBR methods are insufficient to hold up to those forces. Large wood structures can still potentially be implemented in these areas, but requires an engineered approach to design elements that are embedded or anchored in such a way that they will remain in the stream channel. For this work, TU also employs a stream restoration specialist to survey the stream reach, model hydraulic conditions, and design suitable structures given the location.

2022 Strategic Wood Addition Installations

Based on TU's Maine Director, Jeff Reardon's, stream assessment in spring 2022, portions of Otter Brook and Norton Brook were selected as the pilot project for instream habitat restoration in the Upper Kennebago. The stream reaches met the criteria (further described below) of having suitable riparian forest habitat, a channel slope between 2-7%, and a starting condition of fewer than four (4) pieces of large wood per 100'. Treated reaches on both streams ended when stream and riparian conditions no longer met those criteria; on Otter Brook we ended upstream of a beaver complex and on Norton Brook we ended where the riparian forest ended and became more wetland condition.

The streams were treated using strategic wood addition methods described above. A total of 0.5mi of Otter Brook was treated downstream of Tims Pond Rd with 29 large wood installation sites and 0.25mi of Norton Brook was treated downstream of Mason Camps Rd with 10 large wood installation sites. Conifer-dominated forests surrounded both streams. Installations with conifers tend to sit higher during the initial felling and installation because of their branch structure, but the brittle branches tend to break within the first winter or two and settle lower into the channel while the small branches collect on installations downstream.

Given the low height of banks on both these streams, we expect high potential for increase floodplain access and overland flow during high flows. As the installations retain sediment and organic materials over time this could lead to additional overflow channels and eventually braided channels. Research in other northern New England forested streams indicate a response in aquatic macroinvertebrate abundance and diversity within the first year and an increase in brook trout size and abundance within 2-3 years of installation. TU will photo-monitor these installation sites for at least 3 years.

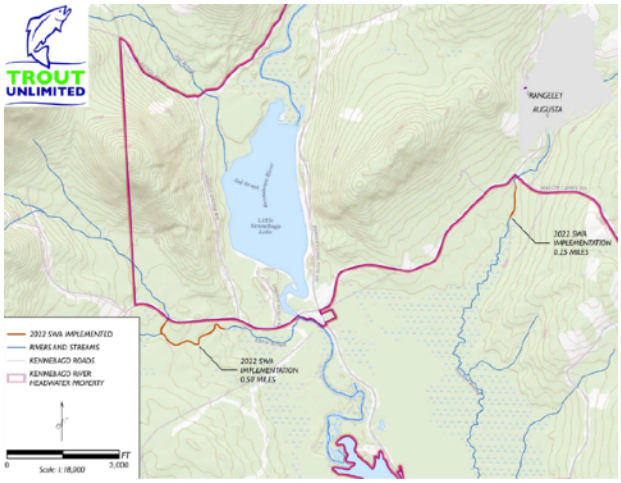

Figure 4: A total of 0.75mi of strategic wood addition (SWA) was implemented in 2022: 0.25mi on Norton Brook downstream of Mason Camps Rd and 0.5mi on Otter Brook downstream of Tims Pond Rd.

Stream Habitat Assessment

The TU field team assessed an additional 5.5mi of streams on the RLHT properties including: Otter Brook upstream of Tims Pond Rd, Wiggle Brook, Bear Brook, Big Sag Brook, and an unnamed tributary to Kennebago Lake. At the time Sol Brook was not assessed because of the undersized culvert at Wiggle Brook Rd that is a barrier to upstream trout movement. However, if this culvert can be addressed, Sol Brook would also be assessed. Not all the stream reaches that were assessed are suitable for instream habitat restoration. When assessing stream habitat, the field staff work in pairs walking the entire waterway and collecting stream data at roughly 500' intervals (based on GPS with a maximum +/- 30' radius of error). They measure bankfull width, channel slope, riparian forest age and condition, bed sediment, and noting any other channel conditions such as erosion, incision, and potential for floodplain connection. For SWA, bankfull should be between 8-24' wide, channel slope between 2-7%, and sufficient riparian forest trees (both in diameter and quantity). BDAs can be created in smaller channels and lower-slope channels, as well as in areas without a riparian forest. PALs can be implemented in wide range of stream width and slopes, including streams over 30' bankfull assuming there is strong riparian forest surrounding.

Otter Brook, Wiggle Brook, and Bear Brook all presented the strongest conditions for future SWA work, for a total of 4.5mi of SWA. The downstream-most reach of Wiggle Brook could also be suitable for BDA or PAL implementation given the finer bed material and alder dominated riparian area, for 0.1mi BDA/PAL. The Unnamed Tributary to Kennebago Lake had limited distance that was not already influenced by natural beaver activity – only 0.2mi could be considered suitable. While SWA could be used in that area, BDA/PALs could also be suitable with the assumption that the beaver will take over these structures and build on them over time as well, further strengthening them. Big Sag Brook downstream of Mason Camps Rd was the largest stream we assessed, consistently measuring 35' bankfull on average. While there were some areas with notable bedrock outcrops, Big Sag Brook is a good candidate for PAL work given the mature riparian forest surrounding.

Stream	Distance Assessed	Distance Suitable
Otter Brook (upstream)	1.5mi	1.4mi
Wiggle Brook	1.7mi	1.6mi
Bear Brook	1.6mi	1.6mi
Big Sag Brook	0.7mi	0.7mi
Unnamed Tributary	0.4mi	0.2mi
Total	5.9mi	5.5mi

TU also completed a topographic survey of a section of the Kennebago River between the confluence of Bear Brook and the bridge at Wiggle Brook Rd as a possible location for engineered large wood on the mainstem. This section was chosen because of the possible access from Bear Brook Rd. The bed material can be large mid channel and along the river left side, but there is good underlying finer material and an extensive gravel/cobble floodplain bar along river right for embedding large wood structures.

Future Implementation Plan

Given suitable, safe weather conditions to operate equipment, the TU field team can implement roughly 0.85mi of SWA in a work week. Both BDAs and PALs take longer to construct depending on stream and riparian conditions; the field team can implement roughly 0.45mi of BDA/PALs in a work week. Given the distance suitable for different restoration methods (4.5mi SWA, 0.3mi BDA, 0.7mi PAL), I estimate 9 weeks to complete the stream habitat restoration in currently assessed streams described above. Assuming the TU field team is available for two weeks of field work in the Upper Kennebago per year, this would be a five-year timeline. In summer 2023, I would propose starting with the 1.4mi of SWA on upper Otter Brook to complete the work started in 2022 and the 0.2mi of BDA work on the Unnamed Tributary. I would propose implementing the 0.7mi of PAL work on Big Sag Brook in 2024, which would then allow us to monitor, modify, or add to that project reach in following years. A project like the engineered large wood site on the Kennebago River would take multiple years from design and permitting through construction, but would run concurrent to the other low-tech stream restoration work. Additional stream reaches can be assessed and added to the implementation plan as properties and partnerships develop.

President's Message

Dear fellow Nor'East Chapter Trout Unlimited Members,

Happy spring! I hope everyone reading this has had an opportunity to get out on the water or has plans to in the near future. It's a great time of year.

In my opinion, one of my most important roles as NETU President is to do my best to make sure that everyone who contributes time, energy, and skills to the NETU Chapter is recognized for their efforts. NETU is an all-volunteer organization. We have no paid staff. Everything we do is facilitated and run by volunteers. It takes a village.

As we near the last meeting of the spring for NETU, there are two people in NETU's group who deserve special mention. Both gentlemen have done – and continue to do – incredible things for NETU. Both are planning to take on a more limited role with NETU starting next fall, however I am optimistic they will stay engaged. Please do, guys!!

Kalil Bogdan has been our official Program Coordinator for the last two years, but has served unofficially in that role for much longer. Kalil has arranged speakers for our meetings, coordinated their time and presentations, and done a myriad of other things to bring a wide variety of speakers and speaking topics to our monthly meetings. I know it is a bigger job than it sounds.

Jim MacDougall has served as NETU's webmaster, email/correspondence guru, and newsletter compiler for the past three years. Like Kalil, he has done much more than that over this time, and much longer before that. Our email, online, and newsletter materials have been our primary engagement with the Chapter members at large – especially as we all hunkered at home during the COVID pandemic - and we couldn't have done it without Jim. Jim's significant time and efforts to get these materials out to our membership at large has – in many respects – kept NETU afloat during some very challenging times.

Please join me in thanking Jim and Kalil for all they have done for the Chapter. You can do so in person at our meeting on Monday, May 1st at the Ipswich River Watershed Association.

BBQ (free food!) at 6 PM, speaker at 7, and NETU Board meeting to follow around 8. Hope to see you there!!

Fish Report

Here is Art Howe kicking off his fishing season on the Florida panhandle at St. Martins Wildlife Refuge. Pretty fish! And take note, Art is doing the safe thing by protecting his skin from the sun. Just talk to us old guys, skin cancer is no fun. I think that mustache is SPF 80.

The fish is an Atlantic Tripletail. For more info: https://en.wikipedia.org/wiki/Atlantic_tripletail

They get up to 3 feet and 50 pounds. Their range includes Massachusetts and they taste good.

Chapter Financials

Our treasurer, Peter Vandermeulen, keeps a very tidy accounting of the Chapter monies. He has just issued a draft report of the financials of the Chapter including the revenues from the Banquet. We started FY22 with about $45,000 in the bank, we fulfilled our pledge of $10,000 to IRWA to cover extra costs associated with the Hood Pond culvert project, received the $2,500 donation and $8K from the banquet so we are back up to about $46,000 in the bank. If you wish to have a more detailed accounting, please contact Ben Meade or Peter.

Volunteer Training

Within the TU national web page are some very nice instructional presentations on how to become a TU leader. If you wish to volunteer, you could find some help by visiting the Volunteer Tacklebox page at: https://www.tu.org/get-involved/volunteer-tacklebox/

Speaker Series September through May

Compiled by Kalil Boghdan

I am pleased to announce the guest speaker series for our chapter for the upcoming year. The speakers have a wealth of knowledge in fly fishing and also in the conservation of our natural resources. It is our hope that you will either attend our in-person meetings or tune in via Zoom. Except for September, our meetings are held on the first Monday of the month at the Ipswich River Watershed Association Headquarters located at 143 County Road, Ipswich, MA 01938. Our evenings begin at 6:00pm with a wonderful dinner prepared by our resident chefs. The speaker portion of the evening begins at 7:00pm followed by the board of director's meeting shortly after the speaker's presentation at around 8:10pm.

Several of the speakers for this year are traveling considerable distances to present to us in person. Your attendance and support of your TU chapter and its endeavors will truly enhance its mission.

We look forward to seeing you at our meetings.

September 12, 2022: Several members of the NETU Board of Directors will share their fly fishing experiences that they participated in this past summer. This should prove to a fun and informative evening of presentations.

October 3, 2022: Ben Gahagan, Diadromous Fish Specialist for the Massachusetts Division of Marine Fisheries. Ben will share information regarding the state of herring runs in the Northeast part of Massachusetts. No show. In his place a round-table discussion between Board of Directors of the Nor'East Chapter of TU and its members on how to increase membership involvement with the chapter.

November 7, 2022: Ben Gahagan, Diadromous Fish Specialist for the Massachusetts Division of Marine Fisheries. Ben will share information regarding the state of herring runs in the Northeast part of Massachusetts.

December 5, 2022: "In Search of Wild and Native Trout in the US" by Dave Parry. His presentation documents his travels out west from New Mexico to California to Wyoming. There are about 25 subspecies of Cutthroat Trout, Rainbows, Redbands, and Golden Trout. Each has adapted and evolved to be a perfect match for their environment. The decline of these beautiful species and, in many cases, their return are amazing stories. The efforts of the federal and state governments, TU, WNTI, and many other groups have been Herculean.

January 9, 2023: Carl Soderland, fly fishing enthusiast, fly-tyer, and current member of the Nor'East Chapter of TU. Carl will share his week-long experience fly fishing for trout on the Smith River in Montana.

February 6, 2023: Christopher Jackson, fly fishing guide on the Deerfield River, the Swift River, and other rivers in the western part of Massachusetts. He was a board member of the Deerfield River Watershed Chapter of TU. He authored an article in the August/September issue of the Fly Fisherman magazine. The article is titled, Going Wild. Chris will talk about the efforts to create optimal river and environmental conditions on the Deerfield River to promote and support a wild brown trout population. More information to follow.

March 6, 2023: Ethan Bourque, an associate of Concord Outfitters of West Concord, MA. He is also a fly-fishing guide, youth fly fishing instructor, and an environmentalist. The History of Conservation and Angling Tactics of the Beloved Yellowstone Cutthroat

April 3, 2023: Art Howe, current member of the Nor'East Chapter of TU will speak on the important topic of Fishing Safety. Free food!!

May 1, 2023: Brenda Sears, A 'Road Trip of Sorts' Introducing the Rangeley, Kennebago and Magalloway Rivers

Parting Shot - Your help needed

Communications are an important part of any club or organization. The Speaker Program, Chapter Newsletter, Emails, Web page and some social media posts are all done by a couple of members. After May, they will be moving on to take a rest and give room for others to step-up. So if you wish to continue to be informed about Chapter events and happenings, we recommend you volunteer and help out with a part of the communications effort. If you have the time, it is easy to learn the basics of managing a webpage based on Wordpress, or Mailchimp for Chapter wide emailing and a word processing package to compile the Newsletter and speaker series.

If you want to help out, contact Ben Meade or send emails to: info@tunoreast.org