BAGADUCE RIVER MONITOR

BROOKSVILLE PENOBSCOT SEDGWICK CASTINE

Bagaduce River Monitor Report

2021

Compiled by Bailey Bowden

Common merganser with rainbow smelt ~ courtesy Jon Albrecht

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SYNOPSIS: For the second year, COVID 19 has stalled most projects that involve contact with other people. Most meetings have been held virtually. I have become involved with monitoring activity along the shores of the Bagaduce. I currently participate in a Blue Hill peninsula group that is concerned with sea-level rise called Peninsula Tomorrow. This group is currently focused on how to spend the *American Rescue Plan Act (ARPA)* funds that are being dispersed by the Federal government.

The Towns of Brooksville, Penobscot and Castine are all in various stages of updating their Comprehensive Plans. This is a huge step forward for the protection and planning of the lands of the Bagaduce Watershed.

The former Callahan Mine in Brooksville has been a source of pollution since large-scale mining began in the late 1960's. The Environmental Protection Agency has decided to use ARPA funding to finish the clean up of the former mine site.

There is beginning to be local concern about the possible presence of forever chemicals (PFAS) that may have been present in the Castine wastewater treatment facility sludge and was spread on several local farms and hayfields within the Bagaduce River Watershed.

Except for the soft shell clam resource of the upper Bagaduce River, the status of all species appears to be holding steady or improving.

The number of field studies has decreased in 2021 mainly due to the high positivity rate of Covid at Maine Maritime Academy. Projects being led by the Maine Center for Coastal Fisheries has increased with more partners joining the effort.

2021 has been a big year for land conservation efforts in the Town of Penobscot that will protect the ecological health of the Bagaduce.

TOMCOD: The 2021 tomcod survey showed the same results as past years. Tomcod were present in Winslow Stream and Camp Stream and were located using traps. Fish were not caught at the outlet of Walker's Pond, Mill Brook in Penobscot, and the "crick" in Penobscot (by the A-Frame brickyard).

One time visual checks were done at Smelt Brook – Penobscot and a small brook near the Blue Hill Heritage Trust Bagaduce River Canoe Access Trail. No fish were seen.

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SMELT: The smelt runs at Winslow Stream and Mill Brook in Penobscot both had outstanding runs again this year. Camp Stream in Sedgwick had decent size and numbers but I did not observe the length or total productivity of this run over the entire season.

The Gulf of Maine Research Institute, Downeast Salmon Federation, and The Nature Conservancy are working with DMR to gather sea run smelt population data. This is only a presence / absence survey as the volunteers are retirees with no experience to base their observations on. Experienced smelt fishermen should be courted to do this work. No management decisions will be made based on this data so why bother? This is only informing DMR where Marine Patrol should look to issue citations.

I have discussed this issue with Danielle Frechette – who leads this survey. I have asked why Marine Patrol is not required to enter biological observations in their logbooks as this was once part of their jobs. They have eyes on every resource and could add valuable information for state biologists at no additional cost. Ms. Frechette is using the old Patrol reports to learn where historic smelt runs occur.

Brooksville residents were not enthusiastic about informing DMR of smelt run locations so I did not offer that information. In fact, I did not offer any information to this program as I do not see any benefit in participation.

Human fishing pressure and natural predation activity seemed to be normal.

ELVER: The 2021 season started off very slowly with cold waters and high water velocity. When the waters warmed and levels subsided, the elvers ran in great numbers and personal quotas were filled quickly. There did not seem to be as much fishing pressure from the Passamaquoddy Tribe this year.

One riparian owner has tired of the noise and nocturnal activity of the elver fishery and posted her land. This has nearly eliminated parking along the town road as the ROW is very narrow.

ALEWIVES: All required data and biological samples from Wight's, Pierce's, and Walker's Ponds were collected and submitted to DMR as required.

Stocking continued at Frost and Parker's Ponds in 2021.

DMR is concerned with a lack of 3 year old fish at Wight's Pond in 2020 and 2021 However, the 2021 scale results indicate that 31% of the samples came from 4 year old fish – which were 3 year old fish in 2020.

MCHT and MCCF received grant funding to purchase 2 solar powered underwater cameras. One was placed in the outlet of Pierce's Pond to count alewives. Unfortunately there was an issue with the solar panel keeping the battery charged. We will try again in 2022.

I purchased a drone that will be used to look for beaver dams on Winslow Stream which should be much faster than a canoe trip. I also plan to get video of seals chasing alewives and well as possibly filming eel grass beds.

Wight's count – **62, 894**

Pierce's count – **33, 469**

Walker's count – **260, 230**

Total – **356, 593**

The 2021 harvest brought in $2365. This is a total of $4190 in 2 years.

BEACH SEINE PROJECT: The beach seine project continued in 2021 under the direction of Maine Center for Coastal Fisheries staff. This year the MCCF media specialist came along to capture drone footage as well as still photos of the event. More members of the Penobscot Alewife Committee participated this year and are very interested in participating in the future. One member of the Orland Alewife Committee participated this year.

Sample sites included Freethy Point, Grindle Point, Mollie's Island, Gravel Island – all in Northern Bay. Also Till's Cove, Mill's Cove, and Green's Cove in Southern Bay. All sites had juvenile alewives. There is a large Atlantic silverside population in the Bagaduce. Bycatch included green crab, mummichog, flounder, sculpin, and sand shrimp (crangon). The number of green crabs captured this year increased – see the shellfish section.

ENVIRONMENTAL DNA: The collection of eDNA continued during 2021 by Anne Hayden from Manomet with the assistance of MCCF staff. I hope that this work continues. The goal is to correlate adult abundance numbers to the amount of DNA in a given water sample.

A PhD student from the University of Southern Maine has been collecting eDNA samples as well.

ZOOPLANKTON: The same PhD student is collecting water samples from various waterbodies in Maine looking at the type and quantity of zooplankton in the water. This information could help determine factors for juvenile growth rate or how increasing populations affect the quantity of plankton available. This could set baselines for carry capacities of ponds that would differ from acreage available.

PURSE SEINE PROJECT: Due to covid concerns and space available, I did not participate in the purse seine project this year. This allowed alewife committee members and academia the opportunity to participate. MCCF collected the data for 2021.

FISH PASSAGE: 2021 marked the completion of the Bagaduce River Fish Passage Project ! The outlet of Parker Pond had a rock ramp fishway installed – replacing the colonial era earthen berm. A perched culvert running under Route 15 in Sedgwick caused the extirpation of the alewife run, and other anadromous fish, into Frost Pond.

The Parker Pond project abuts land owned by the Blue Hill Heritage Trust. A very nice walking trail leads from the parking lot to the outlet of the Parker's Pond flowage. This site includes signage recognizing the history of dams and mills on the brook. This site will provide educational opportunities as well as a nice place to relax and enjoy nature.

The perched culvert project was the first time that a non-profit organization, the Department of Transportation, and a town collaborated and shared funding to address a water drainage issue. The results were outstanding. The box culvert is large enough for mammals to follow the brook instead of crossing the road. This will reduce road kill and vehicle damage – a real win – win for our area.

The total cost of the 5 restoration projects on the Bagaduce was right around $3.5 million dollars. All of this money was raised by Ciona Ulbrich from the Maine Coast Heritage Trust.

SHELLFISH: The shellfish resource of the upper Bagaduce River remains dismal. Previous beach seine data indicated low numbers of green crabs. In the 2021 survey, we noticed that the number of green crabs had increased considerably. There were pockets of soft shell clams beginning to repopulate Northern Bay but were decimated by August. There were a few clams harvested from areas that have a gravel or rocky substrate, but the number of harvesters is under 3 so the data is considered proprietary by the State and data is not released.

BAGADUCE ALEWIFE CELEBRATION: Cancelled due to covid.

EDUCATIONAL EVENTS: These events were few due to covid but the Brooksville Elementary School did bring their students to Pierce's to move fish over a vertical obstruction. Mike Thalhauser (MCCF) assisted with a short talk about the life cycle and biology of the fish.

LAND TRUSTS: Plans were finalized and a public presentation made to the residents of Penobscot regarding the purchase of a 197 acre parcel of land that borders Winslow Stream. Residents were in favor of the purchase and the final action will be taken at the Annual Town Meeting held in March 2022.

Blue Hill Heritage Trust came forward and arranged the purchase of Wallamatogus Mountain by a conservation minded "holding company". BHHT has three years to raise the funds needed to purchase the property from the "holding company".

CLIMATE CHANGE : Climate change is more evident each year. I witnessed three 100 year rain events in 2021, including the road flooding at Smelt Brook near the Lampson Preserve, the New Road, and at the foot of Perkins Hill in Penobscot.

The spring, summer, and fall were wet and the grass was green until Thanksgiving. It seemed like the fall winds never stopped blowing with incredible gusts. There was very little snowfall in the early winter again this year. Northern Bay never froze over until the very end of December.

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POLLUTION: DMR water quality test results indicate improving water quality at all test sites in the upper Bagaduce.

It will be interesting to see if the EPA dedicated enough finding to complete the remediation / closing of the former Callahan Mine in Brooksville. Dredging is proposed in Goose Pond which is always a concern. Will this activity disperse more contaminants than are collected? I have not seen the actual plan for the project at this time but will be looking into the matter.

I contacted the Code Enforcement Officer regarding a clear cut to the shoreline in Green's Cove in Brooksville. I was told that the activity was permitted as the wood was dead. There are no small shrubs or saplings along the shore which does not seem quite right but who am I to say? I also questioned an excavator on the shoreline in the South Wharf Road area and was told the project was permitted.

There is concern about PFAS chemicals being dispersed locally. The sludge came from the Castine Waste Water Treatment Plant in the 1990's. Some of this sludge originated from the Maine Maritime Academy. The sludge was disposed on the land of Ken Taplin – North Blue Hill, King Hill Farm – North Penobscot, and Homewood Farm, - North Blue Hill. These three properties drain into Wight's pond.

POLICY: As mentioned in the synopsis, several Bagaduce River towns are updating their Comprehensive Plans. These efforts are good for the river as they address issues that are critical to the environmental health of the watershed. Sea level rise is being addressed which has a huge potential impact of pollution due to flooding.

A positive accomplishment of Peninsula Tomorrow was the convening of Select Board members and Town Managers from the nine peninsula towns - Castine, Penobscot, Brooksville, Sedgwick, Brooklin, Deer Isle, Surry, Stonington, and Blue Hill. While many topics were discussed, and not necessarily focused on the Bagaduce Watershed, this is the beginning of a dialogue and opens the door for continued conversations and possible collaboration among neighboring towns. This is a radical departure from the old school protocol of everyone following their own path.

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COLLABORATION: I continue to work with other groups as the opportunity presents itself. Unfortunately in the time of covid, these opportunities are few and are almost always virtual. I was interviewed by Ethan Genter from the *Bangor Daily News* regarding the ecological benefits of alewife restoration. I also gave a Power Point presentation to the Maine River Herring Network about Restoration, Research, and Monitoring. The last slide of the presentation showed the groups that have been involved with the Bagaduce River.

BIRD POPULATION: The increase in the alewife population has produced an abundance of food for many creatures, especially birds. Not only has the adult population increased, but the juvenile population has exploded as well.

There were 40 eagles counted by Jon Albrecht at Pierce's Pond / Mill Brook this spring. Caren Plank confirmed that the eagles that nest on Mollie's Island successfully reared two eaglets in 2021. I attribute the survival to an abundance of food.

The kingfisher population has rebounded nicely as well. In the 1980's they were plentiful but then their numbers plummeted. Today, kingfishers are found all along the shoreline and on the islands.

Osprey numbers remain low – only a few pair – and I believe it is due to the huge number of eagles. I have seen many osprey at Walker's but far fewer eagles there.

Egrets seem to have determined that Northern Bay can provide an endless supply of food – until cold weather sets in. Not long ago egrets were unheard of here. There were 10 great egrets in 2021. There were snowy egrets and cattle egrets as well.

A pair of Harrier hawks have made Northern Bay their home. They are tearing up the woodcock population.

The number of Blue Heron appeared to have declined over the past 10 years. I wonder if the eagles are feeding on them too.

Yellow legs, red knots, and plovers are common sights as well.

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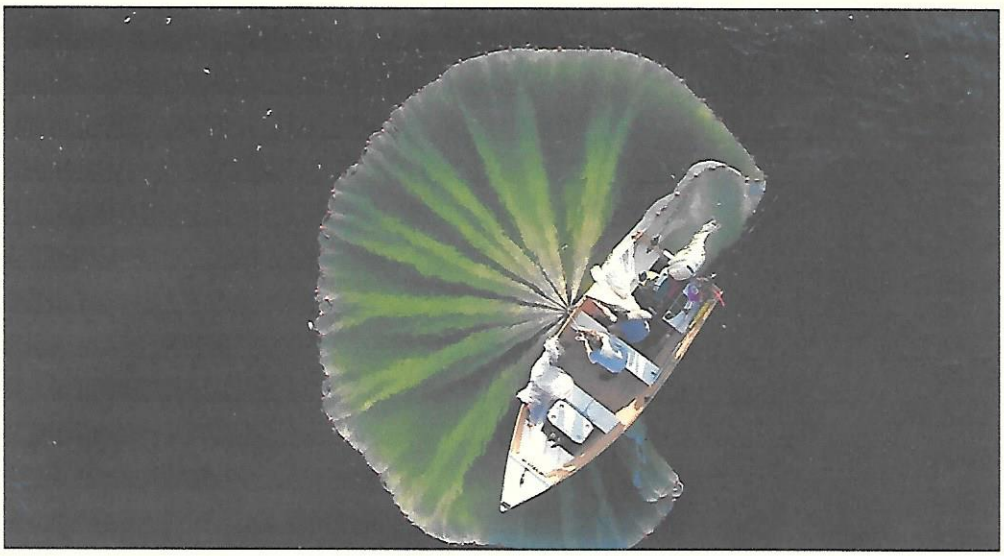

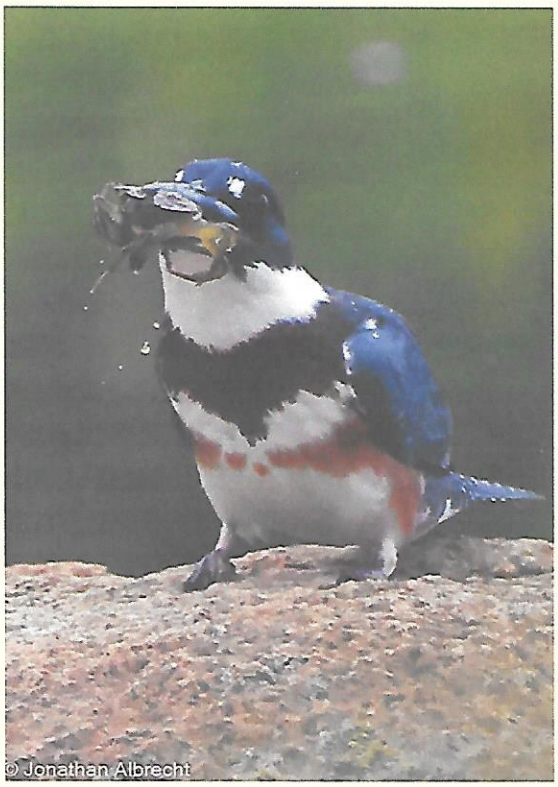
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Maine Center for Coastal Fisheries
PO Box 27 | 13 Atlantic Avenue
Stonington, ME 04681
Phone: 207.367.2708 | Fax: 207.367.2680
www.coastalfisheries.org

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Maine Center for Coastal Fisheries (MCCF) makes community resilience possible by bringing together fishermen and harvesters, scientists, policy makers, business and community leaders, and citizens to create and implement sustainable solutions for communities that depend on wild fisheries, aquaculture and the seafood economy. For fishing communities to prosper, they must be able to respond to, withstand, and recover from adversity including changes in ecosystems, fluctuations in markets, local demographic shifts and regulatory mandates.

MCCF strives to develop, test, and refine ways to engage fishermen, community leaders, and state and federal policy makers, providing information on current practices while exploring alternative management strategies and improving local capacity for collaboration.

In order for MCCF to be relevant and to achieve success, these goals must be aligned with the values and efforts of the communities that we work with and represent. The towns of Penobscot, Brooksville and Sedgwick are three such towns that have been models in these efforts and are key partners in our collaborative research and management efforts.

MCCF is working with these Bagaduce River towns to monitor and document the status of local marine resources, assist local managers with policy issues at the State and Federal level, encourage academia to collaborate and use the Bagaduce as a case study, and encourage public participation in all of these issues. This work stands as a model for other NGO's and towns to use as a template for how to participate in local collaborative monitoring, research and management

Examples include:

- Three Town Alewife Committee that MCCF supports and facilitates in work monitoring and managing local river herring populations. Goals of this committee are:
- Monitor all alewife populations in the Bagaduce - ongoing
- Restore ACCESS to all habitat where alewife have historically existed – done with leadership from Maine Coast Heritage Trust

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- Manage all alewife populations in the Bagaduce - ongoing
- Restore FISH to all ponds where alewife historically existed - done
- Open non-commercial harvest to Walker's pygmy alewives - done
- Make this all sustainable (fish and people) – ongoing

- Assisting local towns with monitoring and co-management issues associated with the river herring fishery and the municipal shellfish program. (see attached sampling data from this work.)
- Directing or providing a boat for academia to collect eDNA, plankton samples and locally led research efforts from local waterbodies.
- Including Bagaduce River data with data from other places in Maine and New England.
- Establishing the Maine River Herring Network that invites harvesters, academia, and regulators to work together and share information about river herring runs.
- Participating in a Shellfish Advisory Council subcommittee tasked with improving the collaborative system where the state of Maine and municipalities work together to manage local shellfish fisheries.
- Continuing a field study focused on identifying juvenile river herring habitat within the upper Bagaduce that is also a good absence / presence survey of marine life native to the river.

MCCF exists to support fishing communities along the coast of Maine. The social, economic, and cultural benefits that fishing has provided have shaped and sustained these communities and it is only by working with these communities that we can be successful. Our work along the Bagaduce River is a shining example of what is possible and it is only through a mutual partnership that this success can take shape. We value this partnership, this work and these communities and are proud to be working alongside them. We look forward to future work and the possibilities therein.

Sincerely,

Mike Thalhauser
Collaborative Management Specialist

Maine Center for COASTAL FISHERIES

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Stonington, ME 04681
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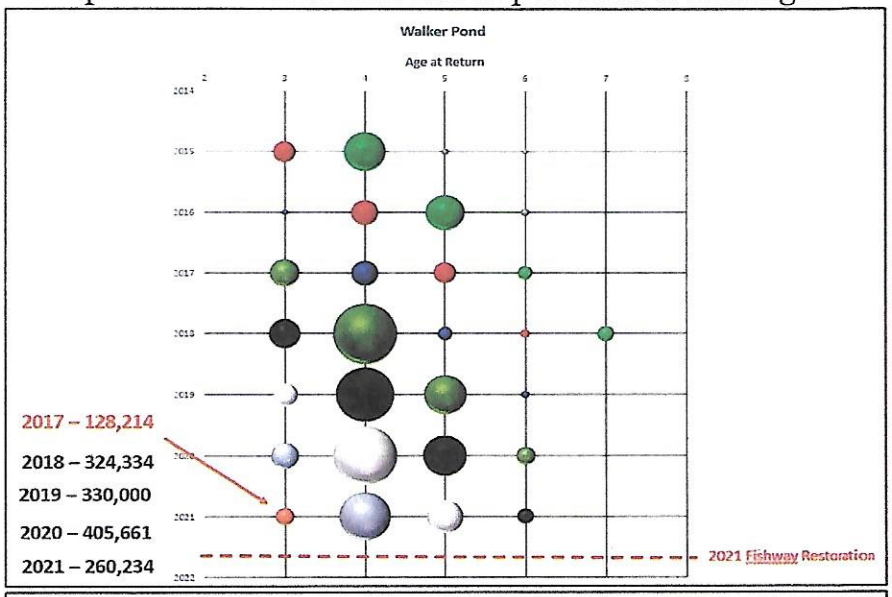
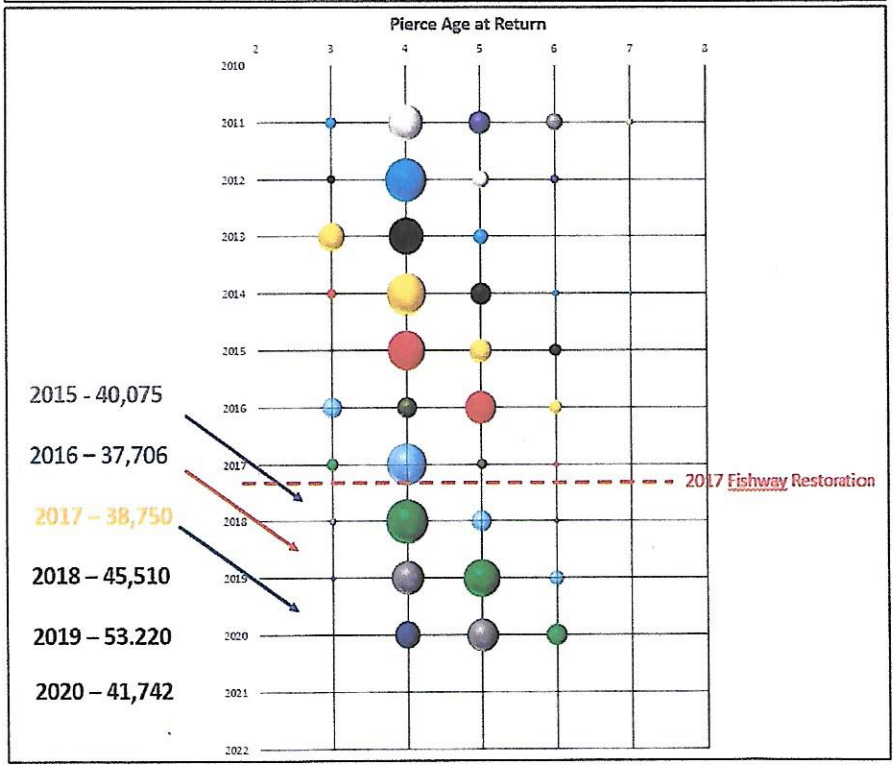
Examples of some data collected as part of river herring monitoring:





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