

Upstream Watch Comments on Olver Associates Submission  
to the Belfast Planning Board

## Marine Resources

October, 20, 2020

Olver Associates Wrote:

“The discussion of surface water quality related to the pipeline covers both the construction and disturbance of mercury contaminated soils and the impacts of the waste water effluent discharge. Relying on information submitted by the applicant and the Department of Marine Resources, the DEP finds that construction of the pipelines and the discharge of effluent from the wastewater treatment facility will not have an adverse effect on Penobscot Bay. The conditions associated with this includes requiring that the excavated material from the pipeline installation go to a licensed landfill and that care is taken during construction to minimize sediment transport. NAF will also need to conduct further sampling and analysis of the sediment prior to construction to verify there are no additional parameters found of concern to DEP in addition to mercury.”

This statement does not evaluate the DMR’s comments to the DEP concerning “Fisheries and Industry Impact”, nor does it take into account the comments from local fishermen who have experienced dredging and other disturbances in the bay for decades. Under Section 82-3 the City is obligated “*to protect fish spawning grounds, aquatic life [and] to protect commercial fishing and maritime industries and activities.*” Based on this obligation, Upstream is bringing the below points to the Planning Board’s attention in hopes that Ms Olver may offer comment, and that the board will further examine the potential impacts on the marine environment, and local fishing.

*The DMR report states that:*

“The proposed RAS discharge pipe will be located within an area prohibited to shellfish harvesting under the authority of 12 M.R.S.A. § 6172.”

This area, like so many others along the coast, is closed and significantly diminished due to present pollution levels from sewage treatment plants and

overboard pollution, as well as ongoing degradation since colonial take over. It is not that this area cannot support shellfish, but that existing pollution has already closed the area, and lowered water quality so significantly that shellfish can no longer exist there, and when they do, they are contaminated.

What will the impact be of adding more pollution to this already degraded area? Is it not in the interest of the local fishing community to enhance and clean this area in order to raise water quality and fishing opportunities? Is it not the DMR's mission to "conserve and develop marine and estuarine resources"? Or, is Belfast willing to consider this area a "sacrifice zone"? (Please see our comments on "Climate Alteration" concerning the impacts of allowing degradation of Marine ecosystems to persist and accumulate.)

We are all aware that the Belfast and Penobscot Bays were once thriving marine environments, and we know that ongoing pollution, general degradation, industrial failures, and dams are at fault for its current state. Restoration is taking place, as local fisherman Mr. Black points out below, and must continue in order to maintain cool and clean waters that support as much life as possible. It is counter intuitive to assert that additional dredging and polluting will not hamper this progress—progress that is more urgent than ever due to the climate and extinction crisis.

According to the DMR report, landings for Waldo county in 2017 and 2018 for lobsters alone totaled over \$3 million each year. This doesn't include all other aspects of the economy that this lobstering helps support. It also doesn't take into account the documentation of commercial landings that include: scrob, scallops, sea urchins, menhaden, periwinkles, mussels, clams, elvers, sea urchins and smelts, as well as recreational landings of several migratory species. In addition, around 250 species of fin fish call the Gulf of Maine home. Many of these species have been observed in Upper Penobscot Bay (this includes Belfast Bay). The DMR writes, "concerns regarding the impact of this project on spawning of cod and haddock were also mentioned though there is no active ground fish fishery in the area."

While there are no longer commercial "fisheries" due to centuries of pollution and degradation, *these species are being caught*. How else do "fisheries" recover if not over time with the required conditions and support of the DMR?

As David Black, a senior fisherman, writes concerning the Bay's recovery from past pollution:

"The Harbor was so fouled with this effluent that Belfast Harbor was listed in the U.S. Coast Pilot publication as a harbor to avoid when cruising the Coast of Maine...I believe it will take many a lifetime for this area to completely clean itself."

He goes on to point out that:

"In my experience, whenever there was a dredging project at Mack Point in Searsport Harbor, the lobster catch in the area slowed for several years until the environment recovered. Additionally, when Belfast Harbor was dredged in 2003, it took a decade for the environment to recover according to a letter from a prominent Lobster Fishermen's Association to the U.S. Army Corps of Engineers dated May 4, 2013...Dredging and blasting resulting from this project will produce the same impact as other dredging projects in the area."

Wayne Canning, the District 1 representative for the State of Maine Zone D Lobster Management Policy Council points out in his testimony on behalf of local fishermen that:

"The placement of a sewer pipeline across Belfast Harbor in the year 2000 stopped lobster migration into the inner harbor and up the river. This area had previously been very productive lobster fishing, and has never returned to its earlier production."

Finally, Mr. Black testified that:

"I have fished in the area of this project from May until the end of December ... The overlap between my fishing "season" and this dredging and disposal project occurs in November and December which in recent years have become more productive months due to an increase in the water temperature of the bay. This change in water temperature has resulted in a later out migration of lobsters than was evident in past years and decades. The environment in this area of Penobscot Bay is changing very rapidly."

This testimony reaffirms that this area is an active fishing ground, and that dredging and pollution do have long term impacts that affect fishing. Should we be allowing more warm waters and pollution to enter this environment, or should we be doing all we can to keep these waters cool and clean?

The DMR writes:

“Traditional fishing access could be a concern for lobster, crab, and scallop fishing due to intake and discharge structures. These structures will be between 2-9 feet above the sea floor and would pose as a trap for fishing gear to become entangled upon. It is possible that an exclusion zone along the pipeline will need to be established. The loss of fishing bottom would be approximately 149,000 square feet or 3.4 acres.”

So, while the project should not result in adverse impacts, the area and fishing where the pipes would be laid will be lost. Is the loss of 3.4 acres significant to the fishermen who fish there now? According to Mr. Black it is. What is the impact of this loss combined with the effluent? Fishermen have already lost significant portions of the Penobscot Bay to pollution. Do they deserve to lose even more? Can we afford to lose any portion of the seas? Is not this idea that acres of seabed can just be destroyed the same thinking that has gotten us into the extinction and climate crisis, and drastically reduced our fishing communities?

While Mr. Black’s and other fisherman’s testimonies are ignored by the agencies, most of us understand that fishing people’s local ecological knowledge is among the most essential data that exists. These men and women are on the bay almost every day. They also pass down their knowledge from generation to generation. Do we have the right to put Mr. Black’s, and other fishermen’s livelihoods, on the line? Are there options that will guarantee the continued recovery of the Bay, support local fishing, address global warming, and clean up existing pollution sources, rather than adding to them?

We would like to point out as well the the Federal Hatchery at Craig Brook was in violation of its own phosphorus standards for several years. “Maine DEP was only now requesting a consent agreement with the hatchery because it had taken several years to accumulate a sampling of water quality data.” <https://>

[www.ellsworthamerican.com/maine-news/jurisdiction-issues-phosphorus-cloud-waters-at-lake-alamoosook/](http://www.ellsworthamerican.com/maine-news/jurisdiction-issues-phosphorus-cloud-waters-at-lake-alamoosook/)

If it takes years to “accumulate a sampling of water quality data” when a violation takes place at a government establishment, how long would it take to address Nordic’s violations? Cooke Aquaculture, also licensed and overseen by DEP has been in violation of its permits for years. It will now pay a fine that is insignificant compared to its profits. <https://bangordailynews.com/2019/10/16/news/canadian-salmon-firm-will-pay-156k-over-fish-pen-violations-to-fund-salmon-restocking/>

In other words, once these facilities are in, pollution and violations happen— technologies fail and humans make mistakes. Is Belfast prepared to take this risk at this crucial time?

Finally, though this is extremely recent information, we would like to bring to the attention of the board a model that was discussed on October 19, 2020 at the Senator George Mitchell Center for Sustainability at the University of Maine. This new model is on Estuarial Tidal Flow dynamics. Specifically this activity has focused on harmful algal blooms using a "particle model" for now, and a more sophisticated model once the "Estuary Builder" comes online. The coastline of Belfast Bay is shown in red as a "Vulnerable Area". We cannot offer more information than this, however Lauren Ross and Dr. Sean Smith from the Mitchell Center are the people to communicate with in regards to this newest modeling.

Concerning the endangered Atlantic Salmon it is important to note that the DMR cited data from 2002 and 2012. However, the restoration of the Penobscot River took place in 2013 and 2015. According to NOAA, “on July 28, Maine Department of Marine Resources reported 1,426 salmon returns, up from 1,076 in 2019. These numbers are a vast improvement from 2014, when only 248 Atlantic Salmon returned to the river to spawn. The Penobscot River hosts the largest remaining run of Atlantic Salmon in the United States. However, numbers are just a fraction of what they used to be—75,000 to 100,000 Atlantic Salmon used to return to the river to spawn.” <https://www.fisheries.noaa.gov/feature-story/penobscot-river-salmon-run-surges-second-straight-year>

Therefore, more recent data is needed to determine the activity of Atlantic Salmon in the area of the pipes and effluent, especially considering the fact that

“75,000 to 100,000 Atlantic Salmon used to return to the river to spawn”, and we know that the salmon historically used the entire Penobscot Bay, and migrated through the Belfast Bay to the Passagassawakeag River, [https://www.fws.gov/GOMCP/maps\\_salmon.html](https://www.fws.gov/GOMCP/maps_salmon.html). This is why the entire Belfast Bay is under the protection of the Endangered Species Act for both Atlantic Salmon and Shortnose Sturgeon. Due to changes in water temperature salmon and sturgeon migration may also vary as temperature is one of the factors that determines migration. <https://nefsc.wordpress.com/2017/05/26/salmon-team-and-predators-ready-for-spring-on-the-penobscot/> It is thought that there might also be appropriate habitats for small runs on the Little River and the Goose River. While we realize that Whole Oceans just received a permit to pollute, we do not believe that this justifies adding even more pollution to this ecosystem.

Concerning the endangered Shortnose Sturgeon and the Atlantic Sturgeon, data from 2010 was cited. “There are no recoded reports of shortnose present in the area of the pipeline. (Fernandes et al. Seasonal Distribution and Movements of Shortnose Sturgeon and Atlantic Sturgeon in the Penobscot River Estuary, Maine. Transactions of the American Fisheries Society 139:1436-1449, 2010).” More recent data was used concerning the lack of spawning in the area.

However, according to a study in 2015: “Evidence has become available in this century indicating that populations of the endangered Shortnose Sturgeon *Acipenser brevirostrum* *migrate outside their natal river systems, but the full extent and functional basis of these migrations are not well understood.* Between 2007 and 2013, 40 Shortnose Sturgeon captured and tagged in four Gulf of Maine river systems migrated long distances in coastal waters to reach the Kennebec System where their movements were logged by an acoustic receiver array. Twenty-one (20%) of 104 Shortnose Sturgeon were tagged in the Penobscot River.” <https://afspubs.onlinelibrary.wiley.com/doi/abs/10.1080/00028487.2015.1037931> In other words, Shortnose Sturgeon are making a come back due to the removal of the Edwards dam, and the dams on the Penobscot. It is well known that the Passagassawakeag River means “a good place to spear sturgeon by torchlight.” Making sure they can make it back to the Passagassawakeag is a responsibility we all share.

So, the question is not only if fish and other marine life are currently present, but *could they be present again* if the right conditions existed?

Amazing restoration stories abound concerning fish, marine and river habitats in Maine and beyond. In addition to marine life restoration, foundation species such as eel grass can and must be protected and restored now more than ever. Eel grass exists in the outfall area of these pipes. While restoration of eel grass has not yet been seriously attempted in our area, Virginia's Eastern Shore is home to the "world's largest seagrass restoration project, [where] scientists have observed an ecosystem from birth to full flowering." [https://www.sciencenews.org/article/seagrass-restoration-project-virginia-ecosystem-rapid-recovery?fbclid=IwAR32Z2r\\_U5YDbMM6gqHzUEBEXHfLK9brRv2cfH8rtJDjr91uEhZ01\\_1](https://www.sciencenews.org/article/seagrass-restoration-project-virginia-ecosystem-rapid-recovery?fbclid=IwAR32Z2r_U5YDbMM6gqHzUEBEXHfLK9brRv2cfH8rtJDjr91uEhZ01_1)

UCSA One of the most important elements of this restoration is the seagrass's ability to sequester carbon. Could Belfast launch a similar restoration effort? One main ingredient is clean, clear water...Something 7.7 million gallons of effluent added to existing effluent, will make very difficult, if not impossible to maintain.

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## Alteration of Climate

October, 20, 2020

Olver Associates wrote:

There's not much discussion about climate alteration but the DEP does conclude this project should have no impact on climate.

Despite being legally required to meet Maine's climate goals, including Governor Mills' mandate to reach carbon neutrality by 2045, the Maine Department of Environmental Protection (DEP) has no data on record concerning Nordic Aquafarm's carbon footprint, or the terrestrial and marine carbon sequestration it would permanently eliminate. To issue a draft permit for a facility of this magnitude, that does not require a full climate impact study, is unacceptable considering the severity of the climate crisis. Upstream sees this as a serious oversight by the state, when we must significantly lower, not increase, our greenhouse gas emissions (GHG). As stated by the Coastal and Marine Working Group of the Maine Climate Council, "decisions about our climate future must rely on sound science that is accessible, credible and relevant to climate-related actions." Where is this climate science on one of the largest salmon producing factories ever to be built?

The principal climate argument Nordic put forth is that having a factory in Maine will reduce the need to fly fish from Norway. Upstream Watch believes this argument borders on the absurd, and avoids the multiple layers of GHG pollution this factory will cause. We touch on some of these below, and then focus on Belfast's Climate Crisis Council's recommendations. Please see our carbon paper for alternative recommendations concerning fish consumption and their corresponding carbon footprints.

Upstream Watch's research paper, [Nordic Aquafarm's Total Carbon Footprint](#), estimates that if built, the Nordic factory would emit 550,000 to 759,000 metric tons of carbon dioxide to the atmosphere each year. This is equivalent to adding 120,000 to 165,000 cars to the community, or 14,000 to 18,000 households.

*It is important to note that these figures are very conservative estimates. They do not include the potential elimination of the discharge area's present "blue carbon" sequestration, and its future potential if fully restored. ("Blue carbon" refers to marine vegetation's ability to mitigate the consequences of carbon dioxide (CO<sub>2</sub>) emissions through sequestration.) Nor do they include the loss of sequestration from coastal and terrestrial wetlands. (Wetlands are some of the largest storers of carbon on the planet, when disturbed or warmed, they release the three most potent GHGs: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O)).*

Upstream's conservative estimates of GHG emissions reveal that this one facility would represent approximately 5 to 6 percent of the state's total 2030 GHG target, and 12.8 to 17.6 percent of the 2050 target. The electricity use alone would be equal to Belfast, Northport, Lincolnville, Camden, Rockport and Rockland combined. The factory requires seven diesel generators to run at peak hours every day. This is in addition to the electricity being purchased from the grid which has its own carbon footprint.

Emission sources include, but are not limited to:

- site preparation, including forest, wetlands and stream elimination (This will result in releasing GHG's *and* the loss of ongoing sequestration. Data now confirms that maturing trees sequester more carbon as they age. Please see this paper for more information: [https://issuu.com/newwildernesstrust/docs/wildworks\\_v1\\_wildcarbon-2\\_\\_1\\_?fr=sZjgxYzE0OTMxNTU](https://issuu.com/newwildernesstrust/docs/wildworks_v1_wildcarbon-2__1_?fr=sZjgxYzE0OTMxNTU))
- soil removal and replacement (soils store carbon and release it when disturbed)
- road building
- pipeline construction and dredging
- creation of buildings, tanks, piping, motors, filters, diesel generators, etc.
- All operational elements such as electricity, burning of diesel fuel, waste disposal, transportation, effluent, the import of fish-meal, the creation of fish meal from forage fish, and its impact on the marine ecosystems in Africa and Latin America, etc.

As documented in the Maine Climate Council report, Maine's 2,000 miles of coastline has 10 times the amount of carbon sequestration capability than all the terrestrial features of the entire State! Yet, no study has been conducted to assess the impact of Nordic's pipelines and effluent on our coastline's blue carbon potential. Two of the seven actions recommended by the Coastal and Marine Working Group on climate are:

1. Expand monitoring of coastal water quality, including nutrients, and acidification to provide actionable information on water quality risks statewide

2. Characterize, map, and track marine and coastal habitats and species, including economically important and at-risk species

These actions, in addition to a complete study on the facility's embodied and operational GHG emissions, need to be taken *before* Nordic's permit is issued so that Belfast and the State fully understand the climate risks and impacts. Concerning the marine environment, understanding the impacts on sequestration capacity from effluent, and higher water temperatures, as well as acidification, is crucial.

The state commissioned study on ocean acidification recommends action to “preserve, enhance and manage a sustainable harvest of kelp, rockweed, and native algae, and preserve and enhance eelgrass beds” to increase the state's capacity to mitigate, and adapt to the impacts of ocean acidification. As stated in Upstream's Marine Resources comments, eelgrass restoration is seeing amazing success along Virginia's Eastern Shore. <https://www.coastkeeper.org/restoration/eelgrass-restoration/>

While we have problems to tackle, such as green crabs and existing pollution, there are solutions that are working elsewhere and can work here. Eelgrass is an indispensable part of a climate change strategy. As stated in a Pew Charitable Trust study:

“[e]elgrass is one of the most important plants in the ocean. It cleans the water, nurtures fish, absorbs climate-warming carbon, produces oxygen, and protects the coastline—and that's just for starters. **But this versatile seagrass, found in estuaries, bays, and other shallow nearshore areas, is disappearing because of pollution, dredging, development,** sea level rise and other impacts. Approximately 30 percent of the world's seagrass has vanished since the 1870s. Globally, we're now losing an area of eelgrass that would cover two football fields every hour.”

<https://www.pewtrusts.org/en/research-and-analysis/articles/2019/06/07/six-reasons-to-protect-eelgrass>

We have no data on how Nordic's effluent may impact eelgrass, and whether or not it will create an environment that would prevent eelgrass restoration. In fact, it is impossible to have this data without knowing what the fish food will consist of as it would be a dominate element of the waste water. We also do not know if the effluent will attract green crabs. What is certain is that the effluent levels are already at the maximum of the DEP's acceptable limits, and Nordic only reached these levels by changing their numbers at the invitation of the DEP after the permitting process was

officially closed. (Please see our submission on Water Quality concerning this issue.) The point being made here is that this effluent will have an impact on the bay's capacity to support as much carbon sequestering life as possible. To this end, we recommend that the Planning Board examine the following Belfast Climate Crisis Council's (CCC) recommended actions concerning natural systems:

- **Prioritize defensive solutions utilizing natural systems themselves.**
- **Require low-impact development practices on all vulnerable properties.**
- **Discourage development strategically on private or public properties that are vulnerable *and undeveloped*.**
- **Assemble and redesign parcels of open space for reuse as conservation or restoration projects that can offer benefits in terms of public recreation, scenic amenities, and sequestration of greenhouse gases. Upstream would add here, "can offer outdoor, nature education opportunities."**

As the CCC writes:

"Defensive solutions based on nature are permeable and dynamic. They, too, can cope with erosion. But they also can mediate temperature and chemical changes in the water, in order to sustain biodiversity; and they can sequester carbon. In short, they serve both adaptation and mitigation. A list of such solutions includes conserving and restoring smaller-scale natural ecosystems within the watershed (wetlands, river mouths, beaches, dunes, intertidal and subtidal habitats)...[t]he health of coastal ecosystems is important several times over in an era of climate change." The Little River ecosystem is a "smaller-scale natural ecosystem within the watershed."

Fortunately, as we have repeated many times before, there are viable alternatives for Belfast. Smaller, closed loop systems would need water at a reasonable amount, and help reduce taxes and avoid risking the bay and eliminating the Little River Ecosystem. They would also have far smaller carbon footprints. In addition, Belfast must realize that opportunities abound for selling carbon credits, and the payments can be quite substantial. Receiving income for the city from a variety of smaller sources, while actively addressing the climate crisis, and engaging in restoration of both aquatic and terrestrial ecosystems, is not only possible, but a far less risky endeavor than what Nordic is proposing.



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**Natural Resources**

October, 20, 2020

Olver Associates submitted that:

NATURAL RESOURCE IMPACTS - We have no comment on this topic except to note that in other applications that we have either made or reviewed, the type of analysis that has been completed is typical of what is expected for site development. In reviewing the comments made by state and federal agencies of the application, they conclude that the impacts are acceptable.

Upstream believes there is room for assessment and comment in regards to the board's obligation under Section 82-3.

We have outlined areas for Ms Olver to comment on below.

1. DEP requires soils to be suitable for the proposed development, and yet all soils will have to be removed and replaced. It is unclear how the DEP is justifying this departure from its own regulations. We agree with Ms Olver that this analysis may be typical, but we argue that it is not acceptable, particularly because of the urgent ecological crisis before us, the complete destruction this soil removal requires, and the pollution such removal and replacement entails.

Ms Olver writes:

SOIL TYPES - The project includes extensive excavation of the on-site soils to reach the elevation at which construction will begin. This makes the quality of the existing soil somewhat irrelevant as they will be removed from the site.

Whether soils are removed due to elevation, or due to the fact that they are not suitable, does not address the fact that the soils AND the site are both not suitable in this case. While soil unsuitability alone would not necessarily be a deciding factor, it is in fact one of the many issues with this proposal, that when viewed as a whole would have an

enormous cumulative impact. This impact would affect terrestrial and marine natural resources, neighboring homes, route one traffic, the peace, beauty and health of the site and surrounding neighborhoods, the city's climate goals (see comments concerning Ms Olver's comment on climate impact) and Belfast's tourism appeal. We encourage the Planning Board to ask Ms Olver to comment on these cumulative impacts, in addition to the specific impacts.

2. The DEP has stated in its Draft Permit that:

“Where a discharge will result in lowering the existing water quality of any waterbody, the Department has made the finding, following opportunity for public participation, that this action is necessary to achieve important economic or social benefits to the state.”

It is unclear to Upstream how the DEP can authorize the degradation of water quality.

Furthermore, we are unaware of anyone on either side of this issue in our town requesting that water quality standards be lowered for economic and social reasons. We would like to recommend that the Planning Board ask Ms Olver for her comments concerning the DEP's decision to accept the lowering of water quality standards for economic and social reasons. This statement also appears to be admitting that water quality standards will be lowered by Nordic's facility. Is this a typical ruling by the DEP? What role does the Federal Clean Water Act play in the DEP's decision?

*3. Concerning Ordinance No. 8-1997, § 1, 7-15-1997; Ord. No. 54-2003, 6-17-2003] which states:*

“The purposes of this chapter are to further the maintenance of safe and healthful conditions; to prevent and control water pollution; to adequately provide for the disposal of all wastewater; to protect fish spawning grounds, aquatic life, and bird and other wildlife habitat; to protect buildings and lands from flooding and accelerated erosion; to protect archaeological and historic resources; to protect commercial fishing and maritime industries and activities; to protect fresh-water and coastal wetlands; to control building sites, placement of structures and land uses; to conserve shore cover; to protect visual as well as actual points of public access to inland and coastal waters; to conserve natural beauty and open space; and to anticipate and respond to the impacts of development in shoreland areas.”

Upstream Watch would like to point out that this area was evaluated as separate ecological components, i.e. wetlands, streams, shorelands, bay, forest habitat, riverine habitat, not as the complex, interconnected ecological community that it is.

**We feel it is essential for the board to know that this fractured, reductionist approach to wildlife habitat evaluation is now well documented as scientifically incorrect.**

The argument that the complete elimination of this forest and wetland complex, and some coastal wetlands, will not have adverse impacts on resident and migratory species, relies on the same false stance as the argument that water quality is not intimately linked to economic and social well-being.

In fact, it is this fractured thinking that is at the heart of our ecological and climatic destruction. To quote Penobscot leader Sherri Mitchell, “It is this fractured view that has been central to the fracturing of our societies and environment” (*Indigenous Prophecy and Mother Earth* in All We Can Save, Ed. Johnson, Ayana, E and Katherine K. Wilkinson, p. 18). That the state and consulting agencies are still using this approach is a reflection of political and economic priorities that continue to favor large scale industrial projects with huge ecological footprints. This does not reflect the most recent science, nor does it support smaller, ecologically restorative industries that do not funnel large quantities of money toward a handful of people, while consuming, polluting or eliminating large amounts of “natural resources”.

Is the city obligated to rely on state agencies’ decisions, or can it make its own demands in order to fulfill its legal obligation to “protect aquatic life, and bird and other wildlife habitat”?

To this end, this recent study notes that:

“Rivers have all too often been considered as two-dimensional elements of terrestrial landscapes neglecting their own internal structure and heterogeneity. But rivers exhibit certain characteristics, which should grant them a special position in connectivity conservation. With habitat fragmentation causing dramatic losses in global aquatic biodiversity, ecological research put much effort into conservation measures for maintaining and restoring connectivity of riverine habitats. To make use of the full mitigation hierarchy, the implementation of both avoidance (e.g. large-scale planning) and mitigation measures (e.g. facilities for up- and downstream migration) should be aspired.” Seliger C.,

Zeiringer B. (2018) *River Connectivity, Habitat Fragmentation and Related Restoration Measures*. In: Schmutz S., Sendzimir J. (eds) Riverine Ecosystem Management. Aquatic Ecology Series, vol 8. Springer, Cham. [https://doi.org/10.1007/978-3-319-73250-3\\_9](https://doi.org/10.1007/978-3-319-73250-3_9)

Due to the complete lack of onsite, four season studies, *we cannot know for sure what the exact impacts on wildlife and the Little River ecosystem will be*. To say that there are “many other ecosystems in the area that are similar” as Nordic’s consultants have, is incorrect, misleading and again, rests on ecologically dated and incorrect science. It also relies on the faulty thinking that sites with similar ecologies can just replace one another. Overcrowding, limitations in food and nesting habitats, and increase in disease, are all augmented by this dated, reductionist rationale that reinforces habitat elimination and pollution, rather than restorative efforts that work with natural systems, and their unique contributions to the whole.

Furthermore, there are few remaining habitats in the area that provide *connectivity* between the coastal wetlands, riverine habitat, a maturing forest (i.e. a forest that is increasing its carbon sequestration yearly), terrestrial wetlands and streams, and that also offers a corridor to uplands. As noted above, this fractured thinking has resulted in both the extinction crisis and climate crisis. Furthermore, why the Inland Fisheries and Wildlife designations have been completely ignored (Shoreland Wading Water Habitat of Special Significance, and two Inland Water Wading Habitats of Special Significance), remains a mystery to Upstream Watch. At the very least these designations, along with the current ecological crisis, should have triggered a four season study of birdlife and bats, which could have easily been completed by now.

Instead, the state is choosing to ignore the ecological realities we are all facing, and to use outdated approaches that favor large scale industrial projects that have brought us to the current predicament. Destroying wetlands, forestlands, streams, digging up soils and the sea floor, using massive amounts of fresh water, making enormous quantities of waste that must be hauled off, requiring huge amounts of energy, putting smoke stacks in the air and pipes out into a water body to produce an industrial food product that requires stripping ecosystems (forage fish) in struggling nations, and requires numerous artificial inputs, some of which are highly toxic... *This* is the thinking we can no longer afford.

The city, however, can take note of all of this, as well as the excellent work of its citizen scientists, and still request a full, four season wildlife study by an independent

consultant *prior to permitting*. The plummeting of bird populations and state endangered bats should have been enough to warrant such a study by the DEP. As noted in this January 2020 article, *birds are facing extinction 100 times faster than thought*. <https://theconversation.com/bird-species-are-facing-extinction-hundreds-of-times-faster-than-previously-thought-129134>

We would like to also add that recent studies by Cornell have shown *for the first time* that "areas where the stopover-to-passage ratio is high are potentially more important for migrating birds than was previously thought." Does our area qualify? We do not know. However, the preliminary data presented by Nordic, and collected on e-bird by citizen scientists, reveals significant numbers of migratory birds use and move through this area. We simply cannot know if the studies are not conducted. Under Section 82-3 the City is obligated to fully determine the impact of this project on wildlife before approval. Other likely impacts beyond complete elimination of the forest and wetland complex include, but are not limited to: smoke stacks (height, pollution and noise), noise in general, change in water levels of the Little River, and increased turbidity of the Little River during storm events.

To conclude, we understand that Big Aqua is pushing into Maine very quickly throughout the state, and Belfast would like to benefit from this. However, this wave of industry clearly means that we hold resources these corporations want. If the Planning Board rules that Nordic will violate local law, many other opportunities will present themselves. Should Belfast examine other options before accepting what is clearly a very large, complex factory that will have a significant footprint on many levels in a time when we can no longer risk the fragile ecological assets the community depends upon? As Upstream has stressed, there are other options that will benefit the town, and not have such a massive impact. We are certain, for example, that representatives from Sustainable Blue would present to the city their methods and successes as a closed loop facility. The city could benefit from selling such a company water, and gain tax revenue, while simultaneously keeping the Little River forest intact, receiving carbon sequestration funds, restoring the Little River ecosystem, and protecting the bay and local fishing community.