Natural Resources Subcommittee

Meeting Agenda

Tuesday, February 20, 2024 – 5:30PM

Location: Town Office Meeting Room

1. Call to Order

2. Review and discuss recommendations for Goals, Policies, & Strategies
    a. Agricultural & Forest Resources
    b. Marine Resources
    c. Natural Resources
    d. Water Resources

3. Committee/Public Comment

4. Adjournment

Goals, Policies & Strategies Definitions / Information

DEFINITIONS (per Chapter 208)

Goals: The plan must indicate the state goal or goals relevant to each topic area as identified in Section 3. Local goals may be added but are not required. (Note: These are essentially broad, overarching ideas.)

Policies: The minimum required policies for each topic area in Section 3 must be incorporated into a plan for it to be found consistent with the Growth Management Act. The language may be altered to better suit a community, but the specific intent of the minimum policy must remain. Altered policies must reflect the desired future direction of the community as stated in the community's vision statement.

Strategies: The strategies describe what actions the community will take to carry out its policies. Minimum required strategies identified in Section 3 for each topic area must be included unless sufficient alternative strategies are included. Alternative strategies will be considered by the Office to determine if they, in combination with the other strategies in the plan, address the goals of the Act. Strategies must identify the responsible party, anticipated timeline, and be developed pursuant to 30-A M.R.S.A. §4326(3). (Note: These are essentially more specific recommendations in order to carry out the broad goals and policies described above. For the purposes of Damariscotta's plan, they will be SMART-ER strategies, an acronym for specific, measurable, attainable, relevant and time-based, with ways to be evaluated and the specific resources (staff time and suggested funding sources) provided for each, where appropriate.)

Water Resources

Goal #1: Protect the quality and manage the quantity of the State's water resources, including lakes, aquifers, great ponds, estuaries, rivers, and coastal areas.

Policy #1.1: Protect current and potential drinking water sources. Continue to collaborate with Great Salt Bay Sanitary District to maintain the high water quality of the Town's drinking supply.

- Strategy #1.1.1: Work with Miles Hospital and the Pines Mobile Home Park on acquiring land surrounding their wellheads, or adopt strict wellhead protection standards in these areas.
- Continue to collaborate with the Sanitary District to ensure strong watershed protection through zoning and enforcement support from town officials. Poor water quality in the past shows little Pond is highly susceptible to contamination and point to changes in land use policy as the source of recovery of water quality to current levels.
- Work with the District to prevent soil erosion or phosphate accumulation in Little Pond from the gravel pits north of the pond.
- Work with the District to evaluate the integrity of the impoundment dams and repair these as necessary, to prevent the inadvertent release of water.
- Further information signage on the access trail from Biscay Road may be helpful in notifying the public that Little Pond is a source of drinking water, and outlining what recreational activities are permitted.

Policy #1.2: Protect significant surface water resources from pollution and improve water quality where needed by amending land use ordinances to minimize non-point source pollution.

- Strategy #1.2.1: Adopt or amend local land use ordinances as applicable to incorporate stormwater runoff performance standards consistent with:
    - Maine Stormwater Management Law and Maine Stormwater regulations (Title 38 M.R.S.A. §420-D and 06-096 CMR 500 and 502).
    - Maine Department of Environmental Protection's allocations for allowable levels of phosphorus in lake/pond watersheds.
- Strategy #1.2.2: Within 1-3 years, work with a qualified professional engineer to amend the Town's Site Plan and Subdivision Review Ordinances to incorporate low impact development standards.
- Strategy #1.2.3:Within 3-5 years, consider the adoption of a pesticide/fertilizer ordinance to minimize runoff from farmland and yards.

Policy #1.3: Protect water resources in growth areas while promoting more intensive development in those areas.

- Strategy #1.3.1: Where applicable, develop an urban impaired stream watershed management or mitigation plan that will promote continued development or redevelopment without further stream degradation.
- Strategy #1.3.2: Within 1-3 years, establish a relationship with a qualified third-party engineering peer reviewer who can review new development projects slated for Planning

Board review for compliance with stormwater standards and who can suggest modifications in an effort to encourage more low-impact development.

- Strategy #1.3.3: Adopt water quality protection practices and standards for construction and maintenance of public and private roads and public properties and require their implementation by contractors, owners, and community officials and employees.

Policy #1.4: Minimize pollution discharges through the upgrade of existing public sewer systems and wastewater treatment facilities.

Policy #1.5: Cooperate with neighboring communities and regional/local advocacy groups to protect water resources.

- Strategy #1.5.1: Provide educational materials at appropriate locations regarding aquatic invasive species.
- Strategy #1.5.2: Participate in local and regional efforts to monitor, protect and, where warranted, improve water quality.
- Strategy #1.5.3: Encourage landowners to protect water quality. Provide local contact information at the municipal office for water quality best management practices from resources such as the Natural Resource Conservation Service, University of Maine Cooperative Extension, Soil and Water Conservation District, Maine Forest Service, and/or Small Woodlot Association of Maine.
- Strategy #1.5.4: Collaborate with the Maine DEP and local conservation organizations to understand the impact projected increases in annual precipitation will have on stormwater runoff to help minimize future contamination of waterways.
- Strategy #1.5.5: Work with Coastal Rivers Conservation Trust to monitor invasive species migration in the region to ensure native ecosystems are safe from this potential stressor.
- Strategy #1.5.6: Use the results of state and non-profit agencies to improve water quality for all natural bodies of water.

Natural Resources

Goal #1: Protect the State's critical natural resources, including without limitation, wetlands, wildlife and fisheries habitat, sand dunes, shorelands, scenic vistas, and unique natural areas.

Policy #1.1: Conserve critical natural resources in the community.

- Ensure that land use ordinances are consistent with applicable state law regarding critical natural resources.
- Designate critical natural resources as Critical Resource Areas in the Future Land Use Plan.
- Through local land use ordinances, require subdivision or non-residential property developers to look for and identify critical natural resources that may be on site and to take appropriate measures to protect those resources, including but not limited to, modification of the proposed site design, construction timing, and/or extent of excavation.
- Through local land use ordinances, require the planning board (or other designated review authority) to include as part of the review process, consideration of pertinent BwH maps and information regarding critical natural resources.

Policy #1.2: Coordinate with neighboring communities and regional and state resource agencies to protect shared critical natural resources.

- Initiate and/or participate in interlocal and/or regional planning, management, and/or regulatory efforts around shared critical and important natural resources.
- Distribute or make available information to those living in or near critical or important natural resources about current use tax programs and applicable local, state, or federal regulations.

Policy #1.3: Continue to coordinate with Coastal Rivers Conservation Trust in protecting critical natural resources in Damariscotta.

- Provide educational information to property owners near areas such as Salt Bay and Oyster Creek about working with Coastal Rivers to permanently protect undeveloped areas, such as through conservation easements or similar.
- Pursue public/private partnerships to protect critical and important natural resources such as through purchase of land or easements from willing sellers.
- Work with Coastal Rivers Conservation Trust to determine an inventory of possible rare species in Oyster Creek's salt marsh and act to conserve this land.

Policy #1.4: Inventory and map natural resources throughout Damariscotta in order to allow developers to better plan locations for future development.

- Use available Beginning with Habitat mapping to steer development away from important habitats and any large blocks of undeveloped land (as part of the Future Land Use Plan).
- Consult deer wintering area mapping when planning or permitting future road constructions. Contact the local DEP office for all permitting information required.

- Within 3-5 years, implement a robust GIS mapping program, including information from the US Fish & Wildlife Service Wetlands Inventory to assist Town staff, the Planning Board and potential developers with understanding clearly where wetlands are located.
    - Keep GIS mapping updated with peer-reviewed wetlands delineations on development projects.

Policy #1.5: Stay current on new methods for wetland protection and amend ordinances as required.

- Adopt local LID (low impact development) measures such as vegetated catch basins.
- Incorporate any updates from the State Shoreland Zoning regulations.

Policy #1.6: Protect and restore habitats and deer wintering areas to the extent practical (including from invasive species).

- Identify locations on roadways, culverts, and bridges that can be restored or retrofitted with wildlife crossing structures to improve wildlife movement, such as the deer wintering regions along Biscay Road.
- Incentivize timber harvesting landowners to sustain quality deer wintering habitat.
- Monitor for invasive plant and animal species, and stay updated on species migration trends in Maine as a response to climate change.
- Adopt a policy of using only native species for roadside plantings, erosion control, and slope stabilization. Plant maintenance-free native wildflowers and other plants along roadsides to prevent non-native plant species from invading.

Agricultural & Forest Resources

Goal #1: Safeguard Damariscotta's agricultural and forest resources so that they may continue to be used productively and contribute to the scenic character of the community.

Policy #1.1: Conserve lands identified as prime farmland or which are capable of supporting commercial forestry to the extent practical.

- Strategy #1.1.1: Within 1-3 years, amend the Town's Site Plan Review Ordinance to require that commercial developments in the Rural Areas (as designated in the Future Land Use Section of this Plan) to maintain areas with prime farmland soils (as mapped) as undeveloped open space to the greatest extent practicable.
- Strategy #1.1.2: Within 1-3 years, amend the Town's Land Use Ordinance to expressly permit land use activities that support productive agriculture and forestry operations, such as roadside stands, greenhouses, firewood operations, feed milling, sawmills, log buying yards, and pick-your-own operations, as expressly allowed operations in the Rural Zoning District (not subject to Planning Board review if within existing buildings on-site or if the new proposed building would not otherwise trigger the applicability requirements of the Site Plan Review Ordinance).
- Strategy #1.1.3: Consult with the Maine Forest Service district forester when developing any land use regulations pertaining to forest management practices as required by 12 M.R.S.A. §8869.
- Strategy #1.1.4: Consult with Knox-Lincoln County Soil and Water Conservation District staff when developing any land use regulations pertaining to agricultural management practices.
- Strategy #1.1.5: Within 1-3 years, adopt a "right to farm" provision within the Town's Land Use Ordinance expressly exempting farming operations from nuisance complaints (such as noise or odor complaints) as long as they are complying with applicable local, state and federal laws, rules and regulations.
- Strategy #1.1.6: Within 3-5 years, revise the Town's Open Space Subdivision standards (Appendix A of the Subdivision Ordinance) to require the applicant to create an Open Space Subdivision in the areas designated as Rural according to the Future Land Use Plan where prime agricultural land or deer wintering areas (both as identified on maps included within this Plan) are present (removing the choice to do either a traditional or an Open Space Subdivision).

Policy #1.2: Conserve small stands of trees or forested lands with scenic quality.

- Strategy #1.2.1.a: Within 3-5 years (and as part of the Open Space Plan recommended in the Recreation section), the community should inventory areas of scenic importance throughout the community in determining which private sites should be prioritized for protection, including important small stands of trees and significant trees (as defined in the Site Plan Review Ordinance) within the village area.
- Strategy #1.2.1.b: Within 5-7 years, the Planning Board should also amend the Zoning Map to specifically protect these designated scenic areas from future development.
- Strategy #1.2.2: Within 1-3 years (and as part of the Public Works Committee's development of a prioritized improvement, maintenance, and repair plan for the community's transportation network as identified in the Transportation section of this

Plan), ensure that street trees in the village area are identified and a plan to replace dead or damaged trees is in place.

Goal #2: Encourage economically viable, ecologically sustainable and socially responsible agriculture through outreach and education.

Policy #2.1: Support farming and forestry and encourage their economic viability throughout the community by considering the role of farmers in economic development initiatives.

- Strategy #2.1.1: Within 1-3 years, develop a community farm survey to gather information on what products are grown, what challenges farmers face, and why they operate in Damariscotta.
- Strategy #2.1.4: Within 1-3 years, amend the Main Street TIF Development Program to create/support economic development opportunities related to local agriculture such as a year-round Farmers' Market location (and ongoing marketing for the same), food trucks, and other agritourism opportunities.
- Strategy #2.1.5: Include agriculture, commercial forestry operations, and land conservation that supports them in local or regional economic development plans.

Policy #2.2: Provide education materials about what incentives are available for farming and forestry in Damariscotta.

- Strategy #2.2.1: Within 1-3 years, the Town's Assessing Agent should encourage owners of productive farm and forest land to enroll in the current use taxation programs through the mailing of educational materials regarding the programs.
- Strategy #2.2.2: Within 1-3 years, the Town's Assessing Agent should explore and report back to the Comprehensive Plan Implementation Committee whether or not moveable greenhouses without a permanent foundation can be taxed as business equipment rather than property. The Town's Assessing Agent should also report how this would impact revenue.
- Within 3-5 years, the Comprehensive Plan Implementation Committee should collaborate with local land trusts and the Maine Forest Service district forester to host small woodlot owner forestry workshops.

Goal #3: Ensure that Town policies allow for small-scale agriculture and community garden spaces and that these spaces are considered on other conserved lands where appropriate.

Policy #3.1: Consider the location of community garden spaces in recreation and open space planning efforts.

- Strategy #3.1.1: Within 3-5 years (and as part of the Open Space Plan recommended in the Recreation section of this Plan), Town staff will work with Coastal Rivers Conservation Trust to identify opportunities, if any, for timber harvesting, farming or gardening (including community gardens) on their conserved land in Damariscotta, especially on conserved open space that is identified as prime farmland.

Policy #3.2: Amend the Town's ordinances to reflect the importance of small-scale agriculture within the community.

- Strategy #2.3.1: Within 1-3 years, create a Small Farm Animal Keeping Ordinance to allow for the safekeeping of a small number of farm animals on residential lots in order to encourage small-scale agriculture in appropriate areas.
- Strategy #2.3.3: Within 1-3 years, amend the Town's Site Plan and Subdivision Ordinance to require that certain kinds of multi-family residential or multi-lot subdivisions include designated space set aside for community gardens for the enjoyment of the residents of the proposed developments.

Marine Resources

Goal #1: Protect the State's marine resources industry, ports and harbors and balance these water-dependent land uses with other complementary land uses, including opportunities for outdoor recreation.

Policy #1.1: Promote the maintenance, development, and revitalization of the State's ports and harbors for fishing, transportation and recreation.

Policy #1.2: Support shoreline management that gives preference to water-dependent uses over other uses and that promotes public access to the shoreline.

Goal #2: Promote access to the shore for commercial fishermen and recreational users.

Policy #2.1: Protect, maintain and, where warranted, improve physical and visual public access to the community's marine resources for all appropriate uses including fishing, recreation, and tourism.

- Strategy #2.1.1: Within 5-7 years, create an updated Harbor Management Plan that creates an inventory of existing physical features, natural habitats, uses, access points, and moorings and suggests goals and objectives to better balance shared uses and eliminate pollution sources, potentially including suggested updates to the Harbor Management Ordinance as required.
    - As part of this effort, interview local shellfish harvesters to determine how to incentivize natural resource harvesters to operate within Town boundaries.
- Strategy #2.1.2: Within 1-3 years, the Town's Assessing Agent should provide information about the Working Waterfront Access Pilot Program and current use taxation program to owners of waterfront land used to provide access to or support the conduct of commercial fishing activities.
- Strategy #2.1.3: Within 1-3 years, the Comprehensive Plan Implementation Committee should identify needs for additional recreational and commercial access to waters (which includes parking, boat launches, docking space, fish piers, and swimming access).
- Strategy #2.1.4: Within 3-5 years (and as part of the Open Space Plan recommended in the Recreation section), work with local property owners, land trusts, and others to protect major points of physical and visual access to coastal waters, especially along public ways and in public parks.

Goal #3: Discourage growth and new development in coastal areas where, because of coastal storms, flooding, landslides or sea-level rise, it is hazardous to human health and safety.

Policy #3.1: Keep up-to-date with changes in FEMA's flood mapping.

Policy #3.2: Work with Coastal Rivers Conservation Trust to enable salt marsh migration in current salt marshes, which are critical habitat for many marine species.

Policy #3.3: Limit new construction within areas of highest astronomical tide + 3 feet (*Maine Won't Wait*'s "Prepare to Manage" by 2050 number).

- Strategy #3.3.1: Within 5-7 years, revise the Shoreland Zoning Map around the Damariscotta River to incorporate highest astronomical tide + 3 feet projections, limiting construction within these areas.

Goal #4: Manage the marine environment and its related resources to preserve and improve the ecological integrity and diversity of marine communities and habitats, to expand our understanding of the productivity of the Gulf of Maine and coastal waters and to enhance the economic value of the State's renewable marine resources.

Policy #4.1: Protect and manage critical habitat and natural areas of state and national significance and maintain the scenic beauty and character of the coast, even in areas where development may occur.

- Strategy #4.1.1: Consider alternatives to wastewater outfalls that impair quality of shellfish beds and wetland habitats.

Policy #4.2: Protect, maintain and, where warranted, improve coastal air quality to protect the health of citizens and visitors and to protect enjoyment of the natural beauty and maritime characteristics of the Maine coast.

Policy #4.3: Protect, maintain and, where warranted, improve marine habitat and water quality.

- Strategy #4.3.1: Within 3-5 years, the Comprehensive Plan Implementation Committee should encourage owners of marine businesses and industries to participate in clean marina/boatyard programs.
- Strategy #4.3.2: Continue to work closely with the Darling Marine Center and Coastal Rivers Conservation Trust to research reasons for shellfish population declines and continually monitor populations; refine the Town's shellfish management program accordingly.
- Strategy #4.3.3: Within 1-3 years, test for chlorine in effluent from Great Salt Bay Sanitary District overboard discharges, as even trace amounts of chlorine can negatively impact shellfish.
- Strategy #4.3.4: Limiting nutrients entering the Damariscotta River is critical, especially in light of coastal acidification, which is worsened by increased nutrients, so better treatment methods should be explored in light of the projected growth in the Town's population. To that end, within 3-5 years, work with Great Salt Bay Sanitary District to try to develop a plan to deal with the discharge currently being dumped in the Damariscotta River, including providing staffing support to allow the Sanitary District to apply for a Maine DEP Overboard Discharge Elimination Grant.
- Strategy #4.3.5: Within 1-3 years, the Comprehensive Plan Implementation Committee should seek to limit runoff by working with Coastal Rivers Conservation Trust to encourage shorefront owners to protect and enhance vegetative buffers along shorefront through education and "ShoreSmart" programs.

- Strategy #4.3.6: In order to alleviate negative effects on downstream aquaculture, the Town should cooperate in programs that monitor hydrocarbon pollutants from snow dumping at the harbor.

Policy #4.4: Encourage and support cooperative state and municipal management of coastal resources.

- Strategy #4.4.1: Advocate for the Maine Department of Marine Resources to restrict movement of aquaculture gear in or near Salt Bay to minimize the spread of green crab and other invasives, and protect eelgrass beds.

Agricultural + Forest Resources

Overview

Although there are only a few large commercial agricultural enterprises in Damariscotta, many other agricultural activities in town reflect the community's commitment to local food production. Great Salt Bay School maintains a large greenhouse and several grades include a horticulture curriculum and tend gardens at the Foodbank Farm. At the Central Lincoln County YMCA, the FARMS program (Focus on Agriculture in Rural Maine Schools) works to develop connections between local farms and area schools and teach children how to grow and eat nutritious food. Raised beds at the YMCA are used by FARMS program participants to grow food. Twin Foodbank Farms has 25 adult community volunteers and works with about 250 schoolchildren each year. Healthy Lincoln County, a local nonprofit dedicated to improving health, sponsors Lincoln County Gleaners, which collects food from farmers fields after commercial harvest and shares it at tables at various locations year-round throughout the community.

Locally grown food has a well developed market in Damariscotta. Most restaurants in town feature locally sourced foods. A farmstand for Clarks Farm in Nobleboro is located along Business Route 1 in the village area. The local food cooperative, Rising Tide, provides yet another market for local growers. Residents of Damariscotta and surrounding towns support the Damariscotta Farmers Market held weekly at Round Top Farm from May to October.

Historically, the community supported numerous farms along the river north of the village and around the Salt Bay. After World War 1, New York businessman Edward Freeman began to acquire large parcels of land in Damariscotta, including five farms and other properties along the river from Pleasant Street to Oyster Creek at the northern border of the town. Most of these historic farmlands and orchards are now in conservation ownership or are large parcels with residences. Much of the field acreage is used for hay production. Along Business Route 1, north of the village area to the intersection with US Route 1 bypass, a string of historic farm properties retain farmhouses, fields and barns characteristic of the traditional rural New England landscape. These old farm properties are used as residences and home-based businesses and are not in active agricultural production.

Existing Conditions & Trends

Agriculture

The 2017 Census of Agriculture for Lincoln County reports 309 farms, with about half generating less than $5,000 in agricultural sales annually. In Damariscotta, the former Chapman Farm at the northeastern end of Business Route 1 is owned by Inn Along the Way and provides accommodations for the general public and caregivers. One of the Chapman

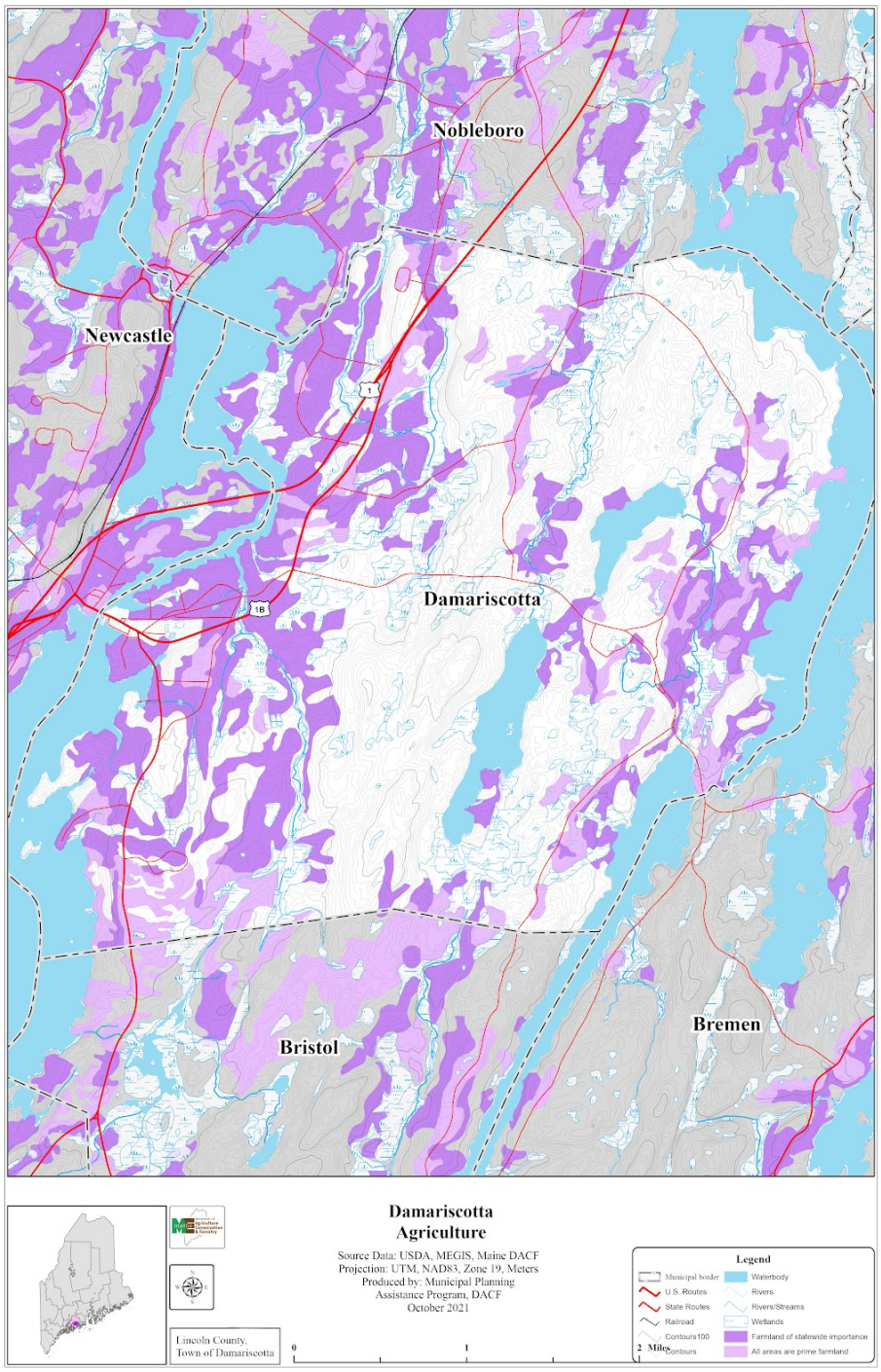
fields that borders the Coastal Rivers Conservation Trust (CRCT) property on Belvedere Road was acquired by CRCT and is used by Twin Village Foodbank Farm for vegetable production, growing more than 45,000 pounds of produce on three acres (as of 2023) for families distributed through the local food bank. This property has a large agricultural easement to ensure that the former saltwater farm stays in agricultural use in perpetuity. Adjacent to the CRCT property, Townley Farm conserves 29 acres used at present for hay production. Townley Farm is the only property in Town currently utilizing the farmland tax use exemption.

On Upper Main Street (Business Route 1/Route 1B), CRCT also owns and manages Round Top Farm. This was a major dairy operation until 1968, but the property now supports extensive hayfields, a small orchard, a restored dairy barn available for rentals, a restored farmhouse used as headquarters for CRCT, and a field that hosts weekly farmers markets in the summer and an ice skating rink when weather permits.

At the junction of Business Route 1 and the Route 1 Bypass is Morning Dew Farm, a 60 acre parcel in intensive crop production. This property, part of the old Philips Farm, was once considered for development by Wal-Mart, but Damariscotta voters passed a size cap for commercial buildings in 2006 and discouraged the developers. A former nursery, just off Route 1, still retains several greenhouses used by Morning Dew Farm and contributes to the town's agricultural infrastructure. Other greenhouses support retail sales of plants at local businesses.

Biscay Orchards (across from Biscay Pond on Biscay Road) includes about 500 trees on 6 acres and specializes in retail and pick-your-own apples as well as cider production.

Throughout the town, residents raise poultry for egg and meat production and tend bees for honey. Midcoast Microgreens, a recent business since the pandemic, grows microgreens, a high value product requiring a modest amount of growing space. Another high value, intensively cultivated crop, marijuana, has not taken off in Damariscotta despite the availability (since 2019) of nine local licenses for marijuana cultivation facilities and three for nurseries. As of December 2023, no such licenses have been issued.

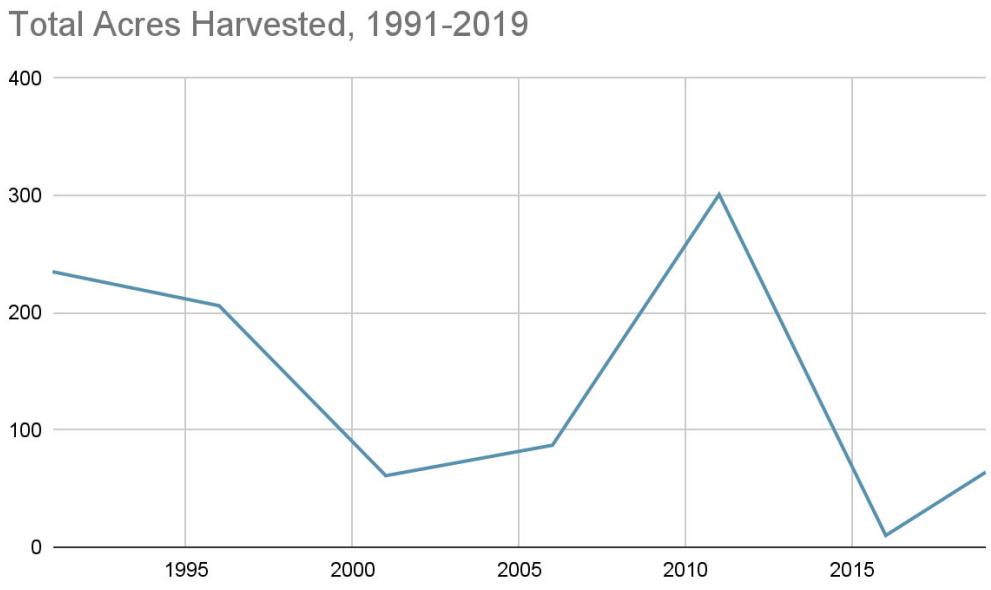


Prime farmland (the area shown in light purple on the map above) is land with the best soils suited for agriculture. This map shows that the land most suitable for farming runs along the river and village area, along upper Main Street (Business Route 1) (the site of historic farm properties) and patches in dense woodlands near Castner Creek, along Oyster Creek, adjacent to Pemaquid Lake, and along sections of Standpipe Road and Back Meadow

Road. Some of the prime farmlands are in heavily wooded areas bisected by freshwater wetland systems, but many of the high value soils are still available for agriculture in the open fields along the river and bay north of the village and to the east of Upper Main Street. Future agricultural enterprises in Damariscotta will likely follow the national trend of focus on high value specialty products that require less land but more intensive effort.

Timber Harvesting & Forestry

Timber harvesting was an important part of the town's economy in the early 1900s when sawmills were located on Castner and Deer Meadow Brooks and thick pine and oak forests covered much of the interior of town. Initially, the forest was cut to feed the brick kilns along the river, to clear land for farming, and for logs to build homes and ships. Viewed from above, Damariscotta still is a land dominated by woodlands. In recent decades the scale of logging has diminished although twenty landowners in town (approximately 1,200 acres) are currently enrolled in the Tree Growth Tax Exemption Program. Timber harvesting in Damariscotta has fluctuated greatly in the past thirty years, but has been steadily trending upward since reaching a thirty-year low (10 acres harvested) in 2016.[1] The most recently available data is for 2019, at 64 acres harvested. Many town residents continue to make their living cutting wood for firewood, growing Christmas trees on a small-scale, cutting brush and making wreaths, and trimming and cutting trees. It should also be noted that these statistics do not reflect the acreage of woodlots cut for residential development.



Data compiled from Confidential Year End Landowner Reports to Maine Forest Service. Timber harvesting includes selection harvest and shelterwood harvesting. No acreage was permitted for clear-cutting in the timespan above.

[1] Per data from the Town Assessor's Office.

Village Trees

Trees function in the village area to help define the rural character, provide habitat for wildlife, moderate temperature fluctuations, provide screening for development, absorb excess rain and break up the visual impact of commercial development. Many of the larger trees in the town cemeteries and roadsides are stressed because of age and disease. The trees die and are cut and are rarely replaced. The Town does not have a formal street tree program or a regular maintenance schedule in place for street trees.

Efforts to Support Agriculture and Forestry

There have been some efforts to conserve farmland in Damariscotta, such as Coastal Rivers' and Maine Farmland Trust's work to permanently protect agricultural land in northern Damariscotta for Morning Dew Farm (in 2017). In addition, Coastal Rivers Conservation Trust provides agricultural land for Twin Villages Foodbank Farm. There are no Town-wide policies or committees directly working to specifically support agriculture or woodlot management. However, the Town has recently required that developers identify "significant trees," trees with a diameter at breast height (DBH) over 30 inches) on projects requiring the Site Plan review so that these trees may be protected.

Castner Creek Community Forest is an approximately eighty-five acre woodland along Castner Creek owned by Coastal Rivers Conservation Trust. Selective harvesting is used to enhance recreation, wildlife habitat and forest health. Additional analysis is required to determine if additional lands would benefit from forest management.

Farmers and woodlot owners in Damariscotta may apply to the State's Farmland and Tree Growth Tax Exemption programs for property tax relief. Farmers can reduce their tax burden by applying to the program, which requires only 5 contiguous acres of farmland that produce an annual gross income of at least $2,000 per year. The Tree Growth Tax Use Program requires a forest management and harvesting plan and requires at least 10 acres be used for commercial harvesting.[2] The parcel may be used for multiple uses, as long as the parcel remains primarily used for the growth of trees used to produce forest products that have commercial value.[3]

Threats to Farms and Forest Resources

Competing Interests

Residential and commercial sprawl threatens to disrupt current and potential agriculture and forest management areas. Most land east of Route 1 is currently in the Town's Rural Zoning District, the only zone where agriculture and timber harvesting is expressly

[2]"Maine Land Use Program," Maine Revenue Services, (Department of Administrative and Financial Services, 2020) https://www.maine.gov/revenue/taxes/tax-relief-credits-programs/property-tax-relief-programs/land-use-programs

[3] "Maine Tree Growth Tax Law, Bulletin 19," Maine Revenue Services Property Tax Division, (Department of Administrative and Financial Services, December 19, 2022). https://www.maine.gov/revenue/sites/maine.gov.revenue/files/inline-files/bull19.pdf

permitted.[4] In the Rural zone, one- and two-family dwelling units are also expressly permitted, as well as a variety of commercial and industrial uses. Residential and commercial sprawl has been occurring in these areas for the past 10 years. Sprawl, including commercial sprawl up Route 1 and residential sprawl into rural areas, is an issue in this case because many farm and forestry operations need substantial uninterrupted acreage in order to be viable. Even large, multi-acre residential lots can disrupt manageable farm or forestry units.[5]

Farming and timber harvesting is a conditional use (subject to Planning Board review) within the commercial (C-1 & C-2) districts in Town, but unlikely to actually occur in these areas for the reasons stated. Not only would new farming or tree growth operations hamper development in the faster growing areas of town, but any substantial residential and commercial development occurring would also make agricultural and forestry uses less feasible.

The Town's Solar Energy System Ordinance, adopted in 2021, limits the installation of ground-mounted solar energy systems exceeding 1-acre in panel area to the Rural and C-2 Zoning Districts.[6] Because the land most suitable for solar farms usually overlaps with prime agricultural land, future commercial solar developments may directly compete with farming interests for the most optimal land.[7]

As noted in the Water Resources section of this Plan, the Shoreland Zoning Ordinance regulates most uses that may contaminate waterways and wetlands. This includes agriculture, as farmland can contaminate nearby ecosystems with runoff fertilizers, pesticides, and tilled soils. Under the Ordinance, manure stockpiles, livestock grazing, and tillage is restricted within 100 feet of a great pond (or river flowing to a great pond) or within 75 feet of other water bodies, tributary streams, or wetlands. Any soil tillage of 40,000 square feet or more within Shoreland Zoning districts requires a conservation plan to ensure minimal contamination of waterways and wetlands.[8] State policy, as reflected in the Chapter 1000 Guidelines that the Town's Shoreland Zoning Ordinance is based upon, that prioritizes protecting natural resources may be inadvertently creating obstacles to future farming operations.

Pollution and climate change

The prevalence of per-and polyfluoroalkyl substances (PFAS) in existing agricultural land and waters is under evaluation across Maine. The State of Maine banned the use of septic

[4] See the Town's Land Use Ordinance for more information.
[5] State Planning Office, *Comprehensive Planning: A Manual for Maine's Communities*, 2005. pp. 83-95.
[6] See the Town's Solar Energy Systems Ordinance.
[7] Kate Cough, "Maine's Prime Farmland Is Being Lost to Solar. Is 'Dual Use' the Answer?," The Maine Monitor, January 16, 2022, https://www.themainemonitor.org/maines-prime-farmland-is-being-lost-to-solar-is-dual-use-the-answer/.
[8] See the Town's Shoreland Zoning Ordinance.

and sewage sludge as a fertilizer source in 2022 because of the potential to contaminate groundwater with PFAS from the waste.[9] Several septage spreading sites permitted by the Maine Department of Environmental Protection (DEP) in the 1980s and 1990s have been identified within Damariscotta. Most of the sites and nearby wells were tested for groundwater contamination in 2023 and treatment systems are being provided where needed. The next step is for the DEP to determine where additional information is needed to adequately evaluate the fate and transport of PFAS in the environment. DEP staff will review each site's results to determine where additional sampling is necessary.[10] More information is available in the Water Resources section of this Plan.

Climate change threatens to disrupt the economic well-being of farms and timber harvesters across the state. In November 2023, the U.S. Department of Agriculture (USDA) revised the Plant Hardiness Zone Map, which is used by growers to determine which crops can thrive in a certain location. Damariscotta and most of coastal Maine shifted to the next warmer half zone (6a), reflecting the trend in the northeast United States toward warmer winters. This will likely influence the types of crops grown by the farmers in Damariscotta, the length of the growing season and the presence of associated pests.

As referenced in the Natural Resources chapter, the warmer winters have encouraged the spread of tree pests and diseases as well as the spread of invasive plant species, all of which may influence the health of Damariscotta woodlands and village trees. Once common only to southern areas of the state, outbreaks of Brown Tail and Winter Moths are now common in Damariscotta and have affected tree and resident health.

Issues & Opportunities

As noted previously, trends toward the production of high value specialty products that require less land but more intensive effort may help to increase agricultural output in Damariscotta. Policy protections will be needed to protect working farms from nuisance complaints, especially when they are sited on smaller lots. However, this can also be looked at as an opportunity: these kinds of products require less land, and may even be able to be completed on residential lots or in backyard areas.

Further research or study may be needed to understand what products are currently being grown in Damariscotta, what challenges farmers face, and why they have chosen to operate in Damariscotta. The inclusion of farmers in economic development initiatives and plans in the future will be imperative in order to protect this industry into the future.

[9]Tom Perkins, "Maine Bans Use of Sewage Sludge on Farms to Reduce Risk of PFAS Poisoning," The Guardian (Guardian News and Media, May 12, 2022), https://www.theguardian.com/environment/2022/may/12/maine-bans-sewage-sludge-fertilizer-farms-pfas-poisoning.
[10] https://www.maine.gov/dep/spills/topics/pfas/maine-pfas.html

Increased collaboration with land trusts and other stakeholders will be necessary to support small woodlot owners and increased agriculture and forestry in the community. The Town has already been taking steps to protect significant trees, but additional tree inventory work should be undertaken and a plan should be in place for their ongoing maintenance, especially in the downtown and village area where trees are vital as both character-defining features of the community and for shade and cooling properties in the summer.

Marine Resources

Overview

The Town of Damariscotta benefits from the blue economy of the Damariscotta River estuary. The Damariscotta River is the major oyster aquaculture growing area in Maine. In 2022, 34% of Maine's annual American Oyster harvest was grown in or wild harvested from the river.[1] The estuary's unique ecosystem supports a variety of shellfish, including soft shell clams, quahogs, razor clams, blue mussels, scallops and American oysters. The Salt Bay, at the head of the river is a state-designated Marine Shellfish Preserve and horseshoe crab breeding area. The Bay is carpeted with eelgrass beds that provide juvenile fish nursery habitat and nutrients to the river ecosystem. Anadromous fish (including alewife, blue back herring, eel, rainbow smelt and sea-run brown trout) travel the river from saltwater to fresh and back. Striped bass move up the river seasonally, supporting a local recreational fishery.

Since 2012, harvests of marine resources (including American/Eastern oysters, quahogs, soft-shelled clams, and razor clams) in Damariscotta and Newcastle have resulted in more than $30,600,000 of economic value.[2]

Species	Total Weight (lbs)	Total Value ($)	Total Harvesters
Clam Razor Atlantic	1,098	$4,151	16
Clam Northern Quahog / Hard	23,272	$24,285	48
Clam Soft	1,003,877	$1,786,985	559
Oyster American / Eastern	10,904,391	$23,797,290	215

Source: Maine Department of Marine Resources, 2012-2022. Note: There may be significant overlap in the number of harvesters, as some harvest more than one species. In those instances, Maine DMR counts them twice (once for each species).

Use of the river's resources to accommodate a thriving aquaculture industry, a restored migratory alewife run approaching historic levels, traditional soft-shelled clam and wild oyster harvests, a vibrant downtown restaurant scene featuring Damariscotta oysters, river-based employment, tourism and recreation combine to create a thriving regional economy centered in the Town of Damariscotta.

[1] Maine Department of Marine Resources Landings Data Portal, https://mainedmr.shinyapps.io/Landings_Portal/
[2] Maine Department of Marine Resources Landings Data Portal, https://mainedmr.shinyapps.io/Landings_Portal/

Marine Infrastructure

A Harbor Master and Deputy Harbor Master oversee permits for moorings for both Damariscotta and Newcastle, and assist in the review of applications for floats, pilings, and wharves in the Inner Harbor of the Damariscotta River. As of 2023, there were 149 moorings in the harbor. There is also a town dock consisting of a concrete ramp and fourteen 16-ft floats that remain in the river from April to November. Dinghies 12-feet in length or less are permitted to dock with a sticker. A canoe/kayak rack near the dock accommodates up to sixteen boats. The adjacent town parking lot has six designated boat/trailer parking spaces and eight boater parking spaces reserved by permit. Both Damariscotta and Newcastle share responsibility for maintenance of a sewage pump out station for boats in the inner harbor.. The pump station for the Great Salt Bay Sanitary District harbor outfall is located adjacent to the town boat ramp.

Both towns have also adopted an Interlocal Agreement and Harbor Management Ordinance to ensure public safety and balance commercial, recreational, and natural interests on the Damariscotta River.[3] The Ordinance establishes 5 harbor districts (see map below), and forms a committee of members from both towns to work with the shared Harbormaster to designate mooring districts, anchorage areas, and public boat launch areas for both communities.

The Harbor Ordinance divides the waters shared between Damariscotta and Newcastle into five districts:

- Inner Harbor, on the Damariscotta River from the western-most point of Lewis Point downstream to the Southernmost edge of Walker's Point, defined by a line across the Damariscotta River to the southernmost edge of Belknap's Point.
- Lower Harbor, on the river from the southern boundary of Inner Harbor downstream to a line connecting the southernmost points of the two town's boundaries.
- Upper Harbor, on the Damariscotta River from the western-most point of Lewis Point upstream into Salt Bay to the Marine Protected Area.
- Great Salt Bay, on the water body beginning at the southerly boundary of the Marine Protected Area northerly to the Newcastle Town line.
- Sheepscot River, the body of water within the corporate limits of Newcastle that includes the Sheepscot River and its tidal tributaries, including the tidal portion of the Marsh River.

District 1, the Inner Harbor area, is considered a special boater and public safety area, and requires an application to the applicable Selectboard to install a wharf, pier, ramp, pilings or float in this district specifically. In all other districts, the Harbormaster may permit the installation of floats (not to exceed 6 by 18 feet) on moorings.

[3] See the Town's Harbor Ordinance.

Water skiing and tubing is also prohibited in the Inner Harbor, and the Harbor Management Ordinance prohibits abandoning water or fishing craft, as well as the discharge of fuel, sewage, or trash from motorcraft into the river.

Next to the town dock across a small gulch (Misery Gulch) is a seasonal marina and restaurant, Schooner Landing. About 25 seasonal rental slips are available. The marina is the base for local fisherman guides and the River Tripper, a commercial tour boat, which regularly gives tours of the river from May to October. Midcoast Kayak also offers tours and rentals from the marina docks. A few of the marina floats near the fast water that flows under the bridge remain ice-free in winter and are kept in the water year-round.

Damariscotta also has a Town Landing Ordinance to ensure safe and timely operation of the town boat landing area, setting a time limit for public use of the float as well as associated fees or penalties for misuse.[4] Swimming and recreational fishing is allowed at the Town landing.

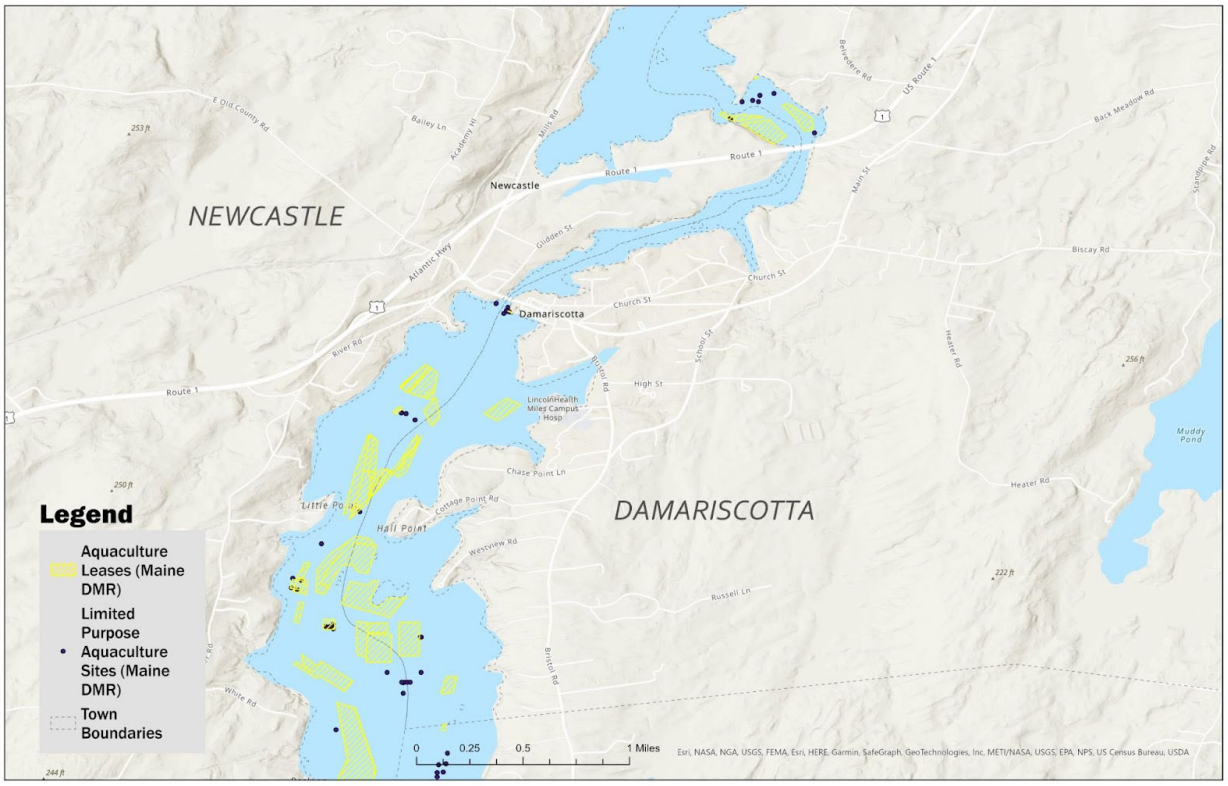
Wild Shellfish Harvest & Aquaculture Regulation

The Salt Bay, at the top of the estuary, is designated by state statute as Great Salt Bay Marine Shellfish Preserve. All activities involving bottom disturbance, including the harvesting of any shellfish species are prohibited, except for approved research activities. South of the Salt Bay, American oyster aquaculture dominates Damariscotta's marine resource economy. The Maine Department of Marine Resources (DMR) lists 38 aquaculture leases and 53 limited purpose aquaculture sites in the estuary below the bay in waters shared by Damariscotta and Newcastle.[5] Fourteen of these operate solely in waters designated as within Damariscotta's municipal borders, and an additional three leases are located in both Damariscotta and Newcastle waters.

The Department of Marine Resources (with input from local authorities and nearby landowners) offers Limited Purpose Aquaculture sites, shown on the below map. A Limited Purpose Aquaculture license permits the licensee up to 400 square feet of area for one calendar year for the culture of specific shellfish species and marine algae using certain types of gear. It is typically used as a tool for trying new areas or nursery sites or for small operations.

[4] See the Town's Town Landing Ordinance.
[5] William Devoe, MaineDMR Aquaculture - AQ Leases, MaineDMR Aquaculture - AQ Leases (Maine Department of Marine Resources, March 21, 2019), https://maine.hub.arcgis.com/datasets/a0b3c775cfc243a2b92df328ad85c642/explore?filters=eyJDSVRZIjpbIkRhbWFyaXNjb3R0YSJdfQ%3D%3D&location=44.013991%2C-69.514457%2C12.91.

Map of Aquaculture Leases (Damariscotta River and Salt Bay)



The Newcastle-Damariscotta Joint Shellfish Committee annually establishes the number of shellfish harvesting licenses to be issued based on available information about the size, distribution and abundance of these resources. Four different types of licenses are available: Commercial Shellfish License (for residents); Commercial Shellfish License (for non-residents); Recreational Shellfish License (for residents); and Recreational Shellfish License (for non-residents). The number of licenses issued annually must be approved by the Maine Department of Marine Resources (DMR).[6]

From 2018-2022, the shellfish harvesting licenses were allocated as follows:

- Commercial Resident License: 18 available
- Commercial Nonresident License: 14 available
- Recreational Resident License: 35 available
- Recreational Nonresident License: 10 available

[6] For more information, see the Town's Shellfish Conservation Ordinance, available online here: https://www.damariscottame.com/home/pages/town-ordinances

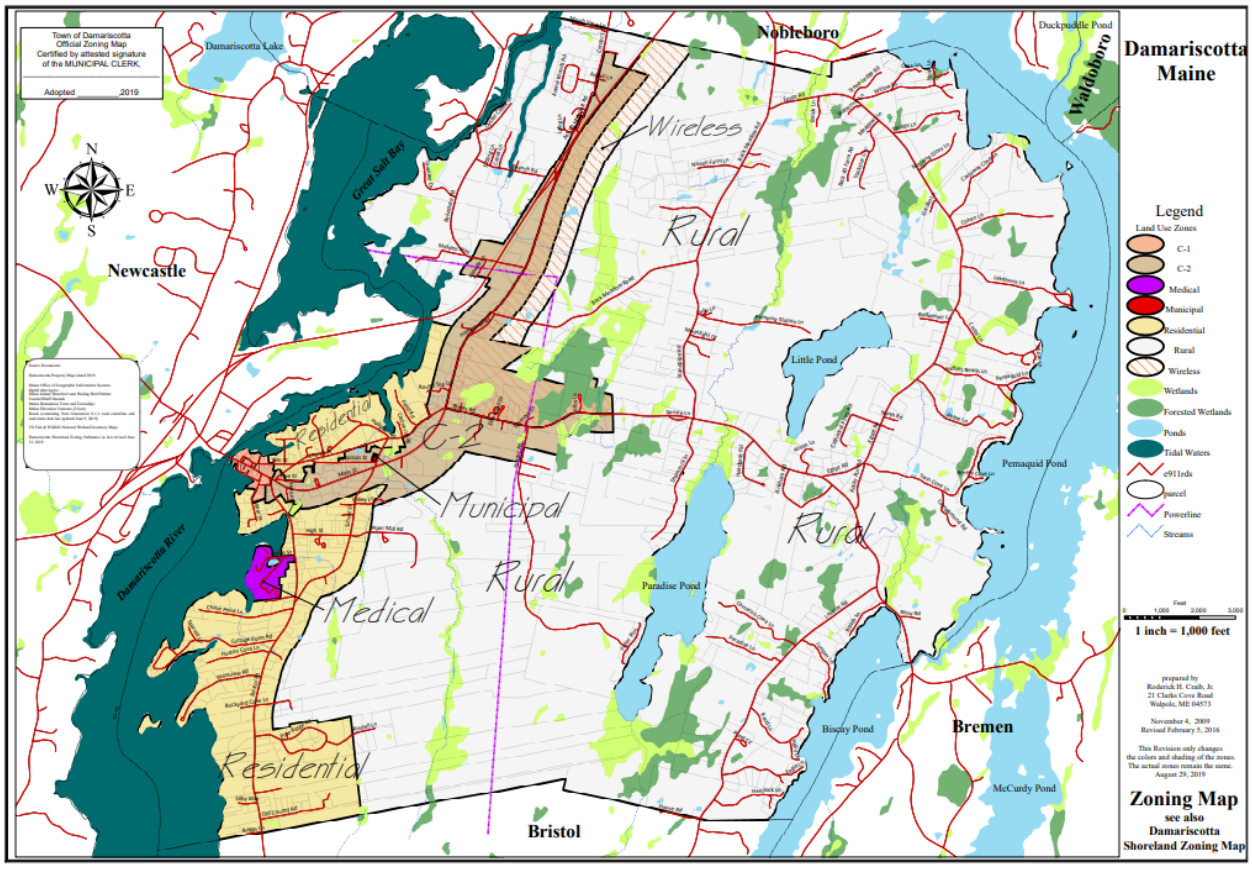
In 2023, the approved number for Resident Licenses decreased from 18 Commercial Licenses to 16 and from 35 Recreational to 25. The number of Nonresident Licenses remained the same in both categories.

As there is a limited number of licenses available and applicants frequently outnumber the amount of licenses available, the administering Town holds a lottery for licenses each year. For Commercial Licenses, those who received a license from the lottery in the previous year are eligible to apply for early renewal the next year.[7] The Towns' Joint Shellfish Committee also sets the fees for licenses, and annually establishes the conservation measures required to be implemented by commercial harvesters in order for them to receive a license.

Local Zoning & Land Uses

Overview of Local Zoning

The majority of properties abutting the Damariscotta River or Salt Bay are either in the Town's Rural Zoning District (for properties located north of Route 1) or in the Residential Zoning District (for properties south of Route 1). A limited number of properties directly abutting the Damariscotta River are in either the C-1 or Medical Zoning Districts, as shown below on the Town's existing zoning map (in effect at the time of plan drafting).



[7] https://www.damariscottame.com/shellfish-committee

The stated purpose of the Rural Zoning District is to "allow for a diversity of uses, while still maintaining the essential rural character of this area." The stated purpose of the Residential Zoning District is "to preserve the physical, aesthetic, and social quality of Damariscotta's developed residential areas and to provide for areas within the Town for residential growth." The C-1 (Downtown) Zoning District was created in order to "provide general retail sales, service, and business space within the Town of Damariscotta in locations capable of conveniently servicing community-wide and/or regional trade areas."[8] The Medical District lacks a stated purpose but is generally the area occupied by Lincoln Health campus.

Factors Affecting Traditional Water-Dependent Land Uses

Regulations (coupled with increased land costs) in these zones prohibit many "working waterfront" or harbor-related uses, which may have led to an increase in residential development located on prime tidal water frontage.

Land Uses Typically Associated with "Working Waterfronts"

- Commercial and recreational fishing and boating facilities (excluding recreational boat storage buildings)
- Finfish and shellfish processing
- Fish storage and retail and wholesale fish marketing facilities
- Waterfront dock and port facilities
- Shipyards and boat building facilities
- Marinas

"Outdoor recreational facilities associated with boating and kayaking classes and rentals" (as defined in the Land Use Ordinance) are allowed, with prior conditional use approval by the Planning Board, in the C-2 and Rural Zoning Districts. Boat building facilities are similarly allowed, with prior approval by the Planning Board, in the C-2 Zoning District. Retail fish markets may be allowed with conditional use approval by the Planning Board under the definition of retail store in the C-2 Zoning District. Marinas, finfish or shellfish processing areas, commercial fishing or boating facilities, and the like are not allowed anywhere in the community (though some, such as Chasse Marine, exist as non-conforming uses).

[8] Purposes of each Zoning District from the Town of Damariscotta Land Use Ordinance, Sec. 101.5.A.

The Pemaquid Oyster Company is the only business in Town boundaries currently utilizing the working waterfront tax use exemption.[9] They also maintain an oyster upweller, a system used to grow shellfish, on the Schooner Landing dock.

Protective Measures

The Town has adopted policies intended to prevent degradation of Damariscotta's water bodies and associated ecosystems. This includes the Town's Site Plan Review Ordinance, which requires an erosion and sediment control plan, a stormwater management plan, and a report on the phosphorus impact of any new construction or alteration if located within the watershed of a Great Pond (as defined in Title 38 M.R.S.A. §436-A).[10] Damariscotta has a Shoreland Zoning Ordinance which establishes land within 75 feet of a normal high water line of a stream as a Stream Protection District and land within 250 feet of coastal or freshwater wetlands as a Resource Protection District.[11] This Ordinance regulates all new construction or alterations within this buffer zone, and expressly prohibits any new construction within 25 feet of a water body or wetland.[12] See the Protective Measures section in the Water Resources chapter for additional detail.

The Town works collaboratively with the neighboring Town of Newcastle to maintain the health of the river and to promote sustainable harvesting of wild shellfish with shared Harbor and Shellfish Ordinances. The Damariscotta/Newcastle Shellfish Conservation Committee administers the Shellfish Conservation Ordinance to protect and sustain wild harvests. The Committee works with the Darling Marine Center, Maine Department of Marine Resources, and Coastal Rivers Conservation Trust to evaluate the health of shellfish habitats to plan conservation measures. The Darling Marine Center monitors the ecological trends in the Damariscotta River estuary. The Maine Department of Marine Resources and Coastal River's staff train volunteers for Coastal River's Tidewatch Program, which monitors dissolved oxygen, salinity, total nitrogen, transparency and temperature of the estuary.

Scenic Views

A draft list of scenic views and important points of visual access was initiated by the Town's Land Use Advisory Committee (LUAC) in 2019 and 2020. The list was never formally adopted, but is included in the appendix for reference.

The Planning Board is required to find, during its review of Site Plan or Subdivision applications, that the proposed project will not have an undue effect on rare or

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[9] Damariscotta Working Waterfront Tax Use Properties, FY2023 (data courtesy of the Damariscotta Assessor's Office). This program was enacted to encourage the preservation of Maine's working waterfront and is intended to support commercial fishing activities. To qualify, a landowner must have a parcel of land abutting tidal waters and must use the land primarily (more than 50%) for commercial fishing activities.

[10] See the Town's Site Plan Review Ordinance.

[11] See the Town's adopted Shoreland Zoning Ordinance.

[12] See the Town's Shoreland Zoning Ordinance.

irreplaceable natural or scenic areas.[13] In making this determination, the Planning Board has the authority to limit the extent of tree-clearing and minimize the view of development from adjacent roads. Outside of this requirement, there are limited protections for these identified scenic resources. In particular, the view across the Harbor and river from the US Route One ramp and the views from downtown parking lots and Main Street bridge up and down the river are central to defining the Town of Damariscotta's sense of place.

Issues & Threats Related to Marine Resources

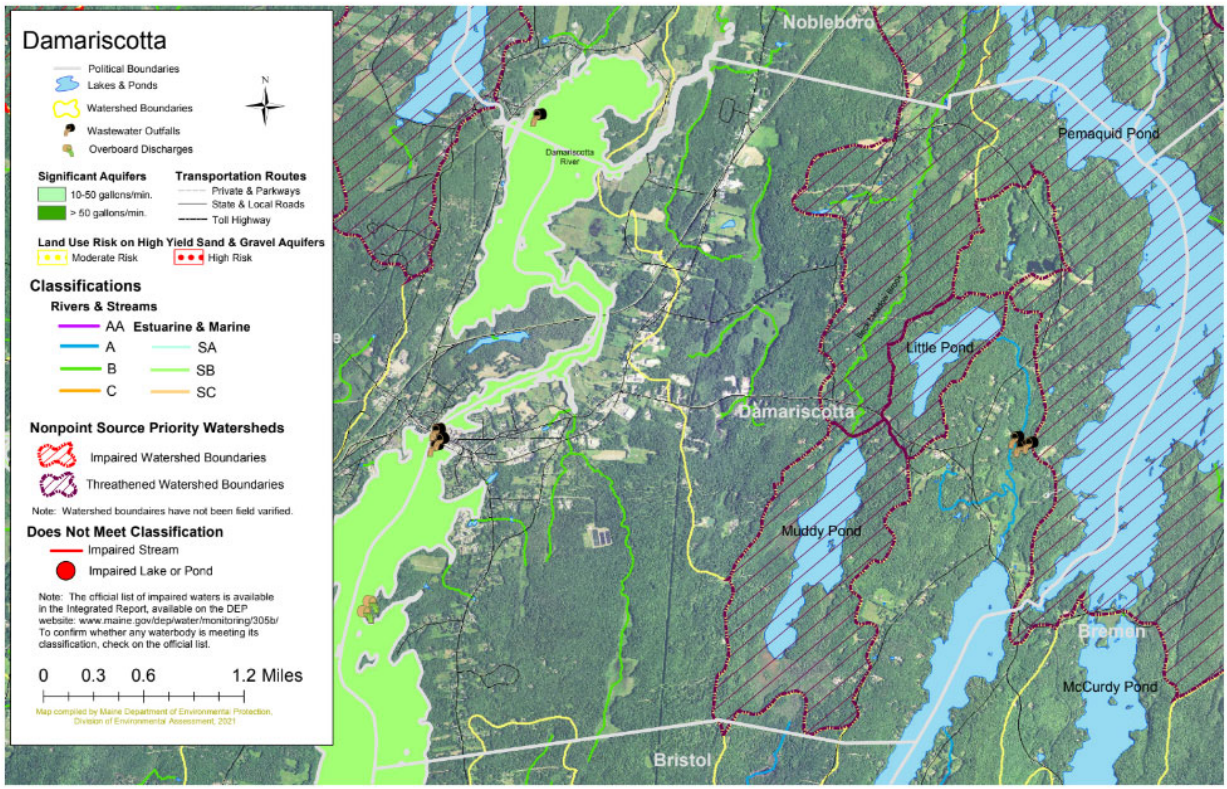
Limited Public Access

Paths across shorefront properties have long provided access to the flats for clammers and wormers. As these properties change ownership, often traditionally-used access paths are closed. The Town Landing in the municipal parking lot is Damariscotta's only public access on the river for both recreational and commercial motorized boats. Possible competing interests between recreational and commercial access at this facility were identified during the planning process. Hoists, ice, and trucking facilities are available at commercial docks along the river.

Pollution Sources & Shellfish Closures

Both point and nonpoint sources of pollution impair the water quality of the Damariscotta River. The point source discharges are licensed by permit. Wastewater from the Great Salt Bay Sanitary District, is discharged into the inner harbor of the Damariscotta River after being treated through a series of aerated lagoons and chlorinated. The Sanitary District also maintains an outfall from the sand filter system which services Damariscotta Mills on the Nobleboro side of the Salt Bay. Three overboard discharges are licensed in the area of Cottage Point. Because of the licensed outfalls and discharges, the upper river above town (except for a small section north of the Route 1 bridge), and the inner harbor area from Jack's Point in Newcastle to Cottage Point in Damariscotta is closed to shellfish harvesting. The area of Days Cove along the hospital property is conditionally restricted. The Huston Cove area is conditionally approved with a seasonal closure from June through October.

[13] See Sec. 102.6 of the Site Plan Review Ordinance and Sec. 103.6 of the Subdivision Ordinance.



Map compiled by Maine Department of Environmental Protection, Division of Environmental Assessment (2021)

Nonpoint sources of pollution refers to the run-off of pollutants, nutrients and sediment from lands that drain to the river. These pollutants and their impacts are discussed in the Water Resources section of this Plan. The parking lots along the waterfront on both sides of Main Street are a concentrated source of nonpoint pollution as storm and flood waters wash sediment, road salt, and contaminants into the river. Heavy rain events often result in closure of the river to the taking of shellfish because of bacterial pollution that follows increased runoff of freshwater to the river.

Marine Invasive Species

At least 64 marine invasive species have been reported in the Gulf of Maine,[14] but only a few of these are of major concern in the Damariscotta River. Green crabs, originally brought to the East Coast in the 1800s in ship ballast, are present in the Damariscotta River and feed on soft-shell clams and mussels. Green crabs also damage eelgrass beds and saltmarsh vegetation. Studies in southern Maine estuaries indicate that the increase in green crab populations are a major reason for declining soft shell clam stocks.

[14] Pappal, Adrienne. *Marine Invasive Species*. State of the Gulf of Maine Report, Gulf of Maine Council on the Marine Environment (June 2010).

European Oysters were released intentionally by researchers more than forty years ago and are now found wild in certain areas.

Although found in southern New England waters for decades, MSX, a protozoan parasite that only affects American (and Pacific) oysters, has now been established in Damariscotta River estuary waters. In 2010, MSX caused significant oyster mortalities in the river. MSX is not a human health concern and the state restricts the transfer of oysters from the Damariscotta (and Sheepscot) to other waters in an effort to limit the spread of MSX and protect oyster growing areas.[15]

Climate Change & Sea Level Rise

Changes in water temperature and atmospheric composition from global climate trends impact the health of the river ecosystem and the survival of wild shellfish species. In particular, changes in climate that result in warmer winter water temperatures could assist in the spread of marine invasive species as well as change the timing of larval recruitment and survival of wild species. Increased carbon dioxide levels in the air increase the uptake of carbon dioxide into seawater. As carbon dioxide is absorbed, the acidity of marine water increases. This ocean acidification threatens the health of marine life and, significantly for the Damariscotta, may dissolve the calcium carbonate of oyster shells and other species.

Increased water temperatures can also cause closures of marine areas due to vibrios. Vibrios are naturally occurring bacteria found in oysters and hard shell clams in marine waters. Illnesses from vibrio infections are often associated with the consumption of raw or undercooked seafood, including oysters and other shellfish. Vibrio growth is managed by maintaining harvested shellfish at temperatures below 50 degrees. Several factors can affect the growth of vibrios, with water temperature having the largest impact. Because of this, DMR has special regulations that reduce the risk of vibrio infections caused by the consumption of oysters or hard clams. These regulations are in effect from June 1st to October 15th (the warmest months of the year) and impact the Damariscotta River north of Montgomery Point in Boothbay (including Damariscotta and Newcastle).[16]

Climate change promises to worsen the threats that storms and flooding already pose to the Town's only public access to the Damariscotta River. The increasing frequency and intensity of severe storms will make access more difficult and threaten to significantly damage harbor infrastructure. The landing and surrounding parking area frequently flood during significant rain events, which impairs the safety of recreational and commercial

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[15] Pappal, Adrienne. *Marine Invasive Species*. State of the Gulf of Maine Report, Gulf of Maine Council on the Marine Environment (June 2010).

[16] Maine Department of Marine Resources, Chapter 115: Vibrio parahaemolyticus CONTROL PLAN, April 26, 2022, https://www.maine.gov/dmr/sites/maine.gov.dmr/files/inline-files/Chapter115_04262022.pdf

boats using it, inhibits access, and threatens to damage any structures nearby.[17] Eventually, the low-lying municipal parking lot could remain underwater for hours of the day as sea level rise increases the average high tides for coastal and inland systems.

More frequent coastal flooding also increases the rate of erosion and the risk of landslides along vulnerable spots of the estuary riverbank, especially where natural vegetation has been cleared for residential development. This is described in further detail in the Natural Resources chapter of this Plan.

Decline of Soft-Shelled Clams

The shellfish beds around downtown Damariscotta and Newcastle and the Lincoln Health Hospital campus are particularly vulnerable to sediment and other pollutants washing into the river from paved roads and parking lots, pollutants from the licensed discharges including the town's sanitary district outfall, and disturbances from harbor maintenance activities and boat traffic.

A 2019 study by the Darling Marine Center documented a decline in softshell clams in the Damariscotta River. The study interviewed local shellfish harvesters, all of whom noticed changes in the estuary and shellfish populations over the previous twenty years. The changes described included an increase in wild oyster and quahog populations and a decline in softshell clam populations. Harvesters responded to these changes by switching harvest species, harvesting less, looking for licenses in other areas, and depending more on income from other work.[18] The harvesters reported that the changes they observed in shellfish populations in the Damariscotta River estuary could be due to a number of factors such as aquaculture operations, over and under harvesting of the soft shell clam beds, predation from green crabs and sand worms, and sediment disturbance caused by dragging the river bottom to harvest oysters off leases.

The 2019 study suggested continued monitoring of wild shellfish populations in the Damariscotta River estuary to provide information to inform license allocation and other local management decisions. Studies by the Darling Marine Center each year since the initial 2019 study provide findings to Damariscotta and Newcastle.[19] At the time of plan drafting, concerns about the impact of aquaculture activities on wild clam harvests have led to a local moratorium on new aquaculture leases in the nearby Town of South Bristol and

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[17] Jessica Picard, "Damariscotta Parking Lot Floods for Second Time in Two Months," The Lincoln County News, March 6, 2018, https://lcnme.com/currentnews/damariscotta-parking-lot-floods-second-time-two-months/.

[18] Kara Pellowe and Heather Lesllie, *Current and Historical Trends in the Shellfish Resources of the Upper Damariscotta River Estuary* (University of Maine, December 20, 2019), https://umaine.edu/leslie-lab/wp-content/uploads/sites/151/2020/01/2019-Final-Report_Damariscotta-Newcastle-Shellfish-Resilience-Project.pdf.

[19] Findings are available for public viewing on the Town's website here: https://www.damariscottame.com/shellfish-committee/pages/maine-shellfish-restoration-and-resilience-project-damariscottanewcastle

efforts to enact a moratorium in the Town of Waldoboro.[20] and paddlecraft As the Department of Marine Resources has exclusive jurisdiction to lease and license coastal waters,[21] it is unlikely that these moratoriums will prove to be legally binding.

Issues & Opportunities

Sustainable aquaculture activities may have beneficial effects on the river ecology. The cultivated oysters and other shellfish grown in the aquaculture leases clean the water of the Damariscotta River by filtering water while feeding. Each mature oyster can filter between 30 to 50 gallons of water a day. Because of the enormous tidal flows and significant phytoplankton blooms, the river sustains both wild and cultured fisheries. The shells of the millions of oysters may have a small buffering effect on the acidification of the estuarine waters. Aquaculture gear–ropes, cages, floats and moorings–provides habitat for a variety of marine organisms which improves the biodiversity and resilience of the river ecosystem. Shellfish aquaculture relies on clean water and the shellfish farmers collectively have a vested interest in keeping the river ecology healthy.

In order to further protect scenic areas, the existing protections within the Site Plan Review Ordinance could be strengthened by delineating the extent of scenic resources on the Town's Zoning Map, and specifically not allowing development within these limited, high-value areas. This would be comparable to the way that neighboring Newcastle regulates their scenic areas.

In 1995, the Damariscotta River Estuary: A Management Plan was published at the end of a two year effort by officials and residents of the towns along the river. Though the report is more than 25 years old, the issues documented along the river are surprisingly relevant today. Given the identified conflicts between recreational and commercial uses, the continued concern around overharvesting of shellfish, and the desire to protect the unique natural resources surrounding the Damariscotta River and Salt Bay, an updated management plan that further explores these areas may be necessary. The management plan would inventory existing physical features, natural habitats, uses, access points, and moorings and would suggest goals and objectives to better balance shared uses and eliminate pollution sources (this could potentially include suggested updates to the Harbor Management Ordinance).

Maine DEP Overboard Discharge Elimination Program provides grants to municipalities, sanitary districts and owners to remove overboard discharges such as those described above.

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[20] Elizabeth Walztoni, "Waldoboro Residents to Consider Aquaculture Moratorium at Annual Town Meeting," The Lincoln County News, April 4, 2023, https://lcnme.com/currentnews/waldoboro-residents-to-consider-aquaculture-moratorium-at-annual-town-meeting/.
[21] https://www.maine.gov/dmr/aquaculture/municipal-participation-in-aquaculture

Natural Resources

Overview

For thousands of years the Wabenaki people enjoyed the abundance of the Damariscotta River estuary and nearby ponds and forests. Dense beds of oysters and quahogs were harvested in the Salt Bay and upper Damariscotta as well as shad, smelt, alewives and other migratory fish that traveled upriver each spring. White oaks, valued for their tasty acorns, thrived in the area around the Bay and were not found further north or east. Deer and other wildlife were plentiful and the ponds, creeks and lakes were filled with fish and waterfowl. The Whaleback and Glidden oyster middens along the river shores at the entrance to the Salt Bay remind us that the natural resources of the Damariscotta area have attracted gatherings of people for centuries.

The natural resources found within the Town of Damariscotta are still abundant and valued by its residents, visitors and those who depend on the natural environment to make a living. Bounded to the west by the Damariscotta River estuary, and the east by the connected Pemaquid and Biscay Ponds, Damariscotta is a land striated by freshwater wetland systems that run roughly south to north, and with plentiful springs that are the source of Little Pond, pocket wetlands, forested wetlands and seeps throughout the town. Of the Town area of 14.71 square miles, 12.42 sq. miles is land (84.4%) and 2.29 sq. miles (15.6%) is water (US Census). Of what is categorized as land, 1.77 sq. miles is freshwater forested/shrub wetland (National Wetlands Inventory).

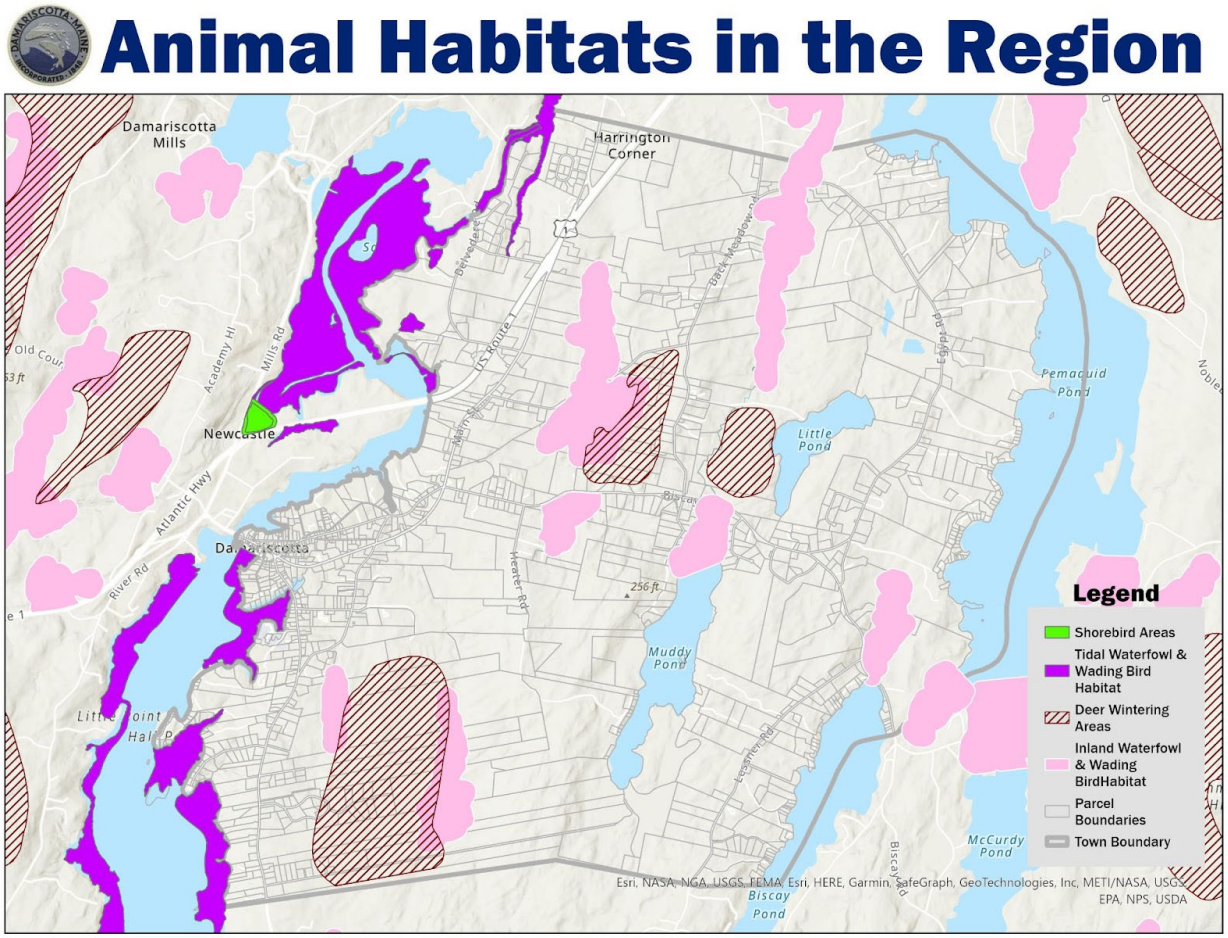
Significantly, Damariscotta and the surrounding towns occupy a transition area between northern downeast and southern Maine ecosystems. This means that the area supports a high species diversity including many at the limit of their northern range, for example quahog, horseshoe crab and white oak. This high biodiversity increases the resilience (or ability to adapt) of the forests and wetlands to climate change.

Within the boundaries of Damariscotta are three major freshwater wetlands systems with meandering low velocity streams: Castner Creek, Little Oyster Creek/Lily Brook and Back Meadow Brook. These streams support a diversity of aquatic and riparian (river bank dwelling) species and are largely intact ecosystems that provide wildlife and aquatic corridors connecting the Damariscotta River to inland wetlands. In addition to habitat values, freshwater wetlands provide flood control during heavy precipitation events by absorbing and storing excess water and filtering sediments and pollutants.

Castner Creek

Castner Creek originates just south of the Bristol townline and wends north, winding through extensive freshwater wetlands, behind the Great Salt Bay Sanitary District sewage lagoons,

through the Castner Creek Community Forest, into an old ice pond behind Damariscotta Hardware and out through the tumbled stone dam to meet another small tributary (that drains an area parallel to School Street and crosses Piper Mill Road). Finally, Castner Creek passes through culverts under upper Main Street and Church Street to empty into the Damariscotta River. The lands around Castner Creek are minimally developed and the riparian areas are largely intact. The watershed is part of a 3,877 acre habitat block that stretches from the Castner Creek Community Forest south into the town of Bristol.[1] Areas along the creek south of the Community Forest have been identified as Inland Waterfowl/Wading Bird Habitat, essential habitats which are regulated by the state under the Natural Resource Protection Act (NRPA). These and other animal habitats are shown on the map below.



Source: Maine Geolibrary/Maine Department of Inland Fisheries & Wildlife.

Little Oyster Creek/Lily Brook

[1] Beginning with Habitat Primary Map 3: Undeveloped Habitat Blocks & Connectors and Conserved Lands.

The town boundary with Nobleboro runs down the middle of the widest part of Oyster Creek, a tidal tributary to the Damariscotta River at the northern end of the Salt Bay. Oyster Creek drains Nobleboro lands to the north. Little Oyster Creek joins Oyster Creek as the Damariscotta town boundary veers east off Oyster Creek. The Little Oyster Creek drainage originates in large marshes south of Biscay Road. The drainage flows north, under Biscay Road west of the former town dump, under Back Meadow Road and eventually forming the stream called Lily Brook (which flows under Business Route 1 and then US Route 1, eventually merging into Little Oyster Creek). Little Oyster Creek is lined with freshwater marshes until it flows through the culvert under Branch Road. Downstream of Branch Road, the waters are tidal and flow among a mixed saltmarsh, a relatively rare wetland habitat.[2] Little Oyster Creek meets Oyster Creek north of Belvedere Road. The marshes along Lily Brook west of Business Route 1 are designated Inland Waterfowl/Wading Bird Habitat by the Maine Department of Inland Fisheries & Wildlife (IF&W) and are part of a 529-acre undeveloped habitat block. The Little Oyster Creek/Lily Brook wetland system is the most affected of the three major wetlands in Damariscotta by road crossings, as described above. Improperly installed culverts at road crossings may have the potential to disrupt the natural flow of water in wetland systems and impede the migration of anadromous species such as smelt and salmon.

Back Meadow Brook

Back Meadow Brook originates in wetlands at the outlet of Paradise/Muddy Pond and flows north bordered by marshes, under Biscay Road east of Standpipe and Back Meadow Roads to cross Egypt Road and eventually empty into Pemaquid Pond in Nobleboro. Most of the freshwater wetlands bordering the brook from Muddy Pond to the outlet in Pemaquid Pond are designated Inland Waterfowl/Wading Bird Habitat by IF&W, as shown on the map above. These wetlands and adjacent uplands form a 760-acre undeveloped habitat block that includes land around Little Pond.

Other Habitats

In addition to the three major freshwater systems described above, there are several other mapped streams with riparian wetlands and associated Inland Waterfowl and Wading Bird Habitat sites, as well as sizable Deer Wintering Areas in Damariscotta. These are shown on the map above.

Damariscotta Lake is the primary freshwater source for the Damariscotta River estuary. Waters from the Mill Pond at the lake outlet tumble down about fifty feet to enter the west side of the Salt Bay in Damariscotta Mills. Some of the waters are diverted through hydroelectric turbines and other outfall spills down a large natural falls or fills a fish ladder made of stone and concrete pools that forms the border between Nobleboro and

[2] Mixed saltmarshes are an S3 ranking per the Maine Natural Areas Program, which means there are between 20 and 100 occurrences of this kind of habitat across the entirety of the State.

Newcastle. The fish ladder enables the annual migration of nearly a million alewives from the Salt Bay to the lake.[3] Historically, the Damariscotta River alewife fishery was the largest in the state and recent improvements to the fish ladder have enhanced the upstream migration of this species. The spring alewife run attracts a variety of bird species that prey on the fish, including osprey and bald eagles.[4]

The Damariscotta River estuary is very productive, in part because of the huge tidal flow that washes in and out twice a day bringing in offshore nutrients and mixing with the warmer waters of the Salt Bay. The river supports wild soft shell clam and oyster fisheries as well as 38 aquaculture lease areas, primarily growing American Oyster but also kelp and other shellfish species.[5] The Salt Bay and Damariscotta River is characterized as a Focus Area of State Wide Ecological Significance by the Maine Department of Inland Fisheries & Wildlife (IF&W). The bay area includes significant wildlife habitats for Tidal Wading Bird and Waterfowl and is designated as the Great Salt Bay Marine Shellfish Preserve.[6]

Eelgrass beds are abundant and extensive in the Salt Bay on either side of the main channel. Small areas documented by the Maine Department of Marine Resources in 1997 were found in the section of river above the village area and in limited coves along the river. By 2010, the lower river sites had almost disappeared, but the Salt Bay beds have continued to flourish.[7] Eelgrass meadows provide protected nursery areas for juvenile fish and invertebrates and are often sites for settlement of shellfish larvae. In addition, the presence of eelgrass (which reduces current and wave action) may stabilize sediments and the adjacent shoreline.

The Salt Bay is a spawning area for horseshoe crabs. The population has fluctuated in recent years due to overharvesting of the crabs for eel bait and biomedical purposes. In 2003, the state ended horseshoe crab harvests in Maine. The State of Maine's Wildlife Action Plan (2015) lists horseshoe crabs as a Priority 1 Species of Greatest Conservation Need, the highest priority in the Plan. For more than ten years, Coastal Rivers Conservation Trust (CRCT) has organized annual spring horseshoe crabs counts in the bay.

Fringing pockets of saltmarsh are found along the shore of the estuary and more extensive marshes thrive in the intertidal areas of Oyster and Little Oyster Creeks, as well as Castner

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[3]Annie Sherman, "The Centuries-Old Fish Ladder That Feeds Maine's Lobster Industry," (Atlas Obscura, April 26, 2022), https://www.atlasobscura.com/articles/fish-ladder-maine-lobster-industry.

[4] "Focus Areas of Statewide Ecological Significance: Salt Bay," (Beginning With Habitat).

[5] William Devoe, MaineDMR Aquaculture - AQ Leases, MaineDMR Aquaculture - AQ Leases (Maine Department of Marine Resources, March 21, 2019), https://maine.hub.arcgis.com/datasets/a0b3c775cfc243a2b92df328ad85c642/explore?filters=eyJDSVRZIjpbIkRhbWFyaXNjb3R0YSJdfQ%3D%3D&location=44.013991%2C-69.514457%2C12.91.

[6] Under M.R.S.A. Title 12, §6961.

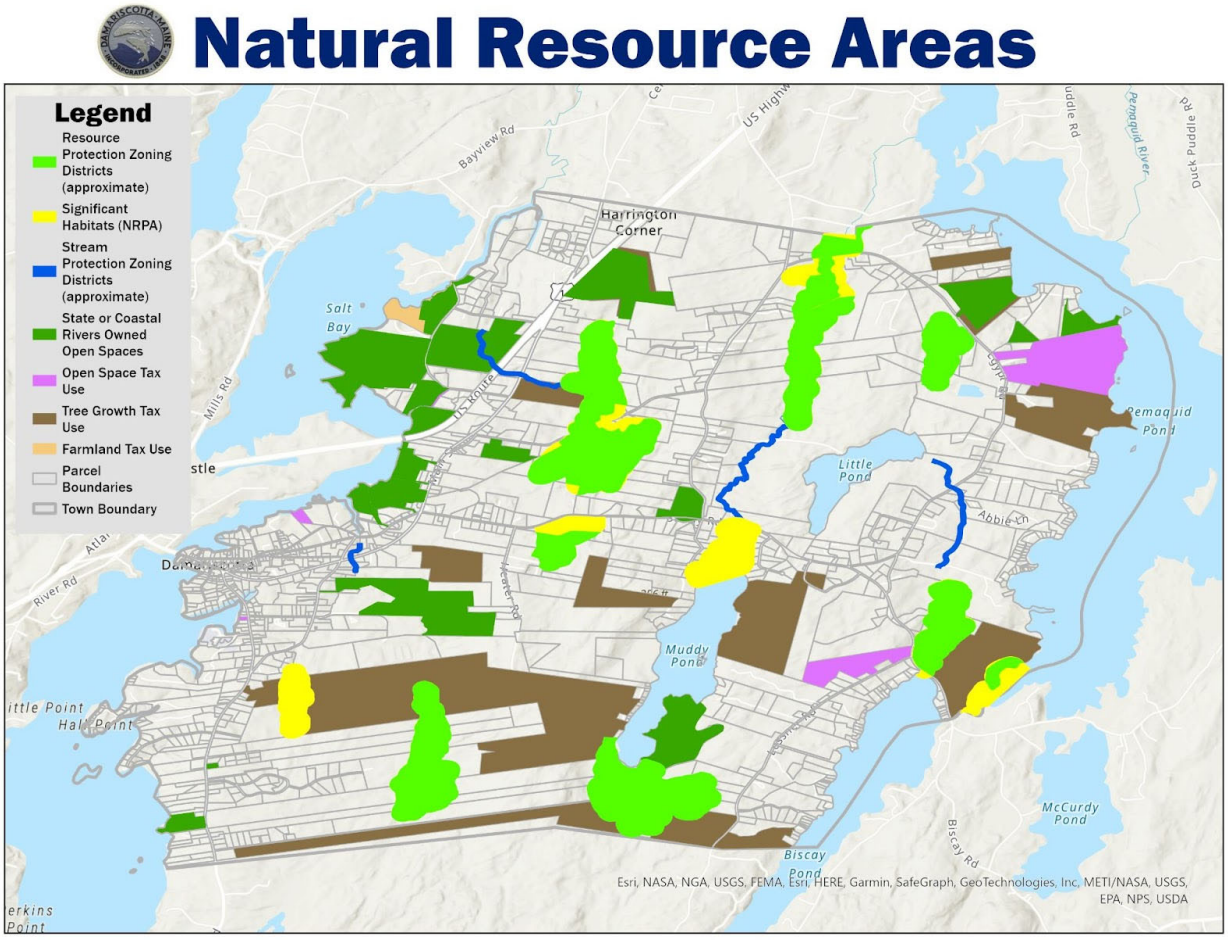
[7] Maine DMR Historical Eelgrass Coverage Viewer:

https://dmr-maine.opendata.arcgis.com/apps/mainedmr-historical-eelgrass-coverage-viewer/explore

Brook below the culvert at Church Street. These intertidal areas are rainbow smelt spawning sites. The flats and waters adjacent to the estuary shore in Damariscotta from the Nobleboro town line at Oyster Creek to the Bristol town line (except for a stretch between the US Route 1 bridge to the Main Street bridge) are considered significant Tidal Waterfowl and Wading Bird Habitat by IF&W, as shown on the map above.

The river, salt marshes, freshwater ponds and wetlands in Damariscotta provide corridors for the movement of wildlife and migration of fish as well as habitat for birds and diverse interconnected communities of plants, turtles, frogs and other species. White tailed deer, moose, coyote, fishers, bobcats, beavers, porcupines, racoons and smaller mammals are found throughout the town and coexist with commercial and residential development. In recent years the white tailed deer population has grown in Damariscotta despite steady hunting pressure. Deer regularly wander down the village streets in the early morning and take refuge in the fields and forests along the river during the day.

State documented Deer Wintering Areas provide white tailed deer refuge from harsh weather and deep snow. The Town's largest deer wintering area is south of Castner Creek Community Forest. Other documented wintering areas are located adjacent to Little Pond on water district lands and wetlands near Biscay Road.



Source: Resource Protection Zoning Districts and Stream Protection Zoning Districts data from the Town's Shoreland Zoning Map (revised through 9/2019); Significant Habitats, Parcel Boundaries, Town Boundary data from the Maine Geolibrary; State or Coastal Rives Owned Open Spaces, Open Space Tax Use, Tree Growth Tax Use, and Farmland Tax Use data from the Town's FY2023 tax records.

Scenic Views

In 2019 and 2020, the Town's now disbanded Land Use Advisory Committee compiled a list of scenic views in the Town of Damariscotta, as well as the threats posed to them. This is included in the Appendix of this Plan as Table 8. The most common threats identified come from development of residential or recreational areas and climate change.

Existing Protective Measures

Damariscotta and neighboring Newcastle administer a joint Shellfish Committee and Shellfish Ordinance to protect the health of their shared intertidal resources from overfishing and pollution. (For more information on shellfish conservation efforts, reference the Marine Resources section of this Plan.)

The Town's Site Plan Review Ordinance requires a stormwater management plan and an erosion and sediment control plan for new construction subject to the Ordinance.[8] This is meant to minimize the risk of contamination to nearby water sources. Damariscotta also implemented a Shoreland Zoning Ordinance,[9] which established all land within 75 feet of a high water line as a Stream Protection District, and all land within 250 feet of a coastal or freshwater wetland ecosystem as a Resource Protection District. This Ordinance regulates areas where development would adversely affect water quality, productive habitat, biologic ecosystems, or quality of scenic views. Any new construction in these sensitive areas must partially re-establish trees and local vegetation removed during construction to ensure the retention of natural stormwater buffers.

The Shoreland Zoning Ordinance, adopted to be consistent with the State's Chapter 1000 guidelines, limits commercial land uses in order to prevent contamination from fertilizers, petrol products, chemical, heavy metals, or other industrial pollutants. Any construction or natural resource harvesting must provide an erosion and sediment control plan to ensure minimal threat of runoff. Minimizing threats to water quality protects the health of nearby wetland ecosystems and the species relying on them.

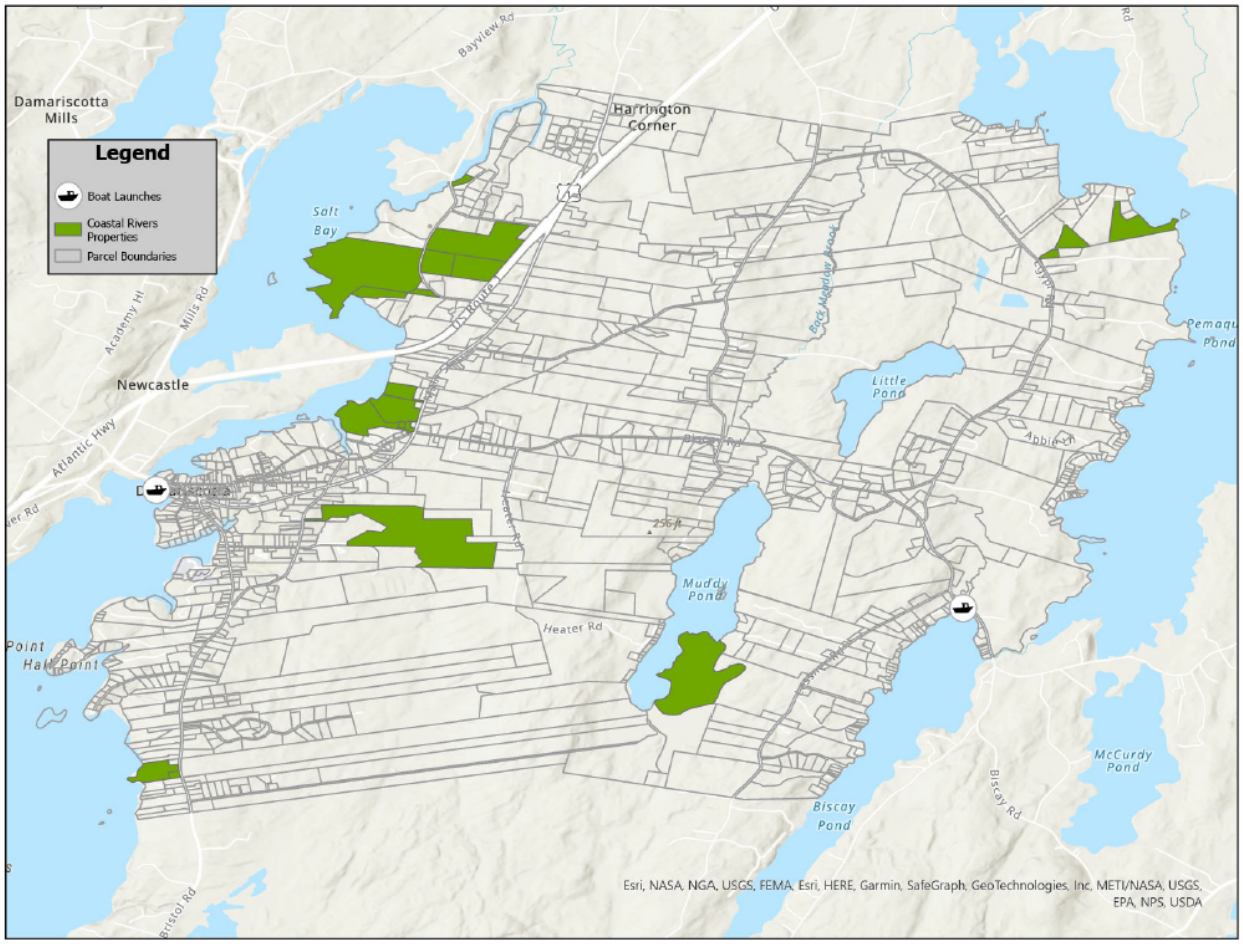
Regional Coordination

Most conserved land in Damariscotta is managed by Coastal Rivers Conservation Trust (CRCT), including:

- Doyle Preserve on Pemaquid Pond (1,200 ft of shoreline and a small island)
- Huston Landing on the Damariscotta River (10 acres with 500 ft of river frontage)
- A parcel on Paradise/Muddy Pond
- Castner Creek Community Forest on Castner Creek (87.8 acres)
- Round Top Farm (12 acres along the river on upper Main Street)
- Salt Bay Farm (146 acres on the Salt Bay)

CRCT also manages the Whaleback Shell Midden Historic Site with Maine Bureau of Parks and Lands (11 acres adjacent to the Round Top Farm).

[8] See the Town's adopted Site Plan Review Ordinance.
[9] See the Town's adopted Shoreland Zoning Ordinance.



Data Sources: Coastal Rivers Conservation Trust, Town Tax Records

The Town of Damariscotta works closely with Coastal Rivers Conservation Trust to maintain the health of Damariscotta's habitats and wildlife. In addition to conserving land, Coastal Rivers also restores ecosystem health where possible, one example being the restoration of wetlands on the shores of Salt Bay Farm in 1997.

The Town supports the efforts of the Great Salt Bay Sanitary District to limit development in the Little Pond watershed, the community's primary source of public drinking water. The district owns most of the watershed of Little Pond, over 500 acres, and works with the Maine Department of Inland Fisheries and Wildlife to minimize the risk of bacterial contamination in Little Pond during the annual stocking of Brook Trout.

The Town of Damariscotta, in coordination with Lincoln County Regional Planning Commission and Coastal Rivers Conservation Trust, is working to establish priorities with regard to climate resilience planning.

Issues & Opportunities

Challenges to Ecosystem Health

Within the next ten years, the expected rise of sea level, temperature fluctuations and increased frequency and severity of rain and snow events as a result of climate trends, will have a profound effect on the town's natural resources. While the situation of global climate change is a complex and overwhelming issue, local actions by the Damariscotta town government and its residents may improve the ability of our shared natural resources to adapt to these changes.

For example, the Town has worked to prioritize ecosystem health through the adoption of ordinances meant to limit the pollution caused by development and protect buffers in and around wetlands and in shoreline areas, described in further detail above. Local nonprofits such as Coastal Rivers Conservation Trust (CRCT) conserve land for passive recreation as well as to protect certain natural areas and resources.

Development adjacent to wetlands can fragment and degrade wildlife habitat by increasing noise and light, and can adversely impact water quality from increased stormwater runoff associated with increase in impervious surfaces. With swings in precipitation, freshwater wetlands and associated streams and ponds will shift in size and nearby development (road building, residential and commercial construction) will affect the ability of the natural ecosystems to shift and adapt. As annual precipitation events become more frequent and severe, runoff from streets, parking lots and other impervious surfaces will overwhelm roadside ditches and current stormwater systems especially within the village area. This stormwater runoff contains sediments and pollutants that contribute to the observed increasing acidity and nitrification of the estuarine and lake waters.

The wetlands and mud flats around downtown Damariscotta are vulnerable to runoff pollution and disruption from human activity, as referenced in the Marine Resources section of this Plan. The Town of Damariscotta is permitted by the Maine Department of Environmental Protection to dump snow into the river at the bridge and at the edge of the municipal parking lot, thus releasing sand, salt, chemicals and oil into the river.

As the coastal waters warm, scientists expect to see new species of phytoplanktons with biotoxins that may affect human health.[10]

Endangered and Threatened Species

No endangered or threatened plant or animal species have been documented within Damariscotta. Bald Eagles (considered an endangered species in Maine until 2009) nest and

[10] Susanne K Meidel, "2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report Appendices https://www.maine.gov/dep/water/monitoring/305b/2022/25-May-2022_2018-22_ME_IntegratedRpt-LIST.pdf.

feed along the River and are still a species of concern protected by the federal Bald Eagle-Golden Eagle Act of 1963.[11]

Invasive Species

Varieties of invasive species are found in Damariscotta among them: Asiatic Bittersweet, Japanese Barberry, Purple Loosestrife, Japanese Knotweed and Buckthorn. Mile-a-minute weed, a fast-growing vine native to Asia, was recently discovered in nearby Boothbay Harbor on nursery stock and is of concern. This weed and other invasives threaten to out compete native species and disrupt the local ecology. Roadside erosion-control plantings, construction, nursery plantings and even vehicles, trailers and boats traveling from outside areas can all inadvertently introduce invasive species to uplands, lakes and freshwater wetlands. Recent surveys of the freshwater ponds within the town indicate that aquatic invasives such as Variable Leaf Milfoil, Curly Leaf Pondweed and Hydrilla are not present (though they were previously found in nearby Damariscotta Lake). Hemlock Wooly Adelgid has been documented in hemlock along the river and is presumed to be present within town boundaries. White Pine Weevil is endemic in the area but Emerald Ash Borer has not been reported in Lincoln County.

Road Construction, Maintenance & Stream Crossings

Road building and improperly installed culverts have the potential to disrupt the natural flow of water in wetland systems and impede the migration of anadromous species such as smelt and salmon. The Maine IF&W Stream Habitat Viewer, available online, has identified and mapped all the problematic stream crossings in Damariscotta and can help in planning for roadway improvements.[12]

Town roads are a major source of nonpoint source pollution as stormwater washes off sediments, road salt, and heavy metals directly into adjacent ecosystems. Last year (2022), more than xx tons of salt and xx tons of sand were spread on town roads which eventually washed into nearby uplands, wetlands streams and the Damariscotta River. Roads fragment habitats and create hazardous barriers for animal movement. Some deer wintering areas such as the large area south of Castner Creek are impacted by residential and road development. Preventing road development in habitat areas in the future would provide a variety of benefits to habitat and water quality in the community.

Shoreland Erosion

In addition to threatening the integrity of shoreline structures, slumping and erosion of the banks along the Damariscotta River estuary threaten to damage shoreline habitats and release large amounts of sediment and pollutants to coastal waters. In 2001, the Maine Geological Survey mapped out the erosion potential of shoreline along the Damariscotta

[11] "Forest Management Recommendations for Bald Eagles," (Maine Department of Inland Fisheries & Wildlife).
[12] https://webapps2.cgis-solutions.com/MaineStreamViewer/#

River, finding land at risk of potential bank slumping south of Days Cove and along Cottage Point in Damariscotta.[13] Additionally, one stretch of coastal bluff near the southern border of town along the Damariscotta River was found to be highly unstable.[14] While no shoreline was found at significant risk of erosion, that may have changed in the years since the last available study in 2001.

Fluctuations in lake water levels and storm events cause erosion on freshwater lake shores in Damariscotta and potentially endanger structures built within the shoreland zone. Actions by individual residents to harden the shoreline of their property with riprap to reduce erosion (which is allowed with permits under existing state and local laws) may adversely affect adjacent natural areas.

[13] Stephen M Dickson, *Coastal landslide hazards in the Damariscotta quadrangle,* Maine, Maine Geological Survey, Open-File Map 01-514, map, scale 1:24,000, 2001 https://digitalmaine.com/mgs_maps/266/
[14] Thomas et. al., *Coastal bluffs in the Damariscotta quadrangle, Maine,* Maine Geological Survey, Open-File Map 02-185, map, scale 1:24,000, 2002, https://digitalmaine.com/mgs_maps/513/

Water Resources

Overview

Water is the defining feature of the landscape of Damariscotta. The Town is bounded on two sides by water: the tidal Damariscotta River and Salt Bay to the west, and Pemaquid and Biscay Ponds to the east. Wholly within the boundary of Damariscotta are Little Pond and Paradise (or Muddy) Pond, and just north of the Town (in neighboring Nobleboro) is Damariscotta Lake. In addition to serving as habitats for a variety of plant and animal species, the Town's waterways are used for a variety of economic and recreational activities (described in greater detail in the Marine Resources and Recreation sections of this Plan).

The Town attempts to minimize contamination of water bodies through the Shoreland Zoning Ordinance, which regulates new construction and commercial use of land surrounding all bodies of water in town, in accordance with the State's Chapter 1000 standards. In addition, the Town's Site Plan Review Ordinance requires the Planning Board to evaluate plans to minimize erosion of soil and includes standards for stormwater management on all sites within the community where new development is proposed. Developers are required to evaluate the impact of phosphorus runoff by any proposed operation in cases where this would be a concern.

Major Bodies of Water

Damariscotta River Estuary

The Damariscotta River is an estuary that extends from the Salt Bay and empties into the Atlantic Ocean nineteen miles to the southwest. The river is bordered by seven towns, including Damariscotta. The major freshwater source to the estuary is the outlet stream of Damariscotta Lake which spills down fifty foot falls into the Salt Bay. Most of the river is oceanic, dominated by the changing of the tides until Glidden Ledge, a natural bedrock sill across the river south of the town of Damariscotta. Above the bridge connecting the downtowns of Damariscotta and Newcastle is a reversing falls at the head of navigation. Upriver of the bridge (south of Castner Creek) boulders and a bedrock sill form the Johnny Orr rapids. Ancient shell heaps line the River below the US Route 1 bridge before the river opens up past another sill at the indraft into the Salt Bay. The shallow Salt Bay has extensive eelgrass beds and tidal flats and is a Marine Protected Area designated by the State. Little Oyster and Oyster Creeks empty into the Salt Bay at the northern border of Damariscotta, and Castner Creek joins the upper Damariscotta River in the village area.

Ponds

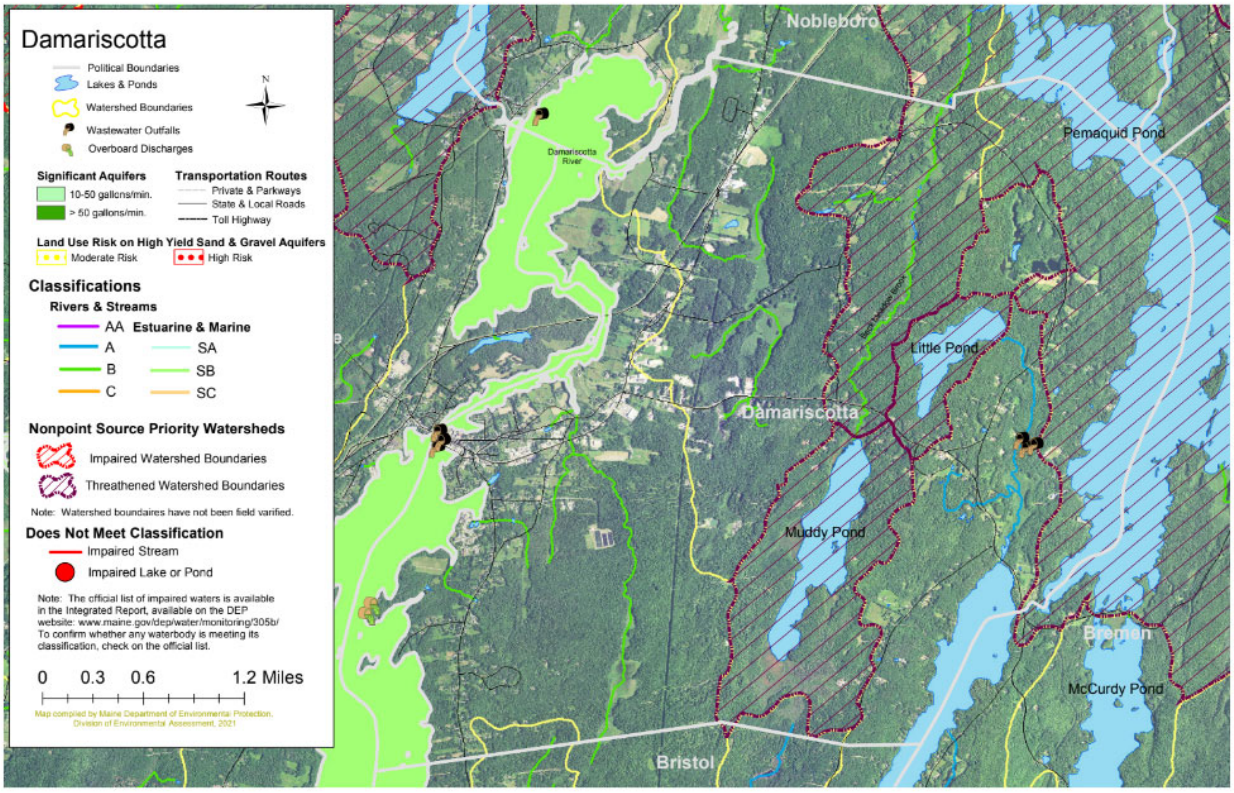
Both Little Pond and Muddy (Paradise) Pond lie wholly within the town of Damariscotta. Biscay Pond and Pemaquid Pond are larger freshwater lakes shared by neighboring towns. All four are classified as Great Ponds (water bodies with a surface area in excess of 10 acres

held in trust by the state for use by the public) under Maine Statute. These ponds (along with McCurdy Pond in Bremen and Duckpuddle Pond in Nobleboro) form a network of connected lakes in the Pemaquid River Watershed. The outlet from spring-fed Little Pond flows south to Biscay Pond. Back Meadow Brook originates at the outlet of Muddy (Paradise) Pond and flows north to Pemaquid Pond. McCurdy Pond in Bremen also connects into Pemaquid Lake just south of the Damariscotta town line and Duckpuddle Pond in Nobleboro drains into the northern end of Pemaquid Pond, just north of the Damariscotta town boundary. Pemaquid Pond connects to Biscay Pond near the small town beach on Biscay Road. The Pemaquid River in Bristol originates at the outlet of Biscay Pond to the south of Damariscotta in the Town of Bristol and flows south to the ocean.

According to a 2004 watershed survey, Biscay Pond has the most developed subwatershed of these lakes with a high rate of new residential development and an increase in conversions of seasonal to year-round residences. Erosion along shorelines and roads were cited as potential sources of nonpoint source pollution, contributing nutrients and sediment to the ponds.[1]

Little Pond, a cold-water spring-fed pond, is the public drinking water source for the Town of Damariscotta, and is protected and managed by the Great Salt Bay Sanitary District. The Sanitary District owns a vast majority of the land within the watershed of the pond. The District disinfects water taken from Little Pond by an ultraviolet light system and has received a waiver from filtration requirements because of the pond's high water quality. In order to receive the waiver, the District demonstrated that water from Little Pond has low turbidity and coliform counts, and that potential sources of contamination are managed to minimize risk. The Town and District work together to establish policy and management practices to prevent contamination of Little Pond from point and nonpoint pollution sources to maintain current drinking water quality. If the waiver were to be lost, a filtering plant would have to be built costing more than $20 million in construction costs.

[1] Maine Department of Environmental Protection (2006) "Nonpoint Source Management Program 2005 Annual Report," Document# DEPLW0758.



Source: Maine Department of Environmental Protection (2021)

The State has four classes for freshwater rivers and streams (AA, A, B, C), three classes for marine and estuarine waters (SA, SB, SC), and one class for lakes and ponds (GPA). Classes AA, GPA and SA describe waters with low risk from ecosystem degradation or pollution since activities such as waste discharge and impoundment are expressly prohibited in these resources. Class A waters allow impoundments and very restricted discharges, so the risk of degradation, while quite small, does exist. Classes B and SB have fewer restrictions on activities but still maintain high water quality criteria. Finally, Classes C and SC have the least restrictions on use and the lowest water quality criteria. Classes C and SC waters are still of good quality, but significant degradation might occur in these waters in the event of an additional environmental or human-made stress being introduced (such as a spill or a drought).[2]

Ponds[3]	Ecological[4] Value	Water Body Classification	Watershed threatened or impaired	Threats to water quality	Documented threats or invasive species

[2] For more information about the classification of waterbodies, see M.R.S.A. Title 38, §465.
[3] Thompson, Woodrow B.,"Surficial geology of the Damariscotta quadrangle, Maine, Maine Geological Survey, Open-File Map 09-6, map, scale 1:24,000, (Maine Geological Survey Maps, 2009), http://digitalmaine.com/mgs_maps/1838
[4] "Your Lake - Search Results, Damariscotta, Maine," Lakes of Maine (Lake Stewards of Maine, 2023), http://www.lakesofmaine.org/search-results.html?DoWhat=&l=&t=damariscotta&c=&z=&m=.

Little Pond	Coldwater fishery (brook trout) Pemaquid River watershed Wetland/riparian habitats	Class GPA	Yes[5]	Sediment runoff Contamination from MDIFW brook trout stocking Sea plane landings Erosion of historic dams from gravel pits	No
Paradise (Muddy) Pond	Warm water fishery Pemaquid River watershed Wetland/Riparian Habitats	Class GPA	Yes	Sediment runoff Residential development Negative water clarity trends	No
Pemaquid Pond	Coldwater fishery Warm water fishery Pemaquid River watershed Wetland/Riparian habitats	Class GPA	Yes	Wastewater discharge in adjacent water body Nearby septic contamination Sediment runoff Development	No
Biscay Pond	Coldwater fishery Warm water fishery Wetland/Riparian habitats Pemaquid River watershed	Class GPA	No	Wastewater discharge in adjacent water body Sediment runoff	No
Rivers, Streams & Bays					
Damariscotta River Estuary (including Salt Bay)	Shellfish growing area Horseshoe crab	Class B	No	Sediment runoff Development	No

[5] Note: Little Pond, which has excellent water quality, is on the list because it is a surface water source for a public water system.

	breeding area & Anadromous fish runs Wetland/Ripari an habitats			Wastewater discharge site	
Oyster Creek & Little Oyster Creek/Lilly Brook	Wetland/Ripari an habitats Mixed saltmarsh habitats present (listed as an "exemplary natural community") Damariscotta River watershed	Class B	No	Sediment runoff Wastewater discharge in adjacent water body Development	No
Back Meadow Brook	Wetland/Ripari an habitats present 75 foot riparian buffer zone	Class B	No	Sediment runoff Nearby septic contamination	No
Stream draining from Little Pond to Biscay Pond	75 foot riparian buffer zone Wetland habitats present	Class A	No	Sediment runoff Direct Wastewater discharge	No
Castner Creek	Wetland/Ripari an habitats	Class SB[6]	No	Nonpoint source pollution	No

Groundwater

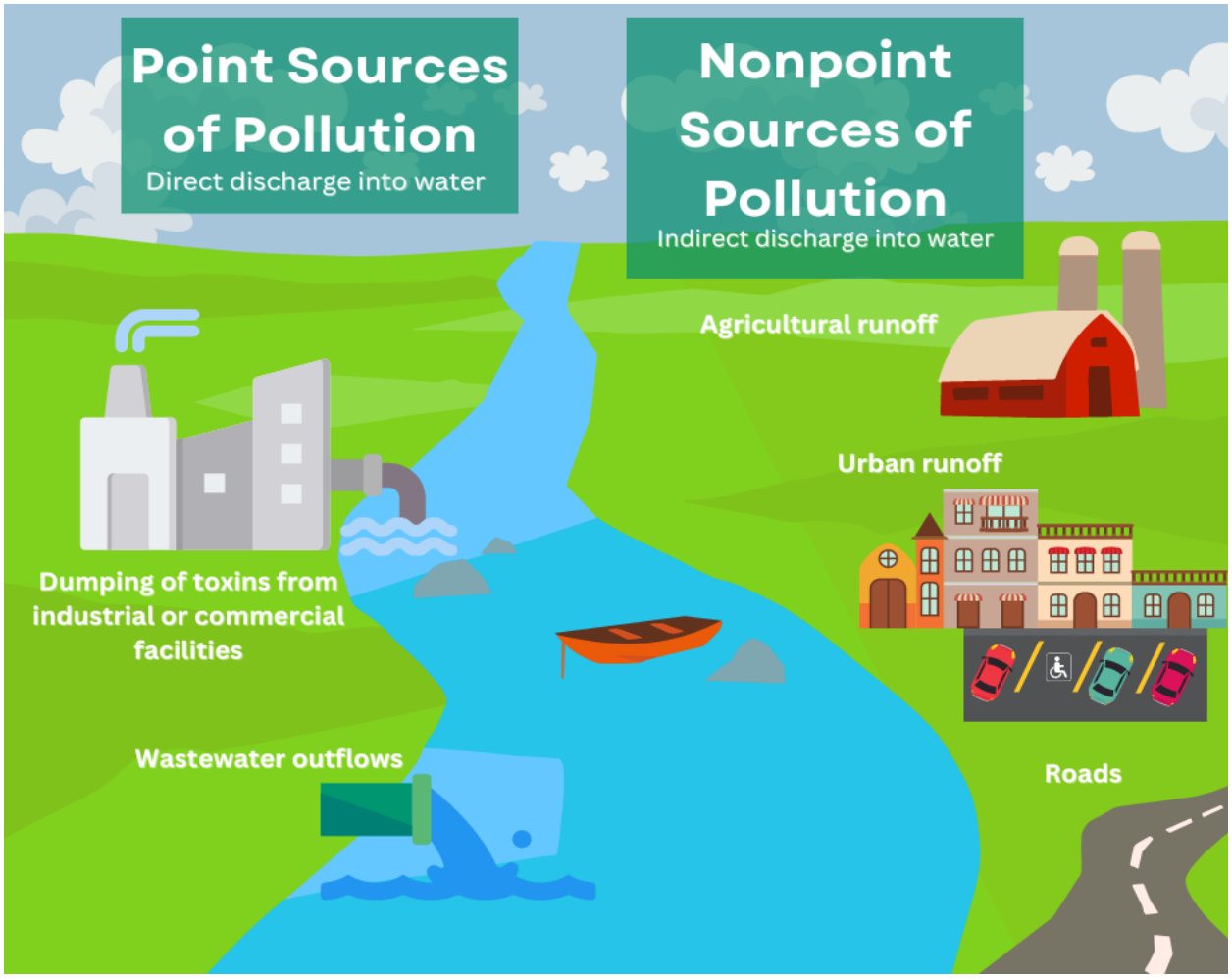
Groundwater is water existing within the pore spaces of subsurface geologic material (e.g., saturated soil). An aquifer is a water-bearing geological formation capable of yielding a usable amount of groundwater to a well. In Maine there are two types of aquifers; loose soil materials (such as sand, gravel, and other sediments) and fractured bedrock. A sand and gravel deposit is considered a *significant aquifer* when a well in that deposit is capable of being continuously pumped at a rate of 10 gallons per minute (GPM) or more. There are no significant aquifers, so defined, mapped in Damariscotta.[7] Despite the Great Salt Bay Sanitary District (which supplies 614 residential and commercial customers), the majority of Damariscotta residents rely on groundwater from drilled fractured bedrock wells for drinking water.

[6] "Your Lake - Search Results, Damariscotta, Maine," Lakes of Maine (Lake Stewards of Maine, 2023), http://www.lakesofmaine.org/search-results.html?DoWhat=&l=&t=damariscotta&c=&z=&m=.

[7] https://www.maine.gov/dacf/mgs/explore/water/facts/aquifer.htm

Threats to Water Quality

The majority of Damariscotta's surface waters are classified at B or higher quality, as noted on the chart above. The major threats to water quality come from nonpoint sources of pollution, mainly nitrogen and phosphorus from stormwater runoff, as well as increased soil erosion due to development.



Point Sources (Direct Discharges) of Pollution

There are multiple wastewater outfalls in and around Damariscotta's downtown, and overboard discharges on Hall Point, all of which release wastewater into the Damariscotta River.[8] Wastewater from the public sewer provider, the Great Salt Bay Sanitary District, is discharged into the Damariscotta River near the municipal parking lot after being treated through a series of aerated lagoon systems. Additionally, a seasonally operated treatment

[8] Map of Damariscotta Watersheds, Maine Department of Environmental Protection (2021).

plant that handles sewage from Pemaquid Lake Campground, releases effluent onto a field near an unnamed stream draining from Little Pond to Biscay Pond.

Maine Department of Marine Resources (MDMR) water tests indicate that levels of coliform bacteria fluctuate in the Damariscotta River, especially after storm events. The Damariscotta River is currently rated Class SB, suitable for harvesting of shellfish by DMR.[9] Refer to the Marine Resources section of this Plan for further information on the impacts of pollution to marine resources in Damariscotta.

Nonpoint Sources of Pollution

Marine Waters

The water quality of the Damariscotta River estuary is threatened by excess nutrients that wash into the river following rain and snow events. The nutrients come from fertilizers applied to fields and lawns, goose manure from the large year-round flocks that live along the upper river, and stormwater runoff from roads and parking lots, and other diverse sources that pollute the waters of the lakes, streams and creeks feeding into the Damariscotta River. These sources may contribute to excessive algal blooms including toxic marine phytoplankton blooms and bacterial pollution as well.

Coastal acidification (changes in water chemistry as a result of excess runoff) is another major issue of concern, especially to the shellfish growers and harvesters on the river. The acidification of Gulf of Maine waters reflects the rise in atmospheric carbon dioxide levels globally since carbon dioxide readily dissolves into water creating carbonic acid. Land based point and nonpoint sources of pollution contribute excess nutrients which cause algal blooms that also contribute to acidification, along with acid rain from fossil fuel use. As seawater acidity increases, less calcium carbonate is available to shellfish and other marine life to build shells and skeletons.

Fresh Surface Waters

As noted on the chart above, the watersheds around Little, Muddy (Paradise), and Pemaquid Pond, as well as Back Meadow Brook, are all considered impaired. The inclusion of Little Pond on this list is because it is a public drinking water source. The remaining ponds are polluted from sediment runoff and erosion due to nearby development around the watershed areas. Phosphorus from runoff, fertilizers, and sewage is a primary factor causing eutrophication, a process in which waters become so nutrient-rich, algae and plant species deplete the supply of dissolved oxygen in the water and kill off other aquatic species.

[9] Susanne K Meidel, "2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report Appendices, https://www.maine.gov/dep/water/monitoring/305b/2022/25-May-2022_2018-22_ME_IntegratedRpt-LIST.pdf.

In the 1970s, Little Pond experienced several algae blooms and was classified as eutrophic, the highest category of algae productivity. Water quality has improved since the 1990s and continues to be high enough to support a filtration waiver. Little Pond's historic contamination was caused by significant runoff from a gravel mining operation northeast of its watershed, which increased the turbidity of the drinking water. The gravel mining operation has ceased, and the Great Salt Bay Sanitary District now owns the remaining pits, and has been managing runoff through a series of dams meant to impede sediment runoff and revegetation efforts to ensure permanent soil retention of the former work site.

The most recent report prepared for the Maine Center for Disease Control and Prevention's Source Water Assessment Program (SWAP), from 2003, cites concerns from Sanitary District staff regarding the integrity of the dams, and the substantial influx of turbid water that could contaminate the pond if the dams failed to prevent the runoff.

Drinking Water

Great Salt Bay Sanitary District

Due to the Town's existing land use controls and the management practices of the Great Salt Bay Sanitary District, threats from contamination of the Town's drinking water are currently considered low. Conservation and management of Little Pond is managed by the Great Salt Bay Sanitary District, a quasi-municipal entity which serves approximately 700 residential and commercial customers in Damariscotta. More than 95% of the 424 acre watershed is undeveloped. The Great Salt Bay Sanitary District owns a vast majority of the land within the watershed, and development within the watershed has been limited due to District management and Town regulations intended to prevent shoreline erosion or any new sources of pollution.[10] Other than the water intake station, the only structures in the vicinity of Little Pond are low-density residential developments built around the periphery of the watershed.

According to data included in the most recent Source Water Assessment Program Report for Great Salt Bay Sanitary District: Little Pond Watershed (from 2003), soil along the shoreline of Little Pond has low to moderate erodibility and the Sanitary District has not observed areas of significant erosion along the shoreline. There are no commercial facilities in the watershed that use petroleum or other materials that could pose a threat to the water quality of the pond. Commercial land uses within the watershed are limited to periodic timber harvesting, all of which is managed by a forest manager to ensure safe harvesting practices that do not pose a threat to drinking water.

Access to Little Pond is limited to a gravel drive to the water intake station (which the District keeps locked, along with the posting of "No Trespassing" signs) and a foot trail from Biscay

[10] Maine Public Drinking Water Source Water Assessment Program Report for Great Salt Bay Sanitary District: Little Pond Watershed (March 2003).

Road at the south end of the pond to facilitate limited recreational canoeing and fishing. Fishing is permitted only in the summer months, and use of live bait or motorized water vehicles is prohibited. Fish stocks are replenished by the Maine Department of Inland Fisheries & Wildlife (IF&W). Because of the high water quality of Little Pond it is now recognized as one of the best brook trout water bodies in the state, per GSBSD staff.

Contamination Threats to Other Drinking Water Sources

The chart below shows public water systems that are outside the management of the Great Salt Bay Sanitary District. A system may still be considered a "public" water system (even if the system of pipes is completely privately owned) if it has at least 15 service connections or serves more than 25 individuals per day for at least 60 days out of the year.[11] The Maine Center for Disease Control and Prevention's Source Water Assessment Program monitors these supplies and identifies potential threats in order to assist with local regulatory decisions.[12]

Information obtained from the most recent reports of the Source Water Assessment Program (shown in the chart below) found no current contamination in any of the water supplies, but did find varying levels of risk of current and future contamination for each. The major sources posing a risk to future contamination came from the water supply's close proximity to private septic systems or a lack of ownership of the land surrounding the wellhead. The findings were unable to determine significant risks of chronic contamination due to a lack of data on the distance of wellheads from potential chemical contaminants.

Supply owner	**Risk of geologic contamination**	**Risk of acute contamination**	**Risk of chronic contamination**
Pines Mobile Home Park	Low	Moderate Future: Moderate	Low Future: High
Miles Health Water System	Moderate	Low Future: High	Moderate Future: High
Lake Pemaquid Campground	Low	Moderate Future: Moderate	N/A
Reunion Station Restaurant	Low	Moderate Future: Low	N/A

[11] For more information, see the State's Public Water Systems page, available online here: https://www.maine.gov/dhhs/mecdc/environmental-health/dwp/pws/whataPWS.shtml

[12] PWS Data provided by the Maine Center for Disease Control and Prevention Drinking Water Program, Fall 2021.

In the list above, risk assessment of contamination is organized by contamination type. Risk of geologic contamination is based on the type of well and thickness of well walls. Risk of acute contamination is based on proximity of septic and waste systems to wellheads. Risk of future acute contamination is based on the radius of land around the well owned by the well owner. Risk of chronic contamination is based on the presence of potential sources of chemical contaminants, such as PFAS chemicals or the storage of hazardous materials at nearby properties. Risk of future chronic contamination is based on ownership or control of the entire wellhead protection area.

Protective Measures: Local Ordinances

Town policy intended to prevent degradation of Damariscotta's water resources includes the Town's Site Plan Review Ordinance, which requires an erosion and sediment control plan to mitigate the risk of erosion and sediment contamination during construction, a stormwater management plan, and a report on the phosphorus impact of any new construction or alteration (if located within the watershed of a great pond, as defined in Title 38 M.R.S.A. §436-A). This type of planning is meant to minimize the risk of contamination as much as possible to nearby water sources. In addition, in order for development projects to be approved, the Town's Planning Board must ensure that the quantity and quality of groundwater is not unduly affected by the proposal.[13]

The Town has also implemented a Shoreland Zoning Ordinance, which establishes land within 75 feet of a normal high water line of a stream as a Stream Protection District, land within 250 feet of coastal or freshwater wetlands as a Resource Protection District.[14] This Ordinance regulates all new construction or alterations within this buffer zone, and expressly prohibits any new construction within 25 feet of a water body or wetland. It also regulates the maximum size for new structures based on their distance from the water body boundary, and requires pre-existing structures to obtain a permit for any new alterations. Any new construction must partially re-establish trees and local vegetation removed in order to build a new structure, and ensure the retention of natural stormwater buffers in the area whenever possible.

The Shoreland Zoning Ordinance also limits commercial use to prevent contamination from fertilizers, petrol products, chemical, heavy metals, or other industrial pollutants. Any agriculture, mineral extraction, or natural resource harvesting near a body of water is regulated, and any operation (whether natural resource gathering or construction) must provide an erosion and sedimentation control plan to ensure minimal threat of runoff.

Issues & Opportunities

[13] See Sec. 102.6 of the Site Plan Review Ordinance and Sec. 103.6 of the Subdivision Ordinance, respectively.
[14] See the Town's adopted Shoreland Zoning Ordinance.

As noted above, water quality in Little Pond used to be severely impeded by a gravel mining operation in proximity to the Pond. Great Salt Bay Sanitary District maintains a series of dams meant to impede sediment runoff. The dams were not built to account for the increased severity and frequency of precipitation events due to climate change, meaning the risk of a substantial release of contaminated water could be more severe than previously accounted for.

The prevalence of per-and polyfluoroalkyl substances (PFAS) in existing agricultural land and waterways is still being evaluated across the state, but could pose a threat to Damariscotta's bodies of water. The State of Maine's decision to ban the use of treated sewage sludge as a fertilizer source in 2022 implies any farmland in Damariscotta could potentially have been a nonpoint source of PFAS to nearby waterways.[15] PFAS tests of well water from wells near historic septage spreading sites in town have revealed instances of low levels of contamination. Investigation is ongoing by the Maine Department of Environmental Protection (DEP).

Threats from invasive species, nonpoint pollution, and erosion may also become more severe in the future due to climate change. These are discussed in detail in the Marine Resources and Natural Resources sections of this Plan.

[15]Tom Perkins, "Maine Bans Use of Sewage Sludge on Farms to Reduce Risk of PFAS Poisoning," The Guardian (Guardian News and Media, May 12, 2022), https://www.theguardian.com/environment/2022/may/12/maine-bans-sewage-sludge-fertilizer-farms-pfas-poisoning.